Wind River Nursery

Site & Facility Plan
June 1, 2000

The Portico Group
with
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TABLE OF CONTENTS

TABLE OF CONTENTS, CONTINUED

LIST OF EXHIBITS: FIGURES AND TABLES

1.0 Executive Summary

2.0 The Redevelopment Plan with Phasing Recommendations

3.0 Site Business Opportunities Analysis: The Redevelopment Plan

LIST OF FIGURES AND TABLES, CONTINUED

4.0 Facility Catalog and Operation/Maintenance Assessment

5.0 Supporting Analysis and Planning Process

LIST OF FIGURES AND TABLES, CONTINUED

5.0 cont. Supporting Analysis and Planning Process

1.0 EXECUTIVE SUMMARY

INTRODUCTION

The Wind River Nursery site is located in the heart of Washington State's Gifford Pinchot National Forest. The site is a unique combination of open meadows and forested slopes. Its location is a twenty minute drive from the Columbia River Gorge National Scenic Area and about one hour from the Portland/Vancouver metropolitan area.

The Nursery produced seedlings until 1997, when it was closed by the Forest Service. This closure resulted in a loss of approximately 300 seasonal and full-year jobs in Skamania County. Currently, nearly 183 acres of land at the Nursery site are being conveyed from the USDA Forest Service to Skamania County. This conveyed land is the subject of this study.

Martha Creek Field

The Portico Group, in conjunction with a team of economists, civil engineers and agricultural specialists, was selected by Skamania County Redevelopment Team in July of 1999 to produce a Redevelopment Plan for the Nursery. Through a year-long study process, members of the team worked to identify future uses of the site. The team focused on creating a site program that would enhance the Nursery's potential for long term economic productivity and job creation, with a collective goal of "putting the site back to work." The resulting Redevelopment Plan outlines uses that are economically feasible, ecologically responsible, and which meet the needs of the surrounding communities. This process involved extensive research into the history of the site, as well as a dynamic series of public community meetings, discussion groups and brainstorming sessions. It also required a look toward the future of the site, and the economic needs of the county.

1.1 THE WIND RIVER VISION AND MISSION STATEMENTS

The County's Vision Statement for re-use of the Nursery site focuses on utilization of the land for the benefit of Skamania County residents:

> *The Wind River Nursery site will be sustained and enhanced to provide economic, cultural, and community benefits and resources for the citizens of Skamania County.*

The Mission Statement for the Wind River Nursery is:

> *To create and promote diverse business operations at the Wind River Nursery site which include research, educational and cultural components; promote tourism and recreation; showcase locally made products; provide a focal point for community activities; and provide local jobs, public revenues, and other benefits to Skamania County citizens.*

These statements guided the work of the Wind River consultant team, providing a framework for the evaluation of uses and activities proposed on the site.

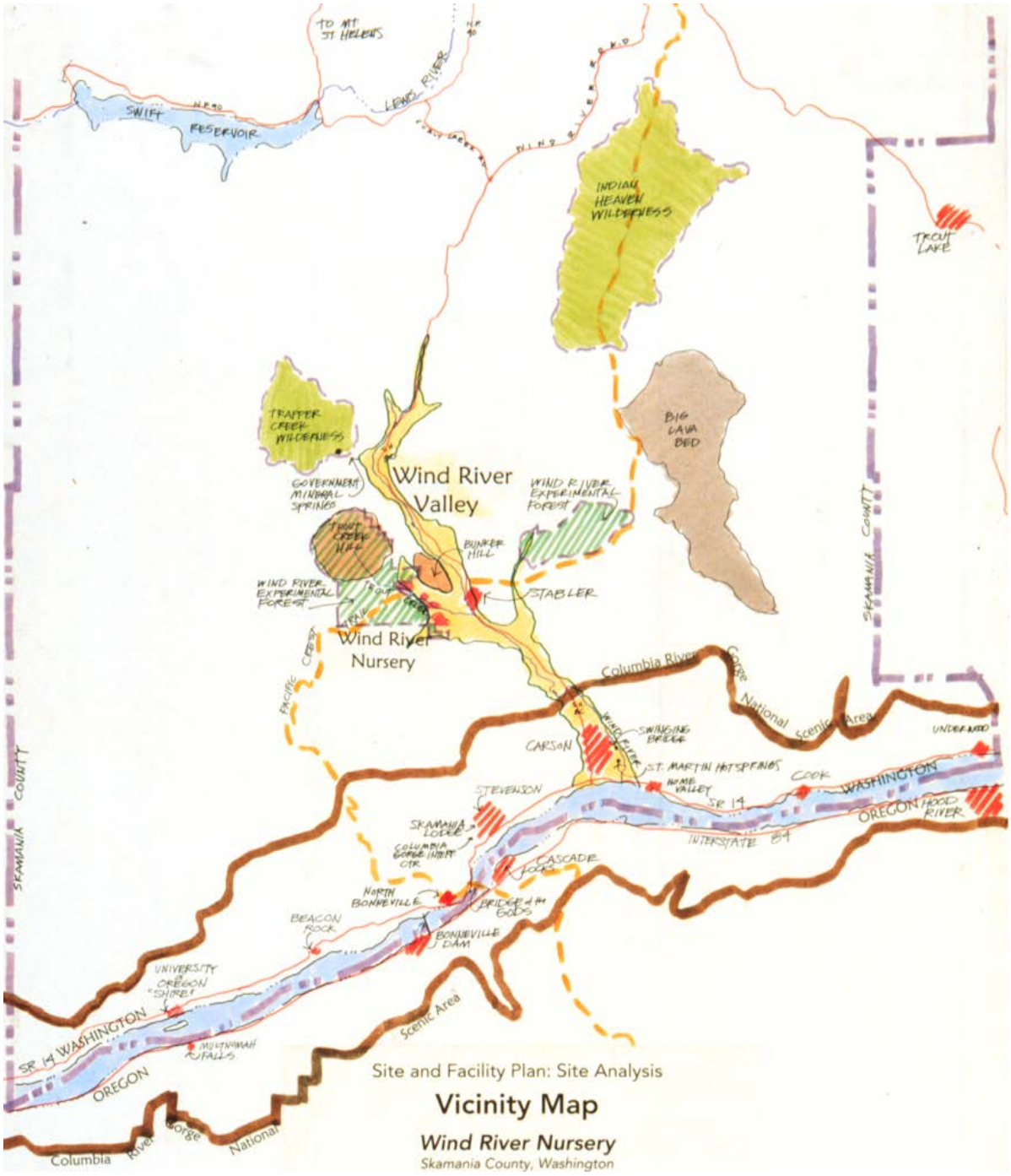


FIGURE 1.1 VICINITY MAP

1.2 THE COMMUNITY INVOLVEMENT PROCESS

The Portico Group and the Wind River Redevelopment Team held a series of workshops and brainstorming sessions for Skamania County residents. Citizens of the county provided valuable ideas, feedback, suggestions, and criticism over the course of three community meetings.

Community Meeting in November 1999

The reactions, comments and concerns of county residents can be found summarized in *Chapter 5: Supporting Analysis.*

1.3 HISTORY OF THE SITE

The historic significance of the Wind River Nursery is directly related to its role in the development of the timber industry in the Pacific Northwest. The site includes buildings and landscapes that represent the early history of the Forest Service, the architectural style of the Civilian Conservation Corps (CCC); the first Arboretum in the Pacific Northwest; and one of the original nursery fields.

Early experimental work at the site aided the Forest Service in developing and refining timber practices; this tradition of experimentation and scientific exploration is still represented on the site today by the forest research done through the Pacific Northwest Research Station (PNWRS), the Wind River Experimental Forest, and the canopy crane operated by PNWRS and the University of Washington.

Historically, the site was used for fishing, collection, foraging, and hunting by Klickitat and Yakama Indians. Non-native settlement of the area began in 1850. The primary land use was the harvest and transport of timber, which has been an important part of the regional economy and culture ever since. In 1903, a nursery was established at the current Wind River Nursery site to reforest areas of the region that had been badly damaged by fire.

Historic Photograph, Wind River Nursery

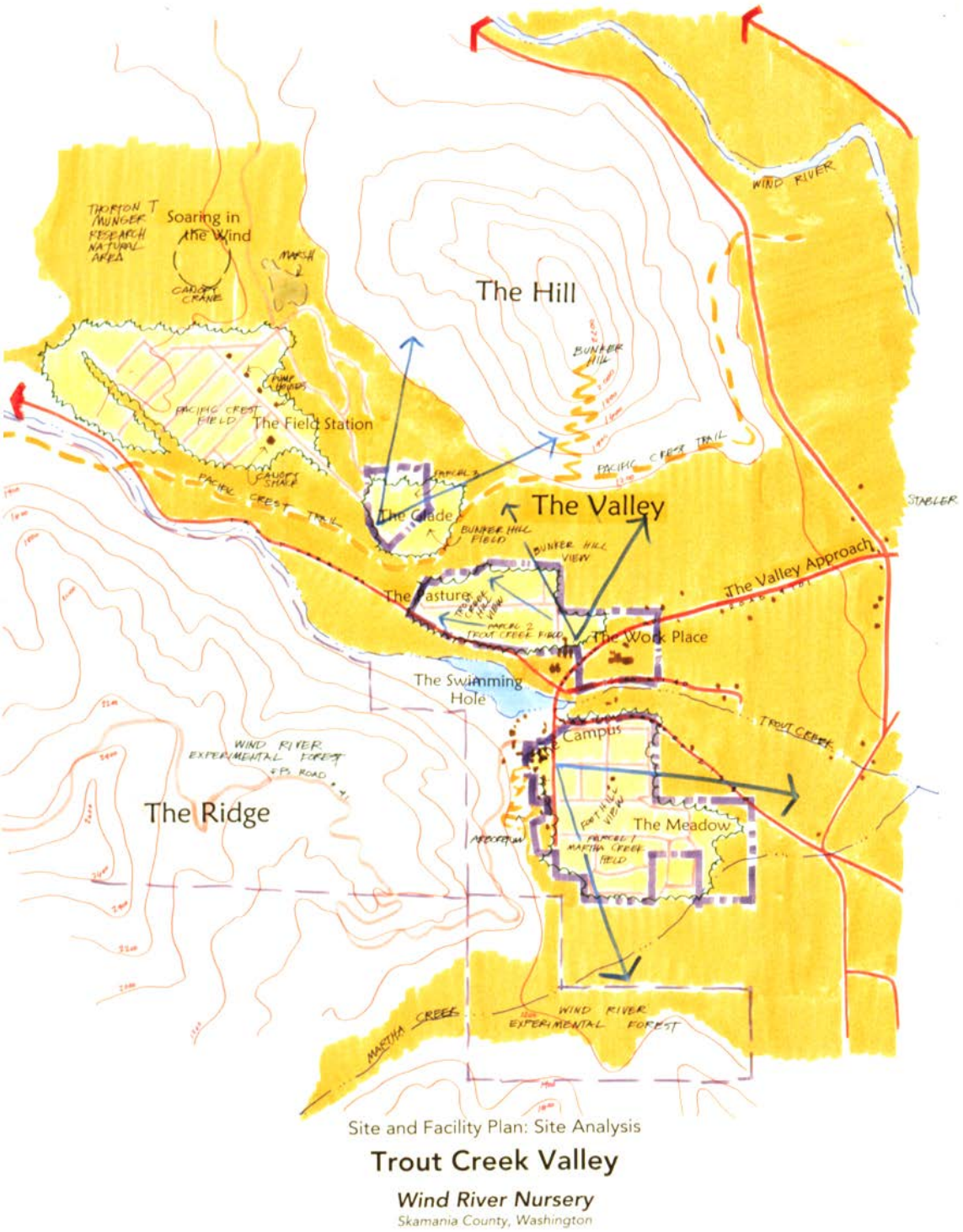


FIGURE 1.2 TROUT CREEK VALLEY

It was at this time that forest managers realized that logged areas would also require reforestation, if timber was to succeed as a renewable resource.

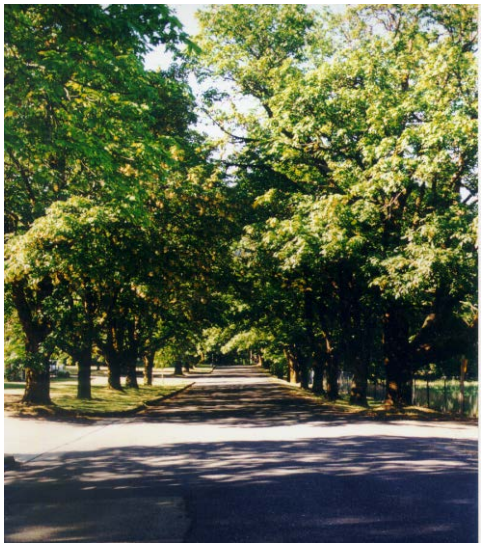
1.4 SITE, FACILITY, AND ECONOMIC ASSESSMENTS

1.4.1 Site Analysis

The site is located in south central Skamania County's Wind River Valley, adjacent to the Wind River Experimental Forest, Government Mineral Springs, and the town of Stabler. It is outside the Columbia River Gorge National Scenic Area, and at the southern part of the Gifford Pinchot National Forest.

A walk through the site is marked by the distinct contrast between the intimate, mystical enclosure of dark green trees, and bright sunlit openings and meadow vistas. These clearings provide distant views to the surrounding foothills, including an ancient volcano - Trout Creek Hill. Owing to the ancient lava flows, the valley bottom is unusually wide, providing level areas for a multitude of uses.

Chapman Avenue, Wind River Nursery



The conveyed land consists of three parcels: Martha Creek Field (108 acres); Trout Creek Field and the Seed Processing Center (61.8 acres); and a portion of Bunker Hill Field (12.6 acres). The majority of the conveyed land is agrarian in nature, though it also includes 17 buildings and the maple-lined Chapman Avenue adjacent to Martha Creek Field.

Also of interest to the county are portions of the nursery remaining in USFS ownership. This includes the southern portion of Bunker Hill Field, as well as land at the Pacific Crest Field. Portions of these fields will be available to the County via special-use permit with the Forest Service. These fields are thus included in the analyses contained in this study.

1.4.2 Buildings Assessment Summary

The Wind River Nursery site and the existing buildings in the conveyance have the potential to provide diverse facilities indoors and out. The existing stock of CCC-era housing and structures, as well as the more modern nursery processing buildings, provide an opportunity to explore multiple options for adaptive reuse. The viability of agricultural uses, for example, may be enhanced if the buildings can be efficiently reused. The CCC structures along the big leaf maple-lined boulevard provide a wonderful armature on which to build and expand research, education, recreation or tourism related uses.

When new uses for existing buildings are considered, the costs of renovation will affect the feasibility of re-use. While some buildings have more extensive renovation issues than others, most of the buildings will remain useful for a significant number of years.

The major renovation issues, regardless of use, will relate to code compliance, including energy, seismic, Americans with Disabilities Act, and life safety codes. Five of the buildings are eligible for the National Historic Register. While the renovation of these buildings will need to comply with the Department of the Interior Standards for Rehabilitation of Historic Properties, the architectural presence of historic buildings on the site provides a rich palette for future renovation and construction on the site.

Residence, Wind River Nursery

Regardless of the final use of the property, the redevelopment of the facility can demonstrate innovative sustainable construction methods and materials; recycling and minimization of waste both during and after construction; and building methods that help to protect environmental quality and animal habitats.

1.4.3 Economic Development and Market Research Summary

Market Assessment

The market analysis shows that the Nursery site has excellent potential to attract visitor and education facilities as a complement to agricultural research and production. The Portland-Vancouver Area, with a vibrant economy and over 1.6 million residents, will serve as a key primary market for the site. The Columbia River Gorge already serves as a primary visitor destination for travelers visiting the Pacific Northwest. The surrounding Gifford Pinchot National Forest enhances the site with habitat for native plants and wildlife, scenery, and diverse opportunities for outdoor recreation.

In addition to travelers, a relatively large population of school-aged youth provides a strong primary market for any educational programs or activities targeted toward this segment of the population.

Potential Opportunities

There are many opportunities for education programs, activities, and facilities that could attract visitors to the WRN site. They include:

- Inn or Retreat for small groups
- Youth Education Programs
- Research Facilities (especially linked with new and existing University programs)
- Equestrian Center
- Yurts and Tent Cabins
- Festival Grounds
- Canopy Crane for visitors

Potential opportunities for business development at the site include:

- Call Centers
- Computer Technology Businesses
- Light Manufacturing
- Value-added Wood Processing
- Bio-remedial Businesses
- Research and Development
- Metal Fabrication
- Micro-Brewery

1.4.4 Agricultural Assessment Summary

Site Capability

The Nursery has excellent agricultural production potential. The climate, soils, topography and buildings offer many advantages to agricultural operators to locate at the site. The site lies within the Western Washington climactic zone which experiences winter rain and a contrasting summer drought. Although the area receives about 100 inches of rainfall annually, one major limitation is irrigation water required in the summer months. This limitation can be addressed through the use of water-saving irrigation technology (such as drip irrigation) or selection of crops that require little or no summer irrigation.

Echinacea Blossom

Potential Crops

There are many different agricultural and forest-related crops that can be produced at the site, which have strong market demand. They include:

- Botanical plants
- Nursery and native plants
- Christmas trees and Christmas tree seedlings
- Wetland plants
- Mushrooms
- Floral greenery
- Bough orchards
- Native berries
- Production or germplasm research for any of the above crops

1.4.5 Civil Engineering Summary

A review of the utility infrastructure systems (including sanitary sewer, storm drainage, water, irrigation) and roadways for the Wind River Nursery was conducted for this study. Information contained in this report was gathered through interviews with U.S. Forest Service personnel, site visits, discussions with regulatory agencies and review of previous reports.

Water Rights

The site currently has water rights for existing irrigation and domestic use. After the conveyance of the existing irrigation and domestic Water Rights to the County, the County will work with the Department of Ecology (DoE) to transfer its water rights from the surface water withdrawal point on Trout Creek.

Utility System

In general, the existing utility system is in good condition for the present facility. Because the Forest Service will not allow new service connections to their existing water and sewer systems, the County will need to develop separate utility systems to accommodate any new facility construction.

New facilities may include:

- A new water distribution system and water tank.
- Upgrades to the existing storm drain system.
- A new sanitary sewage collection and treatment system.

Irrigation System

The present irrigation system includes a distribution system, pumps, wells and intakes. Irrigation heads and field lines have been surplussed by the Forest Service and are not available to the County. The location of the eventual water supply for the irrigation system, determined in consultation with DOE, will dictate the improvements required. Two likely sources of supply for the irrigation system include:

1. Using the existing wells at Pacific Crest Fields.
2. Constructing new wells at other locations on the site for withdrawing groundwater.

Both options require modifications to the pumps at Pacific Crest Field and the distribution system. Due to DOE's withdrawal rate limitations and requirements of Endangered Species Act implementation, a drip irrigation system appears to be the most feasible option for the site.

Roadway System

The main roads, parking lots, and access drives throughout the site are in fair condition. In order to maintain adequate upkeep of these facilities, resurfacing of existing roads need to occur within the first stages of new development.

Aerial view, Wind River Nursery

Regulatory Agencies

Along with the Department of Ecology, which will review water rights and stormwater management issues, other regulatory agencies will be involved in the development permitting process, including:

- Washington State Department of Health (for on-site sanitary sewage systems and domestic water supply systems)
- Washington State Department of Fish and Wildlife
- Skamania County Department of Public Works (review of roadway and utility development)
- Skamania County Planning and Community Development (SEPA, zoning, and critical areas)

Funding Sources for Infrastructure

Possible funding sources for new infrastructure development were identified during this study. Private developers would provide the majority of infrastructure costs. Other potential funding sources include Washington State and Federal grant/loan programs.

1.4.6 Mechanical and Electrical Report Summary

The engineering analysis of the office, production and storage buildings included examination of the mechanical and electrical systems. Key points are as follows:

- Mechanical systems are in good condition. They require ongoing maintenance and operations checks to avoid deterioration.
- Electrical systems are also in good condition. Recent work on these systems has been done appropriately and meets code.
- A major increase in electrical load due to new use would require re-examination and evaluation of power to the site.
- Specific items, such as oil tanks, water pumps, and fire protection systems at certain buildings, should be evaluated for hazardous materials or possible deterioration of equipment.
- Plumbing, refrigeration and fire systems should be operated periodically while buildings are not in use to reduce the extent of repair required once buildings are re-commissioned.

1.5 PROGRAMMING

Through the master planning process, the planning team worked to help define and articulate the county's needs and hopes for the site. Through research, site analysis, community meetings, and extensive work with the Skamania County Wind River Nursery redevelopment team, eleven programming areas were drafted to define possible uses of the site and elicit client and community response.

A summary of these eleven uses is as follows:

- **The Forest Reserve:**
  Natural areas maintained, with some reforestation to provide a buffer for surrounding forest research areas.
- **Skamania Farms:**
  Development of agricultural fields and production opportunities.
- **Wind River Institute:**
  A coalition of researchers in forestry and agriculture, including universities, PNWRS, the Experimental Forest, and other public/private partnerships.

- **Cascadia Learning Center:** Nature-based educational programs and facilities for children and adults.
- **Martha Creek Camp:** Recreation and educational use, with cabins, bunkhouses, tent platforms, or yurts.
- **The Inn at Wind River:** A rustic retreat lodge, conference center, and/or resort facility.
- **The Cascade Event Grounds:** A community gathering space appropriate for arts, sports, or cultural events.
- **Community Social Services:** Includes the possibility for vocational training, teen services, or rehabilitation facilities.
- **The Work Yard:** County and community-based uses, including public programs, training, and storage.
- **The Hemlock Business Campus:** Use of existing and new buildings for offices, agricultural processing, small business incubators, warehouse and storage.
- **Pacific Crest Estates:** A housing program for single family residential use of the site.

The eleven possible uses were grouped into three alternative Site Concept Plans. Each plan was created to focus on a different primary use.

Comments on these plans were gathered from the Wind River Nursery team and the community. With these comments in mind, the consultant team created the Redevelopment Plan, a phased master plan designed to put the site back to work in a realistic, economically sustainable manner that preserves the site character of open meadows and surrounding forest.

1.6 THE REDEVELOPMENT PLAN: PUTTING THE SITE BACK TO WORK

Many of the tenets of the three Concept Plans were refined further to create the **Wind River Redevelopment Plan: Putting the Site Back to Work**. The plan proposes three primary "zones" across the site (see Figure 1-3) corresponding to a range of development levels. These geographical areas address Skamania County's multi-faceted mission statement for the Nursery, and are described as follows:

- **Village at Martha Creek** As the redevelopment plan is implemented, Martha Creek Field will become the area of the highest development and activity. The uses proposed provide a mix of open space, re-use of existing buildings, and new construction. Program elements include the Wind River Institute, Martha Creek Camp, Cascadia Learning Center, the Inn at Wind River, and the Cascade Event Grounds.
- **Hemlock Business Campus:** This zone, located in the eastern portion of Trout Creek Field and at the existing Processing Center, will incorporate agricultural processing, office space, new business space, and public services in new and existing buildings.
- **Wind River Fields:** Skamania Farms, an Equestrian Center, the research outpost for the Wind River Institute, and the Forest Reserve buffer will all come together to make the fields of this site productive, usable, and valuable to the residents of the county.

1.7 IMPLEMENTATION STRATEGIES AND PHASING PLAN

A phased approach was developed for the Redevelopment Plan, which outlines the tasks, events, concerns and issues that will emerge as the county moves toward implementation.

- **2002-2005: Laying the Ground-work**
  In the first years, the county will maintain and care for its new asset, providing opportunities for agriculture, short and long term leasing, and other low-cost, low-impact uses. The county will begin infrastructure development, and develop and expand partnerships with businesses, academic institutions, agricultural businesses and the Forest Service.
- **2006-2010: Taking Shape**
  After ten years, the three primary "zones" identified for the site have emerged. *The Village at Martha Creek* is the home of a growing collection of recreational and educational uses. *The Hemlock Business Campus* houses several small businesses, including agricultural processing. And the *Wind River Fields* are home to a varied and growing agricultural enterprise.
- **Snapshot of 2030: Fulfilling the Mission**
  This phase shows one vision for how the site could mature into a dynamic resource for Skamania County (Figure 1-4). The three areas of the site continue to develop in accordance with the vision set out early in the twenty first century. Added to the mix are the Inn at Wind River, enhancing the experience of tourism at the site, and the Cascade Event Grounds, serving as a gathering and celebration space for the residents of the region.

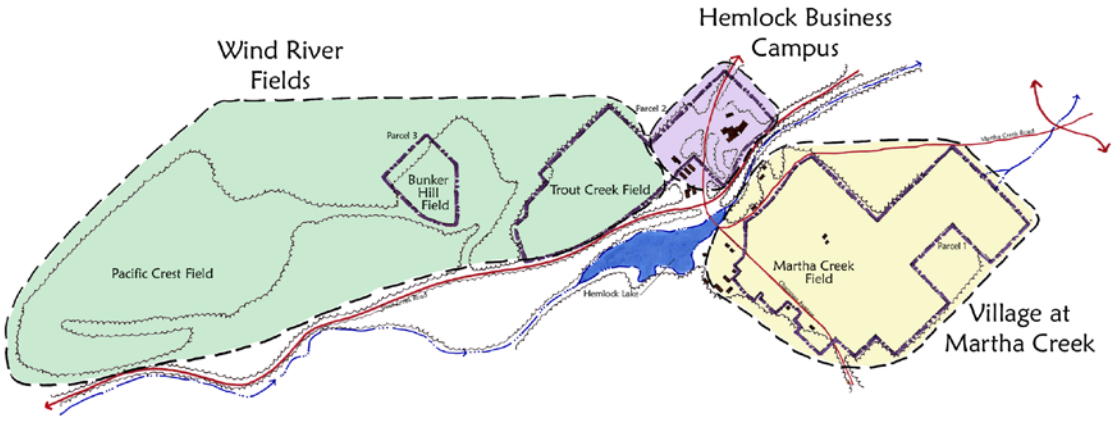


FIGURE 1.3 REDEVELOPMENT PLAN CONCEPT

1.7.1 Economic and Market Implications

The Redevelopment Plan provides an opportunity for Skamania County to combine business, agriculture, research, education, and recreation activities. In the final phase, businesses and organizations will support over 250 full-time and seasonal jobs at the site. In addition, the Plan provides viable options to re-use many of the existing buildings and preserves the site's character for future generations.

A major component of the Redevelopment Plan is agricultural use of the fields. Because uses proposed to surround Martha Creek Field will attract people for educational pursuits, overnight stays, and public gatherings, the Plan recognizes that any agricultural use of this field will feature low-intensity crop production (minimal spraying and few requirements for disc, plow, or harvest operations by tractor or truck). Selected types of research can be conducted at Martha Creek Field along with production of nursery plants, grass/pasture, and trees.

Each of the other three fields is primarily devoted to the production of agricultural crops. Irrigation water will be needed for certain crops especially in the first and second years of establishment. It is likely that out of 200 acres, 25-50 acres will require irrigation.

1.8 CONCLUSION

Through the Redevelopment Plan, Skamania County will become a unique model for other Northwest communities that seek sustainable ventures and opportunities to combine viable business, agriculture, and natural resource uses with visitor, education, and research activities.

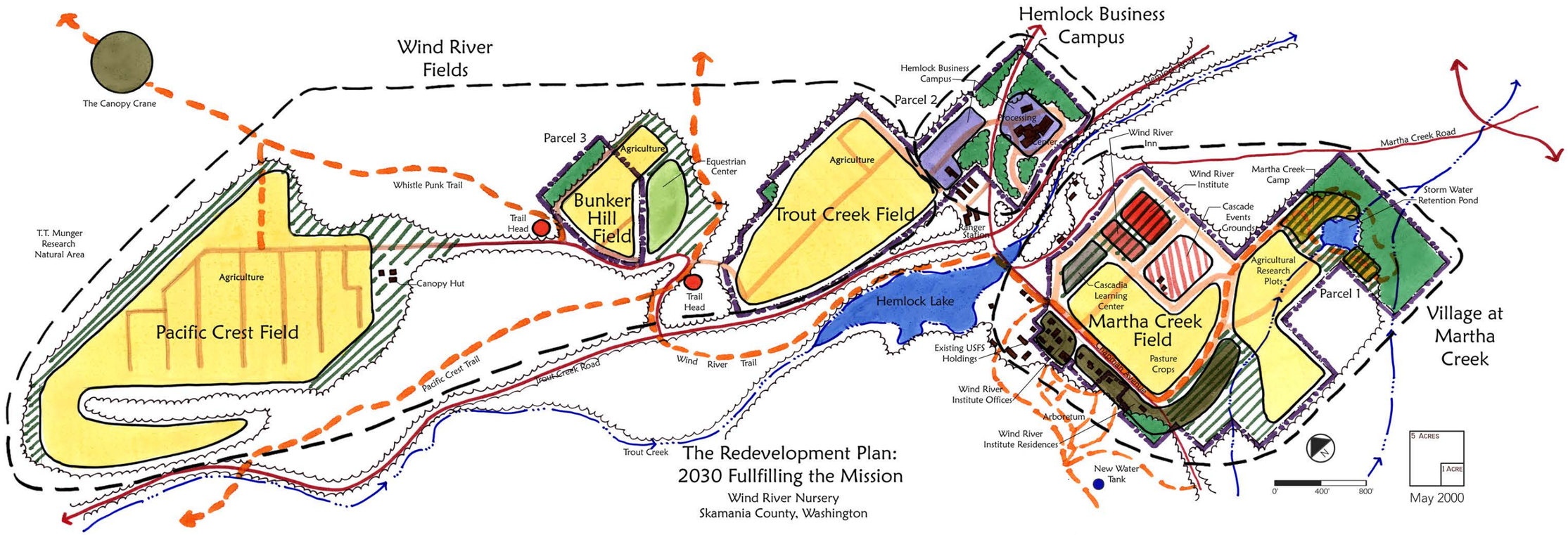

Hemlock Business Campus
Wind River Fields
The Canopy Crane
Parcel 3
Agriculture
Equestrian Center
Whistle Punk Trail
Trail Head
Bunker Hill Field
Parcel 2
Hemlock Business Campus
Processing
Center
Wind River Inn
Martha Creek Road
Wind River Institute
Martha Creek Camp
Storm Water Retention Pond
Cascade Events Grounds
Agriculture
Trout Creek Field
Ranger Station
T.T. Munger Research Natural Area
Agriculture
Pacific Crest Field
Canopy Hut
Trail Head
Hemlock Lake
Agricultural Research Plots
Parcel 1
Cascadia Learning Center
Martha Creek Field
Pasture Crops
Village at Martha Creek
Existing USFS Holdings
Wind River Institute Offices
Arboretum
Wind River Institute Residences
New Water Tank
Pacific Crest Trail
Trout Creek Road
Wind River Trail
Trout Creek
The Redevelopment Plan:
2030 Fullfilling the Mission
Wind River Nursery
Skamania County, Washington
N
0'
400'
800'
5 ACRES
1 ACRE
May 2000

FIGURE 1.4

2.0 DESCRIPTION OF THE REDEVELOPMENT PLAN: PUTTING THE SITE BACK TO WORK

2.1 INTRODUCTION

The Redevelopment Plan for the Wind River Nursery organizes the site and program activities into three geographical areas that address Skamania County's multi-faceted mission statement for the nursery.

The existing character of these areas fall along a wildland / rural / village continuum. The greatest concentration of buildings and road will surround the Martha Creek Field at the southernmost portion of the nursery. The largest extent of mature forest will surround the Pacific Crest Field at the northernmost extent of the nursery. The Trout Creek and Bunker Hill Fields, which lie in between, exhibit character traits of each of the neighboring fields and provide a transitional area.

The *Village at Martha Creek* expands the existing cluster of buildings along Chapman Avenue and emphasizes the development of nature-based tourism and life-long learning opportunities related to the Columbia River Gorge and Cascade Mountain environment. This activity center builds on and expands the site's long history as a forestry and agricultural research station.

The *Hemlock Business Campus* is the intermediate area adjacent and up valley from the Martha Creek Field. Clustered around the existing Processing Center and the south end of Trout Creek Field. This area will provide business development opportunities consistent with the vision for the entire site.

The *Wind River Fields* are the most agrarian areas, and least developed. It includes most of the Trout Creek Field, as well as Bunker Hill and Pacific Crest Fields. In addition to continuing the historic pattern of agricultural use, the fields provide access points to the wealth of recreational opportunities accessible along the Pacific Crest Trail and within the adjacent scientific laboratory of the T. T. Munger Research Natural Area, and other areas in the Gifford Pinchot National Forest.

GOALS OF THE REDEVELOPMENT PLAN:

- Develop the Wind River Nursery as positive model for former timber dependant communities looking to evolve toward new employment and development.
- Develop economic assets for the future.
- Create business development and jobs.
- Generate income for the county through land leases, sales tax receipts, increased numbers of visitors to the county and additional employment in the county.

2.2 DESIGN NARRATIVE:

THE VILLAGE AT MARTHA CREEK

To preserve the existing pastoral character of the Martha Creek Field, proposed development is limited to the edges of either the existing meadow or a modified meadow edge.

Chapman Avenue provides filtered views of the surrounding foothills to the

south and east. A new access road along the east and south margins of the field will complete a loop road. Similar to Chapman Avenue, these new roads will be lined with big-leaf maple trees; the building sites will be located across the road from the meadow, on the outside edge of the parcel.

The program for the Village at Martha Creek includes the following elements:

- Wind River Institute
- Cascadia Learning Center
- Martha Creek Camp
- Inn at Wind River
- Cascade Event Grounds

Each of these uses is described in greater detail below:

Wind River Institute

The Wind River Institute represents the combined research activities associated with the University of Washington (UW) and the Pacific Northwest Research Station's (PNWRS) canopy crane, the Wind River Experimental Forest and a proposed public/private partnership to develop high demand botanical and natural medicinal crops.

In collaboration with research partners, the existing office and warehouses along Chapman Avenue are available for use and renovation for research space, offices, meeting space and storage associated with the institute.

The existing CCC era homes along Chapman Avenue are available for researcher's quarters.

A renovated Mess Hall could be used as a dining facility, community gathering area, convenience store and/or interpretive information center regarding the Wind River Nursery.

An additional research crane, within a second growth forest stand, could be located along the southwest edge of Martha Creek. This is an opportunity for partnership with the USFS and the University of Washington.

Cascadia Learning Center

The Cascadia Learning Center is proposed for the north end of the field. The center's proposed classroom and gathering areas would cater to groups of children or adults interested in nature-based learning and recreational activities.

As another opportunity for partnership, the Forest Service's existing Bunkhouse and Training Center along the north side of Martha Creek Road could provide lodging for groups affiliated with either the center or the Wind River Institute. Additional cabins, bunkhouses and tent sites in this area could expand lodging opportunities. Alternately, these facilities could be located adjacent to the classrooms at the northeast corner of the field.

Martha Creek Camp

Yurts and tent sites associated with Martha Creek Camp are proposed at the eastern perimeter of the Martha Creek Field. The camp incorporates the existing meadow and woods surrounding the proposed storm water retention pond and wildlife viewing area. The camp would provide low cost overnight facilities for school and youth groups. Existing roads in the field would provide access from Martha Creek Road.

The Inn at Wind River

The Inn at Wind River, a rustic retreat lodge, conference center and resort, is proposed at the northeastern corner of

the fields to take advantage of views to the surrounding foothills and southern solar access. The inn and/or cabins are sited to align with the existing pole shed, recreating the former historic nursery row buildings. Access is provided via a new loop road along the perimeter of the field.

Cascade Events Grounds
Special events, including music, theater and community gatherings, are proposed for the Cascade Event Grounds. Centrally located in The Martha Creek Field, the grounds would utilize west-facing slopes for seating focused on a backdrop and stage adjacent to the existing pole barn.

THE HEMLOCK BUSINESS CAMPUS

The proposal for the Hemlock Business Campus provides for:

- Small business and business development space
- Agricultural research space, offices, storage and processing
- Office, work and storage space for non-profits and community service organizations

The business campus reuses the existing Processing Center for offices, storage, warehouse, and parking associated with agricultural and forestry research and processing. Also appropriate for business development is land at the south portion of Trout Creek Field, across Hemlock Road from the Processing Center. Business activities may relate to value added agricultural products, light industrial production, small business incubators, short term rental of garage and cooler spaces to local businesses for storage and distribution, or processing of alternative forest products gathered from the surrounding national forest.

Partnership opportunities should also be explored with the local Yakama Tribe, including storage and processing facilities for forest and river products (bear grass, huckleberries, mushrooms, salmon, etc.).

WIND RIVER FIELDS

Wind River Fields describes the agricultural program for the site and includes:

- Skamania Farms
- Equestrian Center
- Wind River Institute
- Forest Reserve

Skamania Farms
The Skamania Farms describes the agricultural production opportunities on Trout Creek, Bunker Hill and Pacific Crest Fields. Each field has the potential for high demand botanical crops, or alternatively, native plant production including trees, mushrooms, salal and ferns.

Access between the processing center and the three fields is provided by existing access roads through the center of Trout Creek Field and the spur road serving the Bunker Hill and Pacific Crest Fields.

Equestrian Center
An equestrian center is proposed at the southern end of the Bunker Hill Field on USFS ownership. This recreational facility is ideally located alongside the reforested buffer at the Pacific Crest Trail. It provides opportunities for horseback riding along the backcountry trails and roads in the adjacent national forest.

Wind River Institute
Expansion of Canopy Hut offices at the Pacific Crest Field would be as determined by UW and PNRS.

The Forest Reserve
Pacific Crest Field
The plan suggests that the US Forest Service restore the forest meadow ecotone of the Pacific Crest Field to enhance the buffer for the research activities on the Wind River Experimental Forest and the Canopy Crane site. These areas could also be used for forest understory crops such as mushrooms.

As an opportunity for partnership with the USFS and the University of Washington, a recreational canopy crane facility is suggested along the southwest corner of the Pacific Crest Field for use by visitors and education groups. This would allow the existing Canopy Crane to continue to serve researchers, while providing a separate, income generating, nature-based tourism experience for visitors.

Bunker Hill Field

The existing forested edge on the north edge of the Bunker Hill Field could also be used for forest understory crops. East of field, near the base of Bunker Hill, an alpine style trail hut could be developed. This would happen most effectively in partnership with privately operated, nature based tourism operators, as part of a network of huts along the Cascade Crest.

THE PHASING PLANS

Figures 2-1 through 2-4 provide a graphic illustration of the Redevelopment Plan as it may be implemented over thirty years.

Phases of development are outlined as:

2000-02 Completing the Conveyance

2003-05 Laying the Groundwork

2006-10 Taking Shape

2011-30 Fulfilling the Mission

The tasks, issues and events that may be predicted throughout a phased development plan are outlined in Section 2.3.

2.3 PHASING PROPOSAL FOR WIND RIVER NURSERY REDEVELOPMENT PLAN

The Wind River Nursery Redevelopment Plan is designed to be implemented in phases, through the efforts of the County, the community, and interested participants. In table 2-1 below, and on the following page, tasks are outlined by phase in order to clarify some of the issues and work items to be addressed in the near future and in the longer term.

Year	2000	2001	2002-2005	2006-10	2011-30
	Assessing the Resource	Completing the Conveyance	Laying the Groundwork	Taking Shape	Fulfilling the Mission
Site Acquisition and Negotiation	• Site and Facility Plan (Portico Team) • Continue/ complete conveyance process.	• Acquire Property • Apply for and obtain Special Use Permit for Bunker Hill Field (southern portion) and the Pacific Crest Field • Develop and solicit RFP's for agriculture, tourism, etc.			
Marketing	• Newspaper articles, press releases, etc.	• Newspaper articles, press releases, etc	• Market existing processing buildings along Chapman Ave. as potential Hemlock Business Campus		
Community Relations	• Public meetings to review County plans for WRN site.	• Festivals • Concerts • Picnics			
"Mothball" Maintenance		• Mothball buildings as required • Initial field prep (groundcovers and weed control)			
Partnerships		• Explore agreements with partner governmental agencies, colleges and universities (WSU, UW, U of O, etc.)	• Solicit and develop agreements with partner governmental agencies, colleges and universities		
Business Development			• Develop partnership for privately financed botanical production at renovated processing center	• Infill business development around processing center	• New construction and business development at Hemlock Business Campus

Continued, next page.

Phasing Proposal, continued:

Year	2000	2001	2002-2005	2006-10	2011-30
	Assessing the Resource	Completing the Conveyance	Laying the Groundwork	Taking Shape	Fulfilling the Mission
Forestry, Agriculture and Irrigation		• Develop irrigation needs and requirements based on RFP responses	• Pasture rental • Trial botanical research plots • Short-term nursery crop planting • Cover crops • Construction and rehabilitation of irrigation system	• Renovate the existing processing center for botanical use • Install irrigation distribution system • Field production of botanical crops	• Operation of major botanical processing center • Building expansion
Water Rights and Environmental Issues	• Begin ongoing ESA study (1 year process?)	• Apply for transfer of domestic water rights in conveyance • Irrigation water rights application	• Acquire irrigation and domestic water rights		
Infrastructure		• Long range plan and budget • Apply for permits and grants • Design new water storage tank, pumps, water main and water treatment facility	• Apply for permits and grants • Build new storage tank and facilities • Develop new County water, storm drain, and septic systems	• Apply for permits • Development of services and roads by lease holders	• Apply for permits • Development of services and roads by lease holders
Research			• Develop WSU Research Station: utilize Chapman Ave. office, housing • UW and PNRS: Continued use and growth of Canopy Hut operation • Expand researcher's residential housing	• UW/PNWRS apply for $ to construct 2nd growth canopy crane • Wind River Institute renovates Chapman Avenue processing buildings for office and research space	• Wind River Institute receives world-wide recognition
Tourism and Recreation			• Develop Pacific Crest Trailhead and station • Encourage private operators to use site as equestrian staging area	• Develop trails • Construct cabins • Develop equestrian center • Develop Martha Creek Camp tent sites	• Install recreational canopy crane • Develop lodge/inn
Environmental Education			• Encourage school groups and adult education groups to visit the site	• Develop Martha Creek Camp • Construct new classroom space at north end of Martha Creek Field	• Construct additional classroom and lodging space at north end of Martha Creek Field

2.4 LAND AREAS BY USE: REDEVELOPMENT PLAN

Table 2-2 below outlines the various land uses included in the Redevelopment Plan, and shows approximate area (in acres) for each use.

	Acres	2005	2010	2030
Parcel 1: Martha Creek Field				
Total Acreage of Parcel	**108**			
Agricultural Use		52.09	37.47	37.47
Reforestation Area*		36.15	32.34	29.34
Martha Creek Camp		0	7.82	7.82
Retention Pond		0	1.54	1.54
Cascade Event Grounds		4.85	4.85	4.85
Wind River Institute		0	11.57	11.57
Inn at Wind River		0	0	2.5
Leased Residences		3	0	0
Cascadia Learning Center		0	0.5	1
Existing Forested Area		11.91	11.91	11.91
		108	108	108
Parcel 2: Trout Creek Field				
Total Acreage of Parcel	**61.8**			
Agricultural Use		41.7	36.44	36.44
Hemlock Business Campus (north) at Trout Creek		0	5.26	5.26
Seed Processing Center Business Campus		20.1	20.1	20.1
		61.8	61.8	61.8
Parcel 3: Bunker Hill Field				
Total Acreage of Parcel	**12.6**			
Agricultural Use in Conveyed Parcel		9.77	9.77	9.77
Forested Area		2.83	2.83	2.83
		12.6	12.6	12.6
SUBTOTAL PARCELS 1, 2 AND 3	**182.4**			
Acreage for Special-use Permit	**15.2**			
Equestrian Area		0	7.06	7.06
Agricultural Use by Special Use Permit		10.7	3.64	3.64
Reforested Buffer		4.5	4.5	4.5
		15.2	15.2	15.2
FS Parcel: Pacific Crest Field (Special-use Permit)				
Total Acreage of Parcel	**128.5**			
Canopy Hut/Wind River Institute		5.2	5.2	5.2
Agricultural Use by Special Use Permit		89.65	89.65	89.65
Reforested Buffer		33.65	33.65	33.65
		128.5	128.5	128.5
SUBTOTAL SPECIAL USE PERMIT	**143.7**			
TOTAL CONVEYED PARCELS AND SPECIAL USE AREAS	**326.1**			

* Acreage remains forested in later use, but is listed as part of Martha Creek Camp and Inn at Wind River below.

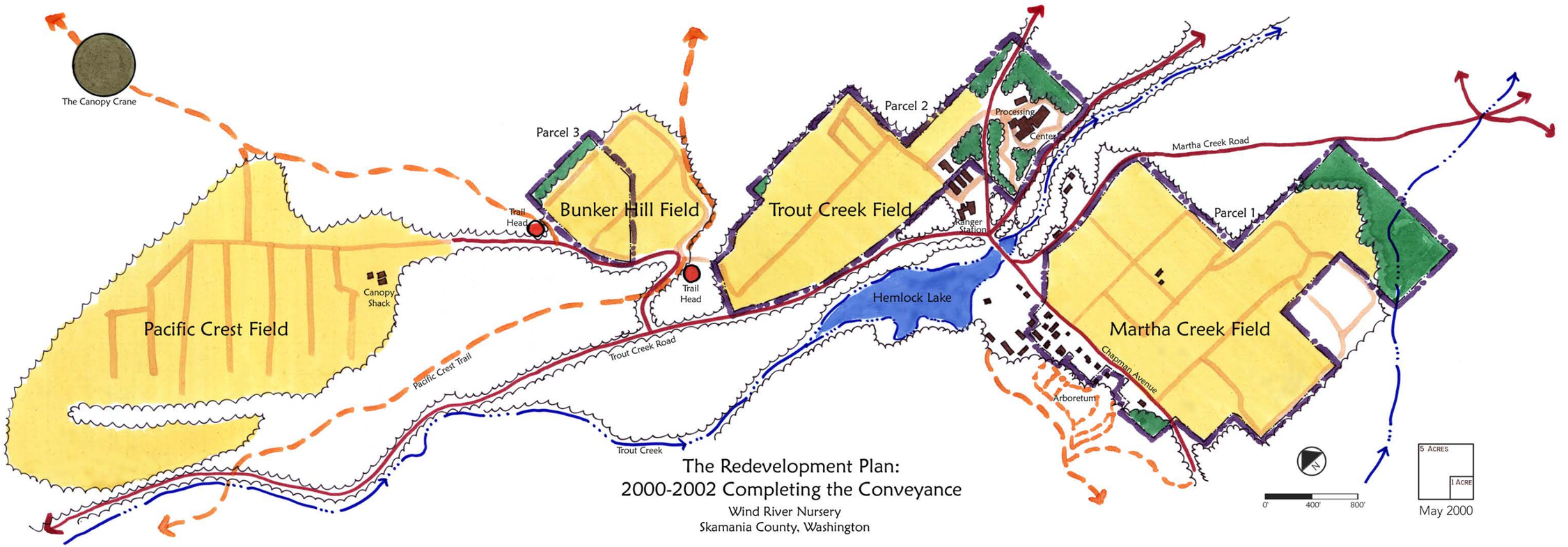

The Canopy Crane
Parcel 3
Bunker Hill Field
Trail Head
Parcel 2
Trout Creek Field
Processing Center
Ranger Station
Martha Creek Road
Parcel 1
Pacific Crest Field
Canopy Shack
Trail Head
Hemlock Lake
Martha Creek Field
Pacific Crest Trail
Trout Creek Road
Chapman Avenue
Arboretum
Trout Creek
The Redevelopment Plan:
2000-2002 Completing the Conveyance
Wind River Nursery
Skamania County, Washington
N
0'
400'
800'
5 ACRES
1 ACRE
May 2000

FIGURE 2.1

WIND RIVER NURSERY
SITE AND FACILITY PLAN
SKAMANIA COUNTY, WASHINGTON

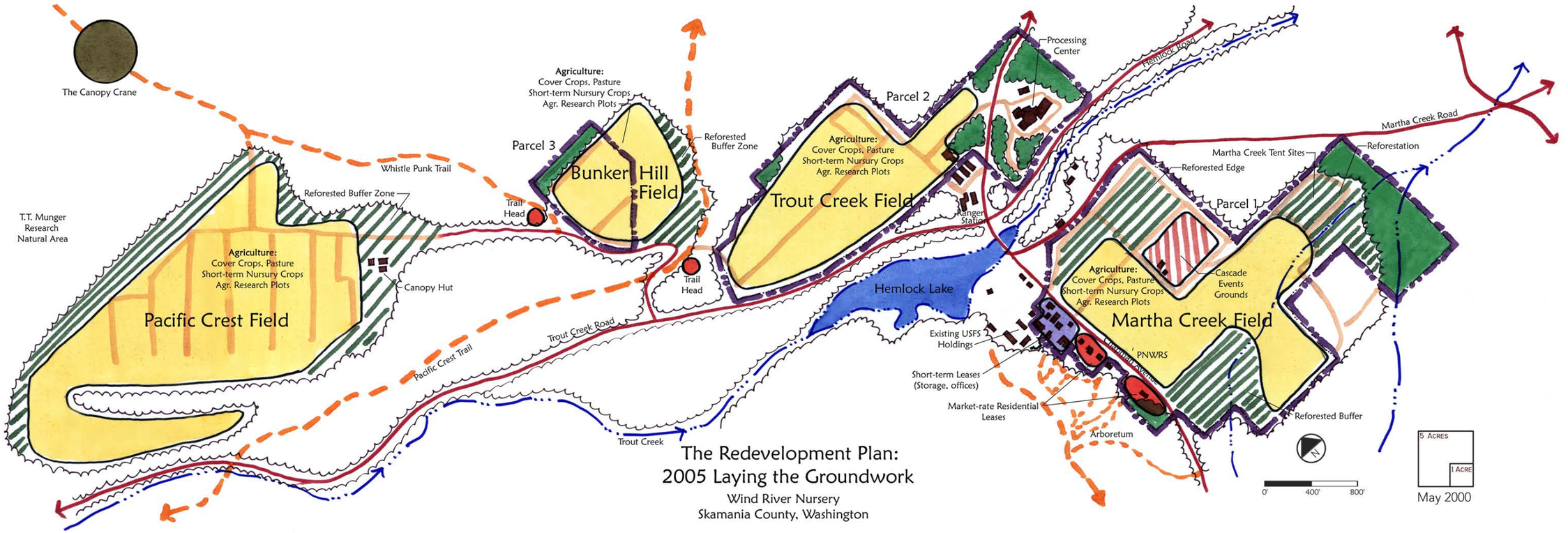


FIGURE 2.2

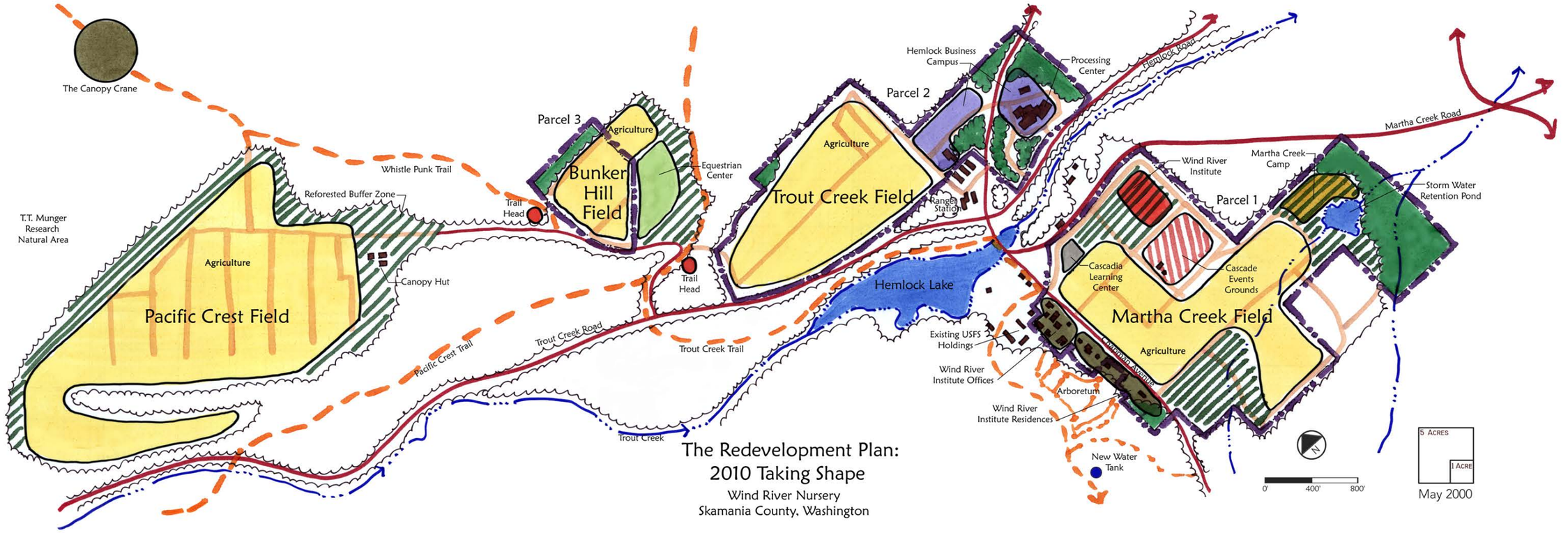

The Canopy Crane
Parcel 3
Agriculture
Bunker Hill Field
Equestrian Center
Whistle Punk Trail
Reforested Buffer Zone
Trail Head
T.T. Munger Research Natural Area
Agriculture
Pacific Crest Field
Canopy Hut
Trail Head
Trout Creek Trail
Pacific Crest Trail
Trout Creek Road
Trout Creek
Agriculture
Trout Creek Field
Parcel 2
Hemlock Business Campus
Processing Center
Hemlock Road
Martha Creek Road
Ranger Station
Hemlock Lake
Wind River Institute
Martha Creek Camp
Storm Water Retention Pond
Parcel 1
Cascadia Learning Center
Cascade Events Grounds
Martha Creek Field
Agriculture
Existing USFS Holdings
Wind River Institute Offices
Arboretum
Wind River Institute Residences
New Water Tank
Hemlock Avenue
The Redevelopment Plan:
2010 Taking Shape
Wind River Nursery
Skamania County, Washington
N
0'
400'
800'
5 ACRES
1 ACRE
May 2000

FIGURE 2.3

WIND RIVER NURSERY
SITE AND FACILITY PLAN
SKAMANIA COUNTY, WASHINGTON

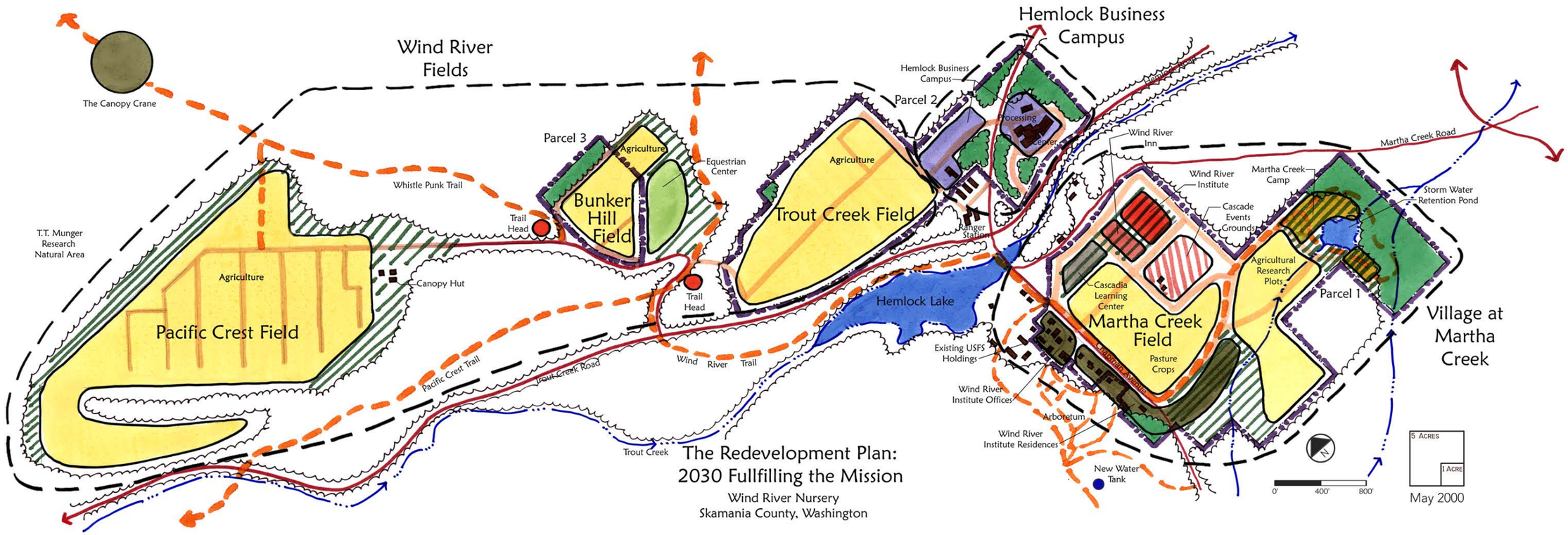


FIGURE 2.4

2.5 FINANCIAL AND ECONOMIC IMPACT ANALYSIS FOR THE REDEVELOPMENT PLAN

This section of the report provides a summary of the economic and financial impacts associated with the Redevelopment Plan. It provides an overview of the various revenue sources (such as lease income and tax revenue) combined with totals for building maintenance costs and infrastructure development, as discussed in other sections of this report. This overview is presented in terms of each of the three Redevelopment Plan phases:

- 2001-2005: Laying the Groundwork
- 2006-2010: Taking Shape
- 2011-2030: Fulfilling the Mission

2001-2005: Laying the Groundwork

In the first phase, lease agreements with one or more agricultural operators will be sought, laying the groundwork for the future vision for the site. Priority will be given to agricultural operators with a long-term interest in the site. Agricultural operators with an interest in value-added processing or research-related activities will serve as a key component for achieving the future goals and fulfilling the mission for the Redevelopment Plan.

Another key component of this phase involves establishing leases for the existing buildings on the site. An investment in a minimum number of building improvements is required to establish leases for most of the buildings on the site. Uses for the buildings along Chapman Avenue include residential leases and other business-related uses. The improvements necessary to lease the processing center – mainly a water tank needed for fire suppression – will not be completed until 2010.

As shown in Table 2-3, approximately $34,000 in annual revenue will be generated during this phase. Revenue projections are based on lease income projections from existing buildings and an initial $72,000 investment for building improvements. This investment can be funded through grants and loans.

2006-2010: Taking Shape

During this phase, the focus will be on infrastructure development, maintenance and improvements to existing buildings, and grounds improvement and restoration.

As shown in Table 2-3, approximately $1.5 million will be required to fund all the maintenance and infrastructure costs. For this period of investment, operating fund requirements amount to approximately $235,000 per year, which can be funded through grants.

Establishing a long-term lease agreement with an agricultural operator, will set the foundation for re-use of the processing center – a vital component for fulfilling the mission. Agricultural lease income from approximately 200 acres of land combined with the continued use of the existing buildings will provide the primary sources of revenue during this phase.

2010-2020: Fulfilling the Mission I

In the final phase, agricultural production and research will have been firmly established on the site with long-term lease agreements with one or more

operators. At the beginning of this phase the processing center will be ready to lease and will begin to generate lease income.

Throughout this phase, a number of education and visitor-related facilities will also begin to generate revenue on the site. Martha Creek Camp will serve as campground for the region. In particular, the development of yurts will serve as a prime attraction for overnight visitors throughout the year. An equestrian center will be established along the edge of the Bunker Hill field near the Pacific Crest Trail, which will operate in summer months – a period of strong demand for equestrian activity.

Other developments that will attract people to the site include the Wind River Institute, developed through partnerships, which will serve as a research and education facility. Most likely, the Wind River Institute would function as a non-profit educational organization.

The Cascade Learning Center will serve as an education facility for school-age youth in the region. The facility's programs and focus will emulate various aspects of the CASEE Center and the Cispus Learning Center (described in Section 5-4) as well as establish unique programs and activities particularly related to the Wind River site and the Columbia River Gorge area.

Establishing these organizations, will give the site additional recognition and appeal to a large number of Pacific Northwest residents as well as visitors traveling through the region.

As shown in Table 2-3, lease and other income will have increased substantially, generating approximately $1.3 million over the 2011-2020 period. The agriculture operations(s) will have proved viable and matured into successful long-term partnerships. The processing center will serve the needs of the agricultural lessee(s) and generate significant lease revenue.

As infrastructure needs increase to support the new visitor and education facilities and deferred building maintenance becomes a priority, the operating fund requirement will be approximately $1.7 million. Spreading this investment over the ten-year period results in about $170,000 per year, a decrease from the amount of *annual* funding required in the previous phase.

A visitor canopy crane, located on the site as part of a partnership arrangement with a research organization, will provide visitors with the opportunity to view a small section of forest canopy. This would increase the notoriety of the site and establish it as a visitor destination as well as a working agricultural operation.

2021-2030: Fulfilling the Mission II

For the final period (2021-2030), the necessary infrastructure development will be completed and the site will attract an increasing amount of interest by visitors.

To fulfill the mission in the final phase, the Inn at Wind River will be developed on the Martha Creek Field. As a complement to the facilities at nearby Skamania Lodge, this new Inn would offer more rustic accommodations in a less developed, agriculturally oriented, and a more secluded surrounding. Programs at the Inn at Wind River could offer courses in team building and leadership training.

During the summer season, the Inn would attract families and small groups who seek a retreat in a natural setting with easy access to education and outdoor activities. During the more rainy months of the year (November-March), the Inn would target its services more toward small business groups from the Portland-Vancouver market. Given its proximity to the nearby Portland-Vancouver market, the site has great potential to develop a niche that could appeal to guests throughout the year and support a small, rustic lodging retreat.

In the final period of development (2021-2030), the Hemlock Business Campus has expanded to its full potential and generates a substantial portion of the lease revenue. As shown in Table 2-3, the site now generates almost $2 million over the ten-year period. Approximately $1.5 million will still be necessary for building maintenance, generating a surplus of about $40,000 in net revenue per year.

The site now provides over 250 full-time and seasonal jobs in business, agriculture, education, and visitor service industries. In addition, the historic buildings and character of the site are preserved for future generations. Through the Redevelopment Plan, the site will become a unique model for other Northwest communities that seek sustainable ventures and opportunities to combine viable business, agriculture, and natural resource uses combined with visitor, education, and research activities.

TABLE 2-3 THE REDEVELOPMENT PLAN: PUTTING THE SITE BACK TO WORK
FINANCIAL IMPACT ANALYSIS BY PHASE, 2001-2030

	Laying the Groundwork	Taking Shape	Fulfilling the Mission	
	2001-2005	**2006-2010**	**2011-2020**	**2021-2030**
Revenue				
Skamania Farms	$15,492	$103,090	$213,010	$184,874
Hemlock Business Campus	200,456	212,758	729,271	786,757
Wind River Institute	-	5,000	53,000	72,000
Cascadia Learning Center	-	783	7,830	18,750
Martha Creek Camp	-	-	104,744	164,854
Cascade Event Grounds	-	1,112	3,572	3,987
Equestrian Center	-	2,223	8,573	8,771
Inn at Wind River	-	-	-	273,760
Leasehold Tax Revenue	13,259	24,925	95,402	149,446
Employee Generated Sales Tax	2,600	4,496	14,447	21,500
Visitor Generated Sales Tax	9,457	21,147	50,964	75,844
Construction Generated Sales Tax	909	4,165	6,691	3,338
Hotel/Motel Taxes	-	-	-	165,915
Total	$242,172	$379,697	$1,287,505	$1,929,795
Costs				
Infrastructure Development		$273,000	$1,382,620	0
Existing Building Maintenance	72,000	1,128,606	1,437,479	1,521,906
Reforestation of Fields		119,790	119,790	-
Festival Ground Restoration/Restrooms		-	53,106	-
Enhanced Trail System		36,000	56,000	-
Total	$72,000	$1,557,396	$3,048,994	$1,521,906
Net Revenue or Operating Fund Requirement	**$170,172**	**($1,177,699)**	**($1,761,489)**	**$407,889**
Annual Revenue or Operating Fund Requirement *	**$34,034**	**($235,540)**	**($176,149)**	**$40,789**

* Examples of funding are shown in Section 2-8

Source: Dean Runyan Associates and Globalwise Inc.

2.6 EMPLOYMENT PROJECTIONS FOR REDEVELOPMENT PLAN

This section of the report projects the employment impacts associated with the Redevelopment Plan. The ability to attract funding for infrastructure development and capital improvements for the site will depend, to some degree, on the number of new job opportunities that can be created through the plan.

ON-SITE JOB ESTIMATES

On-site employment is projected for each of the components of the Redevelopment Plan. These estimates refer to jobs generated by the businesses, organizations, programs and activities described in the final phase of the Redevelopment Plan.

Job estimates for the Hemlock Business Campus are based on the square footage available for building space and the typical amount of square feet required per job. A range of 300-500 square feet per job was used for the range of potential industries considered appropriate for the site. All other on-site employment estimates were based on comparisons with similar businesses, organizations, and programs as described in Section 5.4. A summary of the employment impacts associated with the Redevelopment Plan is shown by type of job in Table 2-4.

CONSTRUCTION JOBS

The infrastructure development, building maintenance, and new building construction necessary for the Redevelopment Plan will generate a number of new construction jobs throughout the implementation period. Construction job estimates are based on the estimated total site development cost of approximately $20 million, with construction activity phased over a 10-20 year period.

Depending on the intensity of the construction activity over the later phases of the Redevelopment Plan, on-site construction activity will generate approximately 10-20 jobs per year. Job estimates represent annual full-time equivalent positions.

SITE MANAGEMENT JOBS

To manage the site, staff will be necessary for contract negotiations, building and grounds maintenance, and the grant writing necessary to obtain the operating fund requirements.

INDIRECT (OFF-SITE) JOBS

The businesses and organizations described in the Redevelopment Plan will purchase goods and services from other local area businesses. Employees who work for these businesses and organizations will also spend a portion of their wages and salaries to purchase household goods and services. This indirect spending will generate additional jobs in other businesses located in Skamania County. For the purpose of this study, these jobs are referred to as indirect jobs.

Employment multipliers provide a basis from which to estimate the number of indirect jobs generated for every new job located at the Wind River Nursery site. Employment multipliers vary by industry and require a detailed analysis

of the economic transactions that occur within a specific area such as a state or county. This study does not attempt to provide such a detailed analysis; however, an employment multiplier of between 1.3 and 1.5 was considered a reasonable estimate for the type of organizations and businesses described in the Redevelopment Plan. For the purpose of this planning document, an employment multiplier of 1.4 was used to help further quantify the employment projections associated with the Redevelopment Plan.

TABLE 2-4
EMPLOYMENT IMPACTS FOR REDEVELOPMENT PLAN

	Number of Jobs	
Component	Full-year	Part-year
Wind River Institute	4	3
Cascadia Learning Center	2	2
Martha Creek Camp	2	5
The Inn at Wind River	15	6
Cascade Events Grounds	1	1
The Hemlock Business Campus	130-210	2
Skamania Farms	8	6
Equestrian Center	1	5
Subtotal	163-243	30
Additional Jobs (full-time equivalents)		
Construction-related	10-20	-
Site Management	2-3	-
Indirect (off-site)	52-97	-
Total Job Potential	227-363	30

Source: Dean Runyan Associates

TABLE 2.7 TOTAL CROP AND IRRIGATED LAND BY FIELD AND PHASE

2005 Plan	Total Crop Acreage	Irrigated Acreage *	Comment
Martha Creek	52	10	Land devoted to research/wetland species propagation is irrigated, otherwise short term, non-irrigated production
Trout Creek	42	15	Specialty ornamental nursery production requires irrigation
Bunker Hill	18	0	Devote to non-irrigated crops including seedlings, Christmas trees, bough orchard & botanicals
Pacific Crest	89	0	Devote to non-irrigated crops including seedlings, Christmas trees, bough orchard & botanicals
Total	201	25	
			* Irrigated acreage is included in total crop acreage.

2010 Plan	Total Crop Acreage	Irrigated Acreage *	Comment
Martha Creek	37	10	Land devoted to research/wetland species propagation is irrigated, otherwise short term, non-irrigated production
Trout Creek	37	30	Botanical medicinal plants and/or specialty ornamental nursery production that require irrigation
Bunker Hill	11	0	Devote to non-irrigated crops including seedlings, Christmas trees, bough orchard & botanicals
Pacific Crest	89	10	Land devoted to research/wetland species/grasses/ornamentals is irrigated, otherwise non-irrigated production
Total	174	50	
			* Irrigated acreage is included in total crop acreage.

2030 Plan	Total Crop Acreage	Irrigated Acreage *	Comment
Martha Creek	37	10	Land devoted to research/wetland species propagation is irrigated, otherwise short term, non-irrigated production
Trout Creek	37	30	Botanical medicinal plants and/or specialty ornamental nursery production that require irrigation
Bunker Hill	11	0	Devote to non-irrigated crops including seedlings, Christmas trees, bough orchard & botanicals
Pacific Crest	89	10	Land devoted to research/wetland species/grasses/ornamentals is irrigated, otherwise non-irrigated production
Total	174	50	
			* Irrigated acreage is included in total crop acreage.

2.7 COMPATIBILITY OF AGRICULTURE WITH OTHER SITE USES

MARTHA CREEK FIELD

The Redevelopment Plan addresses the important concern of selecting agricultural uses that are compatible with other proposed uses. Over time as the site plan progresses, Martha Creek Field will be home to Martha Creek Camp, Cascade Events Grounds, Inn at Wind River, and the Wind River Institute. These uses will all draw workers, day and overnight visitors and residents to the immediate area. The agricultural land uses that have been proposed for Martha Creek Field include:

- Cover crops such as pasture grasses, seed crops, or legumes.
- Short-term nursery crops, which may include ornamental plants or wetland plant starts.
- Certain kinds of research and test crop plots.

The proposed concentration of non-farm activity in the Martha Creek Field generally precludes this portion of the nursery from use for intensive agricultural production activity such as botanical medicinal crop production. Intensive farming is actually an industrial activity. The dust from summer field operations, and the noise and movement of tractors, trucks and other farm implements early in the morning are irritants or nuisances to people. Some alternative weed and plant control methods are incompatible with adjacent lodging or residential activity that brings people in close proximity to the Martha Creek Field. Vandalism, trespass and legal liability are major concerns of farmers, particularly if losses for high-value crops are at stake.

Intensive research plots can also be problematic with non-agricultural activity, since research plots require farming that utilizes scientific study and careful measurement of outcomes. Compatibility of farm and non-farm activity will vary and is determined by the kinds of farming practices required for the crop grown and the cultivation methods employed.

At Martha Creek Field, boundary fencing at a minimum of 6 feet in height is probably required for all agricultural activity. This will reduce human trespass and also reduce elk and deer browsing, which has been a challenge at the nursery in the past.

TROUT CREEK FIELD

The Trout Creek Field is adjacent to the Hemlock Business Center, which encompasses agricultural and forestry research and processing activity. Other non-agricultural business activity could take place here as well without compromising the agricultural use of this field.

This site could be used for intensive crop production including botanicals. A road leading to the existing Canopy Crane and T. T. Munger Research Natural Area would bisect this field. The road would give farm operators very direct access to the Processing Center for their crops.

However, this road probably would necessitate roadside fencing (as well as perimeter fencing) to secure the crops from unwanted human and animal visitors.

BUNKER HILL FIELD

Even more than the Trout Creek Field, the Bunker Hill Field would be in relative isolation from non-farm activity. There should be little or no concern for any agricultural crop production activity as proposed in the Redevelopment Plan. Fencing is still a requirement to keep elk and deer away from all crops.

PACIFIC CREST FIELD

A farm operator at the Pacific Crest Field would not be concerned about compatibility with forest research, the dominant surrounding land use. However, the Forest Service or the University of Washington may want to limit farmer applications of chemicals, fertilizers and other traditional farm inputs. If an organic farm of botanicals or nursery plants is established, then there could be a "win-win" for all parties.

TABLE 2-5 AGRICULTURE AND LABOR REQUIREMENTS (FTE)

Alternative	Acres	Research Jobs	Skilled Field Labor	Seasonal Farm Labor	Pro-cessing Labor	**Total Labor**	% Pasture	% Botan.	% Nursery	% Xmas Trees
Redevelopment Plan										
2005	201	1	5	5	4	**15**	0.1	0.1	0.15	0.65
2010	174	3	6	6	2	**16**	0.05	0.25	0.3	0.40
2030	174	3	4	6	1	**14**	0.05	0.25	0.3	0.4
Pasture/Grass Labor Per 10 Ac.		0.00	0.00	0.20	0.00					
Botanical/Res Labor Per 10 Ac.		0.65	0.50	0.35	0.25					
Nursery Labor Per 10 Ac		0.00	0.50	0.50	0.20					
Christmas/Forest Labor Per 10 Ac.		0.00	0.20	0.20	0.20					

TABLE 2-6 AGRICULTURAL / BOTANICAL WAGES (ANNUAL)

Concept	Acres	Research Jobs	Skilled Field Labor	Seasonal Farm Labor	Pro-cessing Labor	**Total Labor**
Redevelopment Plan						
2005	201	$41,155	$110,711	$75,254	$80,320	**$307,440**
2010	174	$89,066	$133,423	$82,058	$38,054	**$342,602**
2030	174	$89,066	$95,302	$82,058	$30,443	**$296,870**
Ave Wage/Worker		$18	$12	$8	$12	

2.8 SOURCES OF FUNDING

Outside funding to help support the infrastructure development and capital improvements is a vital component of the "Laying the Groundwork" phase and necessary to achieve the vision of the Redevelopment Plan. In the years immediately following conveyance of the Wind River Nursery property, Skamania County will need to direct resources toward obtaining the additional funding necessary to support development on the site.

This section describes the general purpose and intent of a selection of funding sources, particularly those that are targeted toward rural economic development for timber and other natural resource dependent communities in the Pacific Northwest. This section is intended to provide examples of available funding options that appear consistent with the needs and intended use of the site as presented in the Redevelopment Plan. Further research is necessary to establish a more complete and targeted list.

U.S. Department of Agriculture Rural Business-Cooperative Service

Business and Industry Guarantee Loans
The Business and Industry Guarantee Loan Program guarantees up to 80 percent of a loan made to a rural business by a commercial or other authorized lender. Loan proceeds may be used for working capital, machinery and equipment, buildings and real estate, and certain types of debt of refinancing.

Business and Industry Direct Loans
The Business and Industry Direct Loan Program provides loans to public entities and private parties for improving, developing, or financing business and industry, creating jobs, and improving the economic and environmental climate in rural communities.

Intermediary Relending Program Loans
Intermediary Relending Program Loans finance business facilities and community development projects in rural areas. Loans are provided to intermediaries, which, in turn, provide loans to recipients who are developing business facilities or community development projects. Eligible intermediaries include public bodies, nonprofit organizations, Indian tribes, and cooperatives. Skamania County is also served by Evergreen Development Association.

Rural Venture Capital Demonstration Program
The Rural Venture Capital Demonstration Program designates up to 10 community development venture capital organizations to establish a rural business private investment pool to make equity investments in rural private business enterprises.

Rural Business Enterprise Grants
Rural Business Enterprise Grants allow public bodies, nonprofit corporations, and federally recognized Indian tribes to sponsor development of small and emerging private business enterprises located in rural areas. Grant funds can pay for the acquisition and development of land and the construction of buildings, plants, equipment, access streets and roads, parking areas, utility and service extensions, refinancing, and fees for professional services.

Rural Business Opportunity Grants
Rural Business Opportunity Grant funds provide for technical assistance, training, and planning activities that improve economic conditions in rural areas. The program is intended to promote sustainable economic development in rural communities with exceptional needs.

Rural Economic Development Loans and Grants
Rural Economic Development Loans and Grants finance economic development and job creation projects in rural areas. These loans and grants are available to any Rural Utilities Service electric or telecommunications borrower to assist in developing rural areas from an economic standpoint, to create new job opportunities, and to help retain existing employment.

U.S. Department of Agriculture-Rural Utilities Service

Water and Waste Disposal Loans
Water and Waste Disposal Loans are available to public entities such as municipalities, counties, special-purpose districts, Indian tribes, and corporations not operated for profit to develop water and waste disposal systems in rural areas.

Community, Trade, and Economic Development, State of Washington

Community Development Block Grants
The Community Development Block Grant (CDBG) program provides technical and financial assistance to cities, towns, and counties. Assistance provided is for activities such as infrastructure, housing, community facilities, economic development, planning, and public services. These activities must principally benefit low- and moderate-income persons and be located in non-entitlement areas of the state.

Community Economic Revitalization Board and Program
The Community Economic Revitalization Board (CERB) contracts with local governments to provide low interest loans for public infrastructure. Examples include bridges, roads, domestic and industrial water, sanitary sewer, port facilities, and industrial buildings. CERB's primary mission is to facilitate job creation and retention by business and industry through public infrastructure development in areas of high unemployment.

Community Assistance Center
The Community Assistance Center provides technical and financial assistance to improve and diversify the economies of resource-based rural areas, distressed urban neighborhoods, downtown business districts, and other targeted areas. The Center participates in a variety of state and federal initiatives that provide a broad range of financial support for high priority local projects. Community Assistance Center technical assistance and advocacy helps local project sponsors refine project elements, phases, and funding; remove impediments; and assemble project financing.

3.1 AGRICULTURAL ANALYSIS AND OPPORTUNITIES

3.1.1 AGRI-FORESTRY DEVELOPMENT CAPABILITY

SITE CHARACTERISTICS AND POTENTIAL

The agricultural and forestry-related land uses at the former Wind River Nursery are appropriate and prominent features of the Skamania Farms program in the Redevelopment Plan. The Wind River Institute, another element of the Redevelopment Plan, encompasses agri-forestry research and development. Agricultural research is also very suitable for this unique, highly productive land area.

Existing and native plant populations, elevation, soil types, precipitation, temperature, length of growing season and market access favor the production of many diverse crops at the former Wind River Nursery site.

Land Area
The total tillable land area in the three fields of the original nursery site is approximately 131 acres. The tillable acreage by field parcel is: Martha Creek 75.3 acres; Trout Creek 35.2 acres; and Bunker Hill 9.8 acres. An additional 10.7 acres are available at Bunker Hill Field, and an additional 89 acres are available for crop production (with 34 acres of forested buffer) at the Pacific Crest Field, if this use is secured via a special-use permit from the USFS.

Soils and Topography
The soils at the WRN site are fairly deep, well drained, coarse, porous, sandy loam. The soils were formed from volcanic ash and pumice and are classified as the Stabler Series. The drainage capacity of these soils is rather unique in the local region and is a major benefit for agriculture.

Without the forest cover, the soil fertility rapidly leaches in the rainy months. During the summer drought season of June through August the soil becomes quite dry.

The fields have pockets where the soils may be less fertile due to the placement of historic burn piles or the uneven application of fertilizers and organic matter. The USFS has stopped its practice of adding organic matter since the Nursery closed, leaving the soil rather infertile due to the continuous leaching of nutrients.

Martha Creek Field is an eastward sloping bench with a grade of about six percent. This gentle sloping site is another very attractive feature for agricultural operations, and is very unique in Skamania County. The south end of the Martha Creek field is typically the last to dry in the spring because of heavier, clay soils. This four to five acre area is rockier, with less soil depth. This area is a suitable site for trees, wetland plants and/or water-tolerant medicinal herbs.

Soil Toxicity
According to Jim McGrath, who worked at the nursery for many years, two pesticides were used sparingly: Round Up and Methyl bromide (soil fumigant). Dave Dutton, a Nursery manager in the 1980's also confirmed that other pesticides were not

used. Precise estimates of the last dates of chemical application can only be collaborated by securing all past records of soil tests which are said to be held at the J. Herbert Stone Nursery in Oregon. Records of pesticide application are required by law and should thus be held by the USFS.

The absorption of pesticides by soil is largely determined by the characteristics of the pesticides and of the soil to which they are added. Both of the chemicals mentioned above have short half-lives and there is rather low probability that traces of these pesticides remain, given the favorable drainage capacity of the soil and the high level of rainfall.

As the new landowner, Skamania County should require the USFS to either document all past pesticide applications, or test the soils to accurately determine current pesticide levels. Basic soil residual testing costs approximately $50/test, with 10-15 tests needed to accurately cover the site. Incorporation of a random pesticide test for any additional pesticides may be worthwhile as well. Ground water contaminant tests, at an approximate cost of $500/test, may also be advised.

Climate and Production Capability
This mid-elevation, isolated site has a proven history of productive plant propagation and culture. After 80 years of use as a USFS plant nursery, it still retains its unique, natural features and the ability to sustain both commercial plant production enterprise, as well as high-caliber botanical research in a remote setting.

The site is a 1,100 to 1,200 foot elevation forest zone. Winter freeze conditions and snow accumulations are regular occurrences. Annual precipitation is approximately 100 inches. During the months of June, July and August very little rainfall occurs. The growing season is limited to less than 130 frost-free days. Fieldwork can commence in late April or May, depending on rainfall and Spring frost conditions. The first Fall frost is usually recorded in October.

Many agri-forestry crops are well suited for production at Wind River. Plants that are best adopted are those that are native to the area and are cold tolerant.

Traditional fruit, vegetable and other food crops are not well adapted to the site. The short growing season, minimal heat units and high rainfall are the principal limitations for growing traditional food crops.

Six agri-forestry categories that hold some promise for both commercial development and research at this site are:

1. **Botanical (medicinal) herbs**--- include Echincea, St. John's wort, Goldenseal, and many others. These plants are in high demand for their health benefits and are the subject of intensive consumer product formulation.
2. **Native berries**—include native caneberries (*Rubus)*, blueberries and semi huckleberries (*Vaccinium),* and strawberries (*Fragaria)*. Both wild harvested and cultivated native berry crops are in demand by high-end culinary markets. Research on Cascade region best management practices for huckleberries and other bush berries is also needed.
3. **Native trees and shrubs**—trees and shrubs for ornamental plantings, ecological restoration, and environmental remediation. Examples of species include: mountain hemlock, western yew, tanoak, northern black

cottonwood, red flowering currant, red-osier dogwood, and willows.

4. **Non-invasive ornamental and native grasses, rushes and sedges**—this includes plants such as wild blue rye and bear grass. These grasses are often specified in revegetation projects where native plants are requested by the responsible agency or property owner.

5. **Mushrooms**--- commercial species include Shitake, Maitake, Reishi and oyster. Organic production is one important way to create a niche opportunity.

6. **Christmas Trees**--- this site has excellent characteristics for growing conifers, or growing seedlings for sale to other Noble Fir Christmas tree growers. Former WR Nursery managers report that the site is distinguished in its ability to grow Noble Fir trees.

3.1.2 INFRASTRUCTURE FOR AGRICULTURE

WATER REQUIREMENTS

Irrigation water is crucial for most high market demand crops that are suited for agricultural production at the Wind River Nursery site. While the total annual rainfall is high (100 plus inches) there is a three month drought during the summer.

Water is also applied for frost control for some crops. For example, if nursery plants are "lifted" from fields in the fall, frost control watering is often necessary.

Irrigation water withdrawal from the existing pump station on Trout Creek is a major constraint for agricultural use of the WRN land. This analysis gives estimates of water requirements for crop production under several alternative scenarios.

Table 3-1 shows the estimated quantity of water applied if all tillable land in the three fields included in the land exchange (131 acres) are irrigated with a traditional sprinkler system (the same high pressure system used previously at WRN). The crop mix used in this scenario includes herb and nursery plants. In this scenario the agricultural production water requirement is 360-acre feet per year.

Table 3-2 presents the water application under the assumption that 40 acres are irrigated with sprinklers to grow nursery or herb crops, or conduct plant research activities. Another 45 acres are devoted to non-irrigated crop uses such as Christmas tree production and pasture for livestock. **This scenario is illustrative of the agricultural water usage for the Skamania Farms program as presented in the Redevelopment Plan 2002.** Under these conditions the water requirement is 160-acre feet per year.

The final scenario (Table 3-3) demonstrates the water saving potential of adopting a drip (also known as micro or trickle) irrigation system. In this scenario, the same crop mix is used as in Table 3-2 (40 acres of nursery and herb crops or plant research and 45 acres of non-irrigated production). Here the total annual water requirement is 110-acre feet.

None of these scenarios includes water for the irrigation of the Pacific Crest field. Any irrigation water for that field will come from the adjacent wells that are operated by the USFS.

These scenarios reveal the significant change in total agricultural water requirements based on the crop mix and the irrigation system employed. The use of water conserving irrigation systems would dramatically reduce the quantity of water needed at the WRN site.

TABLE 3-1
IRRIGATION WATER REQUIREMENTS
131 ACRE BOTANICAL HERB FARM WITH NURSERY AND RESEARCH
USING TRADITIONAL IRRIGATION [1]

	Summer Irrigation		**Frost Control Water**		
	Rate	**Total**	**Rate**	**Total**	**TOTAL**
Herbs (110 acres)	2.5 ac ft/ac	275 ac ft	0	0	275 ac ft
Plant Nursery (21 acres) [2]	2.5 ac ft/ac	53 ac ft	3 ac ft/ac	32 ac ft	85 ac ft
					360 ac ft

1. Based on traditional sprinkler irrigation.

2. Assumes half of the plant nursery needs frost control (10.5 acres).

TABLE 3-2
IRRIGATION WATER REQUIREMENTS
PLANT NURSERY WITH RESEARCH PLOTS AND NON-IRRIGATED CROPS
USING TRADITIONAL IRRIGATION [3]

	Summer Irrigation		**Frost Control Water**		
	Rate	**Total**	**Rate**	**Total**	**TOTAL**
Plant Nursery & Related Crops (40 acres) [4]	2.5 ac ft/ac	100 ac ft	3 ac ft/ac	60 ac ft	160 ac ft
Christmas Trees & Pasture Non-Irrigation (45 acres)	0	0	0	0	0 ac ft
					160 ac ft

3. Traditional sprinkler irrigation.

4. Assumes one-half of the plant nursery requires frost control (20 acres).

TABLE 3-3
IRRIGATION WATER REQUIREMENTS
PLANT NURSERY WITH RESEARCH PLOTS AND NON-IRRIGATED CROPS
USING WATER CONSERVING DRIP IRRIGATION [5]

	Summer Irrigation		Frost Control Water		
	Rate	**Total**	**Rate**	**Total**	**TOTAL**
Plant Nursery & Related Crops (40 acres) [6]	1.25 ac ft/ac	50 ac ft	3 ac ft/ac	60 ac ft	110 ac ft
Christmas Trees & Pasture Non-Irrigation (45 acres)	0	0	0	0	0 ac ft
					110 ac ft

5. Drip irrigation estimated to reduce applied water by 50% compared to traditional sprinkler irrigation.

6. Assumes one-half of the plant nursery requires frost control (20 acres).

BUILDING REQUIREMENTS

Agricultural operations will occupy buildings for many purposes. Depending on the nature and size of operations, buildings are needed for:

- office space
- worker accommodations (rest, wash, toilet etc.)
- equipment and vehicle storage
- repair and maintenance spaces
- supply/material storage
- specialized operations (laboratory and test space, etc.)
- crop processing facilities
- crop storage facilities
- livestock shelter (cattle, horse, etc.)

Most farming operations with over 50 acres typically have a building that serves several of the purposes listed above, including general office space, equipment repair and maintenance, and equipment storage. The Equipment Storage Building (Building #2624) which is near the Processing Center is well suited to this purpose. At 4,700 square feet, it is appropriately sized and designed for an office, equipment repair and equipment storage. Furthermore, its location is suitable for accessing the fields and it is near the main road.

Building Use for Intensive Agricultural Production Enterprises

The WRN site is well suited to production of botanical herbs, nursery and landscape plants, and other specialty

crops. The site's characteristics also make it a very suitable location to conduct agricultural research. All of these agricultural enterprise activities would need building space, and some of the existing buildings, with modification and maintenance, are suitable for many agricultural purposes.

The "gem of the site" is the Processing Center, a building covering 35,000 square feet including 13,100 square feet of cooler/freezer space and 18,500 square feet of relatively open floor space for processing usage. This building has already attracted the interest of private companies. At least one business person sees excellent potential for holding fresh botanical crops under refrigeration, processing these crops and storing processed products under cold or ambient temperature conditions until shipping.

Another prospective agricultural use of the Processing Center is specialty forest product processing. Fir boughs are harvested in the Fall and early winter months in the Gifford Pinchot National Forest for wreaths. The processing floor space is suited to this use and the coolers would extend the harvest and processing season.

Large-scale botanical crop production and agricultural research operations need building space for office and analytical/scientific purposes. The Nursery Office Building and Nursery Office/Packing Shed can be converted to this purpose. If the predominant crops produced are botanical plants, there is need for laboratory space as follows:

- Tissue Culture and Morphology Laboratory—approximately 1,400 square feet for technicians, environmental control, taxonomic storage (cold) and clonal research.
- Chemistry Lab—approximately 800 square feet for chemistry analysis of plants and related studies.

Both of these buildings should be in close proximity of each other and would logically be located in the vacant buildings along Chapman Avenue.

3.1.3 MARKET ASSESSMENT

MEDICINAL BOTANICALS

Botanical plants are principally used as herbal remedies or preventatives for human health problems. The U.S. market for medicinal botanicals grew rapidly in the 1990s, achieving unprecedented growth from 1994 through 1999. Sales reached $4 billion in 1998, up $1.6 billion since 1994, a rise of 250 percent [American Botanical Council, 1998].[1] Sales in 1999 leveled off in all classes of trade, which include mainstream retail, health food, multi-level marketing and e-commerce. This leveling off in sales is probably due to instances of bad publicity and unreasonable consumer expectations.

Long-term market growth is expected for many reasons: the economic influence of aging baby boomers, entrance of large pharmaceutical firms in this market, and increasing endorsement by the mainstream medical community.

The presence of herbal supplements in natural product sections of supermarkets is evidence of the growth in this category. Growth in medicinal herbs in supermarkets has been especially strong. When combined with sales in drug stores and mass retailers like Walmart, this category has shown it is quickly becoming a major consumer product category.

In the U.S. many herb species (especially ginseng, Echinacea and Goldenseal) were initially collected on residual native stands "in the wild." However, over-harvesting has led to a shift to field cultivation.

Table 3-4 presents sales data for the top selling botanicals in U.S. mainstream retail stores. Most of these botanicals are well suited to production at the WRN site.

1 Like many markets for fast-growing products, reliable sales data is hard to track. There are some reports that herbal supplement sales in the U.S. are as high as $9 billion or more. Without doubt, this is a multi-billion dollar industry, and further rapid growth is almost assured.

TABLE 3-4
TOP SELLING HERBALS – MASS MARKET [1]
52 WEEKS THROUGH JULY 12, 1998

	U.S. $ - millions	Percent Growth
Gingko	$138	+140
St. John's Wort	$121	+2,801
Ginseng	$98	+26
Garlic	$84	+27
Echinacea	$33	+151
Saw palmetto	$27	+138
Grapeseed	$11	+38
Kava	$8	+473
Evening primrose	$8	+104
Echinacea/Goldenseal	$8	+80
Cranberry	$8	+75
Valerian	$8	+35
All others	$31	----
Total	**$583**	

[1.] Mass market includes food, drug and mass merchandise stores.
Source: IRI July 12, 1998

Leading herbal supplements with excellent market demand that can be grown at the Wind River Nursery site include:

- Echinacea—This is the top selling herbal product in the U.S., with many therapeutic uses in urology, gynecology, internal medicine and as an immune stimulant. Echinacea has been widely accepted as a cold remedy. Future sales of high-quality Echinacea should be secure; however, prices may be stable or decline if supply grows faster than demand.
- St. John's wort—It is popularly known for its antidepressant effects. Although it is among the five most popular herbs on the U.S. market today, clinical studies are not all conclusive about its effectiveness. Since 1995, St. John's wort sales have risen exponentially. There is a very strong growth market for this herb at the present time. Cascade wild-crafted St. John's wort has been found to be very high quality.
- Goldenseal—This is another important medicinal herb with very fast-growing demand in the U.S. The dried root of goldenseal is a remedy for eye, skin and digestive disorders. It is considered to have antibiotic, anti-infective and immune stimulating qualities.
- Valerian--- This is one of the more popular sleep aids in Europe. It is a strong candidate for production at WRN.
- Other herbs of interest include—ginseng, arnica, bilberry, calendula, evening primrose, and yarrow.

Beyond supplements, the herbs discussed here are also becoming food and beverage ingredients, creating a category known as

"functional foods." Products from juices to snacks and "energy bars" are being introduced that contain beneficial added components such as Echinacea, gingko and St. John's wort. Large food companies, along with smaller, innovative food producers, are offering functional foods. It may be premature to say this will be a major food trend, but it does offer promise as another market outlet for botanicals produced at Wind River.

Commercial botanical production is rather new in the U.S., with few producers here having more than ten years of production experience. Herbal remedies and practices are much more widely accepted outside the U.S. (e.g., Western Europe and Asia). The U.S. imports many herbal products as part of an active and growing world market for these products.

The Wind River nursery site has the climate and soils suitable for selected herbs. The major need is for production knowledge and the ability to grow according to industrial specifications.

Prices for herbs vary depending in large part on the intensity of "marker compounds," key pharmacological compounds extracted for herbal product processing. The Wind River Nursery may have unique advantages (as well as some disadvantages) that will not be known until production actually takes place. To a point, "challenging" climatic conditions cause some herbal plants to produce increased levels of desired compounds. This is one example of why crop research would strongly complement commercial herb production at this site.

References:

HerbalGram No. 44, American Botanical Council

The Booming U.S. Botanical Market: An Overview by Peggy Brevoort in Herbalgram No. 44, American Botanical Council

NATIVES AND ORNAMENTALS

PLANTS AND GRASSES

Production of ornamental and native plants and grasses are a bright spot in the region's agri-forestry sector. Oregon's nursery and greenhouse industry continued its phenomenal growth in 1997 by establishing yet another record-high sales total of $492 million, marking the seventh straight year that record sales were recorded. Sales in 1997 rose 10 percent above 1996 and were 56 percent higher than in 1990. The industry further solidified its place atop all Oregon agricultural commodities by claiming the top ranking for the fifth consecutive year.[1]

Results from a recent Gallop survey report a $2.2 billion increase and a 32 percent increase in the average amount spent by an average household on professional landscape services.[2]

Further growth in nursery product demand is increasingly evident. As urban centers continue to increase in size and density, attention is focused on how natural landscapes and design can counter balance human systems. Reserving land and managing it to counter the negative environmental impact of urban sprawl also boosts demand for grasses and nursery plants.

Wind River can produce quality plant and grass crops. The key is selection of highly marketable plant materials that this site has an advantage to produce. Some of the site

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1 Oregon Nursery & Greenhouse Survey. USDA-Oregon Ag. Stat. Service.

2 Digger Oregon Association of Nurserymen. July 1999.

and product demand considerations to keep in mind are as follows:

- Ornamental plants for nursery production at the Wind River site should be suited for U.S. Hardiness Zones 4-6. Plants from Zone 7 may or may not tolerate the colder temperatures.
- Field crops could be planted to utilize fall rains as plants establish themselves, decreasing the requirement of additional water during the first season. Most ornamental grasses will do quite well without supplemental summer water, especially after the first year of establishment.
- Diversity is recommended to successfully meet demand requirements and to further extend market opportunities. (130 acres of ornamental grasses would glut the market, diversification would allow entry into many other markets.)
- Most plants would be ready to divide or harvest after the second year of growth. Harvest of grasses is flexible to meet the fluctuating demands of the market.
- A unique market opportunity may exist with customers from colder regions, such as the Upper Mid-West, where hardier plants are needed that should also do well in this mid-elevation Pacific Northwest zone.
- Outbreaks of rust may occur in high rainfall years. Otherwise, grasses are not inclined to host diseases or pests. Grasses therefore usually have lower overhead costs of production and may be more environmentally friendly.
- **Research opportunities**: There is an untapped market for developing new plants using such propagation methods as tissue culture, cross pollination and disfigurement through the application of acids.[1] Plants found to possess more vigor, more flowers and/or color variegation, or being less susceptible to disorders hold great market demand potential. One example is gold-leafed Jasmine, a very popular and profitable new variety of Jasmine.

The production of field-grown fescue grass for seed harvest also holds market potential worthy of further review.

Following are some high-demand, ornamental grasses suitable for production at Wind River:

1. Blue fescue *(Festuca cincerea 'Elijah Blue')*
2. Blue Oat Grass *(Helictotrichon sempervirens)*
3. Blooming Wonder Miscanthus (many varieties) *(Miscanthus sinensis 'Blooming Wonder')*
4. Fountain Grass (*Pennisetualopecuroides 'Hameln')*
5. Purple Moor Grass *(Molinia caerulea)*
6. Frost Grass *(Spodiopogon sibericus)*

1 Attempts have been made to mutate plants, in hopes of forcing new varieties with the application of: Benzyladenine, Gibberellic acid, and Radio-active isotopes

NATIVE TREES AND SHRUBS

Recently there has been rapid growth in demand for native plant species for residential, public space, and commercial use. Many contributing factors include heightened awareness of the environment and natural flora, the demand that plants tolerate local conditions of temperature and water supply, and the desire to diversify from the commonly used landscape plants.[1]

Studies show that native plants are a better choice than non-natives for beautifying roadsides and medians. Their superiority lies in being more hearty and adapted to the area's climate. Natives also require less maintenance and are more compatible with the local ecosystem. With the concern for water demands, natives are generally drought-tolerant, requiring less supplemental water because of adoption to the winter rain/ summer drought climate.

Many natives also play vital roles in watershed restoration by preventing erosion and providing wildlife with a source for habitat, protection and food.

The WRN site has a major advantage of having the capacity at the existing Processing Center to hold plant-material inventory in refrigerated facilities prior to shipment to market. Most nurseries have to schedule their harvest during in a narrow window of time, to accommodate their customers. Those nursery operations run the risk of crop damage by frost and additional damage from urgent handling.

The City of Portland's Bureau of Environmental Services buys native and ornamental plant material on contract, allowing the perspective grower an opportunity to forecast its production demands. They are one large, nearby prospective customer for a native plant producer at the Wind River site. Many other municipalities and corporations also face rising demand for native plant material through state and federal highway transportation projects, restoration projects and mitigation for development.

Both Washington and Oregon require bio-swales at highway exits creating high demands for plant materials ranging in diverse levels of plant variety and function based on drainage requirements. A nursery operator at Wind River could compete for a share of this plant business.

The following is a list of popular native plants for potential production at the Wind River site. Sales at local nurseries and demands by local and national mitigation projects suggest a strong need for these specimens for years to come.

List of high-demand native trees and shrubs (1-5 trees, 6-14 shrubs):

1. Western or Pacific Flowering Dogwood *(Cornus nuttallii)*
2. Poplar, Cottonwood, Aspen *(Populus*)
3. Silk Tassle Bush *(Garrya elliptica)*
4. Western or Oregon Yew *(Taxus brevifolia)*
5. Mountain Hemlock *(Tsuga mertensiana)*
6. Serviceberry *(Amelanchier alnifolia)*
7. Kinnikinnick *(Arctostaphylos uva-ursi)*
8. Red Twig Dogwood *(Cornus stolonifera)*
9. Oceanspray *(Holodiscus discolor)*
10. Western Leucothoe *(Leucothoe davisiae)*

[1] Dean Apostol. Mt. Hood National Forest Landscape Architect. Hortus Northwest 1991.

11. Tall Oregon Grape *(Mahonia aquifolium)*
12. Red Flowering Currant *(Ribes sanguineum)*
13. Red Elderberry *(Sambucus racemosa*)
14. Red Huckleberry *(Vaccinium parvifolium*

NON NATIVE TREES AND SHRUBS

The following is a list of unique landscape plants of high value to be considered for the Wind River site. These plants have a fairly wide range of climate-zone adaptability making them prime candidates for markets beyond the Pacific Northwest.

List of potential high-demand ornamental shrubs to be grown at Wind River Nursery:

1. Purple-Leaved Japanese Barberry *(Berberis thunbergii 'Royal Cloak')*
2. Variegated Summer Lilac (many varieties) *(Buddleia davidii 'Harlequin')*
3. Gold-Leaved Dogwood *(Cornus alba 'Aurea')*
4. Blue-Leaved Dwarf Fothergilla *(Fothergilla gardenii 'Blue Mist')*
5. Dark Purple Lacecap *(Hydrangea macrophylla 'Nightingale')*
6. Doublefile Viburnum *(Viburnum plicatum 'Summer Snowflake')*

There are several non-native tree species for consideration at Wind River. Any on-site nursery operator would undoubtedly conduct research to determine species-niches for this lucrative market.

The following are additional considerations for the Wind River site:

- Because most of the plants produced in the Pacific Northwest are shipped by truck (90% of Oregon-grown landscape plants are shipped outside the State) the Wind River site is neutral, relative to Portland, for out-of-state market access.
- Forest products are currently being harvested from areas very close to the Wind River site. Floral greens such as pachistima (Oregon Boxwood) and beargrass are also prospects for production or processing at WRN.
- Develop a unique climate niche for hard to grow plants. A wasabi grower in Florence, Oregon has manipulated the climate to mimic that of a very unique area of Japan. The farmer now produces a rare and profitable crop of high-valued wasabi formerly only produced in small amounts in one location of the World.

References:

Eric Schmidt of J. Frank Schmidt, irrigation specialist.

City of Portland, Environmental Services.

Busse Gardens, Cokato, Minnesota.

NATIVE BERRIES

The Gifford Pinchot National Forest is home to several types of native small berry fruits. The best known local wild berry is the Cascade or blue huckleberry (*Vaccinium deliciosum*). This berry is wild harvested for home consumption and commercially harvested for sale to specialty jam makers, bakeries, and dairies. Presently, the huckleberry cannot be transplanted or otherwise cultivated, and researchers caution that attempting to establish a commercial huckleberry operation entails substantial risk. However it may be only a few years before cultivation is possible. In the meantime, supply is limited to the natural production of forest stands despite this berry's popularity with consumers.

Researchers at the Washington State University Research and Extension Unit (Vancouver, WA), The Sandpoint (Idaho) Research and Extension Center, and Oregon State University scientists are evaluating commercial production potential for native fruits. Some possibilities include lingonberries, saskatoons (serviceberries), chokecherries, and chokeberries. Bilberry is one berry fruit that has medicinal value. Research and development collaboration at the Wind River site by Washington Sate University and others is probably necessary to better identify the potential of this site and the commercial market potential for native berry fruits.

Wild strawberries (Fragaria) may also be a potential native fruit. Research on the potential to propagate one or more varieties may be warranted.

Wild raspberry or blackberry species are in the Rubus family. These may have some appeal as *native* species. Western Washington and the Willamette Valley of Oregon are principal production areas for traditional caneberry varieties such as the Evergreen blackberry, boysenberry, Loganberry, Marion blackberry, and many varieties of raspberries. Total caneberry production in Oregon alone averages 40 to 55 million pounds annually. Western Washington also produces 50 million pounds or more of raspberries annually. However, the Wind River site will not be able to compete in the production of these well-established, commercially cultivated berry crops.

References:

Dr. Scott Cameron, Washington State University, Vancouver, WA

Dr. Danny L. Barney, University of Idaho, Sandpoint, ID

King Bredenkamp, Scenic Fruit Company, Sandy, OR

Bryan Brown, Oregon Fruit Products, Salem OR

3.1.4 ECONOMIC RETURNS ANALYSIS

BOTANICAL MEDICINAL CROPS

As indicated in the agri-forestry development capability section, the WRN site is capable of growing many different crops for botanical medicines. Unfortunately, little can be objectively stated about the current profitability of producing these crops at WRN. There are several reasons for this:

- There is no yield history for these crops at the mid-elevation conditions of the WRN. Furthermore, field production of most medicinal crops is very new (last 5 years).
- There is limited published budget data for most botanical crops, so the basis for predicting revenues and costs of production is very incomplete.
- Costs will vary widely, depending on the total size of operation (number of acres farmed, equipment used, and the methods used to plant, grow, irrigate, and harvest/process the crops).
- Prices received by growers for these crops will vary widely, depending on the overall quality of the crop (particularly the presence of marker compounds), degree of impurities or extraneous material present, volume produced and contract terms (if any).

The botanical crop with the most production budget data available is echinacea (*echinacea purpurea*). This crop illustrates the economic returns that a grower might realize.

Table 3-5 presents the echinacea crop budget with a four-year production cycle. Like other perennial botanicals, echinacea gradually increases production over many years. Harvest is zero in the first year and then grows annually until reaching its maximum level in the fourth year. Growers must be well capitalized to grow large acreages of echinacea, since establishment costs are $5,240 per acre in the first year with rising annual costs thereafter, until reaching almost $11,000 per acre in the fourth year.

Pricing varies depending on the quality of the herb and the root (both parts of the plant are sold). Quality is determined by the presence of marker compounds, and handling and processing methods as well as overall supply and demand. Wholesale prices for echinacea purpurea root in dry form are reported to be approximately $9.00 to $11.00 per pound and $2.00 to $4.00 per pound for dried herb tops

TABLE 3-5 ECHINACEA ESTABLISHMENT BUDGET (1 ACRE)
ORGANIC ECHINACEA PURPUREA: CROP CYCLE – 4 YEARS

This information is based on preliminary projections of both potential yield and adequate market demand reported in 1995. Commercial Echinacea production in Skamania County may vary from these projections.

				Year 1	Year 2	Year 3	Year 4
Yield (dried, lbs/acre)			Herb	0	5,750	8,625	10,000
			Root	0	0	0	1,000
Income							
Echinacea Herb @$2.40*/lb (dried &cut)	*this assumes a secure market			$0	$13,800	$20,700	$24,000
Echinacea Root @$9.50*/lb (dried & cut)				$0	$0	$0	$9,500
Total Income				**$0**	**$13,800**	**$20,700**	**$33,500**
Direct Expenses	**Quantity**	**Price**	**Unit**				
▪ Seed	0.3	$130	Kg	$31	$0	$0	$0
▪ Delivered plugs	23,000	.032	Ea	$808	$0	$0	$0
▪ Fertilizer foliar sprays by nutrient analysis, green & livestock manure				$397	$795	$795	$795
▪ Fuel, oil & lube				$147	$79	$79	$79
▪ Machinery R & M				$167	$64	$64	$64
▪ Contracts and Custom Work							
▪ Planting out	230	$6.90	Hr	$1,587	$0	$0	$0
▪ Weeding		$6.90	Hr	$2,075	$2,075	$1,730	$1,383
▪ Harvesting Herb		$6.90	Hr	$0	$1,272	$1,908	$2,214
▪ Harvesting Root		$790	Ac	$0	$0	$0	$790
▪ Drying & Cutting Herb		$0.40	Dried lb.	$0	$2,285	$3,428	$3,975
▪ Drying & Cutting Root		$1.59	Dried lb.	$0	$0	$0	$1,590
▪ Irrigation Water				$28	$28	$28	$28
Total Direct Expenses				**$5,240**	**$6,598**	**$8,032**	**$10,918**
Contribution Margin				**($5,240)**	**$7,202**	**$12,668**	**$22,582**

This budget is provided as a guideline only. Target yield indicates above average production. An individual enterprise budget must be developed by the specific operator at the Wind River site.
Source: British Columbia (Canada) Ministry of Agriculture, Fisheries and Food, Spring 1995. Canadian currency was converted to U.S. dollars and inflated to 1999 prices.

ORNAMENTAL NURSERY PLANTS

The WRN site is suited to producing a wide range of ornamental plant products. For the economic analysis, there is a very limited number of published budgets to evaluate.

Table 3-6 presents a budget for hedging cedars.

[This information is provided as a guideline only. Target yield indicates above average production. An individual crop plan should be developed by each producer.]

TABLE 3-6 FIELD GROWN HEDGING CEDARS
BUDGET FOR 1 ACRE

	Quantity	Price	Unit	Year 1	Year 2	Year 3	Year 4	Year 5
INCOME								
Hedging cedar – 4 feet	**1,000**	$6.75	Each	$0	$0	$0	$6,750	$0
Hedging Cedar – 5 feet	1,000	$8.25	Each	$0	$0	$0	$0	$8,250
Total Income				$0	**$0**	**$0**	**$6,750**	**$8,250**
DIRECT EXPENSES								
Plants	2,200	$2.40	Each	$5,280	$0	$0	$0	$0
Plant Nutrients & Pest Control								
Fertilizers				$175	$175	$175	$175	$0
Lime	1	$47.00	Ton	$47	$0	$0	$0	$0
Casoron	40	$13.65	Lb.	$540	$540	$540	$540	$0
Roundup (2x)	1	$33.60	Gal.	$33	$33	$33	$33	$0
Kelthane	0.1	$97.50	Gal.	$10	$10	$10	$10	$0
Thiodan EC	1	$43.80	Gal	$44	$44	$44	$44	$0
Fuel, Oil, Lubrication				$36	$36	$36	$36	$36
Machinery R & M				$155	$155	$155	$155	$155
Marketing 5% of gross sales				$0	$0	$0	$426	$520
Custom Work								
Field work	2	$31.70	Hour	$60	$60	$60	$60	$0
Fertilize & Lime	2.5	$31.70	Hour	$80	$80	$80	$80	$0
Pest Control		$31.70	Hour	$15	$60	$60	$60	$0
Hand Weed	96	$6.00	Hour	$575	$575	$460	$345	$0
Dig & Haul		$1.30	Each	$0	$0	$0	$1,300	$1,300
Grade & Load		0.40	Each	$0	$0	$0	$400	$400
Burlap	1,000	0.50	Each	$0	$0	$0	$500	$500
Tags	1,000	0.12	Each	$0	$0	$0	$120	$120
Total Expenses				**$7,050**	**$1,768**	**$1,653**	**$4,284**	**$2,511**
Contribution Margin				**($7,050)**	**($1,768)**	**($1,653)**	**$2,466**	**$5,739**

This information is provided as a guideline only. Target yield indicates above average production. An individual crop plan should be developed by each producer.

CHRISTMAS TREES

Noble Fir Christmas tree production may be well suited to the WRN site. Noble fir trees are typically grown at elevations up to 1,200 feet in very well drained soils without irrigation.

The WRN site must be disease free (especially phytophora root rot) to be considered for conventional or organic Noble production. While Christmas trees are among the top revenue generating crops in Oregon, little production research is being conducted in the Northwest.

Table 3-3 gives the cost estimates for Noble Fir production in Oregon (1996 data). Table 3-4 presents the revenue and cost summary. Noble Fir production is indicated to return just under $12,000 per acre over 10 years to the operator.

TABLE 3-7
COST AND RETURN ESTIMATES FOR NOBLE FIR CHRISTMAS TREE PRODUCTION 1996

Activity	Approx $ / Acre	Approx$ / Tree (a)	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total Expense Each Rotation / Acre
Preplanting Site Preparation	$170	$0.11	X											$170
Seedling purchase (1-1 stock)	$300	$0.20		X										$300
Planting	$225	$0.15		X										$225
Annual Weed Control (post planting)	$50	$0.15		X	X		X		X		X			$250
Replanting (b)	$75	$0.50			X									$75
Basal pruning	$450	$0.30				X								$450
Culturing (c)	Varies	$0.98 to $3.30					X	X	X	X	X	X	X	$2956
Pest Management	$75	$0.20							X	X	X	X		$300
Harvesting (d) Cut, bale, load	Varies	$2.50 to $3.00								X	X	X	X	$3600
Total Costs for Plantation			**$170**	**$575**	**$125**	**$450**	**$180**	**$262**	**$537**	**$1500**	**$1970**	**$1380**	**$1177**	**$8326**
Total per tree														**$5.55**

(a) based on 1500 trees per acre
(b) 10% replacement after first year (cost = tree + planting).
(c) Culturing costs will vary from about 10 cents to 20 cents per tree (when smaller) to about $1.00 per tree (when larger). Costs are based on culturing 1500 trees in years 4, 5, 6 and 7 at 17, 27 and 45 cents per tree, respectively; 1200 trees in year 8 at 60 cents per tree; 750 trees in year 9 at 80 cents per tree; and 300 trees in year 10 at 92 cents per tree.
(d) Harvest schedule is 20% (300) trees in year 7; 30% (450) in year8; 20% (300) in year 9; 20% in year 10; and 10% (150) will be culls. Prices vary depending on market and supply. Wholesale prices per foot for 6-7 foot trees range between $2.00 and $2.50 for #1 and better grades. Field run grades should be about 65% for #1 and better; 25% for #2; 10% cull. Prices for #2 grade is about 25% to 60% below #1 and better grades depending on size.

Source: Oregon State University Extension; Clackamas County Extension Office, 1996.

TABLE 3-8
REVERSE AMD COST SUMMARY
FOR NOBLE FIR CHRISTMAS TREE PRODUCTION 1996

	Per Acre Estimates	**Per Tree Estimates**
Total revenues	$23,600	$15.73
Total "unavoidable costs"*	$8,326	$5.55
SUBTOTAL	$15,319	$10.18
Total "additional costs"**	$3,375	$2.25
Projected net profits	**$11,944**	**$7.93**

*Unavoidable costs are the typical costs which can be estimated for all Christmas tree farmers.

**Additional costs are those significant and somewhat unique costs incurred by operators. Examples of what might be included as additional costs are: land purchase/rent, property taxes, road construction, interest expense, casualty and theft losses, marketing costs, and administrative overhead.

3.2 INFRASTRUCTURE ANALYSIS AND OPPORTUNITIES

3.2.1 DEVELOPMENT OF INFRASTRUCTURE AND UTILITIES

WATER RIGHTS

As part of the conveyance of the Wind River Nursery site, a portion of the U.S. Forest Service irrigation and domestic water rights will be transferred to Skamania County. The County is currently conducting a study to determine if its surface water rights can be transferred to a groundwater source.

REGULATORY REQUIREMENTS

Along with a review by the Department of Ecology, Skamania County may also have to consult with the following regulatory agencies for any new development:

- Department of Health regarding design and construction of proposed (and existing) wastewater treatment systems and effluent drainfields.
- Department of Health regarding design and construction of proposed community water tank and water system.
- Review of grading, drainage and environmental impacts on public waters through the Joint Aquatic Resource Permits Application (JARPA) for Hydraulic Project Approvals, Shoreline Management Permits, Water Quality Certification & U.S Army Corps of Engineers Permits.
- Skamania County Planning Department regarding critical areas, zoning, and State Environmental Policy Act (SEPA)
- Skamania County Public Works Department for improvements, including but not limited to county roads, grading and storm drains.

ENVIRONMENTAL IMPLICATIONS

The environmental implications of new development would occur both during and after construction are completed. During construction, the environmental impacts include:

- Increased potential for erosion and sedimentation contamination of public waters due to clearing, grading and demolition activities.
- Increased traffic and tracking of sedimentation onto roads due to construction equipment and vehicles.
- Increased air pollutant emissions due to construction activities.

During construction, best management practices need to be implemented to prevent or minimize environmental impacts. For example, erosion and sedimentation control measures to be installed during construction include sedimentation ponds, hydroseeding exposed soils, silt fences, inlet and catch basin protection, interceptor swales, designated construction entrances and construction traffic route(s). The Contractor must also submit an emergency spill control plan in the event

of fuel leakage during refueling of construction equipment etc.

The environmental impacts after construction has been completed for new development include:

- Increased vehicle traffic volume due to visitors and users of the site.
- Increased air pollutants from increase vehicle traffic users to the site.
- Increased pollutants in stormwater runoff from vehicle traffic areas, i.e. roads and parking lots.
- Increased runoff flow rate due to new impervious surfacing.
- Increased noise levels during festival and special outdoor events.

In order to minimize or eliminate the long term environmental impacts noted above, facilities would need to be installed to address each issue. For example, water quality structures such as oil-water separators and/or biofiltration swales would be constructed for stormwater treatment and detention pond(s) with flow control structure(s) would be installed to mitigate stormwater runoff release rates.

3.2.2 PHASING AND COST ANALYSIS FOR THE REDEVELOPMENT PLAN: PUTTING THE SITE BACK TO WORK

This section contains a review of the assumptions for the three phases of "The Redevelopment Plan: Putting the Site Back to Work," introduced in earlier sections of this report. The infra-structure cost estimates compiled for each phase of work in the Redevelopment Plan are broken down into three main categories:

- Earthwork and Site Preparation
- Utilities
- Roadways

The approach to the unit costs for each phase of the Redevelopment Plan is conservative in order to account for uncertainties during this conceptual stage of analysis. In all cases, it is assumed that construction of the civil facilities would occur under moderate weather conditions, i.e. between April and October. Escalation, mobilization and taxes were not included in the cost analysis.

For reference purposes and simplification, we will refer to the three stages of the Redevelopment Plan by the year:

- 2005 Plan: Laying the Groundwork
- 2010 Plan: Taking Shape
- 2030 Plan: Fullfilling the Mission

EARTHWORK AND SITE PREPARATION

Since there will be no new development in the 2005 Plan other than construction of the irrigation main and portions of the irrigation system for the agricultural fields, the earthwork and site preparation costs were assumed to be negligible.

For the 2010 Plan, the site preparation and earthwork activities involve clearing for the Martha Creek Camp, Cascadia Learning Center, Wind River Institute facilities and Community Event Space. There will also be earthwork activities associated with construction of the water tank, such as roadway access improvements and clearing for the tank site.

Remaining earthwork activities occur in the 2030 Plan for the Wind River Inn, Hemlock Business Campus, and additional access roadways.

UTILITIES

As part of the conveyance to the County, utility services will be separated from the Forest Service's current utility system for the Wind River site. For the cost analysis, we assumed that the installation of the new utility lines would be constructed over the last two phases, 2010 and 2030.

In general, it is assumed that existing utilities servicing the site, i.e. water, storm and sanitary sewer conveyances, will remain shared with the Forest Service for the 2005 Plan.
For the 2010 Plan, the utility work includes: the water tank; the water, storm and sanitary sewer trunk lines; and electrical service.

For 2030 Plan, utility work is primarily "service" utility connections from the main lines constructed in the 2010 Plan to the new buildings added in the 2030 Plan (such as the Wind River Inn and Hemlock Business Campus).

Since construction and design of the "main" utility lines and water tank are larger in cost in comparison to extending services to buildings, the initial upfront costs for the infrastructure would occur in the 2010 Plan.

Water System

In order to meet current fire code standards, a new water storage tank would be required for the Redevelopment Plan. It was assumed that the tank would be located near the existing water storage tank southwest of the Arboretum. Per the Uniform Fire Code, the governing factor for sizing the water tank is the area of the square footage of the tree processing facility, which would be the largest facility on site and occupied in the 2010 and the 2030 Plans. Per the Uniform Fire Code, we also assumed that a waiver would be obtained from the Fire Marshall for reduction of the fire flow requirements due to installing an automatic sprinkler system for the Tree Processing Facility. However, if the waiver were not granted, then the fire flow requirements would significantly increase the cost for the water system.

Since the Tree Processing facility is expected to not be in use until 2010, it was assumed that upgrades to the Tree Processing Facility's fire protection requirements could be implemented in the 2010 Plan. If the facility is used between 2005-2010, even minimally, such as for storage, then insurance for the building may be difficult to obtain (or even unobtainable) since the building does not meet current fire code requirements. In addition, a waiver would be required from the Fire Marshall to use the Tree Processing facility without making upgrades to the fire protection service prior to implementation of the 2005 Plan.

For the 2010 Plan, a water main would be constructed from the water storage tank to the existing tree processing facility. In the cost analysis, it was assumed that new domestic water mains would be installed along Chapman Avenue, Trout Creek Road and Martha Creek Road in order to serve County facilities, the Hemlock Business Campus, the Cascadia Learning Center, Wind River Institute and Martha Creek Camp. The unit cost for the water main includes the pipe material, fittings, valves, thrust blocking, backfilling, excavation, and restoration (labor and materials). From the linear footage calculated for the water main, excluding the service lines, it was assumed that a fire hydrant would be located every 400 feet in order to provide fire protection coverage for existing facilities.

Cost analysis included a new well pump for the existing well at Trout Creek, and a water treatment plant with booster pumps to fill the water storage tank.

The water tank and water main from the tank to the existing well near Trout Creek was assumed to be funded by the County through grant funding. The service lines from the main to buildings were assumed to be funded by private developers.

Storm Drain System

For the Redevelopment Plan, the storm drain system will be developed over the three phases with the majority of the cost occurring in the 2010 Plan.

For the 2005 Plan, we assumed storm drain facilities along Chapman Avenue would remain in service and shared with the Forest Service. However, for the 2010 Plan, with the development of the Cascade Learning Center and Martha Creek Camp, additional conveyance lines would be installed to collect runoff from roofs and roadways. In addition, detention ponds and/or infiltration systems would be installed east of Martha Creek Field and near the Hemlock Business Campus. Discharge from the pond would be restricted by a flow control structure in order to meet regulatory requirements for stormwater management.

Existing and new swales adjacent to vehicle traffic areas and roadways would remain or be installed as part of the 2010 and 2030 Plans in order to treat pollutants from these areas and meet water quality regulatory requirements. Swales would then direct runoff to the storm drain collection structures and conveyance lines, which would then convey flows to the proposed storm drain detention pond. The majority of the storm drain system would be funded by private developers due to their development of new facilities (i.e. roadways, parking lots, buildings etc.).

Sanitary Sewer System

As with the storm drain system, the existing sanitary sewer system is assumed to remain shared with the forest service for the 2005 Plan and then become separated for the 2010 Plan. For weekend festivals at the site during 2005, it was assumed that portable toilets would be rented for the events.

In the 2010 Plan, the main sewer system would be installed along Chapman and Martha Creek Roads along with a new on-site wastewater treatment system with effluent drainfields near Martha Creek Field. A second on-site wastewater treatment system and effluent drainfields would also be installed to serve the Hemolock Business Campus.

For the 2030 Plan, it is assumed that new services for the Wind River Inn will be conveyed to the sanitary sewer main installed in the 2010 Plan. In addition, modifications to the wastewater treatment system and effluent drainfields are included in order to accommodate the increased demands from the Inn.

For the wastewater treatment and disposal system, it was assumed that the facility would include septic tanks, pretreatment systems, pumps and effluent drainfields. Sizing for the effluent drainfields, including reserves, were determined for the 2010 and 2030 Plan. The sizing of the systems were based on the design peak number of visitors expected at the site in a day (provided by Dean Runyan Associates) and anticipated uses of the site (i.e. restaurant, offices, hotel, overnight campground, or day campground).

Irrigation

The water source for the irrigation system is expected to come from the existing Pacific Crest Irrigation Water Rights. Since Trout Creek Field and

Martha Creek Field would be utilized for agricultural use in 2005, then the extension of the irrigation main, which currently terminates at Pacific Crest Field, would need to be continued to the connection at the Bunker Hill Field. Consequently, it is expected that the existing pumps at the Pacific Crest Field will require upgrading in order to accommodate the increase flow and head pressures. (Note: Other potential water sources for the irrigation system are discussed in Section 3.2.1. Additional analyses would be needed to determine the cost implications of using these other water sources for new development.).

For the 2010 Plan, it was assumed that the irrigation system in Trout Creek Field would be extended to accommodate the increased acreage. In addition, an irrigation system for Pacific Crest Fields would be installed in the 2010 Plan.

For the 2030 Plan, the acreage for agricultural fields is the same as in the 2010 Plan so there are no additional irrigation capital costs in this phase.

For the cost analysis and irrigation water demands, we assumed that an irrigation drip system would be installed. Costs for the irrigation system include valves, fittings, service lines, and valve control units. However, drip irrigation systems can be maintenance intensive. Therefore, further comparison of the long-term maintenance costs with initial capital costs would need to be evaluated.

The extension of the irrigation distribution main and modifications to the pumps at Pacific Crest Fields were assumed funded by Skamania County. A portion of the County costs could also be funded by State Grants (see "Funding Alternatives" discussion at the end of this section.) The costs for the irrigation system within each field was assumed funded by private developers.

Electrical

Abacus Engineered Systems, Inc provided unit costs for the Electrical and Franchise Utility system.

ROADWAYS

The roadway developments for the Redevelopment plan were assumed to be minimal due to utilizing existing alignments and overlaying existing surfaces either with asphalt or gravel. In the 2005 Plan, it was assumed that no improvements would be made to the existing roadways and the existing gravel roads in the agricultural fields

In the 2010 Plan, it was assumed that Chapman Avenue and Martha Creek Road would require an asphalt overlay as part of new utility main construction. Improvements to the existing access road for construction of the new water tank was also include in the analysis. In addition, new gravel access drives around Martha Creek Camp and the Cascadia Learning Center was included in the cost analysis. It was assumed that the County would not utilize Trout Creek Road west of Hemlock Lake Dam for access to the Pacific Crest Fields; therefore, the County would not be responsible for maintenance of this roadway section.

For the 2030 Plan, new parking lots would be added for the Wind River Inn development.

For the cost analysis, it was assumed that the Forest Service and Skamania County would equally share the costs of overlaying Chapman Avenue and re-surfacing of the access road to the water tank site; and the remaining roadway costs would be funded by private developers.

Maintenance costs for the roadways and parking lots (either existing or developed in previous phases) were not included in the analysis.

WATER RIGHTS

The current water rights for the site are illustrated in Table 3-9. The current water rights may be obtainable for the different alternatives. There are four possible scenarios for the obtainable water rights, outlined in table 3-10. Calculations for the domestic and irrigation water demands for the three phases of the Redevelopment plan are listed in the Appendix.

For the 2005, 2010, and 2030 Plans, the domestic and irrigation water demands would each fall under the "Middle-Low" water right scenario.

TABLE 3-9 CURRENT WATER RIGHTS

Water Right/Source	**Domestic**	**Irrigation (excluding frost control)**
Well at Trout Creek	33 ac-ft/yr	24 ac-ft/yr for irrigation 9.5 ac-ft/yr for processing plant
Wells at Pacific Crest Field	None applicable	114 ac-ft/yr
Surface Water from Trout Creek	None applicable	228 ac-ft/yr

3.2.3 SOURCES OF FUNDING FOR INFRASTRUCTURE

We have identified four sources of funding for the infrastructure costs of the Wind River site. Those include:

- Private Developers
- Skamania County
- U.S. Forest Service
- Washington State and Federal Grants

Private developers would provide the majority of project costs for the Redevelopment Plan as a result of development of new facilities and roadways. Since the U.S. Forest Service will still use existing roadways for access around the site, it is expected that a portion of the overlay costs for the roadways would be shared with Skamania County. For Skamania County, the main costs would include development of a new water distribution and storage system in order to meet current fire codes.

Finally, a portion of the infrastructure development costs, such as the new water distribution and storage system, irrigation system, roadways, etc. may qualify for funding through several grant/loan programs in the State of Washington. Some of those grants include:

- Community Economic Revitalization Board Rural Program
- Community Economic Revitalization Board Traditional Program
- Economic Development Planning Assistance
- Economic Development Technical Assistance
- Washington Wildlife and Recreation Program (WWRP)
- Drinking Water State Revolving Fund
- Public Works Construction
- Construction of Municipal and Industrial Water Supply Projects

Descriptions of the above loans are listed in the Appendix for further reference.

COST ESTIMATES

Several tables follow (see section 3-3) which illustrate preliminary cost estimates for Civil Infrastructure as outlined in the Redevelopment Plan. These tables are listed here:

- Table 3-12 a Preliminary Cost Estimate for Civil Infrastructure of Redevelopment Plan 2005: Laying the Groundwork
- Table 3-12 b Preliminary Cost Estimate for Civil Infrastructure of Redevelopment Plan 2010: Taking Shape
- Table 3-12 c Preliminary Cost Estimate for Civil Infrastructure of Redevelopment Plan 2030: Fullfilling the Mission
- Table 3-12 d Preliminary Estimates for Water Demands and Septic Drainfield sizing for the Redevelopment Plan

WIND RIVER NURSERY
SITE AND FACILITY PLAN
SKAMANIA COUNTY, WASHINGTON

FIGURE 3-11: Preliminary Estimate of Water Usage Demands and Effluent Drainfield Acreage for 2050, 2010 and 2030 Redevelopment Plans
SvR Job #99031

Notes:
Visitor Peak Year and Day provided by Dean Runyan Associates
Irrigation Agricultural Areas provided by Globalwise Inc.

	Water Design Usage						**Wastewater Effluent Drainfield Design Plus Reserve**							
	Type of Use for Determining Flow (per Table 4-8 in	#EPA Units/yr	Assumption for EPA Unit for determining flow	EPA Unit for determining flow	Typical Water Flow from EPA	Water Use (Gal/yr)	Type of Use for Determining Flow (per Table 4-8 in EPA	Assumptions of Peak Day Use	Peak # of Units/da	EPA Unit	Typical Flow from	Estimated Peak Loading (gpd)*	Drainfield Area (sf)	Reserve (sf)	Total Acre for Drainfield +
2005 Redevelopment Plan - LAYING THE GROUNDWORK															
No improvements to Water and Sanitary Sewer System in 2005									No improvements to Water and Sanitary Sewer System in 200						
Total Annual Visitor Projection:		**0**	**2005 Plan Total Domestic Water (Gal/yr):**			**0**		**2005 Redevelopment Plan Total Effluent Drainfield Area Requirements:**							**0.00**
			Domestic Water Right Requirements met by Scenario Type*:			**Middle-Low**									
Skamania Farms Annual Irrigation Use	**Area**	**Unit**	**Water use per acre (ft/ac/yr)**	**Total Water Vol. Req'd(ac-ft/yr)**											
Martha Creek	10.0	ac	1.5	15.0											
Trout Creek	15.0	ac	1.5	22.5											
Bunker Hill	0.0	ac	1.5	0.0											
Pacific Crest	0.0	ac	1.5	0.0											
Total Irrigation Area (ac):	**25.0**	ac	**2005 Plan Total Irrigation (ac-ft/yr):**	**37.5**											
	Irrigation Water Right Requirements met by Scenario Type*:			**"Middle-Low"**											
2010 Redevelopment Plan - TAKING SHAPE															
Martha Creek Camp Annual Visitation	Cabin, Resort	10,260	Assume overnight stays	person	42.3	433,998	Cabin, Resort	Assume overnight campground	350	person	42.3	14,805	82,250	82,250	3.78
Cascade Festival Grounds Annual Visitation	Dining Hall, meal	2,100	Assume visitors eat one meal	meal	7.9	16,590	Residence	3-bedroom single family homes	6	house	360	2,160	12,000	12,000	0.55
Cascadia Learning Center Annual Visitation	School, w/cafeteria	15,800	Assume stay for the day and eat one meal	student	15.9	251,220		**2010 Redevelopment Plan Total Effluent Drainfield Area Requirements:**							**3.78**
Wind River Fields Skamania Farms Visitatio	Office	235	Assume employees or workers visiting for the day	employee	14.5	3,408									
Wind River Institute Housing	Housing	2190	6 housing units	per 3 bedroom house	360	788,400									
Hemlock Business Campus	Office	165	Assume employees or workers visiting for the day	person	14.5	2,393									
Total Annual Visitor Projection:		**30,585**	**2010 Plan Total Domestic Water (Gal/yr):**			**1,496,008**									
			Domestic Water Right Requirements met by Scenario Type*:			**"Middle-Low"**									
Skamania Farms Annual Irrigation Use	**Area**	**Unit**	**Water use per acre (ft/ac/yr)**	**Total Water Vol. Req'd(ac-ft/yr)**											
Martha Creek	10.0	ac	1.5	15.0											
Trout Creek	30.0	ac	1.5	45.0											
Bunker Hill	0.0	ac	1.5	0.0											
Pacific Crest	10.0	ac	1.5	15.0											
Total Irrigation Area (ac):	**50.0**	ac	**2010 Plan Total Irrigation (ac-ft/yr):**	**75.0**											
	Irrigation Water Right Requirements met by Scenario Type*:			**"Middle-Low"**											
2030 Redevelopment Plan - FULFILLING THE MISSION															
Martha Creek Camp Annual Visitation	Cabin, Resort	10,260	Assume overnight stays	person	42.3	433,998	Cabin, Resort	Assume overnight campground	500	person	42.3	21,150	117,500	#####	5.39
Wind River Inn	Cabin, Resort	20,160	Assume overnight stays	person	42.3	852,768	Residence	3-bedroom single family homes	6	house	360	2,160	12,000	12,000	0.55
Wind River Institute Housing	Housing	2190	6 housing units	per 3 bedroom house	360	788,400		**2030 Redevelopment Plan Total Effluent Drainfield Area Requirements:**							**5.95**
Cascadia Learning Center Annual Visitation	School, w/cafeteria	15,800	Assume stay for the day and eat one meal	student	15.9	251,220						**Drainfield Area built in 2010:**			**3.78**
Cascade Festival Grounds Annual Visitation	Dining Hall, meal	2,100	Assume visitors eat one meal	meal	7.9	16,590		**Total Drainfield Built for 2030 Plan (Total 2030 req'mts minus area built thru 2010):**							**2.17**
Wind River Fields Skamania Farms Visitatio	Office	235	Assume employees or workers visiting for the day	employee	14.5	3,408									
Hemlock Business Campus	Office	165	Assume employees or workers visiting for the day	employee	14.5	2,393									
Total Annual Visitor Projection (including residents):		**50,910**	**2030 Plan Total Domestic Water (Gal/yr):**			**2,348,776**									
			Domestic Water Right Requirements met by Scenario Type*:			**"Middle Low"**									
Skamania Farms Annual Irrigation Use	**Area**	**Unit**	**Water use per acre (ft/ac/yr)**	**Total Water Vol. Req'd(ac-ft/yr)**											
Martha Creek	10.0	ac	1.5	15.0											
Trout Creek	30.0	ac	1.5	45.0											
Bunker Hill	0.0	ac	1.5	0.0											
Pacific Crest	10.0	ac	1.5	15.0											
Total Irrigation Area (ac):	**50.0**	**ac**	**2030 Plan Total Irrigation (ac-ft/yr):**	**75.0**											
	Irrigation Water Right Requirements met by Scenario Type*:			**"Middle-Low"**											

3.2.4 ELECTRICAL UPGRADES FOR THE REDEVELOPMENT PLAN

INTRODUCTION

The purpose of this section is to document our assumptions and criteria used in developing electrical cost estimates for the Redevelopment Plan at Wind River Nursery.

2001-2005: LAYING THE GROUNDWORK

No apparent electrical service upgrades are anticipated during this phase. The electrical services to the existing buildings are adequate for occupancies similar to present uses.

2006-2010: TAKING SHAPE

New Fire Protection Water Tank

- Provide electrical service to pumps and treatment plant. Location near Hemlock Lake Dam.
- Provide 4" underground conduit from Martha Creek area to the tank (approx. 2000') for telemetry.

Martha Creek Camp

- Provide primary and secondary services to Camp.
- Estimated service: 400 amps, single phase.

Cascade Events Grounds

- Provide primary and secondary services to area.
- Assuming power requirements for lighting, sound equipment, etc.
- Estimated service: 400 amps, single phase.

Cascadia Learning Center

- Provide primary and secondary services to Learning Center.
- Estimated service: 400 amps, single phase.

Second Growth Research Canopy Crane

- Provide primary and secondary services to Canopy Crane at Martha Creek Field.

2011-2030: FULFILLING THE MISSION

Wind River Institute Residence and Office

- Provide primary and secondary services to residence and office.
- Estimated service: 400 amps, single phase.

Wind River Institute Station at Pacific Crest Field

- Provide primary and secondary services to station.
- Estimated service: 400 amps, single phase.

Public Access Canopy Crane at Pacific Crest Field

- Provide primary and secondary services to Canopy Crane.

Wind River Inn

- Provide primary and secondary services to Inn.
- Assuming 50,000 SF, 100 guest rooms, approx. 10 W/ SF.
- Estimated service: 1200 amps, three phase.

Equestrian Center

- Provide primary and secondary services to Center.
- Assuming site lighting, general lighting and small, heated office.
- Estimated service: 200 amps, single phase.

3.3 BACKGROUND COST INFORMATION

CONSTRUCTION AND INFRASTRUCTURE

The following documents comprise supporting cost estimates and analysis for the Redevelopment Plan.

3.3.1 ESTIMATED CONSTRUCTION COSTS

Construction costs outlined in Table 3-11 indicate estimated costs for the suggested new construction recommended in the Redevelopment Plan. This includes new buildings and landscape features. Infrastructure costs, and costs associated with the renovation of existing buildings, are considered separately (see Section 4).

3.3.2 ESTIMATED COSTS FOR CIVIL INFRASTRUCTURE

Preliminary cost information is provided in Tables 3-13a-c for civil infrastructure at each phase of the Redevelopment Plan.

3.3.3 ESTIMATED COSTS FOR ELECTRICAL INFRASTRUCTURE

Tables 3-14 through 3-16 indicate costs assumed to create the required electrical infrastructure for the Redevelopment Plan.

TABLE 3-12 COSTS FOR NEW CONSTRUCTION: BUILDINGS AND NATURAL AREAS						**Redevelopment Plan**					
New Construction Costs						**County Costs**			**Developer/Leaseholder Costs**		
	Unit	QTY	Unit Cost	# Units	Cost	2001-200	2006-2010	2011-203	2001-200	2006-2010	2011-2030
Skamania Farms											
Reforest Buffer Zones: Martha Creek Field	Acre	27.2	$300.00		$8,160	$2,717	$2,717	$2,717			
Reforest Buffer Zones: Bunker Hill Field	Acre	5.5	$300.00		$1,650	$825	$825				
[Reforest Buffer Zones by USFS at Pac. Crest]	Acre	40.0	$300.00		$12,000						
Wind River Institute											
New Station at Pacific Crest Field	SF	1,000	$100	1	$100,000					$100,000	
Housing at Chapman Avenue homes	Allow	1	$3,000	3	$9,000				$9,000		
Renovate housing at Chapman Avenue	Allow	1	$50,000	3	$150,000					$150,000	
Cascadia Learning Center											
New Classrooms at Pole Shed Drive (5)	SF	1,500	$120		$180,000					$180,000	
Cabins at north edge of Martha Creek Fld	SF	600	$85	5	$255,000						$255,000
Martha Creek Camp											
Tent Platforms	Each	10	$2,000		$20,000					$10,000	$20,000
Yurts	Each	5	$7,890		$39,450					$78,900	$78,900
Cabins	SF	700	$60	4	$168,000						$168,000
Reforestation at Martha Creek Field	Acre	9	$300.00		$2,700	$1,350	$1,350				
Hemlock Business Campus											
Renovation of Seed Processing Center	Allow	1	$550,000		$550,000					$550,000	
New construction at Trout Creek Field	SF	6,000	$100		$600,000					$600,000	
Cascade Events Grounds											
Ground preparation for public events	Acre	4.9	$500		$2,425		$2,425				
Renovation of lunch shed for rest rooms	Allow	1	$20,000		$20,000		$20,000				
Inn at Wind River											
Lodge with 20 rooms	Allow	1	$5,000,000	1	$5,000,000						$5,000,000
New cabins at Pole Shed Drive	Each	1	$150,000	4	$600,000					$600,000	
Equestrian Center											
New stables at south side of Bunker Hill Fld	SF	3,000	$75		$225,000					$225,000	
Enhanced Trail System											
Trail link from PCT to Martha Creek Field	LF	4,000	$9		$36,000		$36,000				
Trails around Martha Creek Field	LF	8,000	$9		$72,000		$72,000				
Trail head at PCT for County	Allow	1	$20,000		$20,000		$20,000				
Lease Improvements for Existing Buildings	Allow	1	$72,000		$72,000	$72,000					
(soft costs included)											
Construction/Renovation Subtotal						$76,892	$155,317	$2,717	$9,000	$2,493,900	$5,521,900
Soft Costs											
Design, Fees, Contingency	% cost	50%				$2,446	$77,659	$1,359	$4,500	$1,246,950	$2,760,950
Construction Costs: Total						**$79,338**	**$232,976**	**$4,076**	**$13,500**	**$3,740,850**	**$8,282,850**

FIGURE 3-13c Preliminary Cost Estimate for Civil Infrastructure for 2030 Redevelopment Plan

SvR Job # 99031 | Date: May 22, 2000

Item	Units for each Funding Source: Skamania County # of Units	Forest Service # of Units	Private Developer # of Units	Total #Units of all Funding	Unit	Cost per Unit	Subtotal Costs for each Funding Source: Skamania County Cost	Forest Service Cost	Private Developer Cost	Total Cost of all Funding	Notes/Assumptions
Earthwork & Site Preparation											
Clearing/Grubbing			3	3	ac	$ 250	$ -	$ -	$ 750	$ 750	For new facilities
Erosion Control			3	3	ac	$ 1,000	$ -	$ -	$ 3,000	$ 3,000	For new facilities
Grading			1,210	1,210	cy	$ 4	$ -	$ -	$ 4,840	$ 4,840	Assume 3" fill avg in areas of new facilities
Stripping/Unsuitable			1,597	1,597	cy	$ 4	$ -	$ -	$ 6,389	$ 6,389	Assume strip an average of 4" in areas of new buildings, access drives, roads etc.
Hydroseeding & Site Restoration			2.1	2.1	ac	$ 3,500	$ -	$ -	$ 7,350	$ 7,350	Assume 70% of cleared area requires restoration.
			Subtotals for Earthwork & Site Prep.:				**$ -**	**$ -**	**$ 22,329**	**$ 22,329**	
Utilities											
Water System											
Water Main (incl. valves & fitti	-		1,000	1,000	lf	$ 45	$ -	$ -	$ 45,000	$ 45,000	Water service for new facilities
Fire Hydrants	-		1	1	ea	$ 2,500	$ -	$ -	$ 2,500	$ 2,500	Fire hydrant for new facilities
Water Tank	-			-	ea	#######	$ -	$ -	$ -	$ -	Assume no improvements
Well Pump	-			-	ls	$ 10,000	$ -	$ -	$ -	$ -	Assume no improvements
Treatment Plant & Booster Pumps				-	ls	$ 30,000	$ -	$ -	$ -	$ -	Assume no improvements
Automatic Sprinkler System for Bldg				-	ls	$ 85,000	$ -	$ -	$ -	$ -	Assume no improvements
				Subtotals for Water:			**$ -**	**$ -**	**$ 47,500**	**$ 47,500**	
Storm Drain System											
Storm Drain Main	-		1,000	1,000	lf	$ 45	$ -	$ -	$ 45,000	$ 45,000	Storm service for facility additions
Catch Basins for Roadways	-		-	-	ea	$ 2,000	$ -	$ -	$ -	$ -	Assume ditches and culverts for roads
Catch Basins for Parking	-		4	4	ea	$ 1,000	$ -	$ -	$ 4,000	$ 4,000	Storm service for facility additions
Cleanouts	-		6	6	ea	$ 300	$ -	$ -	$ 1,800	$ 1,800	Storm service for facility additions
Manholes	-		1	1	ea	$ 2,000	$ -	$ -	$ 2,000	$ 2,000	Manhole for pond improvements
Detention System	-		20%	0	ls	$ 10,000	$ -	$ -	$ 2,000	$ 2,000	Expansion of pond(s) built in 2010.
				Subtotals for Storm Drain:			**$ -**	**$ -**	**$ 54,800**	**$ 54,800**	
Sanitary Sewer System											
Sanitary Sewer Main	-		1,000	1,000	lf	$ 45	$ -	$ -	$ 45,000	$ 45,000	Sanitary sewer service for facility additions
Manholes	-		-	-	ea	$ 2,000	$ -	$ -	$ -	$ -	
Cleanouts	-		6	6	ea	$ 500	$ -	$ -	$ 3,000	$ 3,000	Sanitary sewer service for facility additions
Septic Drainfield, Pumps, Treatment			2.17	2.17	ac	$ 50,000	$ -	$ -	$ 108,500	$ 108,500	Septic Field expanded for new services
				Subtotals for Sanitary Sewer System:			**$ -**	**$ -**	**$ 156,500**	**$ 156,500**	
Irrigation											
Irrigation Distribution Main	-			-	lf	$ 60	$ -	$ -	$ -	$ -	No change since costs occurred in 2005 and
Modify Pumps @ Pacific Crest	-			-	ea	$ 5,000	$ -	$ -	$ -	$ -	" "
Irrigation System	-		-	-	ac	$ 2,500	$ -	$ -	$ -	$ -	" "
				Subtotals for Irrigation System:			**$ -**	**$ -**	**$ -**	**$ -**	
Electrical											
Franchise Utilities	-		-	-	ls		$ -	$ -	$ -	$ -	Assume costs are completed in 2010
Electrical	-		-	-	ls		$ -	$ -	$ -	$ -	Assume costs are completed in 2010
				Subtotals for Electrical System:			**$ -**	**$ -**	**$ -**	**$ -**	
Roadways											
AC Overlay Roadways	-	-		-	sy	$ 7	$ -	$ -	$ -	$ -	
AC Overlay Parking lot				-	sy	$ 7	$ -	$ -	$ -	$ -	
Gravel Roadways			1,600	1,600	sy	$ 10	$ -	$ -	$ 16,000	$ 16,000	Assume 6" of CSTC
Gravel Parking Lots			2,000	2,000	sy	$ 10	$ -	$ -	$ 20,000	$ 20,000	Assume 6" of CSTC
				Subtotals for Roadways:			**$ -**	**$ -**	**$ 36,000**	**$ 36,000**	
Assumptions:						**Totals:**	**$ -**	**$ -**	**$ 317,129**	**$ 317,129**	
Mobilization and Taxes not included in estimate						**Contingency (30%):**	**$ -**	**$ -**	**$ 95,139**	**$ 95,139**	
Escalation Costs not included in estimate						**Design, Fees (20%):**	**$ -**	**$ -**	**$ 82,453**	**$ 82,453**	
Maintenance costs for systems built in previous phases (2005, 2010) not included						**Estimate Total:**	**$ -**	**$ -**	**$ 494,721**	**$ 494,721**	

FIGURE3-13b Preliminary Cost Estimate for Civil Infrastructure for 2010 Redevelopment Plan

SvR Job # 99031 | Date: May 22, 2000

Item	Units for each Funding Source: Skamania County # of Units	Forest Service # of Units	Private Developer # of Units	Total #Units of all Funding	Unit	Cost per Unit	Subtotal Costs for each Funding Source: Skamania County Cost	Forest Service Cost	Private Developer Cost	Total Cost of all Funding	Notes/Assumptions
Earthwork & Site Preparation											
Clearing/Grubbing			22	22	ac	$ 250	$ -	$ -	$ 5,500	$ 5,500	For new access drives, buildings utility facilities
Erosion Control			22	22	ac	$ 1,000	$ -	$ -	$ 22,000	$ 22,000	For new access drives, buildings utility facilities
Grading			8,873	8,873	cy	$ 4	$ -	$ -	$ 35,493	$ 35,493	Assume 3" fill avg in areas of new facilities
Stripping/Unsuitable			11,713	11,713	cy	$ 4	$ -	$ -	$ 46,851	$ 46,851	Assume strip an average of 4" in areas of new buildings, access drives, roads etc.
Hydroseeding & Site Restoration			15.4	15.4	ac	$ 3,500	$ -	$ -	$ 53,900	$ 53,900	Assume 70% of cleared area requires restoration.
			Subtotals for Earthwork & Site Prep.:				**$ -**	**$ -**	**$ 163,745**	**$ 163,745**	
Utilities											
Water System											
Water Main (incl. valves & f	5,000		10,000	15,000	lf	$ 45	$ 225,000	$ -	$ 450,000	$ 675,000	Assume new tank located near existing tank
Fire Hydrants	6		14	20	ea	$ 2,500	$ 15,000	$ -	$ 35,000	$ 50,000	
Water Tank	1			1	ea	#######	$ 270,000	$ -	$ -	$ 270,000	Based on Tree Processing Fire Flow req'mts. Assume bldg is sprinklered to allow for 75% reduction in flow req'mts per UFC
Well Pump	1			1	ls	$ 10,000	$ 10,000	$ -	$ -	$ 10,000	
Treatment Plant & Booster F	1			1	ls	$ 30,000	$ 30,000	$ -	$ -	$ 30,000	
Automatic Sprinkler System	1			1	ls	$ 85,000	$ 85,000	$ -	$ -	$ 85,000	For Tree processing facility per Abacus
				Subtotals for Water:			**$ 635,000**	**$ -**	**$ 485,000**	**$ 1,120,000**	
Storm Drain System											
Storm Drain Main	-		8,100	8,100	lf	$ 45	$ -	$ -	$ 364,500	$ 364,500	Storm drain services for new facilities
Catch Basins for Roadways	-		4	4	ea	$ 2,000	$ -	$ -	$ 8,000	$ 8,000	Assume ditches and culverts for roads
Catch Basins for Parking	-		19	19	ea	$ 1,000	$ -	$ -	$ 19,000	$ 19,000	CBs for new parking lots
Cleanouts	-		71	71	ea	$ 300	$ -	$ -	$ 21,300	$ 21,300	2 for each service
Manholes	-		4	4	ea	$ 2,000	$ -	$ -	$ 8,000	$ 8,000	Manholes for each detention pond
Detention System	-		0.8	0.8	ls	$ 10,000	$ -	$ -	$ 8,000	$ 8,000	Detention Ponds for new facilities
				Subtotals for Storm Drain:			**$ -**	**$ -**	**$ 428,800**	**$ 428,800**	
Sanitary Sewer System											
Sanitary Sewer Main	3,600		7,400	11,000	lf	$ 45	$ 162,000	$ -	$ 333,000	$ 495,000	Sanitary sewer main and service connections
Manholes	14		7	21	ea	$ 2,000	$ 28,000	$ -	$ 14,000	$ 42,000	Manhole every 300' of SS main
Cleanouts	-		46	46	ea	$ 500	$ -	$ -	$ 23,000	$ 23,000	Sanitary sewer service for facility additions
Septic Drainfield, Pumps, Tr	-		3.78	3.78	ac	$ 50,000	$ -	$ -	$ 189,000	$ 189,000	
				Subtotals for Sanitary Sewer System:			**$ 190,000**	**$ -**	**$ 559,000**	**$ 749,000**	
Irrigation											
Irrigation Distribution Main	-			-	lf	$ 60	$ -	$ -	$ -	$ -	No cost since extension of main done in 2002
Modify Pumps @ Pacific Cr	-			-	ea	$ 5,000	$ -	$ -	$ -	$ -	No cost since work done in 2002
Irrigation System	-		25.0	25.0	ac	$ 2,500	$ -	$ -	$ 62,500	$ 62,500	Expansion of irrigation system in Trout Creek and Pacific Crest Fields
				Subtotals for Irrigation System:			**$ -**	**$ -**	**$ 62,500**	**$ 62,500**	
Electrical											
Franchise Utilities	1		1	1	ls		$ 2,250	$ -	$ 128,100	$ 130,350	From Abacus Estimate (Wind River Retreat alter.)
Electrical	1		1	1	ls		$ 28,875	$ -	$ 148,950	$ 177,825	From Abacus Estimate (Wind River Retreat alter.)
				Subtotals for Electrical System:			**$ 31,125**	**$ -**	**$ 277,050**	**$ 308,175**	
Roadways											
AC Overlay Roadways	4,310	4,310		8,620	sy	$ 7	$ 30,170	$ 30,170	$ 30,170	$ 60,340	Asphalt overlay of existing roads
AC Overlay Parking lot			4,950	4,950	sy	$ 7	$ -	$ -	$ 34,650	$ 34,650	Asphalt overlay of existing lot near Institute offices
Gravel Roadways			34,920	34,920	sy	$ 10	$ -	$ -	$ 349,200	$ 349,200	Assume 6" of CSTC
Gravel Parking Lots			5,800	5,800	sy	$ 10	$ -	$ -	$ 58,000	$ 58,000	Assume 6" of CSTC
				Subtotals for Roadways:			**$ 30,170**	**$ 30,170**	**$ 472,020**	**$ 502,190**	
						Totals:	**$ 886,295**	**$ 30,170**	**$ 2,448,115**	**$ 3,334,410**	
Assumptions:						**Contingency (30%):**	**$ 265,889**	**$ 9,051**	**$ 734,434**	**$ 1,000,323**	
Mobilization and Taxes not included in estimate						**Design, Fees (20%):**	**$ 230,437**	**$ 7,844**	**$ 636,510**	**$ 866,946**	
Escalation Costs not included in estimate						**Estimate Total:**	**$ 1,382,620**	**$ 47,065**	**$ 3,819,059**	**$ 5,201,679**	
Maintenance costs for systems built in phase 2005 not included											

FIGURE 3-13a Preliminary Cost Estimate for Civil Infrastructure for 2005 Redevelopment Plan

SvR Job # 99031 Date: May 22, 2000

Item	Units for each Funding Source: Skamania County # of Units	Forest Service # of Units	Private Developer # of Units	Total #Units of all Funding	Unit	Cost per Unit	Subtotal Costs for each Funding Source: Skamania County Cost	Forest Service Cost	Private Developer Cost	Total Cost of all Funding	Notes/Assumptions
Earthwork & Site Preparation											
Clearing/Grubbing			-	-	ac	$ 250	$ -	$ -	$ -	$ -	Assume no improvements
Erosion Control			-	-	ac	$ 1,000	$ -	$ -	$ -	$ -	Assume no improvements
Grading			-	-	cy	$ 4	$ -	$ -	$ -	$ -	Assume no improvements
Stripping/Unsuitable			-	-	cy	$ 4	$ -	$ -	$ -	$ -	Assume no improvements
Hydroseeding & Site Restoration			-	-	ac	$ 3,500	$ -	$ -	$ -	$ -	Assume no improvements
			Subtotals for Earthwork & Site Prep.:				**$ -**	**$ -**	**$ -**	**$ -**	
Utilities											
Water System											
Water Main (incl. valves & fittin	-		-	-	lf	$ 45	$ -	$ -	$ -	$ -	Assume no improvements, system remains shared with US Forest Service
Fire Hydrants	-		-	-	ea	$ 2,500	$ -	$ -	$ -	$ -	" "
Water Tank	-			-	ea	$270,000	$ -	$ -	$ -	$ -	" "
Well Pump	-			-	ls	$ 10,000	$ -	$ -	$ -	$ -	" "
Treatment Plant & Booster Pum	-			-	ls	$ 30,000	$ -	$ -	$ -	$ -	" "
Automatic Sprinkler System for	-			-	ls	$ 85,000	$ -	$ -	$ -	$ -	" "
				Subtotals for Water:			**$ -**	**$ -**	**$ -**	**$ -**	" "
Storm Drain System											
Storm Drain Main	-		-	-	lf	$ 45	$ -	$ -	$ -	$ -	Assume no improvements, system remains shared with US Forest Service
Catch Basins for Roadways	-		-	-	ea	$ 2,000	$ -	$ -	$ -	$ -	" "
Catch Basins for Parking	-		-	-	ea	$ 1,000	$ -	$ -	$ -	$ -	" "
Cleanouts	-		-	-	ea	$ 300	$ -	$ -	$ -	$ -	" "
Manholes	-		-	-	ea	$ 2,000	$ -	$ -	$ -	$ -	" "
Detention System	-		-	-	ls	$ 10,000	$ -	$ -	$ -	$ -	" "
				Subtotals for Storm Drain:			**$ -**	**$ -**	**$ -**	**$ -**	" "
Sanitary Sewer System											
Sanitary Sewer Main	-		-	-	lf	$ 45	$ -	$ -	$ -	$ -	Assume no improvements, system remains shared with US Forest Service
Manholes	-		-	-	ea	$ 2,000	$ -	$ -	$ -	$ -	" "
Cleanouts	-		-	-	ea	$ 500	$ -	$ -	$ -	$ -	" "
Septic Drainfield, Pumps, Treatr	-		-	-	ac	$ 50,000	$ -	$ -	$ -	$ -	" "
				Subtotals for Sanitary Sewer System:			**$ -**	**$ -**	**$ -**	**$ -**	" "
Irrigation											
Irrigation Distribution Main	2,500			2,500	lf	$ 60	$ 150,000	$ -	$ -	$ 150,000	Extension of Irrigation main to Pacific Crest from bunker hill
Modify Pumps @ Pacific Crest	5			5	ea	$ 5,000	$ 25,000	$ -	$ -	$ 25,000	Adjust for new pressure reqmts for serving additional fields - Martha Creek, Bunker Hill, Trout Creek etc.
Irrigation System			25.0	25.0	ac	$ 2,500	$ -	$ -	$ 62,500	$ 62,500	Area provided by Globalwise
				Subtotals for Irrigation System:			**$ 175,000**	**$ -**	**$ 62,500**	**$ 237,500**	
Electrical											
Franchise Utilities	-	-	-	-	ls		-	$ -	-	$ -	Assume no improvements, system remains shared with US Forest Service
Electrical	-	-	-	-	ls		-	$ -	-	$ -	Assume no improvements, system remains shared with US Forest Service
				Subtotals for Electrical System:			**$ -**	**$ -**	**$ -**	**$ -**	
Roadways											
AC Overlay Roadways	-	-		-	sy	$ 7	$ -	$ -	$ -	$ -	Assume no improvements to existing roads
AC Overlay Parking lot				-	sy	$ 7	$ -	$ -	$ -	$ -	Assume no improvements to existing lots
Gravel Roadways			-	-	sy	$ 10	$ -	$ -	$ -	$ -	Assume 6" of CSTC
Gravel Parking Lots			-	-	sy	$ 10	$ -	$ -	$ -	$ -	Assume 6" of CSTC
				Subtotals for Roadways:			**$ -**	**$ -**	**$ -**	**$ -**	
Assumptions:						**Totals:**	**$ 175,000**	**$ -**	**$ 62,500**	**$ 237,500**	
Mobilization and Taxes not included in estimate						**Contingency (30%):**	**$ 52,500**	**$ -**	**$ 18,750**	**$ 71,250**	
Escalation Costs not included in estimate						**Design, Fees (20%):**	**$ 45,500**	**$ -**	**$ 16,250**	**$ 61,750**	
						Estimate Total:	**$ 273,000**	**$ -**	**$ 97,500**	**$ 370,500**	

TABLE 3-14 Cost Estimate for Electrical Infrastructure						
2005: Laying The Groundwork						
Abacus Engineered Systems, Inc. 2760-001						
Item	**# Units**	**Unit**	**Cost/Unit**	**Total Elec**	**Total Utility**	**Notes/Assumptions**
No electrical service upgrades are anticipated during this phase.						
Total Franchise Utility Costs					$ -	
Total Electrical Contractor Costs				$ -		

TABLE 3-16 Cost Estimate for Electrical Infrastructure						
2030: Fulfilling The Mission						
Abacus Engineered Systems, Inc. 2760-001						
Item	**# Units**	**Unit**	**Cost/Unit**	**Total Elec**	**Total Utility**	**Notes/Assumptions**
Wind River Institute Residence and Office						Martha Creek Field
Primary service	1200	lf	$ 6.00		$ 7,200	400 amp, 1 phase
Trenching	1200	lf	$ 1.50	$ 1,800		
Secondary services to buildings	4	ls	$ 2,000.00	$ 8,000		
Wind River Institute Station at Pacific Crest Field						
Primary service	100	lf	$ 6.00		$ 600	400 amp, 1 phase
Trenching	100	lf	$ 1.50	$ 150		
Secondary services to buildings	2	ls	$ 2,000.00	$ 4,000		
Public Access Canopy Crane at Pacific Crest Field						
Canopy Crane Service - Primary	6000	lf	$ 9.00		$ 54,000	Pacific Crest Field
Trenching	6000	lf	$ 1.50	$ 9,000		
Secondary	100	lf	$ 15.00	$ 1,500		400 amp, three phase
Inn at Wind River						
Primary Service	1000	lf	$ 9.00		$ 9,000	1200 amps, 3 phase
Trenching	1000	lf	$ 1.50	$ 1,500		
Secondary Service	100	lf	$ 50.00	$ 5,000		
Equestrian Center						
Primary Service	400	lf	$ 6.00		$ 2,400	200 amps, 1 phase
Trenching	400	lf	$ 1.50	$ 600		
Secondary Service	50	lf	$ 6.00	$ 300		
Site lighting	1	ls	$ 10,000.00	$10,000		
Site lighting power	300	lf	$ 7.00	$ 2,100		Conduit and wire
Total Franchise Utility Costs					$ 73,200	
Total Electrical Contractor Costs				$43,950		

TABLE 3-15 Cost Estimate for Electrical Infrastructure						
2010: Taking Shape						
Abacus Engineered Systems, Inc. 2760-001						
Item	**# Units**	**Unit**	**Cost/Unit**	**Total Elec Contractor**	**Total Utility**	**Notes/Assumptions**
New Fire Protection Water Tank						
Primary to pumps/treatment	250	lf	$ 9.00		$ 2,250	400 amp 3 phase
Trenching	250	lf	$ 1.50	$ 375.00		
4" telemetry conduit to tank	2000	lf	$ 11.00	$ 22,000.00		Conduit and pullstring
Trenching and backfill	2000	lf	$ 2.00	$ 4,000.00		
Pullboxes	5	ea	$ 500.00	$ 2,500.00		
Martha Creeek Camp						
Primary Service	4000	lf	$ 6.00		$ 24,000	400 amp, 1 phase
Trenching	4000	lf	$ 1.50	$ 6,000.00		
Secondary Svc to Buildings	300	lf	$ 15.00	$ 4,500.00		
Site lighting	1	ls	$20,000.00	$ 20,000.00		
Cascade Events Grounds						
Primary Service	100	lf	$ 6.00		$ 600	400 amp, 1 phase
Trenching	100	lf	$ 1.50	$ 150.00		
Secondary Service	50	lf	$ 15.00	$ 750.00		
Site lighting	1	ls	$10,000.00	$ 10,000.00		
Cascadia Learning Center						
Primary Service	100	lf	$ 6.00		$ 600	400 amp, 1 phase
Trenching	100	lf	$ 1.50	$ 150.00		
Secondary Service	50	lf	$ 15.00	$ 750.00		
Site lighting	1	ls	$10,000.00	$ 10,000.00		
2nd Growth Research Canopy Crane						
Canopy Crane Service - Primary	2400	lf	$ 9.00		$ 21,600	Martha Creek Field
Trenching	2400	lf	$ 1.50	$ 3,600.00		
Secondary	100	lf	$ 15.00	$ 1,500.00		400 amp, three phase
Total Franchise Utility Costs					$ 49,050	
Total Electrical Contractor Costs				$ 86,275.00		

EXISTING BUILDING COSTS ANALYSIS											
Building # 1053	**Residence**										
1915 SF	Total										
1015 SF	Floor 1										
648 SF	Floor 2							Minimum			
252 SF	Basement							Lease Im-			
		Unit	QTY	Unit Cost	Cost	provement Costs 2001-2005	Costs 2006-2010	Costs 2011-2020	Costs 2021-2030
Systems									
	Foundations	SF	1015	$8	$8,120				$8,120
	Floors	SF	1915		$0				
	Walls	SF			$0				
	Roof	SF	1200	$10	$12,000	$1,000		$12,000	$12,000
	Doors/Windows	Each	30	$800	$24,000	$1,000			$24,000
	Equipment	Allow	1	$5,000	$5,000	$500		$5,000	$5,000
	Mechanical: HVAC	Allow	1	$10,000	$10,000				$10,000
	Mechanical: Plumbing	Allow	1	$7,000	$7,000			$7,000	
	Electrical	Allow	1	$12,000	$12,000	$500			
Finishes									
	Paint	SF	1915	$4	$7,660	$1,000		$7,660	$7,660
	Flooring	SF	1915	$3	$5,745		$5,745		$5,745
	Other				$0				
	Repair/Maintenance Subtotal					$4,000	$5,745	$31,660	$72,525
Code Issues									
	Haz. Mat. Abatement								
	Asbestos	SF	NA						
	Lead Paint	Allow	NA						
	Oil Tank Treatment	Allow	1	$2,000	$2,000		$2,000		
	Other				$0				
	Seismic Code				$0				
	Building Total					$4,000	$7,745	$31,660	$72,525
Soft Costs									
	Design, Fees, Contingency	% cost	50%	(20% for leasing)		$800	$3,873	$15,830	$36,263
Building Costs: Maintain/Renovate at Existing Use						**$4,800**	**$11,618**	**$47,490**	**$108,788**
	Square foot costs					$2.51	$6	$25	$57
Renovation Analysis									
	Concept #1								
	ADA Access to Floor 1	Allow	1	$40,000	$40,000				
	Internet/Communications	Allow	1	$10,000	$10,000				
	Concept #2								
	ADA Access to Floor 1	Allow	1	$40,000	$40,000				
	Concept #3								
	Renovate for sale	Allow	1	$20,000	$20,000				
	Concept #4								
	Internet/Communications	Allow	1	$10,000	$10,000				
	Redevelopment Plan								
	Internet/Communications	Allow	1	$10,000	$10,000				

EXISTING BUILDING COSTS ANALYSIS											
Building # 1054		**Residence**									
1200	SF	Total									
720	SF	Floor 1									
480	SF	Floor 2						Minimum			
0	SF	Basement						Lease Improvement Costs 2001-2005	Costs 2006-2010	Costs 2011-2020	Costs 2021-2030
			Unit	QTY	Unit Cost	Cost					
Systems											
	Foundations/Floors		SF	720	$8	$5,760					$5,760
	Floors		SF	1200		$0					
	Walls		SF			$0					
	Roof		SF	900	$10	$9,000		$1,000		$9,000	$9,000
	Doors/Windows		Each	14	$800	$11,200		$1,000		$11,200	
	Equipment		Allow	1	$5,000	$5,000				$5,000	$5,000
	Mechanical: HVAC		Allow	1	$10,000	$10,000					$10,000
	Mechanical: Plumbing		Allow	1	$7,000	$7,000				$7,000	
	Electrical		Allow	1	$10,000	$10,000					
Finishes											
	Paint		SF	1200	$4	$4,800		$1,000		$4,800	$4,800
	Flooring		SF	1200	$3	$3,600			$3,600	$3,600	$3,600
	Other					$0					
	Repair/Maintenance Subtotal							$3,000	$3,600	$40,600	$38,160
Code Issues											
	Haz. Mat. Abatement										
		Asbestos	SF	NA							
		Lead Paint	Allow	NA							
		Oil Tank Treatment	Allow	1	$2,000	$2,000			$2,000		
		Other				$0					
	Seismic Code					$0					
	Building Total							$3,000	$5,600	$40,600	$38,160
Soft Costs											
	Design, Fees, Contingency		% cost	50%	(20% for leasing)			$600	$2,800	$20,300	$19,080
Building Costs: Maintain/Renovate at Existing Use								**$3,600**	**$8,400**	**$60,900**	**$57,240**
	Square foot costs							$3	$7	$51	$48
Renovation Analysis											
	Concept #1										
		Internet/Communications	Allow	1	$10,000	$10,000					
	Concept #2										
			Allow	1		$0					
	Concept #3										
		Renovate for sale	Allow	1	$20,000	$20,000					
	Concept #4										
		Internet/Communications	Allow	1	$10,000	$10,000					
	Redevelopment Plan										
		Internet/Communications	Allow	1	$10,000	$10,000					

EXISTING BUILDING COSTS ANALYSIS											
Building # 1057			**Residence**								
1530	SF	Total									
880	SF	Floor 1									
342	SF	Floor 2						Minimum			
308	SF	Garage						Lease Im-			
				Unit	QTY	Unit Cost	Cost	provement Costs 2001-2005	Costs 2006-2010	Costs 2011-2020	Costs 2021-2030
Systems											
	Foundations/Floors			SF	880	$8	$7,040				$7,040
	Floors			SF	1530		$0				
	Walls			SF			$0				
	Roof			SF	1100	$10	$11,000	$1,000		$11,000	
	Doors/Windows			Each	18	$800	$14,400	$1,000		$14,400	
	Equipment			Allow	1	$5,000	$5,000			$5,000	$5,000
	Mechanical: HVAC			Allow	1	$10,000	$10,000				$10,000
	Mechanical: Plumbing			Allow	1	$7,000	$7,000			$7,000	
	Electrical			Allow	1	$12,000	$12,000				$12,000
							$0				
Finishes							$0				
	Paint			SF	1530	$4	$6,120	$1,000	$6,120		$6,120
	Flooring			SF	1530	$3	$4,590		$4,590		$4,590
	Other						$0				
	Repair/Maintenance Subtotal							$3,000	$10,710	$37,400	$44,750
Code Issues											
	Haz. Mat. Abatement										
		Asbestos		SF	NA						
		Lead Paint		Allow	NA						
		Oil Tank Treatment		Allow	1	$2,000	$2,000		$2,000		
		Other					$0				
	Seismic Code						$0				
	Building Total							$3,000	$12,710	$37,400	$44,750
Soft Costs											
	Design, Fees, Contingency			% cost	50%	(20% for leasing)		$600	$6,355	$18,700	$22,375
Building Costs: Maintain/Renovate at Existing Use								**$3,600**	**$19,065**	**$56,100**	**$67,125**
	Square foot costs							$2	$12	$37	$44
Renovation Analysis											
	Concept #1										
		ADA Access to Floor 1		Allow	1	$40,000	$40,000				
		Internet/Communications		Allow	1	$10,000	$10,000				
	Concept #2										
		ADA Access to Floor 1		Allow	1	$40,000	$40,000				
	Concept #3										
		Renovate for sale		Allow	1	$20,000	$20,000				
	Concept #4										
		Internet/Communications		Allow	1	$10,000	$10,000				
	Redevelopment Plan										
		Internet/Communications		Allow	1	$10,000	$10,000				

EXISTING BUILDING COSTS ANALYSIS											
Building # 1065		**Residence**									
2293	SF	Total									
1245	SF	Floor 1									
630	SF	Floor 2						Minimum			
418	SF	Basement						Lease Im-provement Costs 2001-2005	Costs 2006-2010	Costs 2011-2020	Costs 2021-2030
			Unit	QTY	Unit Cost	Cost					
Systems											
	Foundations/Floors		SF	1245	$8	$9,960					$9,960
	Floors		SF	2293		$0					
	Walls		SF			$0					
	Roof		SF	1400	$10	$14,000		$1,000		$14,000	$14,000
	Doors/Windows		Each	29	$800	$23,200		$1,000		$23,200	
	Equipment		Allow	1	$5,000	$5,000		$500		$5,000	$5,000
	Mechanical: HVAC		Allow	1	$10,000	$10,000				$10,000	
	Mechanical: Plumbing		Allow	1	$8,000	$8,000					
	Electrical		Allow			$0					
						$0					
Finishes						$0					
	Paint		SF	1245	$3	$3,735		$1,000		$3,735	$3,735
	Flooring		SF	1245	$5	$6,225					$6,225
	Other: Building insulation upgrade		SF	1245	$5	$6,225			$6,225		
	Repair/Maintenance Subtotal							$3,500	$6,225	$55,935	$38,920
Code Issues											
	Haz. Mat. Abatement										
		Asbestos	SF	NA							
		Lead Paint	Allow	NA							
		Oil Tank Treatment	Allow	1	$1,000	$1,000			$1,000		
		Other				$0					
	Seismic Code					$0					
	Building Total							$3,500	$7,225	$55,935	$38,920
Soft Costs											
	Design, Fees, Contingency		% cost	50%	(20% for leasing)			$700	$3,613	$27,968	$19,460
Building Costs: Maintain/Renovate at Existing Use								**$4,200**	**$10,838**	**$83,903**	**$58,380**
	Square foot costs							$2	$5	$37	$25
Renovation Analysis											
	Concept #1										
		ADA Access to Floor 1	Allow	1	$30,000	$30,000					
		Internet/Communications	Allow	1	$10,000	$10,000					
	Concept #2										
		ADA Access to Floor 1	Allow	1	$30,000	$30,000					
	Concept #3										
		Renovate for sale	Allow	1	$20,000	$20,000					
	Concept #4										
		Internet/Communications	Allow	1	$10,000	$10,000					
	Redevelopment Plan										
		Internet/Communications	Allow	1	$10,000	$10,000					

EXISTING BUILDING COSTS ANALYSIS										
Building # 1413	**Mess Hall**									
2380 SF	Total									
2380 SF	Floor 1									
							Minimum Lease Improvement Costs 2001-2005	Costs 2006-2010	Costs 2011-2020	Costs 2021-2030
		Unit	QTY	Unit Cost	Cost					
Systems										
	Foundations/Floors	SF	2380	$10	$23,800			$23,800		
	Floors	SF	2380	$10	$23,800			$23,800		
	Walls	SF	2380	$15	$35,700			$35,700		
	Roof	SF	2500	$20	$50,000			$50,000		$50,000
	Doors/Windows	Each	22	$1,000	$22,000			$22,000		
	Equipment	Allow	1	$40,000	$40,000			$40,000		$40,000
	Mechanical: HVAC	Allow	1	$30,000	$30,000			$30,000		
	Mechanical: Plumbing	Allow	1	$12,000	$12,000					
	Electrical	SF	2380	$15	$35,700			$35,700		
Finishes										
	Paint	SF	4760	$4	$19,040			$19,040		$19,040
	Flooring	SF	2380	$4	$9,520			$9,520		$9,520
	Other: ADA upgrade for current use	Allow	1	$10,000	$10,000			$10,000		
	Repair/Maintenance Subtotal						$0	$299,560		$118,560
							*note: leasing of this facility is not possible			
Code Issues							without significant renovation. See 5 Year Costs			
	Haz. Mat. Abatement									
	Asbestos Tile (VAT)	SF	400	$15	$6,000			$6,000		
	Lead Paint	SF	2380	$10	$23,800			$23,800		
	Oil Tank Treatment	Allow	1	$1,000	$1,000			$1,000		
	Other									
	Seismic Code	SF								
	Building Total						$0	$330,360	$0	$118,560
Soft Costs										
	Design, Fees, Contingency	% cost	50%	(20% for leasing)			$0	$165,180	$0	$59,280
Building Costs: Maintain/Renovate at Existing Use							**$0**	**$495,540**	**$0**	**$177,840**
	Square foot costs						$0	$208	$0	$75
Renovation Analysis										
	Concept #1									
		Allow	1		$0					
		Allow	1		$0					
	Concept #2									
		Allow	1		$0					
	Concept #3									
	Renovate as residence	Deduct	1	-$50,000	-$50,000					
	Concept #4	Deduct	1	$0	$0					
	No use suggested									
	Redevelopment Plan	Deduct	1	-$673,380	-$673,380					
	No use suggested									

EXISTING BUILDING COSTS ANALYSIS										
Building # 2025	**Nursery Offices**									
1375	SF	Total								
1375	SF	Floor 1								
							Minimum Lease Improvement Costs 2001-2005	Costs 2006-2010	Costs 2011-2020	Costs 2021-2030
			Unit	QTY	Unit Cost	Cost				
Systems										
	Foundations		SF	1375	$5	$6,875			$6,875	
	Floors		SF	1375		$0				
	Walls		SF			$0				
	Roof		SF	1500	$10	$15,000	$1,000	$15,000		
	Doors/Windows		Each	15	$1,000	$15,000	$1,000	$15,000		
	Equipment		Allow			$0				
	Mechanical: HVAC		Allow	1	$8,000	$8,000	$500		$8,000	
	Mechanical: Plumbing		Allow	1	$6,000	$6,000				$6,000
	Electrical		Allow	1	$10,000	$10,000				$10,000
Finishes										
	Paint		SF	1375	$3	$4,125	$2,000		$4,125	$4,125
	Flooring		SF	1375	$4	$5,500	$1,000		$5,500	$5,500
	Other: ADA upgrade		Allow	1	$5,000	$5,000		$5,000		
	Repair/Maintenance Subtotal						$5,500	$35,000	$24,500	$25,625
Code Issues										
	Haz. Mat. Abatement									
		Asbestos	SF	NA						
		Lead Paint	SF	2380						
		Oil Tank Treatment	Allow							
		Other								
	Seismic Code		SF							
	Building Total						$5,500	$35,000	$24,500	$25,625
Soft Costs										
	Design, Fees, Contingency		% cost	50%	(20% for leasing)		$1,100	$17,500	$12,250	$12,813
Building Costs: Maintain/Renovate at Existing Use							**$6,600**	**$52,500**	**$36,750**	**$38,438**
	Square foot costs						$5	$38	$27	$28
Renovation Analysis										
	Concept #1									
		Internet/Communications	Allow	1	$5,000	$5,000				
	Concept #2									
		Internet/Communications	Allow	1	$5,000	$5,000				
	Concept #3									
		Internet/Communications	Allow	1	$5,000	$5,000				
	Concept #4									
		Internet/Communications	Allow	1	$5,000	$5,000				
	Redevelopment Plan									
		Internet/Communications	Allow	1	$5,000	$5,000				

EXISTING BUILDING COSTS ANALYSIS											
Building # 2127	**Seed Extraction**										
3585	SF	Total									
3585	SF	Floor 1									
							Minimum Lease Improvement Costs 2001-2005	Costs 2006-2010	Costs 2011-2020	Costs 2021-2030
			Unit	QTY	Unit Cost	Cost				
Systems										
	Foundations/Floors		Allow	1	$2,500	$2,500			$2,500	
	Floors		SF	3585		$0				
	Walls		Allow	1	$4,000	$4,000			$4,000	
	Roof		SF	3585	$10	$35,850		$35,850		$35,850
	Doors/Windows		Each	12	$1,000	$12,000			$12,000	$12,000
	Equipment		Allow			$0				
	Mechanical: HVAC		Allow	1	$10,000	$10,000			$10,000	$10,000
	Mechanical: Plumbing		Allow	1	$2,000	$2,000				
	Electrical		Allow	1	$5,000	$5,000				$5,000
						$0				
Finishes						$0				
	Paint		SF	3585	$4	$14,340		$14,340		
	Flooring		SF	3585		$0				
	Other: ADA Restroom		Allow	1	$5,000	$5,000		$5,000		
	Repair/Maintenance Subtotal						$0	$55,190	$28,500	$62,850
							* it is recommended that this building is			
Code Issues							"mothballed" rather than leased outright			
	Haz. Mat. Abatement									
		Asbestos	SF	NA						
		Lead Paint	SF	2380						
		Oil Tank Treatment	Allow	1	$5,000	$5,000		$5,000		
		Other				$0				
	Seismic Code		SF			$0				
	Building Total						$0	$60,190	$28,500	$62,850
Soft Costs										
	Design, Fees, Contingency		% cost	50%	(20% for leasing)		$0	$30,095	$14,250	$31,425
Building Costs: Maintain/Renovate at Existing Use							**$0**	**$90,285**	**$42,750**	**$94,275**
	Square foot costs						$0	$25	$12	$26
Renovation Analysis										
	Concept #1									
		Internet/Communications	Allow	1	$10,000	$10,000				
	Concept #2									
		Internet/Communications	Allow	1	$10,000	$10,000				
	Concept #3									
		Internet/Communications	Allow	1	$10,000	$10,000				
	Concept #4									
		Storage/ag. offics	Allow	1		$0				
	Redevelopment Plan									
		Storage/ag. offics	Allow	1		$0				

WIND RIVER NURSERY
SITE AND FACILITY ANALYSIS
SKAMANIA COUNTY, WASHINGTON

EXISTING BUILDING COSTS ANALYSIS											
Building # 2130	**Processing Plant**										
35300	SF	Total									
18500	SF	Workspace									
13100	SF	Coolers						Minimum			
3700	SF	Loading Dock						Lease Improvement Costs 2001-2005	Costs 2006-2010	Costs 2011-2020	Costs 2021-2030
			Unit	QTY	Unit Cost	Cost					
Systems											
	Foundations/Floors		Allow	1	$5,000	$5,000				$5,000	
	Floors		SF	35300		$0					
	Walls		SF			$0					
	Roof		SF	40000	$4	$160,000		$2,000		$160,000	
	Doors/Windows		Each	20	$700	$14,000		$2,500		$14,000	
	Equipment (Repair)		Allow	1		$0					
	Mechanical: HVAC at workspace		SF	18500	$10	$185,000				$185,000	
	Mechanical: HVAC at coolers		SF	13100	$15	$196,500					
	Mechanical: Plumbing		SF	18500	$10	$185,000					$185,000
	Electrical		SF	18500	$15	$277,500					$277,500
	Fire Suppression: Sprinklers		Allow	1	$85,000	$85,000			$85,000		
								$1,000			
Finishes											
	Paint		SF	35300	$3	$105,900		$5,000		$105,900	
	Flooring		SF	18500	$3	$55,500				$55,500	
	ADA Upgrade for current use		Allow	1	$15,000	$15,000			$15,000		
	Other: Deferred Equip. Maintenance		Allow	1	$10,000	$10,000		$3,000	$10,000		
	Other: Y2K Maint. for systems		Allow	1	$5,000	$5,000			$5,000		
	Repair/Maintenance Subtotal							$13,500	$115,000	$525,400	$462,500
Code Issues											
	Haz. Mat. Abatement										
		Refrigerant Leaks Repair	Allow	1	$10,000	$10,000		$2,000		$10,000	
		Lead Paint	SF	NA							
		Oil Tank Treatment	Allow	NA							
		Other									
	Seismic Code Evaluation		Allow	1	$8,000	$8,000			$8,000		
	Building Total							$15,500	$123,000	$535,400	$462,500
Soft Costs											
	Design, Fees, Contingency		% cost	50%	(20% for leasing)			$3,100	$61,500	$267,700	$231,250
Building Costs: Maintain/Renovate at Existing Use								**$18,600**	**$184,500**	**$803,100**	**$693,750**
	Square foot costs							$0.53	$5	$23	$20
Renovation Analysis											
	Concept #1										
		Internet/Communications	Allow	1	$15,000	$15,000					
		Adaptive Modifications	Allow	1	$100,000	$100,000					
	Concept #2										
		Internet/Communications	Allow	1	$10,000	$10,000					
	Concept #3										
		Internet/Communications	Allow	1	$20,000	$20,000					
	Concept #4										
		Internet/Communications	Allow	1	$10,000	$10,000					
	Redevelopment Plan										
		Internet/Communications	Allow	1	$10,000	$10,000					

EXISTING BUILDING COSTS ANALYSIS										
Building # 2226	**Packing Shed and Office Annex**									
2583 SF	Total									
2583 SF	Ground Floor									
SF							Minimum			
SF							Lease Im-			
		Unit	QTY	Unit Cost	Cost	provement Costs 2001-2005	Costs 2006-2010	Costs 2011-2020	Costs 2021-2030
Systems									
	Foundations/Floors	SF			$0				
	Floors	SF	2583		$0				
	Walls	SF			$0				
	Roof	SF	2900	$4	$11,600			$11,600	
	Doors/Windows	Each	8	$1,000	$8,000	$1,500	$8,000		$8,000
	Equipment	Allow			$0				
	Mechanical: HVAC	Allow	1	$7,500	$7,500			$7,500	
	Mechanical: Plumbing	Allow	1	$5,000	$5,000			$5,000	
	Electrical	Allow	1	$7,000	$7,000				$7,000
Finishes					$0				
	Paint	SF	2583	$4	$10,332	$2,000	$10,332		
	Flooring	SF			$0				
	Other: ADA upgrade for rest rooms	Allow	2	$3,000	$6,000		$6,000		
	Repair/Maintenance Subtotal				$55,432	$3,500	$24,332	$24,100	$15,000
Code Issues									
	Haz. Mat. Abatement								
	Asbestos	SF	NA						
	Lead Paint	SF	NA						
	Oil Tank Treatment	Allow	1	$2,500	$2,500		$2,500		
	Other				$0				
	Seismic Code	SF			$0				
	Building Total					$3,500	$26,832	$24,100	$15,000
Soft Costs									
	Design, Fees, Contingency	% cost	50%	(20% for leasing)		$700	$13,416	$12,050	$7,500
Building Costs: Maintain/Renovate at Existing Use						**$4,200**	**$40,248**	**$36,150**	**$22,500**
	Square foot costs					$2	$16	$14	$9
Renovation Analysis									
	Concept #1								
	Renovate to classroom/mtg	SF	2583	$50	$129,150				
	Internet/Communications	Allow	1	$6,000	$6,000				
	Concept #2								
	Renovate to classroom/mtg	SF	0	$50	$0				
	Internet/Communications	Allow	1	$6,000	$6,000				
	Concept #3								
	Convert to Office/Retail	SF	2583	$70	$180,810				
	Concept #4								
	Internet/Communications	Allow	1	$6,000	$6,000				
	Redevelopment Plan								
	Internet/Communications	Allow	1	$6,000	$6,000				

EXISTING BUILDING COSTS ANALYSIS										
Building # 2325	**Field Lunch Room**									
700	SF	Total								
700	SF	Ground Floor								
							Minimum Lease Improvement Costs 2001-2005	Costs 2006-2010	Costs 2011-2020	Costs 2021-2030
			Unit	QTY	Unit Cost	Cost				
Systems										
	Foundations/Floors		SF	700	$2	$1,400				$1,400
	Floors		SF	700	$5	$3,500		$3,500		
	Walls		SF	800	$10	$8,000		$8,000		
	Roof		SF	1000	$10	$10,000			$10,000	
	Doors/Windows		Each	6	$1,000	$6,000			$6,000	
	Equipment		Allow	1	$5,000	$5,000				$5,000
	Mechanical: HVAC		Allow	1	$5,000	$5,000				$5,000
	Mechanical: Plumbing		Allow	1	$4,000	$4,000				
	Electrical		Allow	1	$5,000	$5,000				$5,000
						$0				
Finishes						$0				
	Paint		SF	800	$4	$3,200		$3,200	$3,200	$3,200
	Flooring		SF	700	$3	$2,100			$2,100	
	Other					$0				
	Repair/Maintenance Subtotal						$0	$14,700	$21,300	$19,600
							* it is recommended that this building is			
Code Issues							"mothballed" rather than leased outright			
	Haz. Mat. Abatement									
		Asbestos	SF	NA						
		Lead Paint	SF	NA						
		Oil Tank Treatment	Allow	1	$2,000	$2,000		$2,000		
		Other				$0				
	Seismic Code		SF			$0				
	Building Total						$0	$16,700	$21,300	$19,600
Soft Costs										
	Design, Fees, Contingency		% cost	50%	(20% for leasing)		$0	$8,350	$10,650	$9,800
Building Costs: Maintain/Renovate at Existing Use							**$0**	**$25,050**	**$31,950**	**$29,400**
	Square foot costs						$0	$36	$46	$42
Renovation Analysis										
	Concept #1									
		Convert to Camp Uses	Allow	1	$5,000	$5,000				
	Concept #2									
		Convert to Festival WC Use	Allow	1	$20,000	$20,000				
	Concept #3									
		Convert to Equestrian Use	Allow	1	$5,000	$5,000				
	Concept #4									
		Convert to Festival WC Use	Allow	1	$20,000	$20,000				
	Redevelopment Plan									
		Convert to Festival WC Use	Allow	1	$20,000	$20,000				

EXISTING BUILDING COSTS ANALYSIS										
Building # 2327	**Long Pole Shed**									
3340	SF	Total								
3340	SF	Ground Floor								
							Minimum Lease Improvement Costs 2001-2005	Costs 2006-2010	Costs 2011-2020	Costs 2021-2030
			Unit	QTY	Unit Cost	Cost				
Systems										
	Foundations/Floors		Each	20	$500	$10,000		$10,000		
	Floors		SF	NA						
	Walls		SF	1500	$20	$30,000		$30,000		
	Roof		SF	4500	$10	$45,000	$1,000	$45,000		$45,000
	Doors/Windows		Each	0		$0	$1,000			
	Equipment		Allow			$0				
	Mechanical: HVAC		SF			$0				
	Mechanical: Plumbing		Allow			$0				
	Electrical		SF			$0				
Finishes										
	Paint		SF	1500	$4	$6,000	$1,000	$6,000		
	Flooring		SF			$0				
	Other					$0				
	Repair/Maintenance Subtotal						$3,000	$91,000	$0	$45,000
							* This building is of historic significance.			
Code Issues							Maintenance may be independent of leasing.			
	Haz. Mat. Abatement									
		Asbestos	SF	NA						
		Lead Paint	SF	NA						
		Oil Tank Treatment	Allow	1		$0				
		Other				$0				
	Seismic Code		SF			$0				
	Building Total						$3,000	$91,000	$0	$45,000
Soft Costs										
	Design, Fees, Contingency		% cost	50%	(20% for leasing)		$600	$45,500	$0	$22,500
Building Costs: Maintain/Renovate at Existing Use							**$3,600**	**$136,500**	**$0**	**$67,500**
	Square foot costs						$1	$41	$0	$20
Renovation Analysis										
	Concept #1									
		Convert to Equestrian/Camp Use	SF	3340	$40	$133,600				
	Concept #2									
		Convert to Picnic Shelter	SF	3340	$25	$83,500				
	Concept #3									
		Convert to Equestrian/Camp Use	SF	3340	$40	$133,600				
	Concept #4									
		Convert to Picnic Shelter	SF	3340	$25	$83,500				
	Redevelopment Plan									
		Convert to Picnic Shelter	SF	3340	$25	$83,500				

EXISTING BUILDING COSTS ANALYSIS										
Building # 2367	**Equipment Storage**									
3000 SF	Total									
3000 SF	Ground Floor									
							Minimum Lease Improvement Costs 2001-2005	Costs 2006-2010	Costs 2011-2020	Costs 2021-2030
		Unit	QTY	Unit Cost	Cost					
Systems										
	Foundations/Floors	SF			$0					
	Floors	SF	3000		$0					
	Walls	SF			$0					
	Roof	SF	3000	$10	$30,000		$1,500		$30,000	
	Doors/Windows	Each	2	$1,000	$2,000		$2,000			
	Equipment	Allow			$0					
	Mechanical: HVAC	SF			$0					
	Mechanical: Plumbing	Allow			$0					
	Electrical	Allow	1	$5,000	$5,000					$5,000
					$0					
Finishes					$0					
	Paint	SF	3000	$3	$9,000				$9,000	
	Flooring	SF			$0					
	Other				$0					
	Repair/Maintenance Subtotal				$46,000		$3,500	$0	$39,000	$5,000
Code Issues										
	Haz. Mat. Abatement									
	Asbestos	SF	NA							
	Lead Paint	SF	NA							
	Oil Tank Treatment	Allow	1	$1,000	$1,000			$1,000		
	Other				$0					
	Seismic Code Upgrade for Shear	SF	3000	$3	$9,000				$9,000	
	Building Total						$3,500	$1,000	$48,000	$5,000
Soft Costs										
	Design, Fees, Contingency	% cost	50%	(20% for leasing)			$700	$500	$24,000	$2,500
Building Costs: Maintain/Renovate at Existing Use							**$4,200**	**$1,500**	**$72,000**	**$7,500**
	Square foot costs						$1	$1	$24	$3
Renovation Analysis										
	Concept #1									
	No Change	SF			$0					
	Concept #2									
	Convert to Art Studios	SF	3000	$70	$210,000					
	Concept #3									
	No Change	SF			$0					
	Concept #4									
	No Change	SF			$0					
	Redevelopment Plan									
	No Change	SF			$0					

EXISTING BUILDING COSTS ANALYSIS										
Building # 2526	**Gas and Oil House**									
320	SF	Total								
320	SF	Ground Floor								
							Minimum Lease Improvement Costs 2001-2005	Costs 2006-2010	Costs 2011-2020	Costs 2021-2030
			Unit	QTY	Unit Cost	Cost				
Systems										
	Foundations/Floors		SF			$0				
	Floors		SF	320	$10	$3,200				
	Walls		SF			$0				
	Roof		SF	450	$7	$3,150		$3,150		$3,150
	Doors/Windows		Each	2	$750	$1,500		$1,500		
	Equipment		Allow			$0				
	Mechanical: HVAC		SF			$0				
	Mechanical: Plumbing		Allow			$0				
	Electrical		SF			$0				
						$0				
Finishes						$0				
	Paint		SF	320	$4	$1,280		$1,280		
	Flooring		SF			$0				
	Other					$0				
	Repair/Maintenance Subtotal					$9,130	$0	$5,930	$0	$3,150
							* it is recommended that this building is			
Code Issues							"mothballed" rather than leased outright			
	Haz. Mat. Abatement									
		Asbestos	SF	NA						
		Lead Paint	SF	NA						
		Oil Tank Treatment	Allow	1		$0				
		Other				$0				
	Seismic Code		SF			$0				
	Building Total						$0	$5,930	$0	$3,150
Soft Costs										
	Design, Fees, Contingency		% cost	50%	(20% for leasing)		$0	$2,965	$0	$1,575
Building Costs: Maintain/Renovate at Existing Use							**$0**	**$8,895**	**$0**	**$4,725**
	Square foot costs						$0	$28	$0	$15
Renovation Analysis										
	Concept #1									
		No Change	Allow			$0				
	Concept #2									
		No Change	Allow			$0				
	Concept #3									
		No Change	Allow			$0				
	Concept #4									
		No Change	Allow			$0				
	Redevelopment Plan									
		No Change	Allow			$0				

EXISTING BUILDING COSTS ANALYSIS										
Building # 2624	**Equipment Storage**									
4700 SF	Total									
4700 SF	Ground Floor									
							Minimum Lease Improvement Costs 2001-2005	Costs 2006-2010	Costs 2011-2020	Costs 2021-2030
		Unit	QTY	Unit Cost	Cost					
Systems										
	Foundations/Floors	SF			$0					
	Floors	SF	4700		$0					
	Walls	SF			$0					
	Roof	SF	4700	$8	$37,600		$1,500		$37,600	
	Doors/Windows	Each	3	$1,000	$3,000		$3,000			$3,000
	Equipment	Allow			$0					
	Mechanical: HVAC	SF			$0					
	Mechanical: Plumbing	Allow			$0					
	Electrical	SF			$0					
Finishes										
	Paint	SF	4700	$3	$14,100		$1,000		$14,100	
	Flooring	SF			$0					
	Other				$0					
	Repair/Maintenance Subtotal						$5,500	$0	$51,700	$3,000
Code Issues										
	Haz. Mat. Abatement									
	Asbestos	SF	NA							
	Lead Paint	SF	NA							
	Oil Tank Treatment	Allow	1		$0					
	Other				$0					
	Seismic Code	SF			$0					
	Building Total						$5,500	$0	$51,700	$3,000
Soft Costs										
	Design, Fees, Contingency	% cost	50%	(20% for leasing)			$1,100	$0	$25,850	$1,500
Building Costs: Maintain/Renovate at Existing Use							**$6,600**	**$0**	**$77,550**	**$4,500**
	Square foot costs						$1	$0	$17	$1
Renovation Analysis										
	Concept #1									
	No Change	Allow			$0					
	Concept #2									
	No Change	Allow			$0					
	Concept #3									
	No Change	Allow			$0					
	Concept #4									
	No Change	Allow			$0					
	Redevelopment Plan									
	No Change	Allow			$0					

EXISTING BUILDING COSTS ANALYSIS										
Building # 2627	**Seed Cooler**									
1560 SF	Total									
1300 SF	Cooler Space									
260 SF	Loading/Work Space						Minimum Lease Improvement Costs 2001-2005	Costs 2006-2010	Costs 2011-2020	Costs 2021-2030
		Unit	QTY	Unit Cost	Cost					
Systems										
	Foundations/Floors	SF			$0					
	Floors	SF	1560		$0					
	Walls	Allow	1	$2,000	$2,000				$2,000	
	Roof	SF	1560	$8	$12,480		$1,000		$12,480	
	Doors/Windows	Each	2	$750	$1,500		$1,500			$1,500
	Equipment	Allow			$0					
	Mechanical: HVAC	SF			$0					
	Mechanical: Plumbing	Allow			$0					
	Electrical	SF			$0					
Finishes										
	Paint	SF	1560	$4	$6,240		$1,500	$6,240		$6,240
	Flooring	SF			$0					
	Other				$0					
	Repair/Maintenance Subtotal				$22,220		$4,000	$6,240	$14,480	$7,740
Code Issues										
	Haz. Mat. Abatement									
	Asbestos	SF	NA							
	Lead Paint	SF	NA							
	Oil Tank Treatment	Allow	1		$0					
	Other				$0					
	Seismic Code	SF			$0					
	Building Total						$4,000	$6,240	$14,480	$7,740
Soft Costs										
	Design, Fees, Contingency	% cost	50%	(20% for leasing)			$800	$3,120	$7,240	$3,870
Building Costs: Maintain/Renovate at Existing Use							**$4,800**	**$9,360**	**$21,720**	**$11,610**
	Square foot costs						$3	$6	$14	$7
Renovation Analysis										
	Concept #1									
	Renovate to Offices	SF	1560	$100	$156,000					
	Renovate to Laboratory	SF	1560	$175	$273,000					
	Concept #2									
	Renovate to Studios	SF	1560	$100	$156,000					
	Concept #3									
	Maintain/Improve as Storage	Allow	1	$3,000	$3,000					
	Concept #4									
	WRI Storage/Uses	Allow	1	$10,000	$10,000					
	Redevelopment Plan									
	WRI Storage/Uses	Allow	1	$10,000	$10,000					

EXISTING BUILDING COSTS ANALYSIS										
Building # 2628	**Seed Stratification Cooler**									
3120 SF	Total									
3120 SF	Ground Floor									
							Minimum Lease Improvement Costs 2001-2005	Costs 2006-2010	Costs 2011-2020	Costs 2021-2030
		Unit	QTY	Unit Cost	Cost					
Systems										
	Foundations/Floors	SF			$0					
	Floors	SF	3120		$0					
	Walls	Allow	1	$2,000	$2,000				$2,000	
	Roof	SF	3120	$8	$24,960		$1,500		$24,960	$24,960
	Doors/Windows	Each	2	$750	$1,500		$1,500		$1,500	
	Equipment	Allow			$0					
	Mechanical: HVAC	SF			$0					
	Mechanical: Plumbing	Allow			$0					
	Electrical	SF			$0					
Finishes										
	Paint	SF	3120	$4	$12,480			$12,480		$12,480
	Flooring	SF			$0					
	Other				$0					
	Repair/Maintenance Subtotal				$40,940		$3,000	$12,480	$28,460	$37,440
Code Issues										
	Haz. Mat. Abatement									
	Asbestos	SF	NA							
	Lead Paint	SF	NA							
	Oil Tank Treatment	Allow	1		$0					
	Other				$0					
	Seismic Code	SF			$0					
	Building Total						$3,000	$12,480	$28,460	$37,440
Soft Costs										
	Design, Fees, Contingency	% cost	50%	(20% for leasing)			$600	$6,240	$14,230	$18,720
Building Costs: Maintain/Renovate at Existing Use							**$3,600**	**$18,720**	**$42,690**	**$56,160**
	Square foot costs						$1	$6	$14	$18
Renovation Analysis										
	Concept #1									
	Renovate to Offices	Allow	3120	$100	$312,000					
	Renovate to Laboratory	Allow	3120	$175	$546,000					
	Concept #2									
	Renovate to Studios	Allow	3120	$100	$312,000					
	Concept #3									
	Maintain/Improve as Storage	Allow	1	$3,000	$3,000					
	Concept #4									
	WRI Storage/Uses	Allow	1	$15,000	$15,000					
	Redevelopment Plan									
	WRI Storage/Uses	Allow	1	$15,000	$15,000					

EXISTING BUILDING COSTS ANALYSIS										
Building # 2629	**Seed Cooler/Freezer**									
1848 SF	Total									
1348 SF	Cooler Space									
500 SF	Loading/Work Space						Minimum Lease Improvement Costs 2001-2005	Costs 2006-2010	Costs 2011-2020	Costs 2021-2030
		Unit	QTY	Unit Cost	Cost					
Systems										
	Foundations/Floors	SF			$0					
	Floors	SF	1848		$0					
	Walls	Allow	1	$2,000	$2,000			$2,000		
	Roof	SF	1848	$8	$14,784		$1,500		$14,784	$14,784
	Doors/Windows	Each	2	$750	$1,500		$1,500		$1,500	
	Equipment	Allow			$0					
	Mechanical: HVAC	SF			$0					
	Mechanical: Plumbing	Allow			$0					
	Electrical	SF			$0					
Finishes										
	Paint	SF	1848	$4	$7,392			$7,392		
	Flooring	SF			$0					
	Other				$0					
	Repair/Maintenance Subtotal				$25,676		$3,000	$9,392	$16,284	$14,784
Code Issues										
	Haz. Mat. Abatement									
	Asbestos	SF	NA							
	Lead Paint	SF	NA							
	Oil Tank Treatment	Allow	1	$1,000	$1,000			$1,000		
	Other				$0					
	Seismic Code	SF			$0					
	Building Total						$3,000	$10,392	$16,284	$14,784
Soft Costs										
	Design, Fees, Contingency	% cost	50%	(20% for leasing)			$600	$5,196	$8,142	$7,392
Building Costs: Maintain/Renovate at Existing Use							**$3,600**	**$15,588**	**$24,426**	**$22,176**
	Square foot costs						$2	$8	$13	$12
Renovation Analysis										
	Concept #1									
	Renovate to Offices	Allow	1848	$100	$184,800					
	Renovate to Laboratory	Allow	1848	$175	$323,400					
	Concept #2									
	Renovate to Studios	Allow	1848	$100	$184,800					
	Concept #3									
	Maintain/Improve as Storage	Allow	1	$3,000	$3,000					
	Concept #4									
	WRI Storage/Uses	Allow	1	$15,000	$15,000					
	Redevelopment Plan									
	WRI Storage/Uses	Allow	1	$15,000	$15,000					

4.0 FACILITY CATALOG, OPERATIONS AND MAINTENANCE ASSESSMENT

4.1 EXISTING BUILDING ASSESSMENT

ADAPTIVE RE-USE OF THE BUILDINGS

The Wind River Nursery site and the existing buildings in the conveyance have the potential to provide diverse facilities indoors and out. The existing stock of Civilian Conservation Corps (CCC)-era housing and structures, as well as the more modern nursery processing buildings, provide an opportunity to explore multiple options for adaptive reuse. The viability of agricultural uses, for example, may be enhanced if the buildings can be efficiently reused. The CCC structures along the big leaf maple-lined boulevard can provide a wonderful armature on which to build and expand research, education, recreation or tourism related uses.

When new uses for existing buildings are considered, the costs of renovation will affect the feasibility of re-use. The major renovation issues, regardless of use, will relate to code compliance: energy, seismic, Americans with Disabilities Act, and life safety codes will all come into play. Removal of hazardous materials, including asbestos and lead-based paint, may also be required in some cases. In addition, five of the buildings are eligible for the National Historic Register; the renovation of these buildings will need to comply with the Department of the Interior Standards for Rehabilitation of Historic Properties.

While some buildings have more extensive renovation issues than others, all of the buildings will remain useful for a significant number of years. The assessments that follow indicate number of years of expected use based on the Forest Service assessment of 1998-99.

Regardless of the final use of the property, the development of the facility can demonstrate innovative sustainable construction methods and materials; recycling and minimization of waste both during and after construction; and building methods that help to protect environmental quality and animal habitats.

BUILDING MECHANICAL AND ELECTRICAL SUMMARY

Engineers from Abacus Engineered Systems visited eight of the buildings and made some general points. (See Appendix for full report and individual building reports for specific conditions, recommendations.) The summary points are as follows:

- Mechanical systems are in good condition. They need ongoing maintenance and operation checks to avoid deterioration.
- Electrical systems are also in good condition. Recent work on those systems has been code compliant.
- A major increase in load due to new use would require re-examination and evaluation of power to the site
- Specific items, such as oil tanks, water pumps, and fire protection systems at certain buildings, should be evaluated for hazardous materials or possible deterioration of equipment.
- Plumbing, refrigeration and fire systems should be operated periodically while buildings are not in use to reduce the extent of repair required once buildings are re-commissioned.

SUMMARY OF BUILDINGS:

NFS #	Building Name	SF	Parcel	Location
1053	Residence	1,915	Parcel 1	Road 4101, facing fields
1054	Residence	1,200	Parcel 1	Road 4101, facing fields
1057	Residence	1,530	Parcel 1	Road 4101, facing fields
1065	Residence	2,293	Parcel 1	Road 4101, facing fields
1413	Mess Hall	2,380	Parcel 1	Road 4101, access via driveway
2025	Nursery Office	1,375	Parcel 1	Road 4101, adjacent drive, facing fields
2127	Seed Extraction and Kilns	3,585	Parcel 2	Northwest of Hemlock Road, near fields
2130	Processing Plant	35,000	Parcel 2	North of County Road 23150
2226	Nursery Office/Packing	2,583	Parcel 1	Road 4101, vehicle access drive
2325	Field Lunch Room	700	Parcel 1	On access road in field of Parcel 1
2327	Long Shed	3,340	Parcel 1	On access road in field of Parcel 1
2367	Nursery Equipment Storage	3,000	Parcel 1	Road 4101, vehicle access drive
2526	Gas and Oil House	320	Parcel 1	Road 4101, facing fields of Parcel 1
2624	Vehicle/Equipment Storage	4,700	Parcel 2	North of County Road 23150
2627	Seed Cooler	1,560	Parcel 1	Road 4101, vehicle access drive
2628	Seed Stratification Cooler	3,120	Parcel 1	Road 4101, vehicle access drive
2629	Seed Cooler/Freezer	1,848	Parcel 1	Road 4101, vehicle access drive
2324	Chemical Storage Building	320	Parcel 1	Martha Creek Field, near property line

THE HEART OF THE NURSERY

Most of the buildings in the Wind River Nursery conveyance are located on or near Martha Creek Field, with the exception of three seed processing buildings located in Parcel 2. The diagram on the following page shows the buildings and their location.

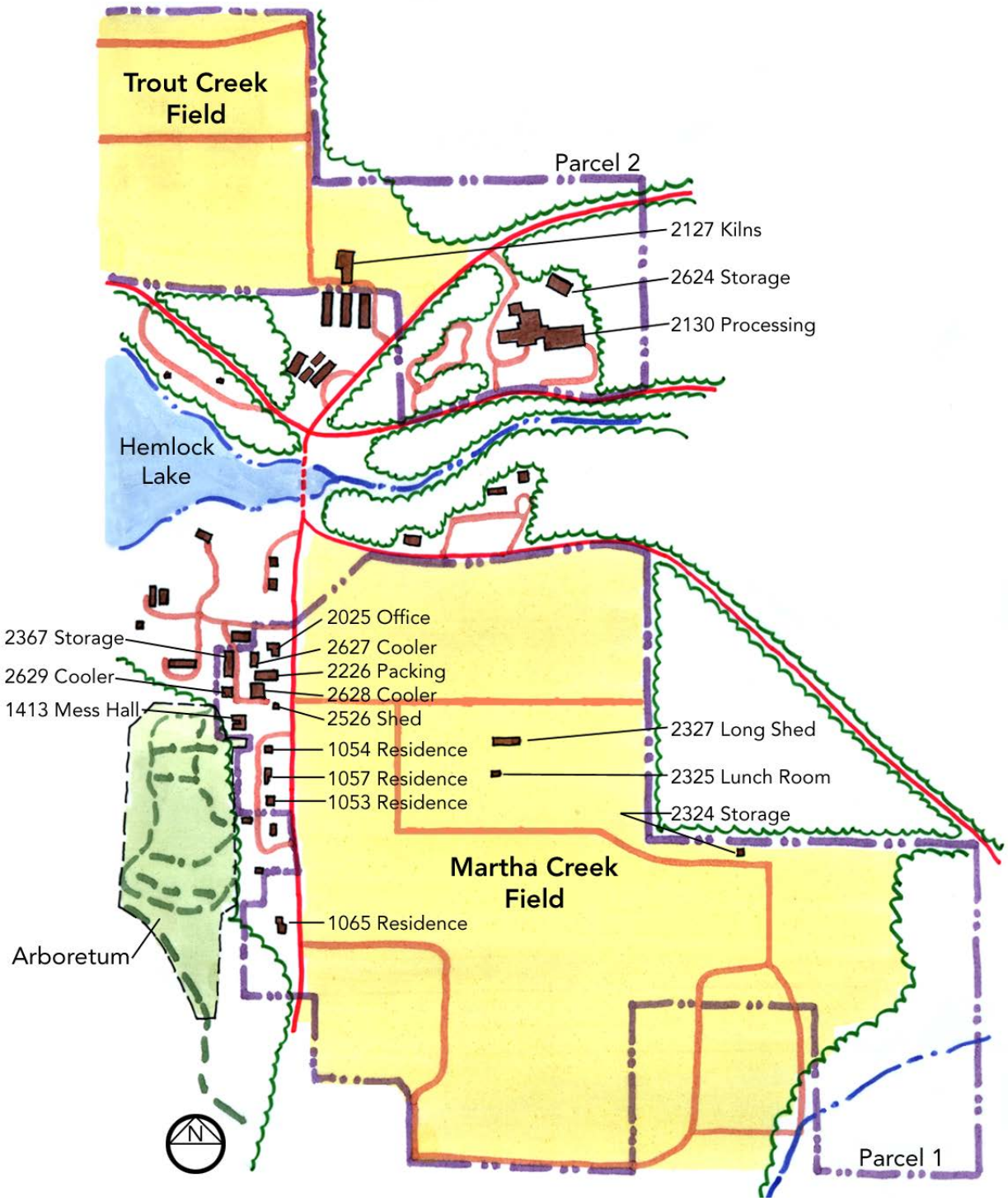

FIGURE 5-1: THE HEART OF THE NURSERY

BUILDING # 1053: RESIDENCE

Physical Description: This two bedroom residence was constructed in the pre-CCC era, and is one of the historically significant buildings on Martha Creek Field. Bedrooms are located on a partial second floor. The house faces the open fields of Parcel 1, and is accessible by vehicle from behind via the service drive off of Chapman Avenue.

Year of Construction:	1914
Square Footage:	1,915 SF
Current Uses:	Residence
Historical Significance:	Pre-CCC construction, eligible to Nat. Reg. of Historic Places Most doors and trim have been replaced, and a porch and garage addition is not original to the building.
Construction Type:	Wood frame residential construction, horizontal wood siding Concrete Foundation with partial basement and crawl space Wood shake roof
Systems:	Heat pump
Significant Renovation Issues:	NA
Code Issues:	
Hazardous Materials:	Vinyl Composition Tile (VCT) at kitchen has been encapsulated. Oil tank present, not in use. Mitigation required (could be drained of water/oil and filled with sand in place).
Seismic Code Compliance:	Wood frame structure. Confirm connection to foundation.
ADA Accessibility:	Accessibility could be provided with ramp to porch (rise of approximately 30") but 2 bedrooms are on second floor.
Energy Code:	Windows are single pane with single pane storm windows. Better insulation at walls and roof than other residences. Confirm extent of insulation.
Ranger District Assessments:	25 years of use expected as of 1999 Interiors repainted often, walls in good condition. New light fixtures. Roof replaced 8 years ago with wood shakes. Even though it was done in-house it was very expensive.

BUILDING # 1053: RESIDENCE, CONT.

FIGURE 4-2 VIEW OF BUILDING 1053 (RESIDENCE) LOOKING SOUTH

BUILDING # 1053: RESIDENCE, CONT.

Cost Matrix

Plan

BUILDING # 1054: RESIDENCE

Physical Description: This pre-CCC era 2-bedroom residence is one of the historically significant buildings on Parcel 1. It faces the open fields of that parcel, and is accessible via the service drive behind. It was built at the north end of Chapman Avenue and moved to its present location in 1935.

Year of Construction:	1913
Square Footage:	1,200 SF
Current Uses:	Residence
Historical Significance:	Pre-CCC construction, eligible to Nat. Reg. of Historic Places
Construction Type:	Wood framing Concrete Foundation with crawl space Wood shingle roof
Systems:	Westco Heat Pump
Significant Renovation Issues:	
Code Issues:	
Hazardous Materials:	Oil tank present, not in use. Mitigation required (could be drained of water/oil and filled with sand in place).
Seismic Code Compliance:	Wood frame structure. Confirm connection to foundation.
ADA Accessibility:	Not anticipated for ADA upgrade as residence, due to lack of ground floor bedrooms. Office use ADA upgrade could be provided for first floor access (30" ramp at porch).
Energy Code:	Windows and doors are original (historic). May require upgrade to meet energy code. Insufficient insulation at walls and roof.
Ranger District Assessments:	25 years of use expected as of 1999 House is well maintained and has had some recent remodeling. Fireplace has insert.

BUILDING # 1054: RESIDENCE, CONT.

FIGURE 4-3 EAST-FACING ELEVATION OF BUILDING 1054, RESIDENCE

BUILDING # 1054: RESIDENCE, CONT.

Cost Matrix

Plan

BUILDING # 1057: RESIDENCE

Physical Description: This CCC era wood frame building is a 4 bedroom residence with an attached garage. Two small bedrooms are located on the partial second floor. It faces the open fields of Parcel 1, but is accessed primarily via the service drive behind.

Year of Construction:	1942
Square Footage:	1,530 SF
Current Uses:	Residence and Garage
Historical Significance:	CCC construction, eligible to Nat. Reg. of Historic Places
Construction Type:	Wood framing Concrete Foundation with basement and crawl space. Wood shingle roof. Garage with gravel floor.
Systems:	Heat pump.
Significant Renovation Issues:	
Code Issues:	
Hazardous Materials:	Oil tank present, not in use. Mitigation required (could be drained of water/oil and filled with sand in place). Vinyl Composition Tile (VCT) at kitchen has been encapsulated with new tile.
Seismic Code Compliance:	Wood frame structure. Confirm connection to foundation. Chimney cleaned and inspected annually.
ADA Accessibility:	Accessibility may be provided to first floor with ramp to porch (rise of approximately 30") or with reconfigured back door, but two of the bedrooms are on a second floor and the floor plan is tight for renovations to accessible fixtures, etc.
Energy Code:	Original windows and doors (historic). May require upgrade to conform with energy code. Insufficient insulation in walls and roofs.
Ranger District Assessments:	25 years of use expected as of 1999 Recently relined fireplace

BUILDING # 1057: RESIDENCE, CONT.

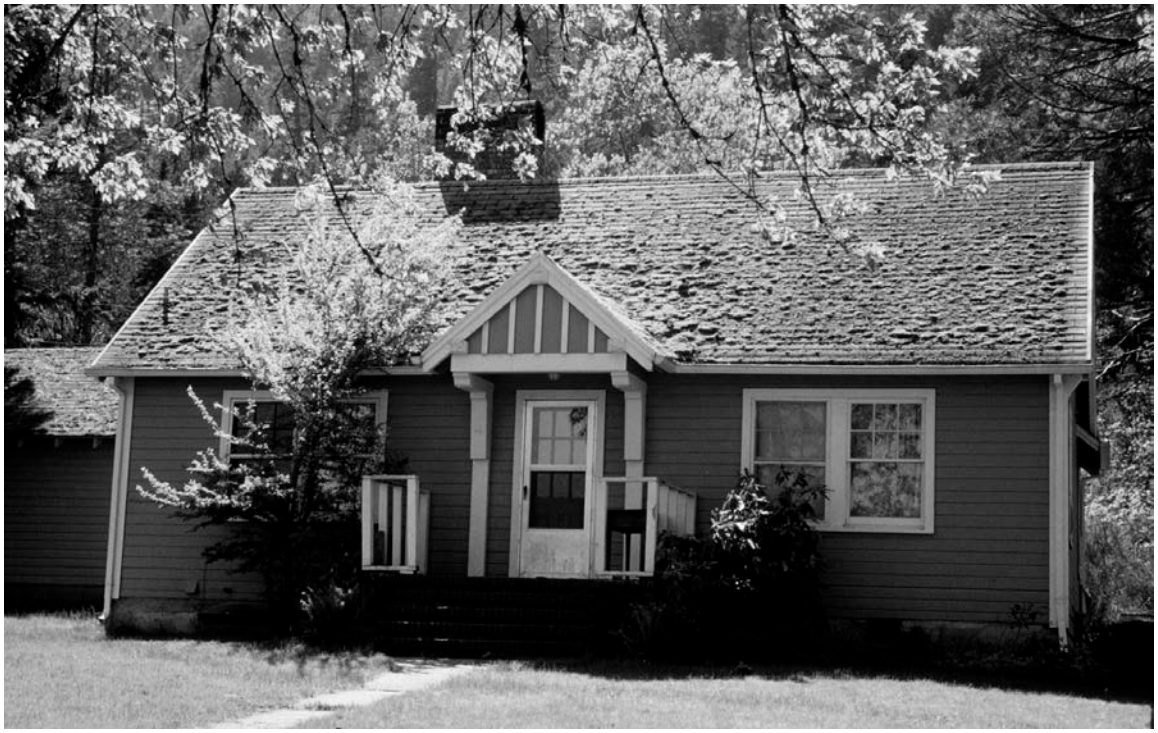

FIGURE 4-4: EAST-FACING ELEVATION OF RESIDENCE 1057

BUILDING # 1057: RESIDENCE, CONT.

Cost Matrix

PLAN

BUILDING # 1065: RESIDENCE

Physical Description: This residence has 4 bedrooms and was constructed in the early 1940s. It is located at the south end of Chapman Avenue and has a dedicated driveway off of that road and a garage with a concrete floor. It faces onto the open fields of Parcel 1, and is accessible via the service drive behind.

Year of Construction:	1953
Square Footage:	2,293 SF
Current Uses:	Residence
Historical Significance:	None
Construction Type:	Wood framing Concrete Foundation with crawl space under north wing
Systems:	Electric heat (baseboards) with wood furnace
Significant Renovation Issues:	
Code Issues:	
Hazardous Materials:	Oil tank present, requires mitigation. Could be drained of water/oil and filled with sand in place.
Seismic Code Compliance:	Wood frame structure. Confirm connection to foundation.
ADA Accessibility:	Corridors and doorways too narrow for full accessibility, and 2 of the bedrooms on the second floor. One accessible bedroom could be provided on the first floor, along with some modifications to entry and kitchen area.
Energy Code:	Requires insulation – heat bills in winter currently $500+
Ranger District Assessments:	35 years of use expected as of 1999 Maple flooring, well maintained New fixtures in bathrooms

BUILDING # 1065: RESIDENCE, CONT.

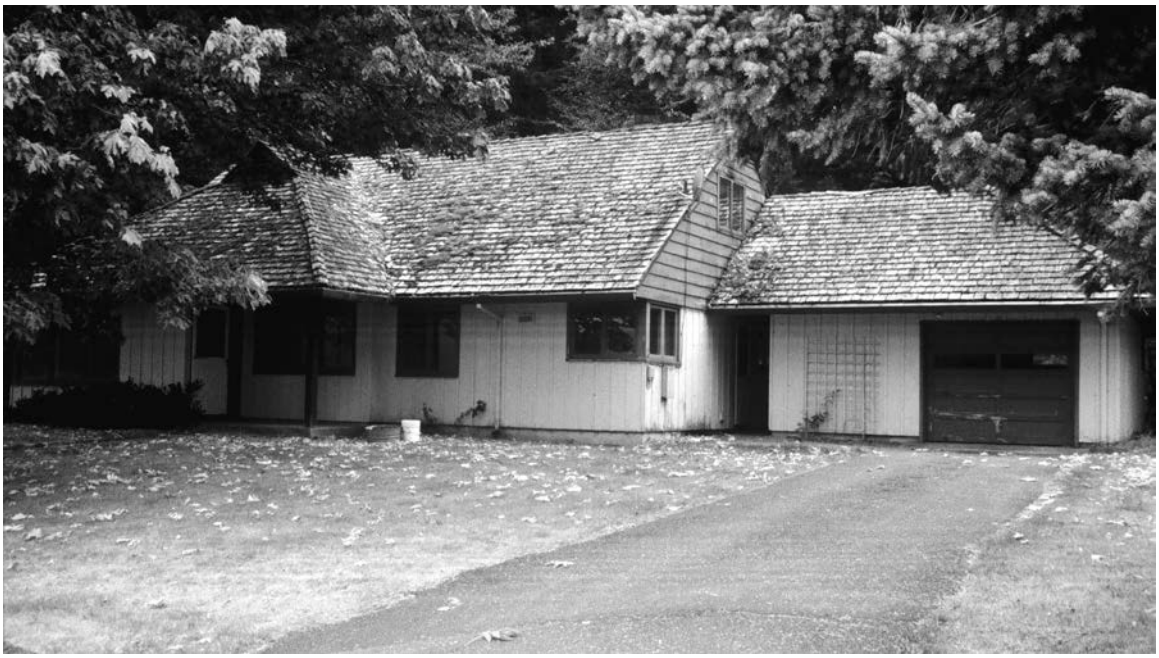

FIGURE 4-5: EAST-FACING ELEVATION OF BUILDING 1065, RESIDENCE

BUILDING # 1065: RESIDENCE, CONT.

Cost Matrix

Plan

BUILDING # 1413: MESS HALL

Physical Description: This CCC era wood frame building was built in 1934. It faces Martha Creek Field, sitting well back from the road. It is in serious disrepair and would require major renovation for any useful life. It is a "U" shaped building with a large dining room flanked by pantry, kitchen and storage rooms in the north wing of the "U," and offices, toilet rooms and garage space in the south side. There is one floor, with a crawl space beneath the north wing. The two wings surround a pleasant courtyard space, currently overgrown.

Year of Construction:	1934
Square Footage:	2,380 SF
Current Uses:	None
Historical Significance:	CCC construction, eligible to Nat. Reg. of Historic Places
Construction Type:	Concrete Foundation, with crawl space under north wing Wood framing at walls
Systems:	Oil Heat Electrical Fuse Box Labeled: "Extreme Fire Danger. Do Not Use."
Significant Renovation Issues:	Concrete foundation is crumbling in locations, requires significant repair Roof requires replacement due to pine needle damage and leaks Block chimney requires repair or replacement Building is unheated, causing mold and dampness damage inside Window frames in good condition but require paint, repair Porch in disrepair
Code Issues:	
Hazardous Materials:	Several layers of paint, likely lead based. Requires removal. Vinyl Composition Tile (VCT) containing asbestos at kitchen requires abatement.
Seismic Code Compliance:	Foundation appears un-reinforced
ADA Accessibility:	Accessibility could be provided with ramp to porch (rise of approximately 24").
Energy Code:	Non compliant. Extensive renovation required, including insulation, heating system, windows and doors.
Ranger District Assessments:	Structural problems noted

BUILDING # 1413: MESS HALL, CONT.

FIGURE 4-6: EAST-FACING ELEVATION OF MESS HALL 1413

BUILDING # 1413: MESS HALL, CONT.

Cost Matrix

Plan

BUILDING # 2025: NURSERY OFFICES

Physical Description: This single story building was built on Parcel 1 in 1959, with a 280 SF greenhouse later converted to office space. Construction on this modified area is not of high quality. Spaces are usable, and include 4 office/meeting rooms, a kitchen (no appliances present) and two toilet rooms. The building is adjacent to an existing parking area and faces the main road.

Year of Construction:	1959 Energy efficiency renovation in 1984
Square Footage:	1,375 SF
Current Uses:	None (Usable kitchen, office, meeting spaces)
Historical Significance:	None
Construction Type:	Wood framing on concrete slab Posts at porch
Systems:	Single phase electrical Heat pump/condensing unit (installed 1984) with under floor duct work Insulation installed 1984 Air conditioning Computer networking line in place Operable windows Electric water heater.
Finishes:	Carpet
Significant Renovation Issues:	Roof is flat, built up, with gravel. Requires replacement due to age (1986) Water damage and rot at porch roof/decking wood No ventilation to crawl space visible Wood doors/frames/harware require repair, replacement (not commercial grade).
Code Issues:	
Hazardous Materials:	Abandoned oil tank should be located, inspected, drained, and either filled or removed. Lighting ballasts probably contain PCBs. If replaced, they will need to be handled as hazardous waste.
Seismic Code Compliance:	Assessment required
ADA Accessibility:	Accessible single story, with ramp in place for one step. Toilet rooms are not compliant.
Energy Code:	Assessment performed and repairs made in 1984. *Windows and doors require assessment.*
Ranger District Assessments:	20 years of use expected as of 1999 Several minor repairs recommended Electrical/computer wiring diagrams available

BUILDING # 2025: NURSERY OFFICES, CONT.

FIGURE 4-7: EAST-FACING ELEVATION OF NURSERY OFFICES 2025

BUILDING # 2025: NURSERY OFFICES, CONT.

Cost Matrix

PLAN

BUILDING # 2127: SEED EXTRACTION

Physical Description: This concrete block building was constructed in 1963. Three long kilns (one currently used as a passage way) are located between a drying room to the south and lab/work spaces at the north. Mechanical space for kilns located above. Garage doors are covered by a long porch/loading area. The building is located near the fields of Parcel 2.

Year of Construction:	1963
Square Footage:	3,585 SF
Current Uses:	Secure equipment/gear storage
Historical Significance:	None
Construction Type:	CMU, appears un-reinforced Wood ceiling joists and glu-lam ridge beam Slab on grade with strip footing foundation
Systems:	Oil fired boiler/steam heat Single and three-phase electrical Kiln equipment in place at two kilns (parts on hand for third) Operable windows
Significant Renovation Issues:	Rot at rafters, soffit and roof at porch/loading. Requires repair, paint Aluminum membrane roof has bubbles and delamination. Requires replacement of roof. No insulation at roof. Gutters require replacement (missing and damaged) Wall repair required at NE corner Water damage to roof and CMU at east wall Windows are stopped in wood sash – 0-3 years useful life Repainting required at interior Kiln maintenance and repair required for re-use
Code Issues:	
Hazardous Materials:	Insulation material at kilns and mechanical systems requires asbestos assessment. Lighting ballasts probably contain PCBs. If fixtures are replaced, these will need to be treated as hazardous waste.
Seismic Code Compliance:	CMU appears un-reinforced.
ADA Accessibility:	One story building is accessible in general. (No access to space above kilns. Toilet room will not conform to ADA.
Energy Code:	No insulation at roof, walls. Windows and doors require assessment.
Ranger District Assessments:	30 years of use expected as of 1999 Major repairs, minor repairs and repainting recommended Existing oil tank requires replacement Specifications for compressors, kilns, and overall building construction available.

BUILDING # 2127: SEED EXTRACTION, CONT.

FIGURE 4-8: SOUTH-FACING ELEVATION OF SEED STRATIFICATION BUILDING 2127

BUILDING # 2127: SEED STRATIFICATION, CONT.

Cost Matrix

Plan

BUILDING # 2130: SEEDLING PROCESSING PLANT

Physical Description: This large processing building, located on Parcel 2, is in three main sections. A central processing building (with support facilities, meeting rooms, staff rooms, toilet rooms and laboratory) is flanked by two wings of cold storage containing four and two cooler rooms respectively. The main processing room contains some tree processing equipment and has a concrete floor that is sloped to drain. All coolers are accessible via outside loading areas.

Year of Construction:	1976
Square Footage:	35,000 SF
Current Uses:	None
Historical Significance:	None
Construction Type:	Wood frame, board and batt siding at 24" on center. Steel columns throughout. 2x8 wall studs at walls, glu lam beams. Metal roof, standing seam. Aluminum windows
Systems:	Single phase electrical Three-phase electrical Irrigation control room Heat pumps (3) Steam heat to processing work space Power doors at coolers Refrigeration systems at 6 coolers: Glycol circulating pumps, currently being run to avoid gelling of glycol. Digital temperature and humidity control system. Halon fire protection system
Significant Renovation Issues:	Repairs and replacement to roof and gutters. 2-5 years remaining life for roof. Some degradation of finish. Repainting required at exterior and interior. Improve ADA access via ramps at north side of building. Rebuilding and renovation required at outdoor porches and entry areas. Some water damage at foundation. Several person-doors require replacement due to delamination and damage. Repairs to windows required at exterior.
Code Issues:	
Hazardous Materials:	Vinyl Composition Tile (VCT) may require abatement during renovation. Halon fire system should be maintained to avoid halon discharge.
Seismic Code Compliance:	Building requires evaluation for seismic stability.
ADA Accessibility:	Portions of the building are accessible from the outside. Improve access with ramps to other entries. Toilet rooms and interior doors require upgrade for accessibility per ADA.

BUILDING # 2130: SEEDLING PROCESSING PLANT, CONT.

Energy Code:	Cooler areas are insulated for refrigeration. Energy evaluation in 1981. Recommendations include: Add insulation at ceilings Pre-heat domestic and processing water Weather-strip and caulk at windows and doors Alternative lighting systems Capture/process waste heat from refrigeration systems
Ranger District Assessments:	35 years of use expected as of 1999 Major repairs, minor repairs and repainting recommended

FIGURE 4-9: WEST-FACING ENTRY OF PROCESSING CENTER 2130

BUILDING # 2130: SEEDLING PROCESSING PLANT, CONT.

FIGURE 4-10: LOADING DOCK AT COOLERS OF BUILDING 2130, NORTH SIDE

Cost Matrix

Plan 1

Plan 2

BUILDING # 2226: NURSERY PACKING SHED AND OFFICE ANNEX

Physical Description: Office and work space built in 1956 on Parcel 1. The building is in good condition, and accessible by loading dock and parking area via loading doors. Rooms include office space, a break room, two toilet rooms, open work area and lab space.

Year of Construction:	1956-59
Square Footage:	2,583 SF
Current Uses:	Break room, work bench space, storage.
Historical Significance:	None
Construction Type:	Wood frame on concrete footing foundation Steel columns at interior and at loading dock Board and batt exterior siding, 1'-0" on center Metal roof, vented attic (replaced 1989)
Systems:	Single phase electrical Forced air oil furnace Some computer networking lines in place Air compressors (Freon) and cooling pump (glycol) run pneumatic controls
Significant Renovation Issues:	Paint required at interior plywood finishes. Insulation required at roof and walls. Repairs to doors and windows Gutters require repair/replacement
Code Issues:	
Hazardous Materials:	Older lighting ballasts probably contain PCBs. If fixtures are replaced, these will need to be treated as hazardous waste.
Seismic Code Compliance:	Wood frame structure. Confirm connection to foundation.
ADA Accessibility:	Single story is accessible from outside via ramp, but interior corridors and door frames require assessment. One ADA toilet room.
Energy Code	Code assessment performed 1981. Heating system, windows, doors, lighting, water heater, insulation were evaluated.
Ranger District Assessments:	25 years of use expected as of 1999 Minor maintenance issues/repairs noted Oil tank requires replacement

BUILDING # 2226: NURSERY PACKING SHED AND OFFICE ANNEX, CONT.

FIGURE 4-11: WEST-FACING ELEVATION OF NURSERY PACKING BUILDING 2226

BUILDING # 2226: NURSERY PACKING SHED AND OFFICE ANNEX, CONT.

Cost Matrix

Plan

BUILDING # 2325: FIELD LUNCH ROOM

Physical Description: This pre-CCC era wood frame building was built for field equipment storage in 1928. It is a simple rectangular shed with horizontal wood siding and a shake roof. The building sits in the open fields of Parcel 1 and is visible from most of the other buildings on that parcel.

Year of Construction:	1928
Square Footage:	700 SF
Current Uses:	None (Storage?)
Historical Significance:	Pre-CCC era, eligible to National Register of Historic Places
Construction Type:	Wood Frame Plywood walls, Horizontal wood siding Concrete slab, formed foundation
Systems:	Single phase electrical Plumbing Oil Furnace (no working oil tank)
Significant Renovation Issues:	Shake roof requires replacement, restoration Doors not historic – sliding shed doors have been infilled and may no longer be operable. Concrete slab cracked, requires repair. Frame doors require re-alignment (at minimum) Interior and exterior paint required. Contemporary drop ceiling not historic.
Code Issues:	
Hazardous Materials:	None evident.
Seismic Code Compliance:	Wood frame structure. Confirm connection to foundation.
ADA Accessibility:	Not currently accessible due to lack of paths/paved road.
Energy Code:	Energy evaluation performed in 1981. Recommendations: Insulation at walls, ceiling and slab. Ventilation at attic and drop ceiling. (Installed.) Water heater replacement and/or insulation. Weather stripping and caulking at windows, doors and slab. Replace/renovated windows. New lighting fixtures. New furnace. *Confirm which recommendations were implemented.*
Ranger District Assessments:	15 years of use expected as of 1999 Oil tank requires replacement

BUILDING # 2325: FIELD LUNCH ROOM, CONT.

FIGURE 4-12: VIEW OF FIELD LUNCH ROOM 2325 LOOKING NORTH

BUILDING # 2325: FIELD LUNCH ROOM, CONT.

Cost Matrix

Plan

BUILDING # 2327: LONG POLE SHED

Physical Description: This CCC era pole-frame structure is an 8-bay shed, built for sheltering field equipment. The roof material consists of long clear cedar shakes, but has deteriorated and requires replacement. The building sits in the open fields of Parcel 1 and is visible from most of the other buildings on that parcel.

Year of Construction:	1942
Square Footage:	3,340 SF
Current Uses:	Storage
Historical Significance:	CCC construction, eligible to Nat. Reg. of Historic Places
Construction Type:	Pole construction with concrete footings Wood siding at ends, with open sides Cedar shake roof
Systems:	Single Phase power Water available to building
Significant Renovation Issues:	Historical shake roof requires replacement. Evaluate columns and purlins for rot. Wire mesh and plywood partitions require evaluation/replacement.
Code Issues:	
Hazardous Materials:	None evident. Evaluate for lead paint at wood siding.
Seismic Code Compliance:	Evaluate pole structure for seismic stability.
ADA Accessibility:	Not accessible – lack of paths or flooring surface.
Energy Code:	NA
Ranger District Assessments:	20 years of use expected as of 1999. Replace roof. Replace rotten column and purline as noted.

BUILDING # 2327: LONG POLE SHED, CONT.

FIGURE 4-13: VIEW OF LONG POLE SHED LOOKING NORTH

BUILDING # 2327: LONG POLE SHED, CONT.

Cost Matrix

Plan

BUILDING # 2367: NURSERY EQUIPMENT STORAGE

Physical Description: A five-bay garage built in 1965, this building faces the service drive behind the Nursery office and seed coolers at the edge of Parcel 1. It is in good condition and will continue to be useful for unheated storage space.

Year of Construction:	1965
Square Footage:	3,000 SF
Current Uses:	Equipment/Vehicle Storage
Historical Significance:	None
Construction Type:	Wood frame, 2x4 studs exposed, plywood interior walls Wood siding at exterior Prefabricated trusses at 24" on center Concrete slab floor
Systems:	Single Phase power Water 18'w x 12'h Garage-type doors (5)
Significant Renovation Issues:	Roof repairs – moss, flashing, some water damage interior. New gutters required. Person doors require replacement – delamination and damage Repainting required at exterior Confirm operation of garage door mechanisms
Code Issues:	
Hazardous Materials:	None evident.
Seismic Code Compliance:	Assess shear capacity of structure.
ADA Accessibility:	Building could be made accessible with access paths (Currently gravel drive access only).
Energy Code:	Not insulated
Ranger District Assessments:	20 years of use expected as of 1999. Minor repairs and maintenance issues noted.

BUILDING # 2367: NURSERY EQUIPMENT STORAGE, CONT.

FIGURE 4-14: VIEW OF STORAGE BUILDING 2367 LOOKING SOUTH

BUILDING # 2367: NURSERY EQUIPMENT STORAGE, CONT.

Cost Matrix

Plan

BUILDING # 2526: GAS AND OIL HOUSE

Physical Description: Small wood frame storage building adjacent to service drive near Chapman Avenue. Wood siding and shake roof is consistent with overall character of the site.

Year of Construction:	1961
Square Footage:	320 SF
Current Uses:	Storage of flammable goods
Historical Significance:	None
Construction Type:	Wood frame with vertical wood siding Concrete slab 2x4 rafters, cedar shakes roofing
Systems:	Single phase power
Significant Renovation Issues:	Roof repairs – moss, flashing. New gutters required. Doors require repair/replacement – delamination and damage. Repainting required at exterior.
Code Issues:	
Hazardous Materials:	Confirm requirements for hazardous material storage.
Seismic Code Compliance:	Wood frame structure. Evaluate connection to foundation
ADA Accessibility:	Building could be made accessible with access paths (Currently gravel drive access only).
Energy Code:	NA as unheated storage space.
Ranger District Assessments:	20 years of use expected as of 1999. Minor repairs and maintenance issues noted.

BUILDING # 2526: GAS AND OIL HOUSE, CONT.

FIGURE 4-15: VIEW OF GAS AND OIL HOUSE LOOKING SOUTHEAST

BUILDING # 2526: GAS AND OIL HOUSE, CONT.

Cost Matrix

Plan

BUILDING # 2624: TREE PROCESSING / EQUIPMENT STORAGE

Physical Description: This storage/garage building has four roll-up doors. It is located on Parcel 2, behind the Seed Processing Building (2130). There is one insulated electrical room with a loft above. Natural ventilation is provided near ceiling.

Year of Construction:	1976
Square Footage:	4,700 SF
Current Uses:	Storage of search and rescue vehicles and equipment
Historical Significance:	None
Construction Type:	Wood frame with board and batt siding at 24" on center 2x6 studs at walls (exposed) Steel columns and glu-lam beams at roof Metal doors, aluminum windows, metal standing seam roof Concrete slab, exposed
Systems:	Three phase power Single phase power (mercury lights) Water (hose bib)
Significant Renovation Issues:	Some evidence of moisture at joists and glu lams (confirm leaks or condensation). Person doors require repair/replacement – delamination and damage to hinges. Confirm operation of garage door mechanisms. Repainting required at exterior Some finish deterioration at roof, 2-3 years life remaining.
Code Issues:	
Hazardous Materials:	None evident.
Seismic Code Compliance:	Wood frame structure. Evaluate connection to foundation. Evaluate shear capacity given extensive openings in long wall.
ADA Accessibility:	Building could be made accessible with access paths (Currently gravel drive access only).
Energy Code:	Building is not insulated.
Ranger District Assessments:	35 years of use expected as of 1999. Minor repairs and maintenance issues noted.

BUILDING # 2624: TREE PROCESSING / EQUIPMENT STORAGE, CONT.

FIGURE 4-16: SOUTH-FACING ELEVATION OF STORAGE BUILDING 2624

BUILDING # 2624: TREE PROCESSING / EQUIPMENT STORAGE, CONT.

Cost Matrix

Plan

BUILDING # 2627: SEED COOLER

Physical Description: Cold storage building with loading dock, built on Parcel 1in 1956. A large cooler room is accessed via a smaller loading and storage area. The interior of the building is in good condition, though some repairs will be required at the exterior.

Year of Construction:	1956
Square Footage:	1,560 SF
Current Uses:	None
Historical Significance:	None
Construction Type:	CMU Building with insulation at interior Concrete Foundation Built up roof
Systems:	Three phase power Single phase power Refrigeration compressors (2) Freon Evaporator Coil System Water misting system and controls
Significant Renovation Issues:	Roof requires replacement – some rot at decking Exterior walls have evidence of deterioration at CMU – require repair and repainting.
Code Issues:	
Hazardous Materials:	None evident.
Seismic Code Compliance:	CMU does not appear to be reinforced. Requires evaluation per existing/new uses.
ADA Accessibility:	Building could be made accessible with access paths (Currently gravel drive access only).
Energy Code:	Building is insulated for use as a cooler. Energy evaluation done 1981. Recommendations include: Use condenser waste heat. Insulate refrigeration pipes. Insulate ceiling (done). (All recommendations based on use as cooler space.)
Ranger District Assessments:	15 years of use expected as of 1999. Electrical and plumbing not bonded to service. Improve electrical bond to ground rod. Other minor repairs and maintenance issues noted.

BUILDING # 2627: SEED COOLER, CONT.

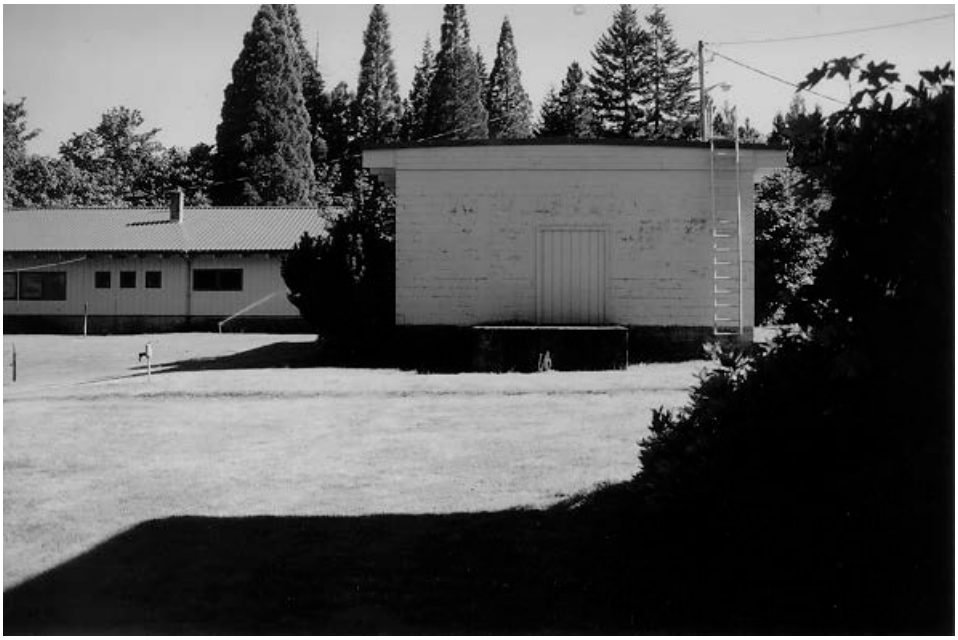

FIGURE 4-17: VIEW LOOKING EAST TOWARD SEED COOLER 2627

BUILDING # 2627: SEED COOLER, CONT.

Cost Matrix

Plan

BUILDING # 2628: SEED STRATIFICATION COOLER

Physical Description: Two large storage areas, unconnected, built with one shared wall. Old sliding doors have been filled in at south side. A small office room is located at the northwest corner. Located at Parcel 1, at service drive.

Year of Construction:	1956
Square Footage:	3,120 SF
Current Uses:	Storage
Historical Significance:	None
Construction Type:	CMU Building with insulation at interior Concrete Foundation Built up roof, 3x16 joists at 4' on center
Systems:	Three phase power Single phase power Refrigeration compressor on one side, freon Water misting system and controls
Significant Renovation Issues:	Roof requires repair or replacement – some rot at decking, evidence of leaks or condensation at ceiling insulation Exterior walls have evidence of deterioration and freeze/thaw problems at CMU – require repair and repainting.
Code Issues:	
Hazardous Materials:	None evident.
Seismic Code Compliance:	CMU does not appear to be reinforced. Requires evaluation per existing/new uses.
ADA Accessibility:	Building could be made accessible with access paths (Currently gravel drive access only).
Energy Code:	Building is insulated for use as a cooler. Energy evaluation done 1981. Recommendations include: Use condenser waste heat. Insulate refrigeration pipes. Insulate ceiling (done). (All recommendations based on use as cooler space.)
Ranger District Assessments:	15 years of use expected as of 1999. Minor repairs and maintenance issues noted.

BUILDING # 2628: SEED STRATIFICATION COOLER, CONT.

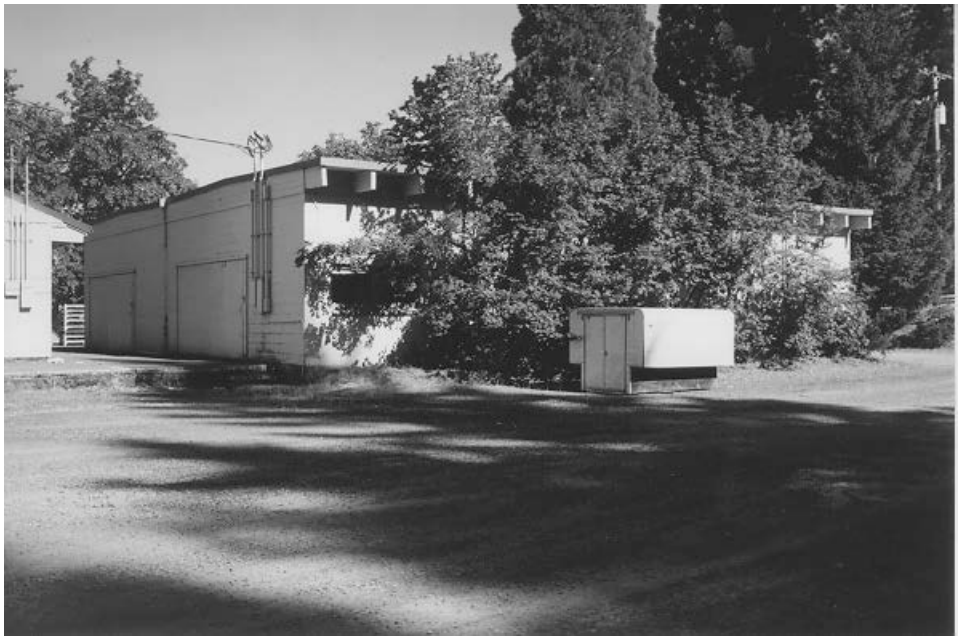

FIGURE 4-18: VIEW OF SEED COOLER 2628 LOOKING EAST

BUILDING # 2628: SEED STRATIFICATION COOLER, CONT.

Cost Matrix

Plan

BUILDING # 2629: SEED COOLER/FREEZER

Physical Description: One access corridor provides access to two storage areas with one shared wall. Access is provided by a loading dock/porch only. Located at service drive on Parcel 1.

Year of Construction:	1956
Square Footage:	1,848 SF
Current Uses:	None
Historical Significance:	None
Construction Type:	CMU Building with insulation at interior Concrete Foundation Built up roof, 3x16 joists at 4' on center
Systems:	Three phase power Single phase power Refrigeration compressor (4), Freon, Freeze capacity (No water)
Significant Renovation Issues:	Roof requires repair or replacement – some rot at decking, evidence of leaks at ceiling. Exterior walls have evidence of deterioration and freeze/thaw problems at CMU – require repair and repainting. One or more compressors are non-functional and require repair or replacement.
Code Issues:	
Hazardous Materials:	None evident.
Seismic Code Compliance:	CMU does not appear to be reinforced. Requires evaluation per existing/new uses.
ADA Accessibility:	Building is not currently accessible due to 3' high loading dock access.
Energy Code:	Building is insulated for use as a cooler/freezer.
Ranger District Assessments:	15 years of use expected as of 1999. Minor repairs and maintenance issues noted.

BUILDING # 2629: SEED COOLER/FREEZER

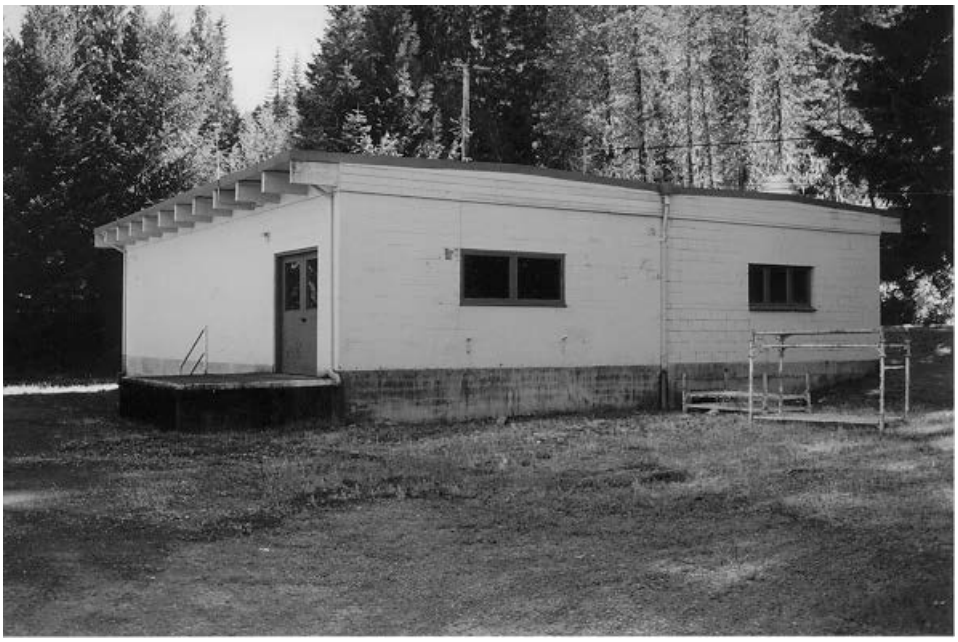

FIGURE 4-19: VIEW OF SEED COOLER 2629 LOOKING SOUTHWEST

BUILDING # 2629: SEED COOLER/FREEZER

Cost Matrix

Plan

4.2 BUILDING MAINTENANCE COSTS

Table 4-2 below illustrates the "mothball" costs for each building. These costs are appropriate as annual expenditures for closing the buildings and allowing no uses to occur.

NFS #	Building Name	"Mothball" Costs	Notes
1053	Residence	$200	Heat on at 55 degrees; Drain water lines if necessary.
1054	Residence: Nelson	$200	Heat on at 55 degrees; Drain water lines if necessary.
1057	Residence	$200	Heat on at 55 degrees; Drain water lines if necessary.
1065	Residence	$200	Heat on at 55 degrees; Drain water lines if necessary.
1413	Mess Hall	$1,500	Repair elec. panel; Fix glass panes; Heat at 55 degrees.
2025	Nursery Office	$200	Heat on at 55 degrees; Drain water lines if necessary.
2127	Seed Extraction and Kilns	$600	Repair CMU wall; Heat at 55 degrees; Drain water lines.
2226	Nursery Office/Packing	$200	Heat on at 55 degrees; Drain water lines if necessary.
2325	Field Lunch Room	$200	Heat on at 55 degrees; Drain water lines if necessary.
2327	Long Shed	$0	Secure building; Check in cases of severe weather.
2367	Nursery Equipment Storage	$0	Secure building; Check in cases of severe weather.
2526	Gas and Oil House	$0	Secure building; Check in cases of severe weather.
2624	Vehicle/Equipment Storage	$0	Secure building; Check in cases of severe weather.
2627	Seed Cooler	$0	Secure building; Check in cases of severe weather.
2628	Seed Stratification Cooler	$0	Secure building; Check in cases of severe weather.
2629	Seed Cooler/Freezer	$0	Secure building; Check in cases of severe weather.
	Total "Mothball" Costs	$3,500	
		Maintenance Costs	
2130	Processing Plant	$10,000	Per Abacus: 1 day per month, one person to test systems, run pumps and do basic maintenance. (Note: Fire and cooling system require immediate maintenance assessment.)
	Total 1-year costs	**$13,500**	

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1,2,4,5,8,9,12,13,16,17,20,21,24,25,28,29,32,33,34,38,39,42,43,46,47,50,51,54,55,58,59,62,63,66,6770,71,74

5,9,13,17,21,25,29,33,34,39,43,47,51,55,59,63,67,71

1,2,4,5,8,12,16,20,24,28,32,38,42,46,50,54,58, 62, 66,6,70,74

4.3 AVAILABLE OPERATION AND MAINTENANCE DOCUMENTATION: FILE INDEX

The following index documents the contents of the Wind River Nursery maintenance files for the conveyed buildings. These files are available for reference during the operation and maintenance of the facilities.

1053 Residence
No files

1054 Residence
No files

1057 Residence
No files

1065 Residence
Unnamed File
1. Appliance information
2. Rental adjustment sheets (1989)
3. Gov't quarters inventory

General File
1. Physical description
   - Building description sheet
   - Building diagrams and architectural drawings
2. Parts
   - Storm door product brochure
   - Appliance brochures
   - Parts receipts
   - Boiler certificate (5-30-79)
3. Maintenance
   - Facility maintenance list (1986)
   - Project manager's statement with sub-unit transaction register
   - Building maintenance cost study
   - Maintenance agreement
   - Energy conservation study

Log Furnace File
1. Product receipt (8-80)
2. Product information, specs and manuals

1413 Mess Hall
No Files

2025 Nursery Office
General File
1. Product info/instructions for flagpole floodlight

2127 Seed Extraction & Kilns

Extractory 2127 File
1. Part information cards & brochures
2. Machine maintenance schedules

Extractory Compressor File
1. Compressor bids (1984)

Boiler & Kiln File
1. Boiler pipe insulation replacement summary
2. Product instruction brochures

3rd Kiln File
1. Compressor/HVAC bids

Tunnel File
1. Tunnel control operation folder

Extractory Specs File
1. Seed extractory bldg construction contract

Extractory Maintenance File
1. Extractory Maintenance sheet

Extractory General File
1. Water treatment proposal
2. Building cross section drawing
3. Energy conservation survey summary
4. Job hazard analysis
5. Actuator specs and instructions

2130 Processing Plant

Processing 2130 File
1. Wiring diagram (dated 12-18-67)
2. Repair cost log (4-24-86)
3. Door insulation brochures
4. Cards with building & mechanical specifications

Pack. Bldg. General File
1. Energy conservation summary (12-81)
2. Compressor Photos
3. Contractor directory
4. Job hazard analysis (12-29-81)
5. Test sheets
6. Blue folder (dated 12-76) containing:
   - Receipts
   - Building specifications
   - Small bag with spare electronic parts
   - Product information brochures and sheets
7. Bids
8. Legend for drawings (6-18-76)

Air Compressor File
1. Owners manual and warranty card (for several different models)
2. Technical information sheets (for several different models)
3. Non-compliance citation (9-9-93)

Air Compressor File (Second File for Quincy Air Compressor)
1. Owners manual

2. Warranty information
3. Product information

Processing Paint File
1. Color schedules
2. Stain brochure
3. Color Maps (10-21-86)

Dock Modification File
1. Concrete specifications
2. Architectural drawings for loading dock modification
3. Requisition form & purchase order (12-7-84)
4. Hydraulic project approval

Operation Procedure File
1. Maintenance and inspection procedures

Air Handlers File
1. Fan & heater instructions
2. Equipment submittals (1977)

Auto Dialer File
1. Product operating instructions and information (2-8-78)

Backflow Preventer File
1. Product information
2. Installation guide

Battery Charger Forklift File
1. Installation and operating instructions

Bristol Charts File
1. Indicating recorder instruction manual (1-77)

Ceiling Tile File
1. Ceiling tile product brochures (5-26-77)

Electric Furnace Shipping Office File
1. Product specifications (12-27-76)

Control Panels File
1. Drawings (11-76)
2. Material list (11-76)

Ducting Furnace File
1. Duct & louver specifications & product information
2. Parts schedule

Electric Panels Breakers File
1. Drawings (11-76)
2. Breaker catalogs

Electric Parts Miscellaneous File
1. Product information

Switches	Fusible switches
Boxes	Controls
Relays	Surge arresters
Capacitors	Conduit
Signaling devices	Connectors
Terminals & receptacles	Fuses
Conductors	Fittings
Thermocouples	Insulating mats
Snow melting mats	Hand dryers

Evaporator Coils File
1. Industrial cooler product information
2. Evaporator specifications

Freon Replacement File
1. Retrofit guidelines for CFC alternatives

Halon Fire File
1. Fire prevention system operating manual (9-72)
2. System drawing

Hangers & Racks File
1. Coat rack information (1-10-77)

Hose Reel File
1. Hose reel information & specifications (6-2-77)

Fire Hydrant File
1. Fire hydrant specifications and parts information (2-28-80)

Fire Alarm File
1. System drawings (1977)
2. System operation and maintenance book
3. Battery instructions

Fuse File
1. Fuse Specifications

Hand Dryer File
1. Hair & hand dryer information

Hot Water File
1. Water heater drawing (blurred from water stain) (1-14-77)

Hot Water Pump File
1. Receipts and vendor information (1982, 1985)
2. Pump installation instructions (1981)

Gearboxes File
1. Installation, operating & lubrication instructions

Lights File
1. Information & specifications for numerous types of fixtures

Maintenance List File
1. Maintenance lists

Metasys System File
1. “As built” building automation system proposal (9-91) from Johnson Controls

Metasys As Builts File
1. Duplicate of previous file

Requisitions File (Empty)

Overhead Door File
1. Proposal (6-29-84)
2. Product Manual (several copies)

Packing Tables File
1. Conveyor machinery manual
2. Conveyor pulley engineering manual
3. Conveyor belt fastener information

Phase Monitor File
1. Product information and specifications

Pipes & Valves All Systems Water Pump Maintenance File
1. Maintenance suggestion list
2. Parts information

3. Circulating pump operating instructions
4. Process controls catalog

Pipe Installation File
1. Insulation submittal (10-13-76)
2. Additional product information (6-17-77)

Plumbing, Fire, Sinks, Toilets, Hot Water, Etc. File
1. Water heater brochure
2. Plumbing proposal (11-1-76)

Pressure Reducing Valve File
1. Instruction sheet

PUD File
1. Electric rate schedule (5-82)
2. Electricity ledger (1977)
3. Handwritten electricity use notes
4. Public utility bill corrections and credit
5. Proposal and accompanying energy savings analysis (9-82)
6. Johnson Controls product literature

Shipping Office Air Conditioner File
1. Instruction manual

Smoking Room Equipment File
1. Operating and installation manuals

Sound System Shipping Office File
1. Sound & speaker brochures
2. PA system brochures
3. Sound system operating manual

Time Clock File
1. Operating instructions (rcvd 10-19-81)
2. Product information sheet
3. Operating instructions for an older model
4. Unsent warranty card (dated 3-19-76)

Toilet Partitions File
1. Color submittal (1-10-77)
2. Drawings for bathroom (1-27)

Tunnel Fan File
1. Product information sheet
2. Product specification sheets (10-20-76)

Vents & Shutters File
1. Installation & trouble shooting guide
2. Product specification sheets (10-20-76)

Wall Fan File
1. Product specification sheets

Waste Water File
1. Operation & maintenance manual (rvcd 8-2-88)
2. Control ladder schematic drawings (8-3-76)
3. Instruction booklet
4. Trouble shooting guide
5. Description of operation for lift station panel
6. Electrical drawings (1977)
7. Material list
8. Electrical product information sheets

Waste Separators File
1. Product information and specifications (rcvd 5-4-79)
2. Operating and installation instructions

2226 Nursery Office/Parking

Seed Office 2226
1. Building description sheet
2. Ceiling fan installation & operating instructions

Seed Office General File
1. Handwritten wiring update cost estimate
2. Faucet warranty sheet
3. Furnace information package
4. Cooler maintenance & inspection report (7-22-71)
5. Energy conservation report (10-81)

Seed Office Roof File
1. Re-roof bid reports (1989)
2. Bid solicitation (11-30-88)
3. Computation sheets
4. Drawings (8-88)

2325 Field Lunch Room

L. Lunchroom 2325 File
1. Building description
2. Honeywell heating/cooling energy saver thermostat owner's manual, installation guide & warranty
3. Energy conservation report (12-81)

Nursery Office "Annuciator" Panel File
1. Hand drawn frost water alarm control scheme
2. Electrical control panel & computer software drawing (4-8-85)

Heat Pump File
1. Correspondence (5-15-84)
2. Air cleaner brochure
3. Warranty card
4. Product registration card
5. Air conditioning price quotes (6-1-84)
6. Air conditioner information manual (rcvd 9-84)
7. Air handler brochure with specifications
8. Heat pump
   Price quotes (5-84)
   Receipt
   Operating manual

Office General File
1. Copy of electrical control panel & computer software drawing from above file
2. Bids (1980)
3. Intercom operating instructions
4. Spruce hydroelectric project preliminary permit (2-17-83)
5. Energy conservation report (10-81)
6. Request for roofing and decking bids (3-26-86)
7. Notes
8. Safe combination instructions

2327 Long Shed
No Files

2367 Nursery Equipment Storage
No Files

2526 Gas & Oil House
No Files

2624 Vehicle/Equipment Storage
No Files

2627 Seed Cooler
Stratification Building 2627 File
1. Building description
2. Equipment information cards

Stratification Room General File
1. Energy conservation survey (12-81)
2. Job hazard analysis (12-81, 7-80, 7-81)

2628 Seed Stratification Cooler
No Files

2629 Seed Cooler/Freezer
Seed Bank 2629 File
1. Equipment information cards
2. Unit cooler operating instructions
3. Building description
4. Cooler product information & specifications
5. Freezer hot gas defrost piping diagram
6. Seed storage maintenance schedule

New Evaporator Coils File
1. Operating instructions
2. Assorted system drawings

Seed Evaporator Coils File
1. Receipts (10-85)
2. Operating instructions
3. Bids (12-85)
4. Requisitions (1985)
5. Purchase orders (1986)

Cooler Condition Log File
1. Undated cooler condition sheets

Seed Bank General File
1. Job hazard analysis (7-29-81)
2. Recorder operations manual
3. Resistance thermometer specifications (rcvd 7-20-76)

2324 Chemical Building (This building was not included on the building summary)

Chemical Building 2324 File
1. Building description
2. Safety & health program information (8-6-85)

District Cooler File
1. Correspondence (1986)
2. Product information cards
3. Operating instructions
4. Purchase order & invoice for compressor (4-86)
5. Lighting installation instructions

Gold Line Thermo File
1. Product binder

Unit Cooler Schematic File
1. Schematic drawings (5-86)

TABLE 4.3: Preliminary Estimate of Annual Civil Maintenance Costs for Wind River Nursery Site

SvR Job # 99031 Date: May 19, 2000 By: KMG; Ck'd By: TvS

Assumption: Use of site remains as it is being used today with no development or increase in usage

Item	#Units	Unit	Unit cost/year	Total Annual Cost	Cost 1-3 Year	Cost 4-10 Years	Cost 11-20 Years	Total Cost 20 years	Notes/Assumptions
Landscaping									
Site Groundskeeper	1,562	hrs	$ 25	$ 39,060	$ 117,180	$ 273,420	$ 390,600	**$ 781,200**	Includes mowing, trimming tree limbs, cleaning ditches, flower beds, etc. Groundskeeper works full-time for six months and half-time rest of year.
		Subtotal for Landscaping:		**$ 39,060**	**$ 117,180**	**$ 273,420**	**$ 390,600**	**$ 781,200**	
Utilities									
Water System	18	service connections	$ 170	$ 3,060	$ 9,180	$ 21,420	$ 30,600	$ 61,200	Includes maintenance for system pumps, water tank, connections. Assume water system and rights remains shared with forest service.
		Subtotal for Water:		**$ 3,060**	**$ 9,180**	**$ 21,420**	**$ 30,600**	**$ 61,200**	
Storm Drain System									
Cleaning of Storm Drain S	40	hrs	$ 150	$ 6,000	$ 18,000	$ 42,000	$ 60,000	$ 120,000	Includes removal of sediment, debris, leaves, etc. from storm drain system including culverts, structures, mains etc. System cleaning done once a year for one week
		Subtotal for Storm Drain:		**$ 6,000**	**$ 18,000**	**$ 42,000**	**$ 60,000**	**$ 120,000**	
Sanitary Sewer System									
Cleaning of Sewer System	40	hrs	$ 150	$ 6,000	$ 18,000	$ 42,000	$ 60,000	$ 120,000	Includes cleaning/flushing main. It takes one week to clean system and done once a year.
Cleaning of Septic Tanks	8	ea	$ 150	Total Cost for 20years divided by 20years = $180/year	$ 1,200	$ 1,200	$ 1,200	$ 3,600	Cleaned once every 10 years with first cleaning done in year one
		Subtotal for Sanitary Sewer System:		**$ 6,180**	**$ 19,200**	**$ 43,200**	**$ 61,200**	**$ 123,600**	
Irrigation									
Mothball	1	ls	$ 1,000	$ 1,000	$ 3,000	$ 7,000	$ 10,000	$ 20,000	Mothball maintenance for irrigation pumps
		Subtotal for Irrigation System:		**$ 1,000**	**$ 3,000**	**$ 7,000**	**$ 10,000**	**$ 20,000**	
Electrical									
Mothball	1	ls	$ 1,000	$ 1,000	$ 3,000	$ 7,000	$ 10,000	$ 20,000	Mothball maintenance
		Subtotal for Electrical System:		**$ 1,000**	**$ 3,000**	**$ 7,000**	**$ 10,000**	**$ 20,000**	
Roadways									
Overlay of Chapman Ave. and parking lots off Chapman Avenue	5,222	sy	$ 5.0	Total Cost for 20years divided by 20years = $3917/year	$ -	$ 26,111	$ 26,111	$ 52,222	ACP overlay once every 10 yrs with first overlay done in yr one. Cost is equally shared with Forest Service (i.e. FS would also pay 78,333 over the 20 years)
		Subtotal for Roadways:		**$ 7,834**	**$ -**	**$ 26,111**	**$ 26,111**	**$ 52,222**	
			Total:	**$ 64,134**	**$ 169,560**	**$ 420,151**	**$ 588,511**	**$ 1,178,222**	Note: Inflation and interest not taken into account for cost estimate
		Fees, Contingency (50%)		**$ 32,067**	**$ 84,780**	**$ 210,076**	**$ 294,256**	**$ 589,111**	
		Estimate Total:		**$ 96,201**	**$ 254,340**	**$ 630,227**	**$ 882,767**	**$ 1,767,333**	

TABLE 4.3: Preliminary Estimate of Annual Civil Maintenance Costs for Wind River Nursery Site									
SvR Job # 99031	Date:	May 19, 2000	By: KMG; Ck'd By: TvS						
Assumption: Use of site remains as it is being used today with no development or increase in usage									
Item	**#Units**	**Unit**	**Unit cost/year**	**Total Annual Cost**	**Cost 1-3 Year**	**Cost 4-10 Years**	**Cost 11-20 Years**	**Total Cost 20 years**	**Notes/Assumptions**
Note: Inflation and interest not taken into account for cost estimate									

4.4 ASSESSMENT OF MECHANICAL AND ELECTRICAL SYSTEMS AT BUILDINGS

INTRODUCTION

The following assessment is based on a visit to Wind River Nursery in July of 1999. The mechanical and electrical systems in the following buildings were surveyed:

2025	Office
2127	Seed Extraction
2130	Tree Processing
2226	Seed Office
2367	Garage
2627	Cooler
2628	Cooler
2827	Pump House

SUMMARY

MECHANICAL SYSTEMS
The mechanical systems in the above buildings are in relatively good condition, considering they have been unused since the nursery was closed. There is on-going maintenance which should be performed to protect the mechanical systems while the facility is inactive. The refrigeration systems should be operated and maintained or they will deteriorate. Gradual deterioration will increase the cost to eventually return the systems to operation. The likelihood of costly refrigerant leaks increases with time. If the mechanical systems become an integral part of the future use of the facility, then a full-time qualified service mechanic will be needed to keep the systems operational.

ELECTRICAL SYSTEMS
The electrical systems in the buildings appear to be in good condition. Modifications have been made over the years and the work appears to be professional and in accordance with Code. The power distribution systems will remain operational with little maintenance for an indefinite period. The lighting fixtures are generally operational and will not deteriorate unless exposed to moisture.

IMPORTANT MAINTENANCE ITEMS

General: The toilets should be flushed and faucets run every month or so to keep the waste traps filled with water. In the process building many of the toilets were dry, though there was no noticeable odor.

2025 – Office – Oil Tank: There is probably an abandoned underground oil tank outside the building. The tank should be located, inspected, drained and either filled or removed.

2127 - Seed Extraction - Oil Tank: The underground oil storage tank has been buried for possibly 36 years. The tank should be monitored for leaks. If no plans emerge to use the boiler in the immediate future, then remaining oil should be removed.

2130 - Process Building - Glycol Pumps: The two pumps circulating glycol solution through the outdoor condensers must be kept continuously running to keep the glycol from jelling. They should be checked weekly.

2130 - Process Building - Halon System: The mechanical room is protected by a halon fire protection system: A leak or accidental discharge of the halon is environmentally harmful, dangerous and expensive to replace. The system should be serviced at least semi-annually by a qualified fire protection contractor. Another option is to disable the system and reclaim the halon until the building's future can be determined.

2130 - Process Building - Control Air System: The control air compressor, filters and air dryer must be maintained at least monthly to prevent contamination of the pneumatic control system

with oil and condensate (water). Once contaminated, it is very difficult to clean the tubing and control devices. Troubleshooting and replacing the damaged devices is expensive.

2226 - Seed Office - Oil Tank: This building has an underground oil storage tank which is old and has the potential for leaks. The building contains an oil-fired furnace.

2827 - Irrigation Pumps: These large water pumps should be exercised regularly to keep them operational and maintain their seals in good condition.

CAMPUS PRIMARY ELECTRICAL SERVICE

The primary electrical service to the Wind River Nursery campus was upgraded to 3-phase in the 1980's. Metering for the Forest Service buildings and the Skamania County buildings is being separated currently. The primary service was sized for the present electrical load. If the County envisions a major increase in electrical load, then a load study will need to be performed and discussed with Skamania P.U.D. engineers.

EXISTING CONDITIONS

A. OFFICE

1. HVAC
   a) Description: The HVAC system consists of a vertical heat pump in a small closet in the center of the building. Judging from the abandoned oil piping, the heat pump appears to be a retrofit from the original oil furnace. The heat pump provides both heating and cooling. Supply air is routed through ductwork below the slab to floor registers along the perimeter. I switched the unit on at the thermostat and the fan operates and the heat pump also responds. Condensate from the cooling coil is routed to a small condensate pump which drains moisture outdoors. The room at the west end has a through-wall propeller exhaust fan which operates on a manual switch. The fan works. Ventilation to the building is provided by operable windows. The heat pump has no outdoor air connection. Toilet Exhaust: The Men's room has a ceiling exhaust fan which works. The Women's room ceiling exhaust fan appears to be missing.
2. Plumbing
   a) Description: Water piping is galvanized steel. Water pressure is satisfactory. Waste piping is probably galvanized and cast iron. Waste is routed to a septic system. There are two restrooms with tank-type toilets and wall-hung china lavatories. They appear to be in good condition, though the Men's room toilet "runs". The restrooms are not ADA compliant. The kitchen sink appears to be in good condition. There is presumably an electric water heater somewhere in the building, but I could not find it.
3. Power
   a) Description: The building electrical service is 240/120V, single-phase with an overhead drop from the utility pole.
   b) The main distribution panel is 100 amps.
4. Lighting
   a) Description: Lighting is fluorescent fixtures with T12 lamps and magnetic ballasts. The lighting and switching functions. Judging from the age of the building, the ballasts probably contain PCBs. If they are replaced, they will need to be handled as hazardous waste.
5. Alarm System
   a) Description: There is an alarm panel mounted on the corridor wall above the men's room door. The panel is about 30" square. It appears to provide annunciation of "fire, intrusion and process" alarms. It appears to be connected to the

phone system, suggesting that it is linked to some remote site.

B. SEED EXTRACTION

1. HVAC
   a) Description: The primary heat source for the building is an old oil-fired steam boiler. The occupied spaces are heated by steam unit heaters (forced air). The unit heater in the space at the west end of the kilns is disconnected from the steam piping. Reason unknown. Ventilation in the lab/office is by operable windows. The seed processing workroom has a large roof-mounted exhaust fan.
2. Drying Kilns
   a) Description: The two kilns are each served by a separate heating and dehumidification air handling system. A steam coil provides the heat. Direct expansion cooling units provide dehumidification. The condenser coils for the DX units are located in the outdoor air intake. The heat extracted in the dehumidication coils is recovered and used to preheat outdoor air.
   b) The boiler and DX compressors are located in the mechanical room. The oil-fired boiler is old and rusted and should be inspected and serviced before using.
   c) The underground oil storage tank is presumably not a modern double-walled unit and there does not appear to be any leak detection system.
   d) The two DX compressors appear to need service, judging from the disconnected linkage on one.
   e) New Kiln Equipment: Prior to closing the facility, the Forest Service purchased a Pace air handler and refrigeration compressor which they intended to install in the attic mechanical room to serve the third kiln tunnel. The equipment is located in the west end of the building and appears to be in perfect condition. None of the equipment is installed and there was not sign of engineered plans for the installation.
3. Plumbing
   a) Description: Water piping is galvanized steel. Water is turned off. Waste piping is probably galvanized and cast iron. Waste is routed to a septic system. The restroom consists of one tank-type toilet and two sinks. There is a 10-gallon electric water heater in the corner of the mechanical room.
4. Power
   a) Description: The building electrical service is 240/120V, three-phase with an overhead drop from the utility pole. The main distribution panel located in the mechanical room is rated at 400 amps.
5. Lighting
   a) Description: Lighting is fluorescent fixtures with T12 lamps and magnetic ballasts. The lighting and switching functions. Judging from the age of the building, the ballasts probably contain PCBs. If they are replaced, they will need to be handled as hazardous waste.

C. SEED OFFICE

1. HVAC
   a) Description: Heating and air circulation is provided by an oil-fired furnace located in the main work room. Air is distributed through exposed overhead ducts. It appears that the air is shut off to the work room and north office. Air is delivered to the break room on the south end. The return air intake is in a closet next to the furnace. Both the closet and the break room doors would need to be open for the furnace to function properly.
   b) The thermostat is located in the break room.

c) There is no outdoor air connection to the furnace. Ventilation is provided by operable windows.
d) The restroom off the work room has an operable window, but not exhaust fan. The ADA restroom off the break room has a ceiling exhaust fan which operates.

2. Plumbing
   a) Description: Water piping is galvanized steel. Water pressure is satisfactory. Waste piping is probably galvanized and cast iron. Waste is routed to a septic system. There are two restrooms with tank-type toilets and wall-hung china lavatories. One restroom is old. The other is a fairly recent ADA restroom improvement.
   b) The break room includes a kitchen sink and a counter-style 50 gallon electric water heater. The sink is part of a sink/stove/refrigerator unit which appears to be functioning. The main work room has two floor drains located at the west wall.
3. Power
   a) Description: The building electrical service is 200 amp, 240/120V, single-phase with an overhead drop from the utility pole. The main disconnect is a 200 amp circuit breaker on the side of the building. It feeds an old panel which subfeeds to two smaller branch panels. The electrical system is a mix of old and new. It appears to be in good condition. The lab/office on the north end has a small branch panel and grounded receptacles.
4. Lighting
   a) Description: Lighting is fluorescent and appears to be functional. The new lab contains relatively new fixtures. The remainder of the building has older fixtures. The older fixture ballasts probably contain PCBs.

D. 2628 COOLER

1. HVAC
   a) Description: The building has two separate cooling rooms and a third space where the mechanical equipment is located. Each cooling room has multiple evaporator fan coil units. There is a separate DX compressor unit for each cooler. A water misting system on a timer is used for adding moisture to the coolers. The cooling system was not operating during the inspection, but it looked to be in good condition. With service the cooling system could probably made to operate.
2. Plumbing
   a) Description: A 1/2" galvanized cold water pipe in the mechanical room serves the misting system. Condensate from the cooling evaporators is piped to a 2" drain near the misting system. The drain looks like it used to be connected to a wall-hung sink. There are floor drains. Building waste drains to a septic system. The systems that were visible appeared to be in serviceable condition.
3. Power
   a) Description: The building has a dual voltage service. There are two drops from the utility pole and two service disconnect circuit breakers on the side of the building. One service is 200 amp, 120/240 volt single phase. The other is 200 amp 120/240 volt three-phase, high-leg. Each service feeds a separate branch panel in the mechanical room. The system appears to be in good condition.

4. Lighting
   a) Description: The south cooler is illuminated by high-pressure sodium low-bay fixtures. They are in good condition. The north cooler has old 4-foot fluorescent fixtures which are in poor condition.

E. 2627 COOLER

1. HVAC
   a) Description: The building has one cooling room and a mechanical equipment space. The cooling room has multiple evaporator fan coil units. One DX compressor unit is located in the mechanical space. A water misting system on a timer is used for adding moisture to the coolers. The cooling system was not operating during the inspection, but it looked to be in good condition. With service the cooling system could probably made to operate.
2. Plumbing
   a) Description: A 1/2" galvanized cold water pipe in the mechanical room serves the misting system. Condensate from the cooling evaporators is piped to a 2" drain near the misting system. The drain looks like it used to be connected to a wall-hung sink. There are floor drains. Building waste drains to a septic system. The systems that were visible appeared to be in serviceable condition.
3. Power
   a) Description: The building has an overhead service drop on the side of the building. The service is 60 amp, 120/240 volt single phase. The system is old, but appears to be in good condition. It serves the compressor, controls and building lights.
4. Lighting
   a) Description: The cooler is illuminated by high-pressure sodium low-bay fixtures. They are in good condition.

F. 2367 GARAGE

1. HVAC
   a) Description: None.
2. Plumbing
   a) Description: The building has water connections on the north wall. There are no sinks, water heater, restrooms, etc. The water lines are protected with heat tape. The galvanized steel piping appears to be in good condition.
3. Power
   a) Description: The building has an overhead service drop to the side of the building. The service is at least 100 amp, 120/240 volt single phase. There are two small branch panels on the inside back wall. There are convenience receptacles at approximately 20 foot centers along the wall. The panels are well labeled. The system appears to be in good condition.
4. Lighting
   a) Description: The interior space is illuminated with incandescent lamps in metal warehouse fixtures. The lights are on a twist- type timer switch so they will turn off automatically. The lighting works and is in good condition.

G. 2130 TREE PROCESSING FACILITY

1. HVAC
   a) Description: The building has basically three types of spaces: 1) Office, breakroom, restrooms, drying room; 2) Seedling processing space; 3) Cold storage spaces.
   b) Offices, etc.: The offices, breakroom, etc. are served by modern air handling systems with steam heat and outdoor air cooling. The main office space adjacent to the loading dock has a thru-wall air conditioner. The systems were not accessible for inspection, but judging from the quality maintenance evidenced elsewhere, they probably are in good condition.
   c) Seedling Processing: The seedling processing room is served by a large air handling system located in the overhead area. The system is a full recirculation system with steam heat and steam humidification. It is

designed to maintain environmental conditions suitable for the seedling processing in the space. The system appears to be in good condition, though it was not operating.

d) Cold Storage: Each cold storage space is served by a separate recirculating air cooling system. Cooling is generated by DX compressors located in the mechanical room. Heat is rejected with glycol condenser water pumped through two dry-coolers located outside the building. The glycol circulating pumps are running continuously to prevent the glycol from jelling. The cooling units in each cooler space is about 16 feet in the air. An expanded steel catwalk system exists for servicing the units. There is no fixed access ladder, so a portable ladder or lift is required. The system appears to be in good condition, though it was not operating (except the glycol pumps). Ed Biggs, Forest Service Maintenance, said that they had run the systems monthly after the facility was closed, but after a few months there was a minor malfunction which prevented the system from operating. He has not had the opportunity to find the problem and repair it. The system will require inspection and service by a qualified refrigeration mechanic before it can be operated again.

2. DDC Controls
   a) Description: In recent years, the Forest Service purchased and installed a Johnson Controls, Inc. Metasys Direct Digital Control (DDC) system. There are three network control units located in the mechanical room. This is a state-of-the-art digital control system which was used primarily for monitoring temperatures, humidity, etc. throughout the building. The hardware can be adapted to other processes. It can be connected to a PC (local or remote) for monitoring and control of the building mechanical system. The Johnson Controls office in Portland, OR is available for training, service, parts, expansion and modification.
3. Halon System
   a) Description: A halon fire protection system serves the mechanical room. I did not locate the halon storage tank. The Kidde control panel is located in the main office. It was not clear if the system is operational. An accidental halon discharge is very dangerous and costly to replace, so this system should be serviced on a regular basis or deactivated.
4. Fire Protection
   a) Description: Fire hose reels are strategically located around the facility. They appear to be in good condition.
5. Plumbing
   a) Description: The cold and hot water service and distribution appears to be adequate for the building and is in good condition. Water pressure is good. There are restroom facilities for a large number of men and women. There are water hose connections distributed around the facility. Outside the drying room there is an outdoor washdown system, presumably for washing mud off work clothing prior to entering the building.
6. Power
   a) Description: The building is served by a padmount utility transformer next to the building and an underground primary and secondary service. The main distribution panel is rated at 1600 amps, 277/480 volt, three-phase. There are 480 volt three-phase distribution panels located around the building. There are step-down transformers to serve

120/208 volt branch panels. The electrical system appears to be in very good condition. Electrical drawings exist and the panels are well-labeled.

7. Lighting
   a) Description: The process and cold storage spaces are illuminated with low-bay high pressure sodium fixtures. The offices, etc. are illuminated with fluorescent fixtures. The fixtures appear to be in good condition and the ones I tested worked.
8. Power Doors
   a) Description: The cold storage space doors have electric operators. These devices appear to be in good condition. I tested one and it operated properly. They will require maintenance as any other mechanical equipment.

H. 2827 IRRIGATION PUMP BUILDING

1. HVAC
   a) Description: Ventilation consists of a thru-wall propeller exhaust fan controlled by a thermostat.

2. Plumbing
   a) Description: The facility houses three irrigation pumps. There are two 250 GPM pumps and one 75 GPM pump. The pumps can be operated manually in various combinations depending upon the flow requirements.
   b) According to Ed Biggs, the pumps have been recently rebuilt and are completely functional. There are two large General Electric control panels in the pump room. Complete wiring schematics exist and parts are readily available.
   c) The pumps should be exercised regularly to keep their seals in condition.
   d) The strainer system in the same building requires annual service. It reportedly has a new gearbox and motor and parts are available.
3. Power
   a) Description: The pump building has an overhead 480 volt, three-phase, three-wire electrical service. The main distribution panel is a 600 amp GE switchboard. The utility transformers are on a pole up the hill from the pump house near the road.
4. Lighting
   a) Description: The pump house has minimal lighting. The fixtures are incandescent.

DISCLAIMER

In state of repair studies on buildings and components, certain assumptions must be made regarding existing conditions which are not visible. Because some of the assumptions may not be verifiable without selective demolition of otherwise adequate and serviceable portions of the structure, or testing, this report should not be construed as a warranty of the conditions, details or future performance of the building. We did not survey for the presence of asbestos or other hazardous building components since we are not qualified or licensed to do so.

4.5 EVALUATION OF EXISTING INFRASTRUCTURE

INTRODUCTION

In this section, we examine the existing conditions of the infrastructure at the Wind River Nursery. The following areas are reviewed:

- Sanitary Sewer System
- Storm Drainage System
- Water System (including Fire and Domestic services)
- Irrigation System
- Roadways
- Franchise Utilities (i.e. Electrical/Gas/ Telecommunications)
- Fencing Systems

BASIS FOR ANALYSIS

Information gathered for this report was obtained through site visits, discussions with U.S. Forest Service personnel (Ed Biggs, Jim Dole, Jeff Hull, and Dave Simmons), and survey drawings provided by the Forest Service.

SANITARY SEWAGE SYSTEM

The sanitary sewage system for the site including effluent drainfields, sanitary sewer lines, septic tanks, and pumps were constructed between 1986 and 1987 and is in relatively good operating condition. The site is divided into three regions with a gravity drain field serving each region. For the areas south of Trout Creek, which includes residential, office and storage facilities, the drain field is located on property to be retained by the Forest Service and is situated east of the Training Center off Martha Creek Road. This effluent drainfield (see Figures 2A and 2B) serves structures that will remain with the Forest Service as well as structures that will be conveyed the County.

The second gravity effluent drainfield,

Overflow at Recycle Pond

located east of the seed extraction building #2365 and north of Hemlock Road, serves the facilities for the Ranger District Offices and Hemlock Lake Recreation Site (see Figure 2C). This effluent field is located on property that will be conveyed to the county.

The third effluent drainfield located east of the processing center serves the processing center facilities, which will be conveyed to the county (see Figure 2C).

The effluent drainfields were designed for flows from the existing facilities, per discussion with Ed Biggs of the U.S. Forest Service. It is unlikely that they would meet the requirements of the State Board of Health (Chapter 246-272

WAC) which were adopted March 9, 1994. The potential failure of the existing effluent drainfields and/or demand increases will likely require system improvements for compliance with the current WAC requirements.

Building Septic Tanks

Per discussions with Ed Biggs of the Forest Service, all of the residences, offices, and buildings with sanitary sewer connections each have 1,000 to 1,200 gallon septic tanks. The tanks have been sized for the demands of a single family unit. Therefore, any increase on the demands of the system, such as multiple family units (i.e., dorms, offices, or classroom units) served by one tank, would need further study to determine if the tanks need to be upgraded/replaced. The tanks have been pumped once in the past 10 years.

Sanitary Sewer Service Lines

Within the site, building service lines are typically four-inch lines, connected to a six-inch main line. The sanitary sewer service lines operate as a gravity system except for the service lines at Hemlock Lake Recreation Site restrooms and the service line at the Tree Processing facility, which are 1 ½" and 2 ½" force mains respectively. The 2 ½" line from the processing plant to the pond was installed to bypass the effluent drainfield and direct water used for washing seedlings to the pond. The pond was then designed to provide recycled water back to the processing plant for washing the seedlings. However, during the tree processing operations, the seedling washwater infiltrated too quickly in the pond before the water was recycled back to the plant; thus, the system was never able to retrieve the recycled water back to the plant.

The six-inch main line, which discharges to drain field #1, conveys sewage from facilities that will remain with the Forest Service as well as facilities that will be conveyed to the County. According to U.S. Forest Service officials, the system is functioning properly, and no further improvements will be required unless demand is increased.

The six-inch main line, which discharges to drain field #2, serves both facilities in Hemlock Lake Recreation Site and the Ranger District Offices, which will remain with the Forest Service. However, a portion of the six-inch sanitary sewer line runs through property that will be conveyed to the County and may require an easement.

The sanitary sewer lines (4" gravity line and 2 ½" pump line), which drain to drain field #3 by the Tree Processing Facility all serve structures that will be conveyed to the County and are all located on property that is to be conveyed to the County.

STORM DRAIN SYSTEM

Existing storm water facilities appear to have been developed as the need arose. The system is an inconsistent assortment of collection and conveyance facilities of various ages and materials. For our analysis of the existing storm drain system, we examined the following existing conditions:

- Drainage Basins
- Water Quality Facilities
- Run-off control systems.

Drainage Basin Overview

The Wind River Nursery is divided between the Trout Creek and Martha Creek drainage basins. In general, the

site is fairly flat. During large storm events, the storm water runoff sheet flows east and collects in drainage swales located along the roads and agricultural fields. From the drainage swales, the storm water eventually discharges to Trout Creek or Martha Creek.

Water Quality Issues

There are no water quality facilities currently in place to provide water quality treatment from vehicle traffic runoff. During large storm events, along most existing roads, (Hemlock Road, Martha Creek Road etc.), the storm water sheet flows to the side of the roads and collects in drainage swales. Along the west side of Chapman Avenue, there is a trench drain that collects runoff from the road and discharges untreated runoff into Trout Creek. In parking lot areas, such as at the tree processing facility, there are no water quality or collection structures in place to treat or convey runoff. Stormwater currently sheet-flows to nearby ditches and/or infiltrates. If there is future development on the site, the storm drain system will require improvements to comply with Department of Ecology's Water Quality Standards as outlined in their Surface Water Management Manual. Water quality facilities such as oil-water separators and/or wet ponds would be required to treat runoff in vehicle traffic areas.

Flow Control Facilities

Except for the dry wells for the roof downspouts at the management offices (buildings 2627, 2226, 2025, 2629, 2526 etc.), there are no flow control facilities on-site to control the peak run-off from the developed areas to Trout Creek and Martha Creek. At most buildings, the run-off from the roof is not tight lined to the storm drainage system and instead just sheet flows off the roof.

In addition to water quality facilities, peak runoff control facilities will be required for developed impervious areas, including roads, buildings, walkways, etc., in order to comply with Department of Ecology's development standards. The site currently drains into two creeks, Martha Creek and Trout Creek. Inflow into these Creeks must match pre-developed existing conditions per Department of Ecology's Development Standards. Therefore, any future development on the site would require an extensive drainage basin analysis and improvements to the drainage control facilities, such as adding detention pond/tanks, flow control structures and infiltration facilities.

WATER

Domestic & Fire Protection Water Service

The domestic and fire protection water services for the site are served by a 100,000 gallon concrete water storage

100,000 Gallon Water Tank

tank located southwest of the Arboretum (See Figures 4A and 4B). The groundwater is pumped via a 170GPM submersible pump from a well located south of Trout Creek near the Forest

Service Training Center to the water storage tank. The water storage tank, pump house and well and water distribution system were constructed in 1983. The tank is currently accessible by a dirt road from Chapman Avenue.

Water Distribution System

From the Water Storage Tank, an eight-inch PVC distribution line conveys the water east to Chapman Avenue and then conveys flows north just west of Chapman Avenue. Near the intersection of Chapman Avenue and Martha Creek Road, the eight-inch line divides into two six-inch PVC distribution lines (See Figure 4A). One of the six-inch distribution lines conveys water north across the Trout Creek Bridge, and the second distribution line conveys water east down to buildings north of Martha Creek Road.

Once across the bridge, the first six-inch distribution line divides into six-inch and four-inch distribution lines at the intersection of Trout Creek Road and Hemlock Road (see Figure 4C). The four-inch distribution line conveys water to the Hemlock Lake Recreation Site and the Ranger District Offices and Cone Storage Pole Buildings (Buildings 2328, 2329, 2365 and 2127). The six-inch distribution line, which flows east along Hemlock Road, conveys water to the Tree Processing Facility.

Joint Use Issues

The county and the U.S. Forest Service are currently negotiating a water maintenance agreement as part of the conveyance. Water Right Certificates issued by Department of Ecology, such as Water Right Certificate G2-25679, have certain water maintenance requirements (i.e. wells) as part of the water right appropriation.

Domestic Services

In general, the domestic service lines provided to the facilities that will be conveyed to the County appear to have adequate pressure, assuming that the existing conditions remain the same (see section on review of the building mechanical systems). The single family residential houses, equipment storage building, and packing shed offices, etc., west of Chapman Avenue are provided with 1-¼" service lines from the eight-inch distribution line. Two-inch and 1-½" service lines are provided to the Tree Processing Facility. Currently there are no meters for the domestic services at the Wind River site.

Fire Protection Services

Skamania County Fire District No. 1 currently provides fire protection service for the Wind River Nursery and will continue to do so after certain areas are conveyed to the County. The existing water storage tank and water distribution network appears to be inadequate and does not meet current fire flow requirements of the Uniform Fire Code. More specifically, for the building size of the Tree Processing Facility, the UFC requires a fire flow of 5,000 gallons per minute over a four hour flow duration time. The existing system cannot meet this requirement.

Water Rights

Per information provided by Department of Ecology, the current water rights for the well that serves the domestic and fire protection water system for the Ranger District Offices, Tree Processing Facility, and buildings north of Martha Creek Field, were granted to the Forest

Service under Water Right Certificate G2-25679, issued in May, 1989. Under this certificate, 200 gallons per minute along with maximum 66.5 acre feet per year of water has been appropriated.

IRRIGATION

Trout Creek, Martha Creek and Bunker Hill Fields

Irrigation and Frost Control for Martha Creek, Trout Creek, and Bunker Hill Fields are provided by Department of Ecology's Surface Water Certificate #S2-26536 issued on April 5, 1984. The certificate appropriated a maximum of 14.5 cubic feet per second and a maximum of 548 acre-feet per year of water to be withdrawn from Trout Creek for the fields.

Pumphouse at Pacific Crest Fields

Water for the fields is withdrawn from Trout Creek (see Figure 1). Three pumps (2-250HP Aurora pumps and 1-75HP Cornell Pump) at the Trout Creek Dam are used to charge the system. The pumps can be operated manually in various configurations depending on flow requirements. Power for the pumps is a 480 volt three phase service. The pumps were installed in 1970 and Ed Biggs estimates that they were rebuilt within the last 6 years. The check valves and the strainer are in good working order.

The distribution system begins at the pump house with a 14" steel pipe, which reduces in diameter as it approaches the various fields. Based on discussions with Ed Biggs, after the 14"steel pipe, the pipe material is PVC.

At the fields the system ends with connection points for the 1-1/2 inch aluminum pipe with connectors. These lines, connectors, and sprinklers were surplussed and given away a number of years ago when the fields were taken out of production.

Pacific Crest Fields

Irrigation for the Pacific Crest Fields is provided by five wells per Water Right Certificate G2-26789 issued in 1985. A sixth well for domestic supply is also covered under the Water Right Certificate noted above for the building/offices in the Pacific Crest Fields. The water supply appropriated under the certificate allows for a maximum of 3,990 gallons per minute and a maximum of 237 acre-feet per year.

The wells and pump houses were constructed between 1985 and 1986. A twenty-inch distribution line runs between the irrigation pump houses. Three 150-horsepower, one 75-horsepower, and one 50-horsepower line shaft pumps (distributed within the five pump houses) feed the twenty-inch line. A 10-horsepower submersible pump supplies water for the domestic use.

ROADWAYS

The main roads through the site, such as Martha Creek Road, Hemlock Road, and Chapman Avenue are constructed with asphalt concrete pavement (see Figure 5). The roadway width varies from 22 feet to 28 feet, with single lanes each

direction. The roadways are in fair condition with some alligator cracking and areas of failure noted.

For access driveways from the main roads, such as the driveway north of the Nursery Office and south of the Gas House on Chapman Avenue, the pavement has alligator cracking. This type of cracking is most often due to failure of the subgrade and freeze-thaw cycles. Replacement of the entire pavement section is recommended for future use along these roads.

Within the fields, there are asphalt concrete pavement and gravel maintenance roads. These roads are in fair condition, with a few potholes.

FENCE

Each field, Martha Creek, Trout Creek, Bunker Hill, and Pacific Crest Fields are enclosed with fencing and access gates of various types and materials. Additional fencing may be required if the county wants to isolate the conveyed property. In all fields, the fencing appears to be in good condition. The type of fencing is intermixed with six-foot high chain link fence with barbed wire to six-foot wire fencing.

ELECTRICAL & FRANCHISE UTILITIES

The Public Utility District in Carson supplies the electrical power service provided to the Wind River Nursery site. Overhead power lines distribute the electrical power throughout the site. The main line was upgraded in 1980 to handle the load for the pumps and facilities built in the 1980s.

The single-family houses located west of Chapman Avenue are metered. The pumps on site for the domestic and irrigation water wells and for the sanitary sewer system also all have individual meters for tracking their use.

Telecommunications

US West provides telecommunication service for the site and distributes the power through the overhead lines. Per discussions with Ed Biggs, US West would be able to expand their services to the Wind River site if necessary.

Fiber Optics

Through the Northwest Open Access Network (NoaNet), a new fiber optic network is being designed to improve telecommunications in rural areas including Skamania County. The fiber optic network provided by NoaNet parallels Bonneville Power Administration's transmission systems.

Skamania County is currently in the process of connecting to the NoaNet system and installing a new network "backbone" within the County's communities. In 2000, the town of Stevenson is expected to be connected to the NoaNet network with expansion to Carson in 2001. Once the fiber optic system is extended to Carson, then any additional fiber optic cables from Carson can be continued to Wind River Nursery. Additional information about NoaNet including a map of the main trunkline for the fiber optic system can be obtained from their website at www.noanet.net.

4.6 SITE SAFETY AND EMERGENCY ACTION PLAN

In order to protect the health and welfare of the public, a safety and emergency action plan for the development project would need to be in place. The plan would be composed of two parts:

- Preventative Safety Action Plan
- Emergency Action Plan

The Preventative Safety Action Plan would include maintenance and inspection requirements for facilities in order to ensure utilities are working in proper order. The following is a sample list of items that would be included in the plan:

- Water System: Maintain records of when each pump and water tank was inspected and any repairs that are conducted. Routine inspections of pumps should be on weekly basis and water tanks on an annual basis. Periodic testing of water samples from the tap should also be conducted to ensure water quality standards are being met.

- Fire System: Fire hydrants should be flushed and tested annually to ensure proper working order and any repairs made should be documented.

- Storm drainage conveyance systems and detention ponds should be cleaned to remove sediment at least annually and after major storm events. In addition, inspection of such facilities should be conducted annually and after large storm events to ensure proper working order.

- Sanitary sewer conveyance lines and structures should be cleaned annually. Maintenance records of repairs should also be documented.

- Roadways should be inspected at least annually for pavement failure. Records of when repairs are made should also be maintained.

- Irrigation system should be tested on an annual basis to ensure proper working order of system. Records of when repairs are made should also be documented.

For unexpected events, such as fire or service disruptions, an emergency action plan would need to be in place. The plan would include such items as:

- Agency contact list, such as fire department, sheriff, hospitals etc., for notifying in the event of an emergency.

- Alternative routes for roadway closures and an action plan for implementing road closures in the event of an emergency.

- Emergency shut down procedures for isolating broken water lines and an action plan for notifying the public of utility disruptions. Plan would also include an action plan in the event of a rupture in the water tank wall.

- Emergency Spill Cleanup Plan in accordance with federal and state requirements.

4.7 INFRASTRUCTURE MAINTENANCE COST ANALYSIS

INTRODUCTION

The estimated annual maintenance costs for the Wind River Nursery are presented in Table 4-3. For the analysis, it was assumed that the future users of the site would remain as it is being used today. Therefore, no development or increase in usage was expected for the cost analysis.

The maintenance costs for existing infrastructure were broken down into three categories:

- Landscaping/Grounds Maintenance
- Utilities including water, storm drainage, sanitary sewer, irrigation and electrical utilities.
- Roadways

The cost was broken out into the following years:

- Cost for years 1-3
- Cost for years 4-10
- Cost for years 11-20

The analysis does not include initial capital costs for the maintenance equipment required in upkeep of the site. Due to the uncertainties for estimating maintenance costs from a conceptual scope, a contingency of 50% was added to the final costs.

Landscaping/Grounds Maintenance.

Grounds maintenance, such as mowing lawns (i.e. along Chapman Avenue), trimming tree limbs, cleaning ditches, cleaning roof gutters, planting flower beds, etc. would be provided by a designated groundskeeper. It was assumed this individual would work full-time for six months out of the year and half-time for the remaining months. Capital costs for the ground maintenance equipment were not included in the analysis.

Utilities

For the water system maintenance costs, we consulted with a water service utility of similar size to determine what the yearly cost per each connection in the system. The estimated cost includes maintenance for the water system's tank and pumps.

It was assumed that the storm drain and sanitary sewer system would be cleaned once every year over the entire 20 years. Cleaning would include conveyance lines and structures to remove debris and sediment build-up. Septic tanks would be pumped once every 10 years starting in year one.

The irrigation and electrical system were assumed to have "mothball" costs to keep system operational during periods of non-usage. For the irrigation system, it was assumed that the pumps for the fields would have to be turned on periodically.

Roadways

For maintenance of existing roadways we assumed that the existing parking lots off Chapman Avenue, as well as the Chapman Avenue roadway, would

require asphalt overlay once every ten years starting in Year Five. Since these areas would be shared with the Forest Service, we assumed that the maintenance costs for completing the overlay would be shared with the Forest Service equally. The estimate area listed in figure 4.6a reflects the portion that would be covered by Skamania County.

5.0 SITE ANALYSIS

5.1 VICINITY MAP

The Wind River Nursery site is a unique combination of open meadows and forested slopes in the heart of the Columbia River Gorge, within the boundaries of Gifford Pinchot National Forest and the Cascade Mountains.

Located in the heart of Skamania County, the Wind River Valley, Experimental Forest and Nursery are easily accessible to its residents and visitors to the region. The Nursery site is located two miles west of the community of Stabler, nine miles north of Carson, and twelve miles north of the Columbia River Gorge and the town of Stevenson. Stevenson is the county's largest town. Other Washington riverside communities linked by State Route 14 include North Bonneville, Home Valley, Cook and Underwood.

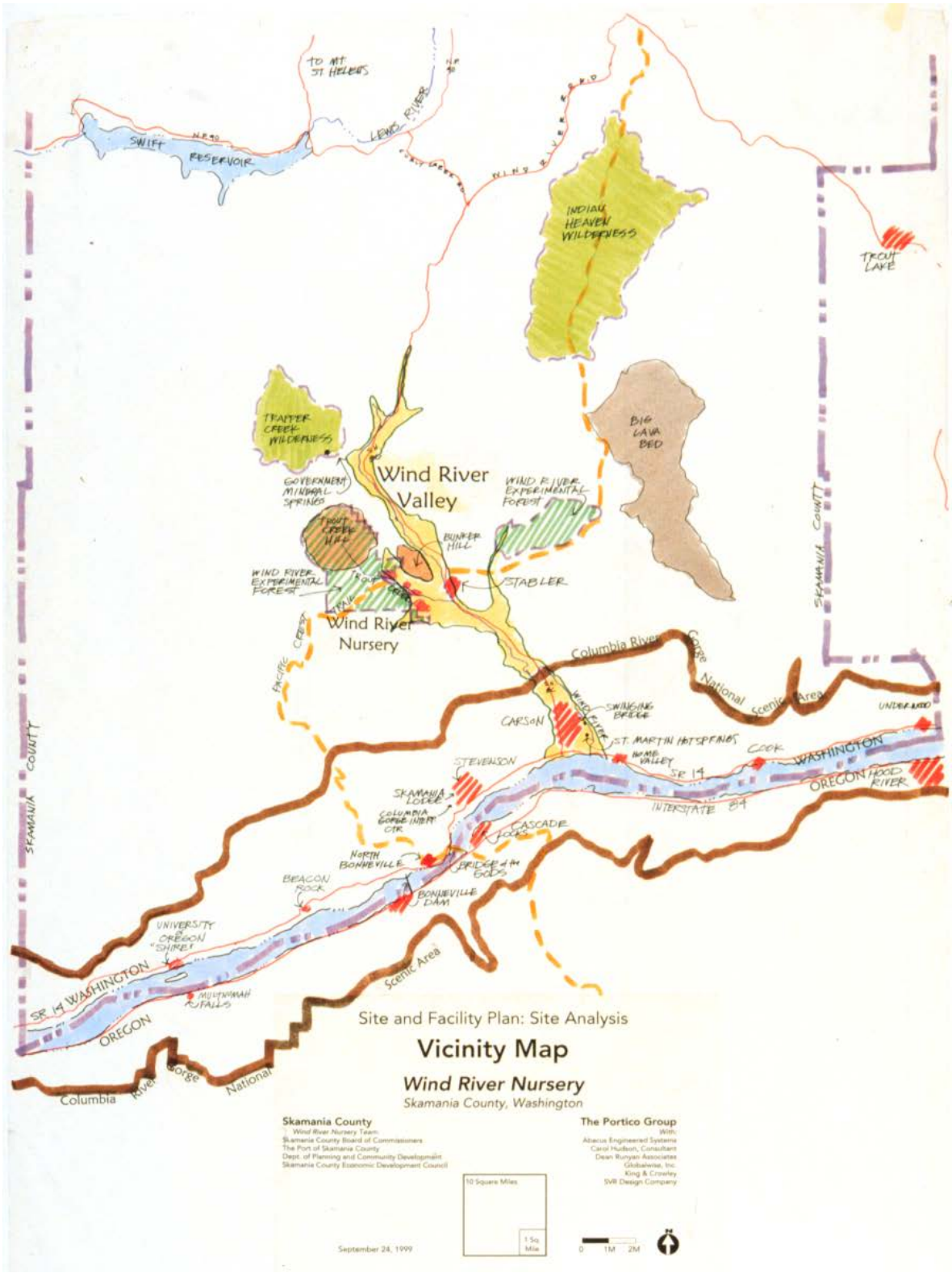
The Nursery is adjacent to regional recreation destinations including the Columbia River Gorge, the Cascade Mountains, Trapper Creek and Indian Heaven Wildernesses, and the Big Lava Bed Area. Further north is the Swift Creek Reservoir and the Mt. St. Helens National Volcanic Monument. Many of these sites are directly adjacent to or have easy connections to Pacific Crest Trail, which traverses the Nursery site.

The Nursery is also a gateway to thousands of acres of the Gifford Pinchot National Forest. Though timber has been an important part of the forest's role in the region, there are many other uses and products that are found on forest land. These include mushroom and berry picking, fishing and plant collection, as well as the use of hiking, biking, skiing and equestrian trails.

Notable destinations near the Nursery include: Skamania Lodge and the Columbia Gorge Interpretive Center in Stevenson, and Beacon Rock and the University or Oregon's field station at the "Shire" (John Yeon property) further down river.

Across the river, on the Oregon side, are the towns of Hood River, Cascade Locks, and notable destinations including Bonneville Dam and Multnomah Falls. The major Gorge highway is also located along the Oregon side – Interstate 84, linking Portland to many destinations to the east. The most direct route across the river to the Nursery site is via "The Bridge of the Gods" at Cascade Locks.

FIGURE 5-1: VICINITY PLAN



5.2 TROUT CREEK VALLEY AND THE HEART OF THE CAMP

The Approach

The approach to the Wind River Nursery site is along Hemlock Road. It takes the visitor from the rural residential community of Stabler up to the Nursery and the edge of the Gifford Pinchot National Forest.

The landscape setting that defines the Wind River Nursery includes three geomorphic landforms: The Ridge, The Hill and The Valley.

The Ridge

The north south running Stabler-Carson Ridge defines the western boundary of the Nursery, rising 1,500 feet above the valley. Both Forest Service Road 41 and the Pacific Crest Trail drop down this ridge to the Nursery. The trail connects south to Oregon, with easy connections for hikers or horseback riders coming from Skamania Lodge. The road ultimately connects via other roads to destinations in western Skamania County and eastern Clark County.

The Hill

North and east of the nursery site, rising 1,100 feet above the valley, is Bunker Hill. The Pacific Crest Trail passes its southern base and provides access to a steep trail to its summit.

The Valley

A walk through the Nursery is marked by the distinct contrast between the intimate, mystical enclosure of dark green trees, and bright sunlit openings of clearings. These clearings, the four open fields of the former nursery, define the character of the Wind River Nursery. They provide distant views to the surrounding foothills, including Bunker Hill and an ancient volcano - Trout Creek Hill. Owing to the ancient lava flows, the valley bottom is unusually wide, providing level areas for a multitude of uses.

Martha Creek Field: The Meadow and The Campus

The Martha Creek Field is the southernmost field and is the most recognizable area of the Nursery. It has the character of a meadow, bounded on the west and north by a campus composed of the existing Civilian Conservation Corps (CCC)-era housing and structures, and the nursery processing buildings from a later era. The two historic barns in the interior of the field provide a picturesque mid-ground to views out toward the surrounding foothills. The Forest Compound formed by the Training Center and Bunkhouse is the social heart of the Nursery. These structures will remain in Forest Service ownership.

The 11-acre Wind River Arboretum is the Northwest's oldest. It was started in 1912 to test and develop suitable trees for use in reforestation projects west of the Cascades. The foresters were searching for hardy exotic trees that could outgrow native trees, but what they discovered is that Northwest native trees performed best. The surviving trees are mostly conifers, as most of the broad leaf trees grew poorly.

The CCC structures and the big leaf maple-lined boulevard along the western edge of the meadow provide a wonderful armature to build and expand upon for potential research, educational, recreational or tourism related uses.

The Swimming Hole

The existing forest service day use picnic area and swimming beach at the Hemlock Lake Recreation Area is currently the most publicly accessible area at the Wind River Nursery. A shallow reservoir lies behind the Trout Creek dam. Territorial views are available from the road atop the dam across the lake toward Trout Creek Hill. A Forest Service sponsored study has recently recommended removal of the dam for habitat restoration related to the Endangered Species Act listing of the steelhead fishery.

Trout Creek Field and the Seed Processing Center: The Workplace and The Pasture

Constructed in the 1970's the existing processing center buildings are the youngest structures on site. Because site access is off the adjacent Martha Creek and Hemlock Roads, it is spatially isolated from the other nursery buildings and fields.

The Trout Creek Field, or the Pasture, provides vistas to the two dominant landforms on the edge of the Nursery: Bunker Hill and Trout Creek Hill. The drying racks at the south end of the field contribute to its agrarian character.

Bunker Hill Field: The Glade

Bunker Hill Field is the smallest of the four fields. It is reached by turning off the main valley road. The scale of the adjacent Bunker Hill dominates its setting.

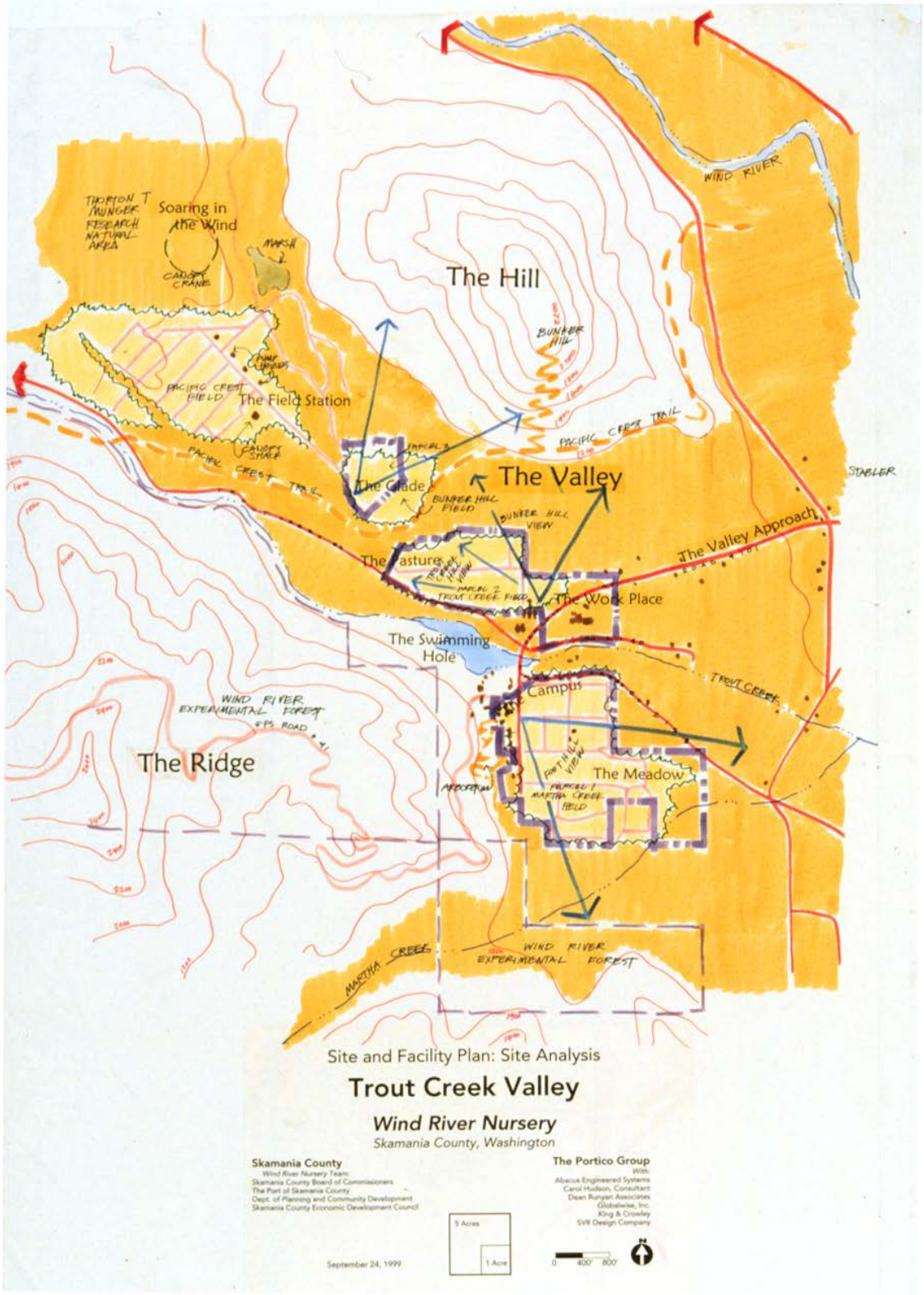
Pacific Crest Field: The Field Station

The Pacific Crest Field is the second largest of the clearings. Because it has been cleared for the shortest length of time, it appears as the rawest of the four fields. It contains a cluster of simple metal clad buildings currently occupied by the Wind River Canopy Research Facility. The University of Washington, the USDA Forest Service Pacific Northwest Research Station, and Gifford Pinchot National Forest cooperatively manage this research project.

Soaring in the Wind

Located a quarter mile from the northeast corner of the Pacific Crest Field, within the old growth forest, is the Canopy Crane. The 250-foot tall crane provides researchers access to nearly 6 acres of old-growth canopy.

FIGURE 5-2: TROUT CREEK VALLEY



5.3 MARKET ANALYSIS

INTRODUCTION

This section of the report analyses the economic and market conditions most likely to influence demand for and feasibility of visitor- and education-oriented uses considered for the Wind River Nursery site. Evaluation of primary markets and the associated demand is an important aspect of ascertaining the feasibility of future uses for this site. The following economic and market trends are particularly important and are discussed in this section:

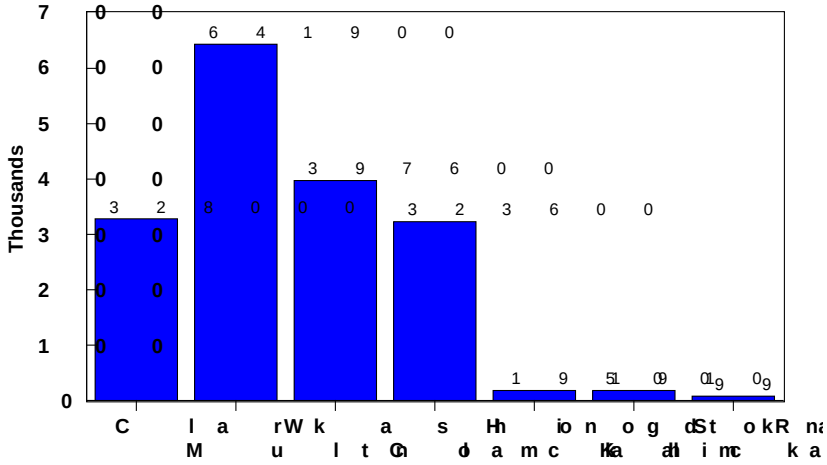
- Population
- Age Distribution
- Employment
- Household Income
- Visitor Spending and Economic Impacts
- Traffic Counts

POPULATION

Skamania County's population growth is consistent with national trends that show population increasing in rural counties that are adjacent to major metropolitan areas. After beginning 1990 with about 8,000 residents, Skamania County ended the decade with a resident population of approximately 10,000, representing an average growth of 1.85% per year over the ten-year period.

Skamania County's population growth is largely attributed to new residents moving into the County. Skamania County offers an attractive option for those seeking the natural and scenic amenities of the Columbia River Gorge combined with the desire for a lifestyle less urban than the nearby Portland-Vancouver Metro Area. Figure 5-3 shows the population of Skamania County as well as other nearby counties in Oregon and Washington.

FIGURE 5-3
POPULATION OF SELECTED COUNTIES, 1999



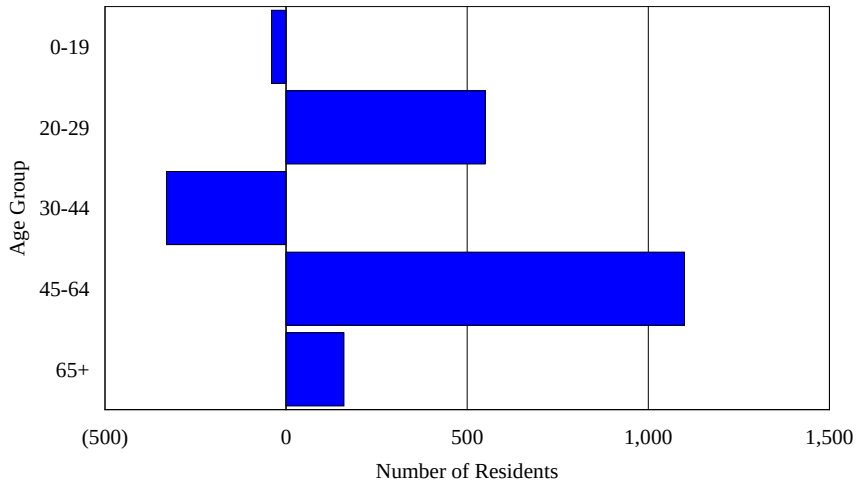
Source: Center for Population Research and Census, Portland State University, Washington State Office of Financial Management, Forecasting Division, and Dean Runyan Associates

Age Distribution

Over the next decade, residents between 45-64 years of age are projected to account for a large portion of the population growth in Skamania County. This age group, which will also increase in the rest of Washington and the U.S., represents a relatively high-income age group. Many of these individuals have the financial resources necessary to acquire larger homes and property in rural areas.

In addition to its natural and scenic amenities, Skamania County offers close proximity to the Portland-Vancouver area, as well as a variety of opportunities for outdoor recreation — factors that will tend to appeal to a financially secure segment of the population with the potential to acquire new residential property as they prepare to enter their retirement years. In Figure 5-4, projected growth in population is shown by age group for Skamania County through 2010.

FIGURE 5-4
PROJECTED POPULATION GROWTH BY AGE GROUP,
SKAMANIA COUNTY, 2000-2010



Source: Dean Runyan Associates and NPA Data Services, Inc.

Conditions for Growth

Trends in the Portland-Vancouver Metro Area will continue to influence the population growth of Skamania County and, to a large degree, shape the demand for any recreational and education activities at the Wind River Nursery site. Since 1990, the population of the Portland-Vancouver area has grown by about 300,000 residents. Through the 1990s, Clark County, which includes the city of Vancouver and borders Skamania County on the west, has experienced particularly rapid growth – about 4% per year. Figure 5-5 shows population growth rates for Washington, Oregon, and selected counties.

Over the last decade, the Portland-Vancouver area has added 23,500 jobs in the high tech industries, growing from just over 37,500 jobs in 1990 to roughly 61,000 jobs in 1999. Employment projections for Portland-Vancouver call for continued growth, although at a slower rate, across all major industry sectors through 2008.

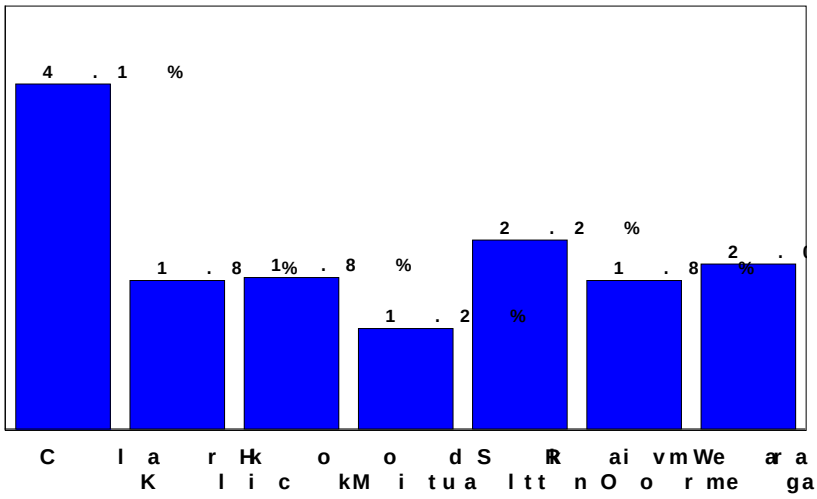
Employment trends in the Portland-Vancouver area will, to a certain degree, continue to influence the population growth of Skamania County.

Over the last decade, residential housing prices in the Portland-Vancouver area rose rapidly while average household income grew more slowly. The National Association of Realtors has recognized this trend and, through the latter half of the 1990s, has consistently rated the Portland-Vancouver housing market among the ten least affordable housing markets in the nation. In 1999, the median home price for the Portland-Vancouver area was about $160,000.

In Skamania County, residential housing prices have risen rapidly as well. In 1990, the Columbia Gorge Economic Development Association reported the median home price in the City of Stevenson was $62,500. By 1998, the

median home price had risen to about $179,000, higher than for any other community in the Columbia River Gorge. Most likely, the strong growth in the nearby Portland-Vancouver real estate market played a significant role in the growth of housing values for Skamania County.

FIGURE 5-5
AVERAGE ANNUAL RATE OF POPULATION GROWTH
OREGON, WASHINGTON, AND SELECTED COUNTIES, 1990-99



Source: Labor Market and Economic Analysis Branch, Washington State Employment Security and Dean Runyan Associates

TRAFFIC VOLUME

Interstate 84, on the Oregon side of the Columbia River, serves as the primary thoroughfare for travelers visiting the Columbia River Gorge. Traffic entering Skamania County from I-84 does so via the Bridge of the Gods, which connects Oregon with Skamania County, Washington about midway through the Gorge, and functions as a gateway of sorts.

The traffic counts taken at the entrance to the Bridge of the Gods can provide a useful gauge to estimate the number of visitors traveling into Skamania County each year. Although it is possible for visitors to enter and leave Skamania County via Highway 14, thus not crossing at the Bridge of the Gods, the majority of visitors would travel by way of I-84 and cross over the bridge.

The Bridge of the Gods traffic count figures are reported by the Port of Cascade Locks and represent the total number of vehicles each month, counting traffic in both directions. A procedure is used here to identify the portion of annual traffic that represents seasonal travel, that which is over and above the minimum travel volume during the three slowest months of the year (December, January, and February). Average daily traffic for the three lowest months of the year is used to represent or account for local traffic;

however, a portion of this low traffic volume would likely include some visitors as well. This estimation procedure is described as follows:

- Define the three lowest months of the year as a "base traffic volume" and determine the average daily traffic (ADT) for these three months;
- Subtract this "base traffic volume" ADT from each of the other nine months of the year, yielding an estimate of "seasonal" ADT for each month;
- Sum the resulting seasonal ADT over the nine-month season period to calculate annual seasonal traffic;
- Divide the total vehicle count by two to reflect travel in one direction.

This procedure yields an estimate of about 160,000 seasonal auto trips to Skamania County in 1998. As shown in Table 5-1, total seasonal auto traffic can be used to estimate to the number of visitors traveling into Skamania County. Since seasonal auto travel would also include some travel by seasonal employees and residents, which is likely to increase during the summer months, 80% is considered to be trips by visitors, with the remainder representing seasonal travel by residents and employees. Assuming an average party size of 2.3, this vehicle traffic represents about 294,000 visitors traveling to or through Skamania County in 1998.

TABLE 5-1
SKAMANIA COUNTY
AUTO TRAFFIC COUNTS AND VISITORS, 1998

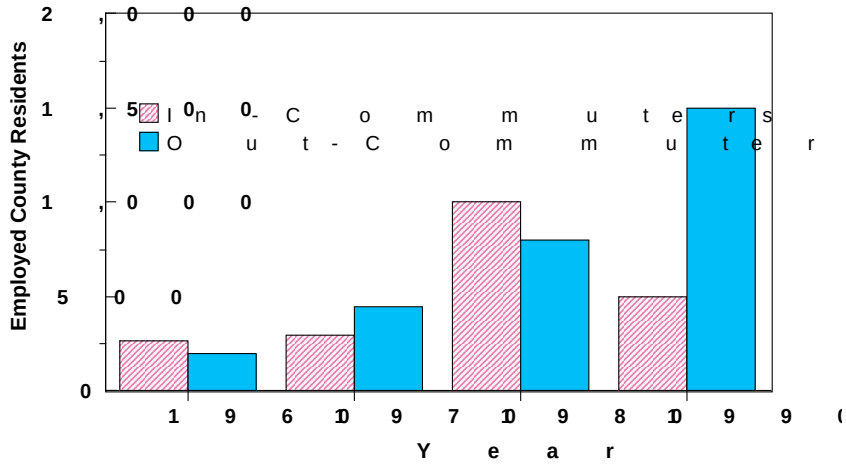
Factor	Amount
Average Daily Auto Traffic, Bridge of the Gods	3,031
Seasonal Average Daily Auto Traffic, Bridge of the Gods	1,161
Auto Traffic One Direction	580
Annual seasonal auto traffic (represents a 275 day season)	159,596
Percent travel-related	80%
Annual travel-related auto traffic	127,677
Average party size	2.3
Annual Visitors	293,656

Source: Dean Runyan Associates and Port of Cascade Locks

Commuting Patterns

It is interesting to note that between 1980 and 1990, the commuting patterns in Skamania County shifted as the number of commuters leaving the County grew substantially. Given the job growth in the nearby Portland-Vancouver Metropolitan Area combined with population growth in Skamania County, this pattern of commuting out of Skamania County is likely to be even more pronounced in the future. Figure 5-6 illustrates the change in commuting patterns that occurred between 1960-90.

FIGURE 5-6
SKAMANIA COUNTY COMMUTING PATTERNS,
1960-1990



Source: Labor Market and Economic Analysis Branch, Washington State Employment Security and Dean Runyan Associates.

SCHOOL-AGED POPULATION

Attendance by school-aged groups will depend to a large extent on:

- the facility's appeal to educators,
- the extent to which the education program complements and enhances classroom education,
- school district budgets – a small portion of which is allocated to fund transportation costs associated with classroom field trips.

At present there is a large number of school-aged children in the region. Table 5-2 shows the 1999-2000 public school enrollment for selected Oregon and Washington Counties within the region. Over 260,000 students in grades K-12 attend public schools in the counties that represent the Portland-Vancouver Metro Area as well as Skamania and Klickitat County. This relatively large population of school-aged youth represents a strong primary market for any educational programs or activities directed toward this segment of the population.

TABLE 5-2
PUBLIC SCHOOL ENROLLMENT K-12,
1999-2000

County/State	K-3	4-6	7-8	9-12	Total
Clackamas, OR	15,922	8,821	8,653	16,510	49,906
Multnomah, OR	28,716	14,451	13,558	26,887	83,612
Washington, OR	22,691	11,210	10,749	20,707	65,357
Clark, WA	17,242	14,852	9,769	17,906	59,768
Klickitat, WA	978	866	629	1,192	3,666
Skamania, WA	332	332	206	412	1,281
Total	85,881	50,532	43,564	83,614	263,591

Source: Washington State Superintendent of Public Instruction, Oregon Department of Education, and Dean Runyan Associates

Higher Education Institutions

Four major higher education institutions provide opportunities for partnerships to foster education and research programs at the Wind River Nursery. Both Washington State University (WSU) and the University of Washington (UW) maintain world-class research and teaching facilities in the vicinity of this site. The University of Oregon's School of Architecture and Allied Arts has established an education center and is working to develop a retreat facility in Skamania County. As the state's Land, Sea and Space Grant institution, Oregon State University (OSU) offers a variety of programs in scientific, technological, agricultural and natural resource fields.

Washington State University (WSU) the state's largest land grant institution is located in the City of Pullman in southeast Washington. WSU offers an array of expanding agricultural, natural resource science and environmentally based programs in research, along with a branch campus and Cooperative Extension presence in Southwest Washington.

WSU Vancouver was formally established as a branch campus in 1989. The branch campuses are intended to provide students that are location-bound with opportunities to complete advanced degrees. WSU expects strong growth enrollment at these branch campuses, particularly the WSU Vancouver branch. The campus offers junior, senior, graduate-level, and continuing education courses. In 1999, the branch campus had an enrollment of about 1,500 students. The campus also serves as a resource for the community by making a research library available, providing gallery space for artwork and maintaining a bike and pedestrian path. The campus is located on 351 acres seven miles north of the Portland-Vancouver metropolitan area.

Of special note is the WSU Vancouver Research & Extension Unit, with research and educational strengths in native and cultivated small fruit crops, environmental horticulture and natural resource sciences.

WSU Cooperative Extension in Southwest Washington, also directed from the research station in Vancouver, has offices and staff in each county providing information to serve the needs of families, youth, communities and businesses, while promoting stewardship of the land through agriculture and natural resource programs. WSU Vancouver, as a growing branch campus, offers a wide spectrum of cooperative opportunities in research and education in life and earth sciences, as well as in business and social science—areas of value to the sustainable development of the Wind River site and Skamania County.

University of Washington (UW) conducts vital forestry research using the Wind River Canopy Crane research facility, which is immediately adjacent to the Wind River site in the Thorton T. Munger Research Natural Area of the Gifford Pinchot National Forest in Skamania County. The research facility exists as a result of a partnership between the UW, the Pacific Northwest Experimentation Station (the experiment division of the US Forest Service) and the Gifford Pinchot National Forest.

Traditionally, canopy studies have been reserved for the scientific community, but

recent innovations have resulted in high strength, low cost canopy access equipment that make more mainstream research and tourism applications feasible. A 250-foot canopy crane, which gives researchers access to nearly six acres of forest canopy, is located on the site. The crane is currently the largest of its type being used in canopy research, and the only one in North America.

Although this canopy crane is used almost exclusively for research, a similar canopy crane located in the area could potentially serve as a visitor attraction and cooperative partnership with the existing research program.

Research knowledge gained at the site could also be offered as an unparalleled educational experience to travelers and recreationists who are already attracted to the Columbia Gorge National Scenic Area. Public education opportunities at the site are diverse and numerous.

Conference facilities, which are also envisioned for the site, can be used for professional staff development by government and the private sector to train personnel who must address the complex and interdependent natural resource use and protection issues that face the region, nation and world. WSU and UW scientists and faculty that conduct research, teaching and outreach activities in the region and throughout Washington could offer a vast pool of educators, trainers and seminar presenters at this site.

Oregon State University (OSU), located in Corvallis, offers a variety of programs in scientific, technological, agricultural and natural resource fields. As the state's Land, Sea and Space Grant institution, OSU also conducts extensive research programs, administers the Extended Education Service in Oregon counties, and maintains branch agriculture experiment stations at several locations throughout the state. Currently, OSU hosts over 14,000 students, including 3,000 graduate students.

The state owns and leases many acres of forest and farmland that are used by OSU for instruction and research related to agriculture and natural resources. Oregon State University provides opportunities to explore partnerships in agriculture and forestry, and the USDA National Clonal Germplasm Repository in Corvallis, which has national responsibility for maintenance and evaluation of native and cultivated small fruit crops.

In October 1995, the *University of Oregon* received a private donation to benefit the education, research and public service mission of the School of Architecture and Allied Arts. The School has established the John Yeon Center for Architectural Studies in Portland and The SHire: John Yeon Preserve for Landscape Studies in Skamania County. The Shire occupies a 75-acre waterfront site in Skamania County directly across from Multnomah Falls and provides a partnership opportunity for any organizations involved with education programs and activities held at the Wind River Nursery site, particularly those related to landscape design, planning, and ecology.

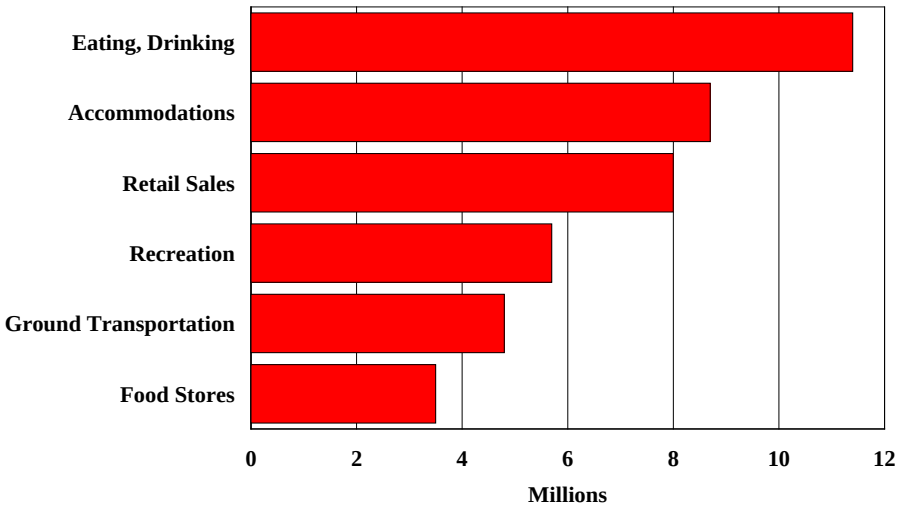
The Shire is a carefully designed landscape with a sculpted lawn, a series of meadows, wetlands, vista points, river bays, and walking paths. While being preserved as an example of landscape design, the Shire serves as an educational site with the opportunity to study landscape architecture, design, planning, ecology, and conservation issues associated with the Columbia River Gorge and Pacific Northwest Region

TRAVEL SPENDING

Spending by visitors traveling in Skamania County generates jobs, payroll and tax revenue for the County. The money that visitors spend on various goods and services while in Skamania County produces revenue for businesses, which in turn employ workers and pay their wages and salaries. Businesses that serve travelers include lodging establishments, restaurants, retail stores, gasoline service stations, and campgrounds.

In 1999, visitors spent approximately $42 million in Skamania County. The largest share of travel spending occurred in eating and drinking establishments. Visitors to Skamania spent over $11 million in restaurants, fast food establishments and taverns. Spending on lodging accommodations including campgrounds amounted to almost $9 million. Visitors also spent about $8 million on retail purchases. Figure 5-7 shows travel spending, broken out by the type of business in which the expenditures occur, for Skamania County in 1999.

FIGURE 5-7
TRAVEL SPENDING BY TYPE OF BUSINESS
SKAMANIA COUNTY, 1999

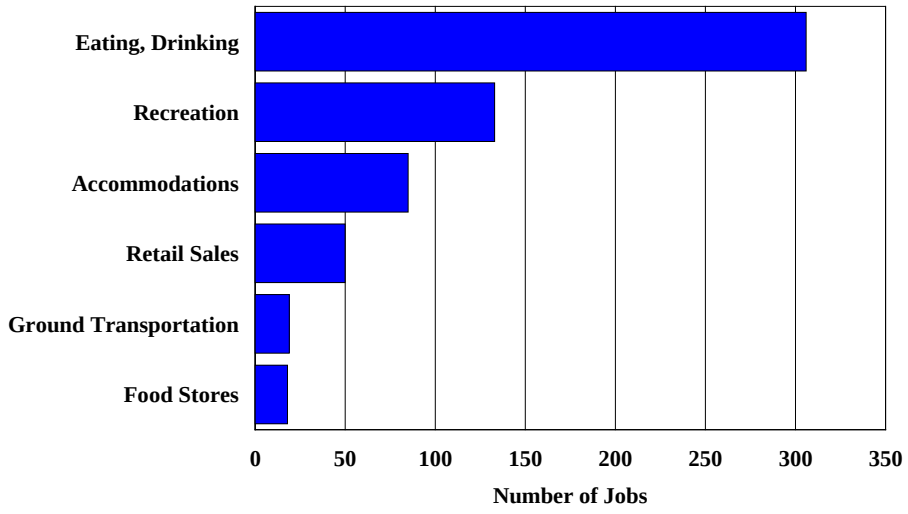


Source: Dean Runyan Associates

EMPLOYMENT AND PAYROLL

Visitor spending in Skamania County during 1999 directly supported over 600 jobs (both full- and part-time) with a payroll of $8.2 million. These visitor-generated jobs represent approximately 30% of total wage and salary employment in Skamania County. A sizable portion of this travel-related employment can be attributed to Skamania Lodge, which began operations in 1993 and has evolved into a premier destination resort. Job estimates do include U.S. Forest Service staff related to recreation planning and management, shown as recreation.

FIGURE 5-8
EMPLOYMENT GENERATED BY TRAVEL SPENDING
SKAMANIA COUNTY, 1999



Source: Dean Runyan and Associates

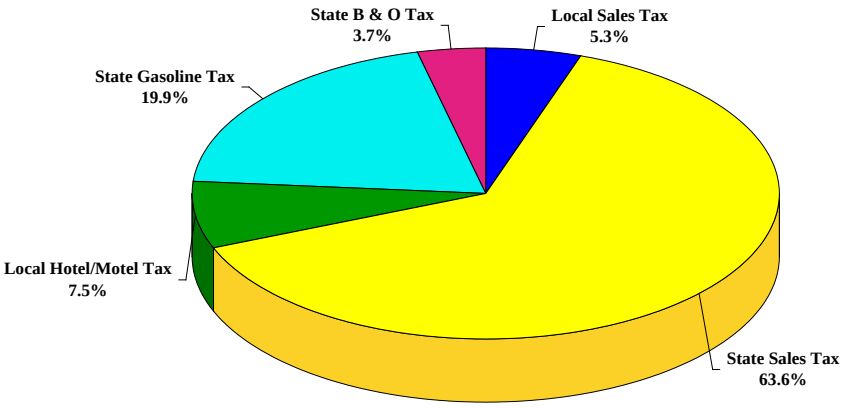
LOCAL AND STATE TAX REVENUES GENERATED BY TRAVEL SPENDING

Tax receipts generated from travel spending in Skamania County amounted to about $2.9 million in 1999. State sales and gasoline tax revenue accounted for almost three-quarters of this total. The state of Washington credits 0.5% of sales tax revenue back to Skamania County and the two other local jurisdictions within the County – North Bonneville and Stevenson. In 1999, the combined amount of sales tax credited back to the localities totaled almost $400,000 (not including any additional credit Skamania County may receive under the terms of the State of Washington Sales Tax Equalization Program). Based on travel-spending estimates for the County, the portion of local sales tax revenue that was directly attributed to travel spending amounted to about $150,000, which represents about 38% of the total.

In Skamania County, a local option tax of 2% is levied on the sale (i.e., rental) of hotel/motel rooms and other similar lodging facilities, including commercial

campsites. In 1999, Skamania County received tax revenue of about $11,000 from the hotel/motel tax, and allocated the entire amount to support the local Chamber of Commerce (the City of Stevenson also receives hotel/motel tax revenue generated by Skamania Lodge as well as the other accommodations that lie within its jurisdiction). Figure 5-9 shows the proportions of travel-generated tax revenue attributable to various state and local sources. Local tax revenue represents travel-related tax revenue captured by Skamania County and the City of Stevenson.

FIGURE 5-9
TAX REVENUES ATTRIBUTABLE TO TRAVEL SPENDING
SKAMANIA COUNTY, 1999



Source: Dean Runyan and Associates

5.4 COMPARISON OF RESEARCH, EDUCATION, AND VISITOR PROGRAMS AND FACILITIES

RESEARCH PROGRAMS AND FACILITIES

Organization of Biological Field Stations

The Organization of Biological Field Stations (OBFS) is an association of more than 200 field stations and professionals engaged in biological research and education, primarily in North America and Central America. Individual stations provide opportunities for a wide variety of different programs with an emphasis on research and education. Each of these field stations provides a different model of how an organization can combine professional research with education programs.

Wind River Canopy Crane Research Facility

The Wind River Canopy Crane Research Facility (WRCCRF) is a cooperative scientific venture among the University of Washington, the USFS Pacific Northwest Research Station and the Gifford Pinchot National Forest. Located in south-central Washington State within the T.T. Munger Research Natural Area and Wind River Experimental Forest, the site is near the Wind River, eight miles upstream from its confluence with the Columbia.

Research is the facility's primary focus. Current research includes canopy structure and function, and exchanges of trace gasses between and among soil, canopy, and atmosphere. In addition, the facility maintains an on-the-ground summer interpretive program. A limited number of education tours with crane rides are provided through certain educational programs and special arrangements; otherwise, canopy crane access is not available to the general public.

Malheur Field Station

Malheur Field Station (MFS) is located on the Malheur National Wildlife Refuge at the northern part of the Great Basin about 35 miles south of Burns, Oregon. The surrounding area, which contains a unique combination of marshlands and desert basins, is on a major bird migration path and contains a large variety of resident bird populations. MFS has co-operative agreements with the USFWS, the BLM and USFS for use and research on the surrounding Federal lands.

Owned and operated by the non-profit Great Basin Society, Inc., MFS was established primarily for educational purposes and offers a series of credit and non-credit courses throughout the spring, summer, and fall. Each year, approximately 10,000 visitors stay at the Field Station. MFS hosts Elderhostel programs, Youth Hostel affiliation, and secondary school visits, as well as participation from Higher Education schools. The Station is the educational focal point for the Wildlife Refuge, the Harney Basin, Steens and Hart Mountain, and the Alvord Desert.

The 20-acre building site contains 34 frame buildings used for classrooms, dormitories, cafeteria, trailer houses, several staff houses, recreation hall, shops, and gym. The facilities can accommodate a maximum of 270 visitors. Generally, capacity is reached on about three weekends a year. A cafeteria is open between the middle of March and the middle of October when most of the guests visit; smaller facilities with kitchenettes are available year round.

To encourage visitation by school children and students, user fees are kept low at $18 per person per night. Most visitors come from western Oregon and Washington. A Consortium of 20 institutions of Higher Education provides support through membership dues. User fees provide about 85% of operating expenses with consortium school dues, memberships, grants, and gifts making up the remainder.

H.J. Andrews Experimental Forest

Located in the Cascade Mountains approximately 50 miles east of Eugene, Oregon, the H.J. Andrews Experimental Forest was established by the U.S.D.A. Forest Service in 1948 to support research related to logging and regeneration. With support from the National Science Foundation in the 1970s, on-site research expanded rapidly. Since 1977, Oregon State University and the Forest Service have jointly administered the site to provide research and educational opportunities.

The National Science Foundation-sponsored Long-Term Ecological Research Program (LTER) provides relatively stable support to the basic science program at the Andrews Forest. Over 50 scientists and 30 graduate students from Oregon State University, the Pacific Northwest Station, and other cooperating institutions are involved with the LTER program. Six nearby Research Natural Areas and three Wilderness Areas offer many opportunities for research.

The facilities at Andrews Forest's Headquarters, located near Blue Lake, include several apartments, a cafeteria, a library/conference room, an open pavilion meeting area, and six small labs with meeting rooms. All apartments have kitchens, a living/dining area, and four bedrooms. The cafeteria seats about 35, and has two four-burner stoves with large ovens, two large refrigerators, and two sinks.

The facilities are available for public and private group functions including: short courses, workshops, overnight field trips, planning sessions, and retreats. Generally, between September through June, the use of the facilities is well below capacity. Oregon State University uses the site year-round for field trips and short courses. Facilities include lab-office space, a bunkhouse with a capacity of about 65 people, and 4 small cabins in remote areas.

Charles Lathrop Pack Experimental and Demonstration Forest

The Charles Lathrop Pack Experimental and Demonstration Forest (Pack Forest) is located an approximately 90 minute drive south of the University of Washington Campus. The College of Forest Resources operates the 4,300-acre "working forest" for the primary purpose of research and field study.

Pack Forest contains dormitory style housing that is supported by University Housing and Food Services from a modern kitchen and dining hall. The housing and meeting space is used year-round for educational and business meetings for up to 100 people. Several classroom settings are available in buildings originating from CCC and WPA projects during the 1930's. In addition to the College of Forest Resources, these facilities are used extensively for conferences, short courses, internal training programs, and continuing education by other University of Washington schools and colleges, institutions, agencies, and groups.

Pack Forest receives only about ten percent of its $1.5 million biennial operating budget from University sources. The balance of the operating budget, which includes staff salaries, building, grounds and equipment

maintenance, heat and electricity, road construction and maintenance, reforestation, and other cultural forestry expenses, comes form the revenue generated through timber harvests, rental of facilities for conferences, and funded research.

The Shire: John Yeon Preserve for Landscape Studies

Located on a 75-acre waterfront site in Skamania County, Washington, the Shire is a center for Pacific Northwest landscape studies. The Shire is a carefully designed landscape with a sculpted lawn, a series of meadows, wetlands, vista points, river bays, and walking paths. John Yeon, a self-trained architect and landscape designer, crafted the landscape design. It provides an educational site for the study of landscape preservation, design, ecology, and management.

The Shire holds a number of events including short courses and conferences. Currently, the Shire makes use of lodging at Skamania Lodge as well as other lodging facilities in Washougal, Washington. The Shire Conference will take place about every three years with approximately 70 people including participants and staff and overnight stays of 2-3 days.

EDUCATIONAL PROGRAMS AND FACILITIES

Programs

OMSI Camps

OMSI offers a variety of educational camp programs for children and adults of all ages. The programs are offered at different campgrounds that are located throughout the state – two on the Oregon Coast and two east of the Cascades. The OMSI camp programs are science-orientated with hands-on activities designed to be active, educational, and fun.

The Elderhostel Organization

Founded in 1975 as a non-profit organization, Elderhostel Inc. offers programs and activities that provide educational opportunities for people 55 years of age and older.

Originally based on a few college and university campuses in New England, Elderhostel, Inc. now offers programs in all 50 states, most Canadian provinces, and 70 other countries. Elderhostel programs combine education with travel through classes, course-related field trips, excursions, and extracurricular activities.

Many of the programs involve overnight stays in a variety of accommodations including campgrounds, conference centers, and rustic retreats.

In 1988, 24 established Institutes for Learning in Retirement collaborated with Elderhostel, Inc. to form a voluntary association known as the Elderhostel Institute Network. An Institute for Learning in Retirement (ILR) is a community-based organization of retirement-aged learners dedicated to meeting the educational interests of its members. They are usually sponsored by a college or university and provide unique non-credit academic programs developed by the members. Most ILRs are governed by their own members, and have members leading some of the academic coursework in lieu of professional faculty.

A center or retreat that can offer modest lodging for small groups, particularly one located in a natural setting which offers space for meetings and education programs, will appeal to an organization such as Elderhostel. Potentially, Elderhostel could

make use of such a facility when seasonal demand is low.

Inclusivity Consulting Group Inc.

An Oregon-based consulting and training company, Inclusivity Consulting Group, Inc. offers a variety of services to business, government, education, and the human services profession. Inclusivity often partners with Skamania Lodge to provide unique programs for meetings, conferences, and retreats in Skamania County. With the use of a unique ropes course at the Flying L Ranch in Klickitat County, Inclusivity also provides team

building and leadership development retreats designed to meet the needs of small business groups. Additional learning opportunities are offered in the ranch's solar-powered yurt. Inclusivity uses the ropes course at the Flying L Ranch about 8-12 times a year with group sizes that range from 5-30 people.

Inclusivity is interested in the possibility of developing programs for a rope or challenge course and working on education programs orientated to team or group development at the Wind River site.

FACILITIES - YOUTH

Camp Kiwanilong

Located on the northern Oregon coast 12 miles north of Seaside, Camp Kiwanilong borders Long Lake, a protected area used for canoeing, fishing, and swimming, and provides opportunities for outdoor science education. The camp attracts many students and youth groups primarily from the Portland area (through education programs offered by OMSI) and from a variety of organizations and school groups throughout Clatsop County.

Originally a Girl Scout camp, the site has been owned by Clatsop County since 1937. After the County operated the camp for a few years at a financial loss, a nonprofit organization called Camp Kiwanilong Inc. was formed to manage the camp. Since 1986, when Camp Kiwanilong Inc., took over management responsibility, Clatsop County has not funded the operations nor paid for any maintenance or capital improvements for the camp. Camp Kiwanilong Inc. manages and maintains the campground year-round with one full-time staff person.

The camp is supported in large part by user fees, including the fees paid by OMSI for use during certain months of the year. Donations from local businesses and residents within the County provide the primary support for the construction and maintenance of new camp facilities. The cost to rent the entire camp and facilities is $200 per night for groups from Clatsop County, and $250 for groups coming from outside county boundaries.

Accommodations include a log cabin lodge with modern kitchen, 14 rustic cabins - each of which sleeps eight, bathroom and shower facilities, a nature center, laboratory, large playing field, and campfire circle. The facilities can accommodate up to about 115 persons.

The Civilian Conservation Corps (CCC) built the lodge/dining hall and cabins in the 1930s. More recently, with the help of volunteer support and labor, Camp Kiwanilong added a bathroom and an outdoor pavilion. In addition to the buildings, the camp maintains nature trails with bridges over wetland areas, a boat dock and an archery field.

Camp Kiwanilong provides an excellent example of how a small rural county continues to maintain the operation of a historic youth campground for the benefit of the community without the use of county funds.

Camp Wa-Ri-Ki

Camp Wa-Ri-Ki, run by the Kiwanis Club, serves the Evergreen School District in Clark County. The camp primarily serves school-age youth groups, with some participation by some church and other adult groups in the area.

A year-around caretaker and a group of volunteers manage the camp. Camp cost is $6 per person per night, which does not include any food. It attracted about 11,000 campers in 1999 with April and May being the two busiest months.

The facilities include dormitory housing that are heated with indoor plumbing and showers. The buildings on the site were once part of a former jail and most have been renovated. The land is owned by Skamania and leased to the camp under the terms of a 10-year renewable agreement.

Center for Agriculture, Science, and Environmental Education (CASEE) Battle Ground Public School District, Washington

In 1987, the Battle Ground Public Schools (BGPS) approved the concept for the Center for Agriculture, Science, and Environmental Education (CASEE) with the idea to create a "land laboratory" on an 80-acre site owned by the Department of Natural Resources. Two years later, the Summer Youth Employment Program (SYEP) helped build sheds and picnic tables, constructed nature trails, and planted vegetation on the site, located in rural Clark County. Then in 1990, BGPS built a $1.5 million administration building, which was financed through certificates of participation and lease fees guaranteed by the Department of Natural Resources. CASEE, which leases 80 acres from the Washington Department of Nature Resources, began operations in 1993.

CASEE provides vocational education for the two BGPS high schools. Middle and primary school students also visit CASEE for educational field trips. In addition, CASEE provides office space for the county's local farm support agencies and WSU Extension, and conference rooms that are available for use by the public.

The Center provides high school students with an opportunity to design research projects, work with adult experts in a variety of fields, and use computer technology to make portfolios and multimedia presentations. Currently, about 60 students attend three classes daily. These students have the opportunity to team with professionals who represent organizations such as the Washington Department of Natural Resources, Washington State University Cooperative Extension, Soil Conservation Service, Master Beekeepers and Master Gardeners. Examples of ongoing student projects include: beekeeping, salmon raising and release, organic gardening, water quality testing, and pheasant/quail and emu raising.

The CASEE operates on an annual budget of about $170,000. The Center is funded primarily through grants, donations, lease fee income, and BGPS support. The students do not pay any program fees; instead, income is generated through the sale of agricultural products produced on the site.

CASEE provides a good example of an education facility and program specifically designed to serve the needs of high school students who live in an area where large portions of land are devoted to agriculture and natural resource based uses. It is notable that CASEE includes partnerships with several public agencies as well as private.

FACILITIES - ALL AGES

Sitka Center for Art and Ecology

Sitka Center for Art and Ecology is a rustic working artists studio and educational facility situated on the slopes of Cascade Head on the central Oregon coast. The Center, which borders a Nature Conservancy Preserve, the Siuslaw National Experimental Forest, and the Salmon River Estuary, is located within a National Scenic Research area and a United Nations Biosphere Reserve.

The Center was built in 1971 by the Neskowin Coast Foundation (NCF). Currently, the Foundation operates the Sitka Center on an annual operating budget of approximately $100,000. Tuition fees account for roughly half the budget while private donations and sponsors cover the remainder.

Current facilities include: 1) a two story structure housing a resource library, artwork archive, work station for facility, students and residents, a reception area and office; a studio for ceramic, stone, and

wood sculpture, and equipment storage; and 2) an outdoor classroom with courtyard and terraces. NCF plans to establish a fund dedicated to the maintenance of all the facilities in perpetuity.

The Center's year-round program offers short weekend workshops as well as week long classes in natural sciences and arts such as book arts, botanical illustration, ceramics, ecology, fibers, drawing and painting, printmaking and other media. Workshops are open to all age groups and various levels of experience. The program includes a selection of evening events (lectures, slide shows, films) and two open house events that attract interested residents from the coastal community.

By combining the demand for creative education programs with a desire to spend time in a scenic natural setting, the Sitka Center provides a good example of how a non-profit organization operates a year-round educational retreat.

Cispus Learning Center

The Cispus Learning Center is a non-profit educational foundation located in Randle, Washington. Originally, the site was a Civilian Conservation Corp (CCC) camp that closed in 1942, and the site was not used again until it served as a Job Corp site from 1965-1969. All the old CCC buildings were razed and new buildings including a gym were constructed. In 1970, under the direction of the State Superintendent of Public Instruction, the site was converted to the Cispus Learning Center, managed by Educational Service District #113.

The 1980 eruption of Mt. St. Helens caused economic problems for the Cispus Center -- while ash damage was minor, the eruption did reduce the number of groups that scheduled a visit. In a successful effort to revive the facility, the Association of Washington School Principals took over the operations of Cispus in 1981.

Currently, the Association of Washington School Principals operates the Center in partnership with Educational Service District # 113 and the USDA Forest Service, which owns the land and buildings. Recently, the USDA Forest Service agreed to a 20-year, special-use lease with the Cispus Learning Center.

At the Cispus Center, individual teachers pick and choose education programs based on the particular needs of the class. Instructors are encouraged to use a curriculum guide called "The Cispus Experience" which was written by teachers and college students specializing in

environmental education. This guide contains over 2,000 lessons arranged by outdoor education topics.

Annually, the Center attracts about 18,000 visitors -- 15,000 students, 3,000 adults -- and gets about 300 days of use. Due to the cost associated with school buses, most of the students do not travel much more than 100 miles one-way to the site. The vast majority visit from western Washington with a few school groups that travel from Portland, Oregon, which is located about 125 miles from the site.

Although it rarely operates at full capacity, the Center has the capacity to accommodate up to 400 persons. Facilities include a large dining hall, 18 meeting rooms, 7 dorms, 10 trailers, 2 auditoriums, a library, and gym.

Program fees cover 97% of operating costs with the balance funded through State Block Grants. Fees range from $13.75 to $16.00 per student per day. In addition, the Center attracts about $25,000 per year in foundation grants that provide support for necessary capital improvements such as new roofs.

Cispus Learning Center provides a good example of an overnight education facility that serves school-aged children throughout its region and beyond. It is notable that the facility is almost completely supported by program fees and operates year-round.

Olympic Park Institute

The Olympic Park Institute is a private, nonprofit educational organization that offers a variety of education programs in the Olympic National Park region. School programs emphasize hands-on learning through experience and often include excursions in the natural settings that surround the campus.

The Institute is the site of many conferences, planning retreats, meetings, and personalized educational programs every year. Rosemary Inn, placed on the National Register of Historic Places in 1978, now functions as the dining hall and meeting facility for the Institute. The largest meeting room can accommodate a group of 100 people. In the large dining hall, meals are served family-style and buffet.

A number of cabins, the largest of which sleep up to 16 persons, are available to sleep small and large groups. Conference facilities can provide meeting space and overnight accommodations for groups up to 100 adults.

In addition to the variety of adult, family, and youth seminars offered by the Institute, Elderhostel hosts about 20 programs during the summer months each year. The Institute is open year-round with limited use in the winter months.

The Institute is a prime example of an organization that has combined good quality lodging and food services with educational programs that appeal to a wide variety of interests and age groups. The location of the Institute also provides a key amenity, Olympic National Park, which offers an exceptional setting for natural scenery and excursions.

Teton Science School

Teton Science School is an independent, non-profit education center that offers natural science programs to people of all ages. Located in Grand Teton National Park in Jackson Hole, Wyoming, the site is surrounded by mountain views, aspen forests, and open grasslands.

Originally a dude ranch, Teton Science School began operation in 1967. The school offers year-round programs that allow

students to participate in field studies. The programs emphasize basic concepts of ecology and specific aspects of the Greater Yellowstone region and involve a hands-on approach to natural science learning. The School's faculty and professional residents teach the courses; natural science experts also serve as guest faculty.

VISITOR FACILITIES

Camping

Yurts

Yurts are modern domed style tents that typically range from twelve to thirty feet in diameter that can accommodate up to five campers. Yurts can include many modern conveniences such as electrical heaters and outlets, skylights, wood floors, interiors lighting, windows with screens, lockable doors, and outside decks.

Oregon Parks and Recreation Department

Oregon Parks and Recreation Department (OPRD) has 153 yurts located in parks throughout the state, most of which are found on the Oregon Coast. These yurts are 16 feet in diameter and have 10-foot high ceilings. They are located in existing campgrounds where shower and restroom facilities are available. Oregon State Park yurts rent for $27 per night and sleep five (although 8 campers are allowed). Pets, cooking, and smoking are not permitted in any of these yurts.

Yurts provide the parks with an appealing alternative to tent camping and they have helped to extend the camping season and generate revenue for OPRD. Each one costs about $10,000 and revenue projections show that this cost is covered in 1.5 to 2 years. Over the next two years, OPRD will add 24 new yurts to the state park system.

Kayak Point County Park, Snohomish County Parks and Recreation

A Yurt Village at Kayak Point can accommodate group camping such as families, clubs, companies, scouts, churches, and schools. Yurts rent for $35 a night and sleep a maximum of five.

Vermilion Valley Resort

Located at Lake Edison along the Pacific Crest Trail in Fresno County, California, Vermillion Valley Resort offers tent cabins, lodging, a general store, and a small restaurant. The resort began as a re-supply stop for hikers with lock boxes. The owner operates the facility on US Forest Service land under a lease arrangement. The lease terms call for the owner to pay about 2% of gross revenue to the Forest Service.

Tent cabins rent for between $35-$45 per night. There are currently five tent cabins and the owner plans to add five more in the next year and a second shower/restroom facility. Tent cabins cost about $2,000 each to build. The Resort also manages a small four-plex hotel as an alternative lodging option.

Pacific Crest Trail hikers account for about 35% of the Resort's business (many hikers start in April from Mexico), with most of the remaining business attributed to fishing activities. The owner offers guided fishing excursions as a recreation option.

CONFERENCE CENTERS

Silver Falls Conference Center

Originally known as Smith Creek Youth Camp, the Conference Center site near Sublimity, Oregon, was once used by scouts, churches, clubs, and family groups. After usage of the camp decreased in the 1970s, development of Silver Falls Conference Center was approved to provide a low cost

meeting facility for government and public agencies. Initially, Oregon State Parks refurbished the original camp's dining hall along with a few cabins, which were built in the 1930's. In 1985, the Park added four guest lodges and a meeting hall to accommodate over 50 guests.

Currently, the Center functions as a regular gathering site for government agencies, educational, religious, business and private groups. The Conference Center now offers overnight facilities for 78 guests in lodges and cabins. Four lodges, each with a spacious living room and woodstove, provide overnight accommodations for 48 guests. Ten cabins are also available, each of which sleeps 4. Each cabin has a covered porch, outdoor picnic tables, and firepits with large metal grills. Oregon State Parks is to add a new dining hall, meeting hall, and 4 new lodges, which will double the current capacity.

Since 1979, the Deshaw House Co. has provided meals, accommodation services, and interior maintenance for the Conference Center. The Deshaw was awarded the contract through a competitive bid process, and agreed to provide services for specific rates. Deshaw House Co. pays Oregon State Parks approximately 10% of the gross revenue generated through the facility with a guaranteed minimum of $120,000 each year.

Recently, Oregon State Parks awarded the Deshaw House a ten-year contract to provide all guest services. As part of the agreement, the Deshaw House will construct a maintenance storage building and a recreation facility for the Conference Center. The management anticipates that an indoor recreation facility will help to attract more visitors to the site particularly during the winter months when capacity is underutilized.

Silver Falls Conference Center provides an example of a successful partnership between a public agency and a private concessionaire to run a meetings and conference facility. It is significant that the facility generates a profit for a private business owner, a portion of which is paid to Oregon State Parks.

Sleeping Lady Resort

Sleeping Lady, a conference retreat in Leavenworth, Washington, provides year round lodging, dining, and full conference services for up to 150 guests. The Retreat is located on 67 acres of pine-forested land beside the Icicle River and beneath the profile of the Sleeping Lady Mountain.

The site, once known as Camp Icicle, was home to a company of the Civilian Conservation Corps (CCC), from 1934 to 1942. The CCC constructed barracks and buildings designed to house 200 men. Many of these original structures remain on the site today.

In 1946, the CCC structures were developed into a private, family oriented dude ranch. The owners remodeled some of the CCC barracks by removing ends or middle sections to create smaller cabins. Horses were kept in the large meadow during the summer and moved down to the Columbia Basin in the winter.

In 1957, the Yakima Diocese of the Roman Catholic Church purchased the property to operate opened a summer youth camp. From 1964-65, the Diocese constructed a new chapel and seven new dormitories, and restored many of the CCC cabins. With increased capacity, the camp began to function as both a summer camp and an off-season adult retreat into the 1980s.

In 1991, the Diocese sold the property to Harriet Bullitt, a longtime owner of adjoining property. Ms. Bullitt redeveloped the camp into a retreat and conference

center, which she named Sleeping Lady. She constructed new buildings to blend with the original style and renovated and relocated the CCC cabins. Currently, Sleeping Lady functions as conference and meetings facility as well as a location for concerts and theater performances.

Sleeping Lady provides a model of a successful retreat center that was developed through time with the restoration of original CCC buildings. It also shows that a private individual with long-term community interest and a passion for historic conservation and restoration can play a vital role in the development of this type of a facility.

Asilomar Conference Center

Situated on 109 acres of forest, dunes, and beach in Pacific Grove, California, the Asilomar site was originally owned by a wealthy banker, John Crocker, who used the site as an undeveloped retreat area. In 1913, the site was donated to the YWCA as a conference site. The YWCA developed many of the original buildings, designed by Julia Morgan, a noted California architect, which are still in use today. A continuing program of capital improvement has extensively refurbished the older buildings and expanded both meeting facilities and accommodations. In 1956, the YWCA donated the land and buildings to the state of California to be used as a conference center.

Asilomar is currently owned by the California Department of Parks and Recreation (DPR) and operated by Delaware North Park Services, a for-profit corporation. Under a concessionaire agreement, Delaware North Park Services pays DPR $1,000,000 per year or 8.61% of annual gross receipts, plus 25% of annual gross receipts over $14,930,000, plus 5% of gross for facility improvements and $500,000 per year for DPR operational program support.

Asilomar provides an example of a successful partnership between a for-profit corporation that operates a conference center with lodging and food services on publicly owned land. Asilomar also shows that, over time, with restoration and capital investment, a relatively modest assortment of buildings can evolve into a notable destination. This example also shows that public access to a significant natural area may co-exist along with the operation of a private facility.

Fort Worden State Park Conference Center

Fort Worden was established in 1902 and later designated the headquarters for the Harbor Defenses of Puget Sound. During World War II, the fort monitored new underwater sonar/sensing devices and radar sites, as well as coordinated Canadian and U.S. defensive activities in the Strait of Juan de Fuca and Puget Sound. Fort Worden was home to the 14th Coast Artillery Regiment of the regular army, and the 248th Regiment of the Washington National Guard. In turn, the U.S. Navy and 2nd Amphibious engineers were also stationed here. As a result of aircraft, submarines, and nuclear missiles, coastal artillery forts such as Fort Worden became obsolete. Fort Worden is now on the National Register of Historic Places as a Historic District.

With the departure of the army, the fort became a state juvenile treatment center for youth committed as delinquents to the Department of Institutions by juvenile courts. The treatment center began operation in 1958. In 1963, the Worden institution became a residential center with a capacity of 141 boys and 64 girls. The institution was phased out in 1970, and officially closed in 1971.

In 1971, through an act of the Governor, the Washington State Parks and Recreation Commission acquired most of Fort Worden. In 1973, through a legislative transfer, Washington State Parks was granted management authority over the entire site. At this time, the legislature approved $600,000 for capital development of conference center facilities at Fort Worden.

Since 1973, the Washington State Parks and Recreation Commission has made the fort's buildings available as conference facilities and recreation housing, and has developed full-service camping and recreational facilities at the beach.

In the most recent biennium (95-97), park revenue covered 85 percent of operating costs, which did not include some administration costs incurred by the Washington State Parks' headquarters. All revenue from park operations goes to Washington State Parks, which funds the operating costs for Fort Worden. To finance capital costs, the park obtains annual general fund support from the legislature and makes use of Certificates of Participation, which are tax-exempt government bonds.

Fort Worden provides a good example of how the use of a former military site can change through time. The Fort Worden example also demonstrates the importance of state funds, which were necessary to achieve the desired use for the buildings, and ultimately the site.

RESORTS

Rock Springs Guest Ranch

Rock Springs Guest Ranch, located in the foothills of the Cascade Range nine miles northwest of Bend Oregon, functions as an exclusive use – only one group at a time – conference center from September through June. During the summer months, the facility is not available for conferences, but instead operates as a guest ranch for family vacations and reunions.

The grounds and facilities of this 2,500 acre ranch include a 4,500 square-foot conference center complete with audio/visual equipment, seven guest cabins, a hot tub, horseback riding, a stocked trout pond, tennis and volleyball courts, hiking and jogging trails, basketball court and a heated pool.

Rock Springs Guest Ranch functions as a conference center for groups of 20 to 50. The all-inclusive price structure includes lodging, use of the entire facility and meals. In addition, the facility provides professional conference coordination, including corporate training, team building, and leadership programs. A challenge course provides a venue for team building, trust building, and leadership programs.

The summer family programs also include all lodging, meals and special activities. Rock Springs Guest Ranch offers daylong programs that provide guidance and supervision for youth: nature walks, horseback riding, a craft and play house, hay rides, and a camp-out, as well as a host of outdoor activities for general recreation.

The facility benefits from its location in the resort community around Bend, and can take advantage of the area's attractions and natural recreational opportunities: the High Desert Museum, shopping and services, alpine and nordic skiing, 12,000 surrounding acres of BLM land, fly-fishing, white-water rafting, and 24 championship golf courses.

Rock Springs Guest Ranch provides a good example of a destination summer resort that has successfully developed into a full-year facility by catering to business clients with demand for small conference facilities.

Skamania Lodge

Located in Skamania County, Skamania Lodge functions as a major destination resort. Situated on a 168-acre site with dramatic views of the Columbia River and forested mountain peaks, the 195-room lodge and conference center serves up to 700 people. The Lodge, recognized for environmentally sensitive design, was partially constructed with recycled 100-year old heavy timbers from an abandoned factory.

As part of the Columbia River Gorge National Scenic Act, established by Congress in 1986, $5 million was appropriated for the construction of a conference center in the State of Washington. In early 1990, Skamania County, through their Board of Commissioners, recruited Salishan Lodge to be their development partner. Skamania County committed $5 million to the project. The private partners are responsible to the County for repayment of this investment. After a total public-private investment of about $25 million, Skamania Lodge opened as planned and hosted the first conference group in February of 1993.

Dolce International, a global operator of conference and resort facilities, operates Skamania Lodge. Flexible meeting, banquet, and exhibit space totaling 12,000 square feet are available and augmented by a full-service business center. The Conference Center consists of two large ballrooms that are each divisible into four smaller spaces by acoustic walls. Two open-air courtyard areas are available for reception and break options.

Recreational amenities include an 18-hole golf course, an indoor pool, sauna, hydrotherapy pool, and an outdoor Jacuzzi. A U.S. Forest Service Information Center, located in the lobby, offers details on numerous hiking trails and other outdoor recreation opportunities in the area.

During the winter and spring months, the Lodge offers one-night packages with dinner for two to attract weekend visitors from nearby Clark County and the Portland Metro Area (just 45 minutes away). During the summer months at close to full capacity and prices are higher. During the peak summer season, business groups from across the U.S. sponsor planning retreats and training seminars at the lodge.

Skamania Lodge plans to construct new meeting space that is similar to the yurts constructed by Oregon State Parks. These new structures will enable the lodge to meet more of the current demand for meeting space which is more connected with the scenery and natural features offered on the site.

With the development of the appropriate accommodations, the Wind River site could provide an opportunity for Skamania Lodge to enhance opportunities for its existing market with additional overnight, meeting and recreation opportunities that are not currently available. Primary demand for such activity would tend to be seasonal and occur during the peak visitor season for Skamania Lodge.

HORSEBACK RIDING OPERATIONS

Skamania Lodge offered on-site horse riding services several years ago, but because the city of Stevenson prohibits the boarding of horses within the city limits, transporting them daily to and from the Lodge became too expensive. Because horseback riding was very popular with guests, the Lodge looked for partners to provide the service.

Mountain Shadow Ranch
690 Herman Creek Road

Cascade Locks, Oregon 97014

The Mountain Shadow Ranch in Cascade Locks, Oregon is a family-owned business with 4 full-time employees (all family members). The facility operates year-round, from 5 A.M. to 10 P. M., 7 days per week, weather permitting. Nineteen stabled horses are available for trail riding. The Ranch operates under a permit from the US Forest Service, and serves approximately 2,000 riders per year, roughly 30% of whom are Skamania Lodge guests. The Ranch charges $25 for a one-hour ride and $45 for two hours

The owners were previously in the poultry business and converted their farm to horse riding when poultry became no longer viable. The facility has survived for seven years, despite being unable to turn a profit as a result of debt incurred while still in the poultry industry. Mountain Shadow Ranch has provided horseback riding services for the Skamania Lodge since 1997.

Northwestern Lake Riding Stables
White Salmon, Washington

- 50 irrigated acres to feed 30 horses
- 15 riders on a busy summer day
- 1 full-time employee year round
- 4-5 part time guides in the summer

Several all-inclusive packages are available, ranging from a one-hour ride, to a five-day camping package.

TABLE 5-3 RESEARCH AND EDUCATION FACILITIES: STAFF, FUNDING, AND OPERATING BUDGETS

Name and Location	**Management Organization**	**# of Paid Staff (full-time positions)**	**Primary Source(s) of Operating Funds**	**Max-Over-night Capacity**	**Annual Visitation**	**Annual Operating Budget**
Wind River Canopy Crane Research Facility Gifford Pinchot National Forest, Washington	University of Washington, USFS Pacific Northwest Field Station, and the Gifford Pinchot National Forest	5 full-year 6-7 seasonal	Grants and research funds	10 (PNRS bunkhouse)	1,000	
Malheur Field Station 35 miles south of Burns, Oregon	Great Basin Society, Inc. (non-profit)	3 full-year 4 seasonal	Dues from member schools, memberships, user fees, grants, and donations	270	15,000	$250,000
H.J. Andrews Experimental Forest	USDA Forest Service's Pacific Northwest Research Station, Oregon State University, and the Willlamette National Forest	3 full-time 2 half-time	Research grants and rental fees	65		$200,000 (site operating expense)
Camp Kiwanilong	Clatsop County/Camp Kiwanilong Inc. (non-profit)	1 full-year	Camp fees	115	12,000	$46,000
Sitka Center for Art and Ecology north of Lincoln City, Oregon	Neskowin Coast Foundation (non-profit)	2 full-time 1 part-time 1 summer intern	Private donations, sponsors, and tuition fees	6	1,000	$200,000
Cispus Learning Center	Association of Washington School Principles	20 full-time	Program Fees	400	18,000	$900,000
Center for Agriculture, Science, and Environmental Education (CASSEE) Battle Ground, Washington	Battle Ground Public School District	2 full-time 2 half-time	Grants, donations, lease fees, and school district support	0	5,200	$166,000
Charles Lathrop Pack Experimental and Demonstration Forest	College of Forest Resources University of Washington	10 full-time 5 part-time	Timber harvests, conference rentals, and funded research			$1,500,000

TABLE 5-3 CONT.

Silver Falls Conference Center Silver Falls State Park, Oregon	Oregon Parks and Recreation Department/The Deshaw House Co.	12 full-time 6 seasonal	Conference Center Revenue	78		$750,000
Camp Magruder	Oregon/Idaho United Methodist Church	12 full-year 4-5 summer	User Fees	200		Not available
Hancock Field Station	OMSI Camps	11 full-time 6 seasonal	Program Fees			$650,000
Olympic Park Institute	The Olympic Park Institute (non-profit)	12 full-time 12 part-time	Tuition fees	150	5,400	$820,000

Source: Dean Runyan Associates

TABLE 5-4 EDUCATION AND CONFERENCE CENTERS: FACILITY USE AND FUNDING COMPARISON

Facility	Historic Use	Current Use	Years in Current Use	Primary Funding Source for Operations
Asilomar National Historic Landmark Pacific Grove, California	Private retreat, YWCA conference and camp facilities	Conference facilities with retreat setting	42	Visitor/Lodging Fees
Cispus Learning Center Randle, Washington	Civilian Conservation Corp (CCC) camp and Job Corp site	Education center for school age youth	29	Program Fees
Fort Worden Washington State Park Port Townsend, Washington	Military Fort and Training Site, State Juvenile Treatment Center	Conference Center and Recreational Destination Park	25	Washington General Fund and Washington State Parks Revenue Fund
Malheur Field Station Malheur National Wildlife Refuge, Malheur County, Oregon	Job Corp Training Center	Regional Education Center with a focus on education and research in the northern Great Basin	27	User fees, consortium of NW universities membership
Olympic Park Institute Olympic National Park, Washington	Private Resort, NPS/concessionaire employee housing	Private Educational Institution with a focus on field science, guided exploration and creative arts	10	Program Tuition
Rock Springs Guest Ranch Bend, Oregon	Family guest ranch (exclusively)	Family-owned resort and conference center	30	Visitor Fees
Silver Falls Conference Center Silver Falls State Park, Oregon	Youth and Family Camp	Conference and Meetings Facility	25	Conference Center Revenue
Sitka Center for Art and Ecology Neskowin Coast Foundation Otis, Oregon	Open space owned by private developer	Study Center for Art, Music, and the Ecology of the Central Oregon Coast	27	Donations, Memberships, Fundraising Events, and Program Fees
Skamania Lodge Columbia River Gorge Stevenson, Washington	Open space owned by the county and National Forest Service	Destination resort with conference and meeting space	5	Visitor/Lodging fees
Sleeping Lady Resort Cascade Mountain Range Leavenworth, Washington	Civilian Conservation Corp. Camp, Family Dude Ranch, Catholic Youth Organization Camp	Lodging, Dining, and Full Conference Services	3	Lodging/visitor fees
Teton Science School Grand Teton National Park Jackson Hole, Wyoming	Homestead and Family Dude Ranch	Education Center with focus on Natural Science in the Greater Yellowstone Ecosystem	24	40% tuition, remainder through private donations

Source: Dean Runyan Associates

TABLE 5-5 EDUCATION AND CONFERENCE CENTERS: OWNERSHIP, OPERATION, AND LOCATION COMPARISON

Facility	Size of Site (acres)	Accommodations	Meeting Space	Ownership/Management	Distance from major Metropolitan Area
Asilomar National Historic Landmark Pacific Grove, California	109	314 guest rooms, 43 meeting spaces, dining services for 850	43 meeting spaces	Ownership: California Dept. of Parks and Rec./ Management: Pacific Grove Asilomar Corp, a non-profit organization	124 miles from San Francisco
Cispus Learning Center Randle, Washington	85	Dining hall (400 person), 7 dorms and 10 trailers, 2 auditoriums, library; 15 acres developed.	18 meeting rooms (range from 10 to 180 in seating capacity)	Ownership: USDA Forest Service Management: Association of Washington School Principles	3 hour drive form Seattle, 2 hour drive from Portland
Fort Worden Washington State Park Port Townsend, Washington	11	Sleeping accommodations for 600 people, including dormitories and houses	Meeting rooms to accommodate groups up to 350	Washington State Parks and Recreation Commission	1 hour or less from Seattle or Vancouver, B.C.
Malheur Field Station Malheur National Wildlife Refuge, Malheur County, Oregon	30	seven 30 bed dorms, 3 kitchenettes, 9 trailers, 3 houses (265 total beds), large cafeteria kitchen	5 classrooms, conference hall, audio-visual room, gymnasium	Land owned by US Fish & Wildlife Service, Buildings owned by Great Basin Society, Inc., an Oregon non-profit	200 miles from Boise 300 miles from Portland
Olympic Park Institute Olympic National Park, Washington	8	overnight accommodations for 140 guests including 8 cabins	1 large room, 3 smaller classrooms, gazebo and outdoor meeting space	National Park Service managed by Olympic Park Institute a private non-profit	160 miles from Seattle (3 hours driving)
Rock Spring Guest Ranch Bend, Oregon	580	Main lodge and 7 cabins (10 acres developed)	4,500 sq. ft. meeting facility	Family owned operation	3 hour drive from Portland
Silver Falls Conference Center Silver Falls State Park, Oregon	25	4 lodges, 10 cabins, outdoor pool	Dining hall, several meeting rooms,	Oregon State Parks and Recreation Department	75 minutes from Portland; 75 minutes from Eugene
Sitka Center for Art and Ecology Neskowin Coast Foundation Otis, Oregon	1	Program participants stay in Lincoln City and Neskowin, rental housing is also available	3 studio/classrooms and garden site for art and stage presentations	Neskowin Coast Foundation (private 501C3 corp.)	2 hours driving from Portland

TABLE 5-5 CONT.

Skamania Lodge Columbia River Gorge Stevenson, Washington	175	195 guest rooms, dining room, lounge, golf course, fitness center, tennis courts, library	12,000 sq. ft. of flexible meeting space- 2 large ballrooms (divides into 8 small rooms, boardroom, and catering	Dolce International	45 miles east of Portland
Sleeping Lady Resort Cascade Mountain Range Leavenworth, Washington	67	Lodging, dining, and full conference services for up 150 guests, 40 buildings	200 seat theater, over 10,000 sq. ft. of meeting space	Sleeping Lady, Inc. owned by Harriet Bullitt developer and long time resident	121 miles east of Seattle, 190 miles west of Spokane
Teton Science School Grand Teton National Park Jackson Hole, Wyoming	4	Sleeping accommodations for 32 students, 30 buildings	Several classrooms and outdoor learning sites	NPS owns land, mixed ownership of buildings	Approx. 370 miles (Salt Lake City, UT)

5.5 FINDING THE RIGHT USE FOR THE SITE: THE COMMUNITY INVOLVEMENT PROCESS

INTRODUCTION

The Portico Group and the Wind River client team held a series of workshops and brainstorming sessions for Skamania County residents. Citizens of the county provided ideas, feedback, suggestions, and critique over the course of three public community meetings.

5.5.1 THE START UP MEETING:

To begin the process of evaluation and planning for the site, the client and consultant teams participated in a team brainstorming session at the start-up meeting in July of 1999. The ideas were sorted into several categories, under the concept of "Putting the Site Back to Work." The categories included:

- Site Character
- Sustainable Development
- Historic Preservation and Adaptive Re-use
- Agricultural Development
- Research, Education and Training
- Cultural Development
- Meetings and Lodging
- Recreation and Tourism

For a complete list of the brainstorming ideas that led to this list, see *Section 5.6, Community Brainstorming Notes*.

5.5.2 PUBLIC MEETING I: SEPTEMBER 1999

The first community workshops were held on September 24 and 25, 1999, at the Wind River site, and were facilitated by Carol Hudson. On the evening of the 24th, sixty community members attended a meeting where they were introduced to the consultant team and asked to add ideas and comments to the lists of concerns, opportunities, and uses that the team was beginning to assemble.

The opening discussion involved soliciting from the participants the aspects of the site that were highly valued by the neighbors and county residents. Observations and suggestions were sorted into three Site Values categories: Site Character, Sustainable Development, and Historic Preservation and Adaptive Re-use.

Meeting attendees then self-selected into groups to discuss the viability and relevance of proposed uses for the site. These uses were divided into four broad categories, and people were invited to participate in a small-group discussion that focussed on the area in which they were most interested. The headings were:

- **Arts, Education and Research.** This heading grouped the uses that relate to a variety of educational and cultural uses for the site. Ideas included a Wind River Institute, a historical museum, learning centers for school groups, and events grounds.
- **Recreation and Tourism.** The site is located in heavily used recreational region, and suggested uses included campsites, golf, fishing, a destination ranch or resort, development of trails for bicycle, equestrian or hiking purposes.

- **Community Services and Local Business Opportunities.** Many ideas related to use of the site by the community both as a resource and for the purposes of small businesses. Community use ideas included recreation and housing. Suggested uses related to business included tele-community center, business "incubator" offices, and use of the processing buildings and coolers
- **Agriculture, Forestry and Natural Resources.** This category grouped the uses that involved capturing the value of the land through various kinds of farming, pasturing, reforestation and wildlife management. Suggested crops included high-value herbs and botanicals, berries, mushrooms and native ornamentals. Other ideas related to the use and protection of the adjacent forested slopes.

The valuable input from this evening session was compiled and used in the development of the materials for the workshops that followed.

On the second day of the workshop, community leaders from around the region were invited to participate in similar focused discussions around proposed uses for the site. While the input from those discussions is included in Section 5.6, several comments were heard in more than one discussion groups, and the following highlights emerged:

- A master plan is clearly necessary to move forward in a productive way.
- Multiple uses for the site will be important to the success of the project.
- Year round uses are also necessary.
- Cash flow and the tax base should be drivers for the plan.
- Sustainability is highly valued for future uses and for construction on the site.
- The county should consider the sale of some of the property.
- Recreation and tourism should be supported by money generated at this site; the region doesn't need the site to be recreation based.
- Balance both the long and short term needs of the county.

These comments, and the organization of the possible uses for the site, were taken forward into the design and planning process, and re-presented to the public in the workshop that followed.

5.5.3 PUBLIC MEETING II: NOVEMBER 1999

On November 29, 1999, a second public meeting was held to evaluate the three site concepts developed by the consultant team. Using the lists of ideas generated via the workshops, as well as research done by the consultant team, eleven Site Uses were developed, and outlined with their corresponding site activities. These eleven uses were:

- **The Forest Reserve**: Natural areas maintained, with some reforestation to provide a buffer for other uses.
- **Martha Creek Camp**: Recreation and educational use, with cabins or bunkhouses, tent platforms, and yurts.
- **Cascadia Learning Center**: Nature-based educational programs and facilities for children and adults.
- **The Work Yard**: County- and community-based uses, including

public programs, training, and storage

- **The Cascade Event Grounds**: A community gathering space appropriate for arts, sports, or cultural events.
- **Skamania Farms**: Development of agricultural fields and production opportunities.
- **Wind River Institute**: A coalition of researchers in forestry, agriculture and botanicals, including Universities, PNWRS, the Experimental Forest, and other public/private partnerships.
- **Community Social Services**: Includes the possibility for vocational training, teen services, rehabilitation facilities.
- **The Inn at Wind River**: A rustic retreat lodge, conference center, and/or resort facility.
- **The Hemlock Business Campus**: Use of existing and new buildings for offices, agricultural processing, small business incubators, warehouse and storage.
- **Pacific Crest Estates**: A housing program for single family residential use of the site.

These uses were grouped into one of three development alternatives, or Site Concept Plans. Each plan was created to focus on a different primary use, organizing three different hierarchies of use. The site concepts were named for their primary use:

- **Site Concept #1: Trout Creek Campus.** This concept was developed to highlight opportunities in research and education, with the inclusion of a small business component.
- **Site Concept #2: Wind River Retreat.** The focus for this alternative is on nature based tourism and environmental education.
- **Site Concept #3: Village at Martha Creek.** Housing and development are dominant in this model, which would involve making some of the land available for purchase by others.

Reaction to these three concepts was mixed, with sentiment at the community meeting leaning toward Concept #2. Overall, members of the community saw the potential for development as dependent on obtaining water at the site – both for irrigation and for occupancy of existing or new buildings. There was also a mixed reaction to the idea of selling portions of the land conveyed to the county, with several people suggesting that it be reserved as a "last resort" use.

After gathering the comments of the citizens, as well as input from the Skamania County Commissioners and the Wind River Nursery redevelopment team, the consultant group created a "hybrid" plan. With this plan, the group extracted the elements from the first three concept plans that address financial sustainability, infrastructure, agricultural and community needs that were most critical to the future redevelopment of the site. Residential development was rejected as an inappropriate use for the site at this time. The resulting plan, *Concept Plan #4: A Rural Community at Wind River***,** incorporated three phases of work, addressing the reality of the "thirty year plan" as a realistic time frame. It was presented to the Wind

River Nursery Redevelopment Team at a workshop on January 26, 2000.

5.5.4 PUBLIC MEETING III: APRIL 2000

Many of the tenets of the Concept Plans were revised and refined to create the *Wind River Redevelopment Plan: Putting the Site Back to Work*. This plan is outlined in full in *Chapter 2: The Redevelopment Plan*. On April 24, 2000, The Portico Group team presented this master plan to the citizens of Skamania County. The plan consists of three phases:

- **Snapshot of 2004: Laying the Groundwork.** In the first years, the county maintains and cares for its new community asset, making opportunities available for agriculture, leasing, and other low-cost, low-impact uses.
- **Snapshot of 2010: Taking Shape.** By this time, the three primary "zones" of the site have emerged. *The Village at Martha Creek* is the home of a growing collection of recreational and educational uses. *The Hemlock Business Campus* houses several small businesses, including agricultural processing. And *Wind River Fields* are home to a varied and growing agricultural enterprise.
- **Snapshot of 2030: Fulfilling the Mission.** This plan shows one vision for how the site might mature into a dynamic resource for Skamania County. The three areas of the site continue to develop in accordance with the goals set out early in the century. Added to the mix are the Inn at Wind River, enhancing the experience of tourism at the site, and the Cascade Event Grounds, serving as a gathering and celebration space for the residents of the region.

Community response to this plan was positive. Citizens suggested that the Redevelopment Plan offered an ambitious, diverse, and thoughtful set of ideas about how to proceed with re-use of the site.

The following concerns and comments emerged from this meeting:

- Water: Questions remain around the issue of water at the site. Concerns include the impact of possible dam removal; the treatment of storm water off of the site; and the infrastructure at the sewers and drainfields.
- Selling portions of the property: Citizens remain curious about the potential for sale of portions of the site for immediate income.
- Soil conditions: Some community members are concerned about the condition of the soil as it relates to suitability for organic farming.

Each of these issues will be addressed as progress is made toward putting the Wind River Nursery site "back to work." Community involvement, however, is key to the process and will continue as the County works to find the best uses and tenants for the site.

5.6 PUBLIC MEETING NOTES: COMMUNITY INPUT

5.6.1 PUBLIC MEETING #1: COMMUNITY BRAINSTORMING

The following lists were presented at Public Meeting #1 for evaluation by the community. Each participant was asked to evaluate the lists and determine which potential site uses they felt to be most appropriate for the site.

The lists were the results of the team brainstorming session at the Start-Up Workshop July 28-29, 1999. The session was organized around the concept of "Putting the Site Back to Work." Each participant was asked to list uses for the site that relate to each of ten re-use categories. For the first Public Meeting, the activity categories from the Start-Up Workshop were organized to create a list of five Site Values and four headings for Site Activities. The four headings were: Recreation and Tourism; Arts, Education and Research; Agriculture, Forestry and Natural Resources; and Community Services and Local Business Support.

SITE VALUES:

- Economic sustainability
- Ecological sustainability
- Cultural, Aesthetic and Historic preservation
- Public accessibility
- Military or munitions uses are inappropriate

SITE ACTIVITIES:

RECREATION AND TOURISM

- The site could provide a base for visiting
  - Canopy Crane
  - Columbia River Gorge
  - Hot Springs
  - Indian Heaven/huckleberries
  - Mt. Hood
  - Mt. St. Helens
  - Old growth forests
  - Skamania Lodge
  - White water rafting
- Amusement/theme park site
- Ball fields, tennis, other sport based recreation
- Bed and Breakfast
- Boy Scout camp
- Business Meetings and seminars
- Camps: Bicycle, equestrian, education links, elderhostel links, summer camp links
- Campsites
- Center for Skamania County tourism
- Conference center
- Cross country skiing
- Day camps and programs linked to OMSI, WSU etc.
- Dude ranch or similar destination
- Educational development center
- Educational opportunities for retirees/seniors
- Equestrian activities
- Family cabins (rustic)
- Field sports
- Fly fishing
- Golf courses
- Hiking and biking trails/connection to Pacific Crest Trail and back country
- Historic Indian campground

- Historic logging camp
- Jamboree or fair grounds
- Maximize historical connections
- Music and performing arts facility
- Pedestrian paths and walkways
- Photographic tourism
- Private school/academy
- Retreat Center that builds on existing residences.
- Retreat programs
- Secluded/peaceful getaway
- Spa and resort functions
- Summer homes
- Tennis center or gymnastics center
- Theater and other summer arts programs
- Training center for athletes
- University uses – classes, research, remote campus
- Weddings & reunions
- Wildlife viewing
- Working farm
- Yurts on site for groups, meetings etc.

ARTS, EDUCATION AND RESEARCH

- Create a Wind River Institute
  - Incorporate and expand canopy crane to include other resource topic.
  - Multi-agency involving UW, WSU, U of O and any other interested groups.
- Botany – plant research
- Corporate retreat center
- Elderhostel facilities
- Forest reforestation training
- Gorge learning center
- Hunter training
- Seasonal festival setting: Links to
  - Symphony
  - Theater
  - Art Schools
- Job training
- Links with American Youth Hostel and Elderhostel
- Links with Science Centers
- Medicinal herbs/native plant research
- Multi use facility
- Private prep school
- Residential boarding school
- Summer arts center
- Summer environmental camp
- Training for school teachers
- Wildlife biology
- Artists' studios, foundry, or retreat facilities
- Berry fields for Native Americans
- College campus
- Community center
- Crafts/Arts center
- Cultural excursions – field trips
- Festivals
- Find corporate sponsors.
- Funding – tribal money/historical
- Good for timber industry – history & culture.
- Historical museum
- History of reforestation
- Interpret native culture and historical migration.
- Native American festival site: pow-wows, educational workshops, etc.
- Music festival/teaching center
- Native American cultural center
- Performing arts center
- Private school
- Retreats
- Theater
- Native American encampment site and gathering area.

AGRICULTURE, FORESTRY AND NATURAL RESOURCES

- Alpine crops
- Animal rehabilitation center
- Arboretum expansion
- Berry crops
  - Blueberries
  - Jams and Jellies produced on site
- Brewery, organic beer, hops, etc
- Cheese production
- Christmas tree farm
- Cooperative project, farm or agriculture
- Diverse plants
- Diversified animal products production

- Develop alternative Canopy Crane experiences for public or educational uses
- Ecological restoration program
- Expanded presence of Pacific Northwest Research Station and Canopy Crane research facility
- Ferns
- Flower bulbs
- Food product to be identified with the Gorge
- Forest reforestation experiments and training
- Goats or llamas
- Herbs
- Horses
- Interpret historical agricultural and forestry uses
- Landscaping plants/nursery model
- Medicinal crops
- Mushrooms
- Native grass seed, sod farm
- Native plants or seeds for habitat restoration, public spaces, or domestic home improvement
- Organic cotton
- Organic vegetable production
- Ornamental/garden plants
- Research station for native forestry
- Wildlife Sanctuary, linked to forest management
- Winery
- Working farm

COMMUNITY SERVICES AND LOCAL BUSINESS OPPORTUNITIES

- Airport and flight school
- Athletic fields
- Boot camp
- Community kitchens
- Community event/crisis based uses.
- County uses: shop, sheds, storage, etc.
- Festivals
- Fire fighting training center
- Forest Service public relations
- Housing
  - Residential development, limited
  - Low density housing
  - Affordable housing for special groups
  - Ecologically sensitive living center
- Indoor sport field
- Law enforcement training center
- Parks
- Prison
- Public school facilities
- Public Works shed or shop location
- Recreation center
- Restoration demonstration center (Dam removal?)
- Skate park for teens
- Social Services headquarters
- Substance abuse recovery facility
- Training centers – fire, rescue, support
- Weed board relocation
- Weekend events
- Winter recreation center
- Youth programs
- Arts center
- Business development
- Co-op processing and marketing centers
- High tech campus
- Light manufacturing
- Meeting rooms
- Rent coolers to food or water companies
- Secondary wood products
- Small business incubators
- Wedding facilities
- Wellness retreats

5.6.2 COMMUNITY INPUT: FRIDAY SEPTEMBER 24, 1999

DISCUSSION NOTES: RECREATION AND TOURISM GROUP

- Prioritize uses that bring money to the community
- Most of the items on the uses list could be done without adverse environmental impact.
- Many uses listed could be combined into one larger use, e.g. spa and resort type ideas
- Look into model of Cispus Center for Education – Lewis County, K-12, teacher training and corporate retreats
- Could we capitalize on this being a home of Lassie (episodes shot here)?
- Red Mountain race track: Native American horse racing
- Capitalize on Skamania Lodge somehow – how can this site benefit from that project?
- Assess unmet needs by Skamania Lodge and others – recreation, rustic lodging, etc.
- Fees should be charged to visitors. County residents should get free pass.
- A "dude ranch" or RV area could be successful
- Good area for equestrian center

DISCUSSION NOTES: ARTS, EDUCATION AND RESEARCH

- Wind River Institute idea combines many ideas and gives a positive identity to the area. That kind of research is already out there, could be capitalized on.
- Higher paying jobs are required over farm labor jobs. Keep people in the county for jobs.
- Public money is important to the Institute model. May not be self-reliant in difficult economic times
- Focus on the security issues that will be created by something like this.
- Keep the status quo in terms of serenity, etc . Avoid loud noise events, since the valley echoes.
- The campus/education type use limits the AM and PM surges of traffic. Could even it out more
- Provide year-round uses and year-round jobs
- The road edge will need attention so that bikes and pedestrians can use it

DISCUSSION NOTES: AGRICULTURE, FORESTRY AND NATURAL RESOURCES

- Need good family wage jobs
- Limit traffic congestion
- Site should have an agricultural base
- Consider water supply, including affect on neighboring residents' wells
- High value specialty crops are best
- Include a value-added component in agriculture activities (processing bldg.)
- Deal with the residual chemicals on the site
- Retain the livability of the area

DISCUSSION NOTES: COMMUNITY SERVICES

- Choose uses that don't require much water
- CCC camp model
- Where will raw materials come from for this work?
- Combined uses might be B&B and recreation, with manufacturing and meeting rooms, retreat center.
- Make it a good place to work
- Athletic fields work with festival uses – the T.O.M. festival was a big boom in town
- Other products included Kale
- Don't thumb nose at Huckleberry access – traditional
- Restrictions on the wilderness will bring fewer people to the county
- WSU training center – could benefit farmers and agricultural business
- Partial emphasis on small business or light manufacturing while maintaining open spaces and access for the community
- It has to make money
- Higher education and small business elements should be developed in tandem

5.6.3 DISCUSSION GROUP INPUT: SATURDAY SEPTEMBER 25, 1999

DISCUSSION NOTES: ARTS, EDUCATION AND RESEARCH, WITH **AGRICULTURE, FORESTRY AND NATURAL RESOURCES**

- Need a hook, sales point
- Education: 4 months of good weather and 8 months of bad.
- Summer camps: focus on specific groups (blind, disabled, deaf), local schools
- Adult education, including research into the elements of the site – soil, reclamation, forestry, etc.
- North Bonneville remediation company funds
- Many of the uses are compatible together (schools, elderhostel, arts; outdoor arts and recreation opportunities
- Check out Sitka Center on Oregon Coast – Randall Koch, Otis OR
- Continue nursery function, private business. (Address water issue – use Pacific Crest Field wells to serve irrigation if dam is removed)
- Look into agricultural reuse and environmental education. U of O is working in Chernobyl, in land reclamation
- "The Heart" is the attraction for the public – historic houses at Martha Creek Field, etc.
- Houses could benefit from historic preservation studios at U of O, with Washington State Parks. OR, WA, ID. Get students to do work and learn from project
- "The Shire" work in biotech, riverfront repair, landscape ecology, landscape preservation. It is 75 acres and all "field trip" based. No overnight camping, potential link to WRN.
- Soil and water issues for agricultural uses
- Local school, economics and sciences – school has the commercial greenhouses from WR site – need space and knowledge
- Year round camps, school in fall/spring and summer camps in May-Sept.
- Researchers at WR could be the teachers for other teachers or students.
- There are only 1,100 students in the county. Student stuff would have to expand to be gorge wide, including OMSI, "Secrets" program, Central Cascades Alliance, Environmental Learning Center, Goldendale in Klickitat County
- Cispus Center – association of school principals. Marty Froten (on site)
- Nursery could be hub for Alpine Lodge network. Footpath could link sites for serious hikers.
- Look at uniqueness of site – location is isolated, valuable for research. Limitations include size, soil quality, etc.
- Proximity to Portland and Seattle would be good for research, medicinal plants, environmental community interest, clinical projects.
- Medicinal plants often grow at transitional climate zones, niche areas. – local plants with unique attributes could be the draw
- On site processing (value added) as well
- Tie into Canopy Crane research

- Non profits (501c3) for research and arts stuff, but private companies could share cost and profit from it as well.
- History of the site is very important – keep the same names (Martha Creek Field, etc)
- Protect the experimental forest and the research sites. Note that the researchers and the interpreters of the research can be different people – education goes hand in hand with the research side, including the arboretum.
- The fields were originally forested – don't preclude long term forest restoration.
- Research – the edge effect at the old growth forest is being studied. Researchers want a buffer around old stand so that use isn't compromised by airborne chemicals, non-native species intrusions, air quality dips.
- Numbers of people have ramifications for research but that is inevitable, so use Crane as draw, but take people elsewhere for intensive use – canopy walks, towers, crows' nests, viewpoints. At Government Mineral Springs you can step off the trail into 8' diameter trees – use these areas around the site to increase draw
- Number of people at height of WRN work is benchmark for use level – 300 jobs at peak.
- Look at Herb Farm in Fall City
- "Organization of Biologic Field Stations" Art McKey at H.J. Andrews Experimental Forest
- Look into a public area canopy crane – where could that be located? South edge of Pacific Crest Field or south edge of Martha Creek Field?
- Only 1.6% of county is fully taxed – site needs to replace some jobs and revenues
- Pacific Crest Trail – trailhead, hostel, wayside idea
- Central Cascades Alliance – "wild lands" planning, habitat, fisheries, housing, wildlife corridors. WRN is part of system
- Create new park if dam goes – Hemlock Lake site would change
- Couldn't the site collect rain water? 90-130 inches per year?!

DISCUSSION NOTES: RECREATION AND TOURISM WITH **COMMUNITY SERVICES**

- The site is big enough for multiple uses.
- Opportunities for recreation are limited economically – if it is a profit center it will contribute to public recreation opportunities. If it is a recreation site, it will just cost money.
- Use private business opportunities in recreation
- Agriculture and value-added work could be good for cross over uses
- Social and cultural aspects of site in community are important
- In the region, the service industry is growing and light industry isn't growing, so go with service industry for jobs and development
- There are some high dollar things in tourism
- Hotel/Motel tax money is important
- Site is on corridor to other regional activities – to the Gorge and Mt. St. Helens and wilderness areas

- High paying jobs in the county could help keep residents here, buying things, recreating and living here.
- Telecommuting goes with the local quality of life – fiber optic line availability is crucial. Could that happen? Great expense?
- County needs a crisis plan for this site and for economic future of county to avoid uses that are basically economic fire fighting when other funding is lost
- Multi-use means not all eggs in one basket
- No points in Skamania county for tourism revenue to get left here
- What for-profit corporations do we want here? Where are the entrepreneurs?
- County needs criteria for accepting business development – not be afraid to say no if the use is not consistent with the community values
- Market the county to potential residents or businesses – have a PLAN. The county has good schools and beautiful land – hard to attract people if there is no where to buy or build affordable houses.
- Need big picture plan – not just crisis based for the county
- There is high level of cooperation among the counties, port districts, towns and two states on the gorge – they are working well to bring development, but don't always go about it correctly.
- Pressure is building with property values
- People are tied to what used to be – that will have to change
- Kids and grandchildren need future jobs, homes, opportunities
- Forest service has been resistant to change – county will need a comprehensive view
- Some envision a community on this site, larger than Stevenson, standing alone and contributing a lot to the economy of the area
- Skamania charter could be at risk if it doesn't get more taxes per capita/acre
- This land is last big hope for expansion
- Shoot for a tax structure that really benefits the county
- Government has money to aid business start ups, etc
- Family wages and resources for the county should be the goal
- County and site need a marketing strategy for the site
- Lowest intensity of use for this site EVER is happening right now – a lot used to happen here
- There is too much "natural beauty" in the NW to market it here. This site can't compete with other recreation areas
- The government wants to build and develop with the county and the residents
- Tele-infrastructure is key – it will be expensive
- 1.6% of county taxed at full rate. 8% privately owned. This is a threat to the county's status – goes to the advantage in selling some of this land to private interests
- But – could just replace jobs and retain quality of life. This is why many people move here – don't wreck it.
- WA state will double in 10 years. People will come here if they can. Even though there are 100" of rain each year.

- Many models of "town" development to choose from
- Need year round uses. Can agriculture or recreation even do that?

HIGH POINTS / SUMMARY:

- Marketing plan needed
- Master plan is necessary to move forward
- Multiple use is key
- Cash flow and tax base have to be drivers
- Sustainability is also important – economic, environmental, utility systems, tax base.
- Look carefully at sale of some property
- Recreation and tourism should be supported by money generated at this site – the region doesn't need this site to be recreation based.
- Balance the long term and short term needs of the county – don't ignore either one.

5.6.4 PUBLIC MEETING #2: POTENTIAL SITE USES AND CORRESPONDING ACTIVITIES

The following site uses were presented at Public Meeting #2 in November of 1999. These uses and activities correspond to site areas delineated on the illustrations of Site Concepts 1, 2 and 3. Community members were asked to evaluate the eleven uses and to comment on each of the initial site concepts. Uses and activities are listed below. See Section 5.6.5 for comments on the Site Concepts.

The Forest Reserve

Natural Areas
Selected Reforestation

Pros	*Cons*
No infrastructure	Low income potential
Community asset, public access to site	Not a unique recreation opportunity
Holds land for future use	Not consistent with project mission statement
Pacific NW Research site connections	

- Consider letting the land return to forest
- Human & natural history evident on site
- Logging/forestry history on site
- Many trails already exist on or near the site
- Native people's history evident and implied on site
- Pedestrian/hiker friendly area
- Preserves site features: meadows, buttes, views
- Provide some interpretation at site (past/present/future approach)
- Quiet area
- Restoration of Trout Creek possible
- Preserve unique open space among old tree stands

Martha Creek Camp (Recreation Center)

Trail Head
Equestrian/Recreation Node
Elderhostel/Youth Hostel
Campgrounds

Pros	*Cons*
Destination in county for tourism links	Seasonal: partner required for off season
Link to Pacific Crest Trail and Wilderness	Low income potential
Restoration projects consistent with use (e.g. Mess Hall, houses)	
Reuse of larger buildings for recreation	
Grant income possibilities	
Partners include schools, OMSI, other orgs.	
Use existing building	
Low costs	

Possible Activities

- Acknowledge Native American use of site
- Actively seek tribal involvement & interest to develop. Note historical crossroads on site.
- Ball fields, tennis, other sport based recreation
- Build or refurbish buildings in a compatible way
- Camps: biking, horses, etc
- Campsites: car, bike, hiking or horse camping
- Center for Skamania County tourism – Link to
  - Columbia River Gorge
  - Hot Springs
  - Indian Heaven/huckleberries
  - Mt. St. Helens
  - Old growth forests
- Cross country skiing
- Day camps, programs link to OMSI, WSU etc
- Educational opportunities for retirees and seniors
- Elderhostel facilities
- Equestrian activities
- Family cabins (rustic)
- Golf courses
- Hiking and biking trails – connection to Pacific Crest Trail and back country
- Interpret site history and historical agricultural uses
- Interpretation of native American history/culture
- Native American encampment site
- River restoration demonstration center
- Tourism "home base"
- Utilize the forest as pre-historic resource
- Winter recreation center
- Youth hostel

Cascadia Learning Center

Environmental Education Center
Outdoors Training
Eco-tourism Opportunities
Artists' Studios

Pros	*Cons*
Good links (off season) with other uses	Needs partnerships to survive
Could attract grant money income	No private income
Local as well as regional draw	
Sustainability/Eco-tourism fits site	
Low cost lodging could fill tourism needs	
Flexible location for this use	
Link to Gorge organizations and beyond	
Link to existing K-12 and elder programs	
Good association with other uses (e.g. Inn)	
Reuse existing buildings easily	

Possible Activities

- Actively seek tribal involvement & interest to develop. Note historical crossroads on site.
- Art studios, foundries
- Cultural and environmental excursions and field trips
- Develop alternative Canopy oriented experiences for public or educational uses (crane, walks, lookouts)
- Eco-Tourism and Education-based development
- Educational opportunities for retirees and seniors
- Environmental education center, with overnight capabilities
- Fire fighter, rescue, outdoor techniques training
- Hiking and biking trails/connection to Pacific Crest Trail and back country
- Job training in environmental education and other areas
- Link to Central Cascades Alliance wild lands planning
- Link to The Shire, Cispus, and to other environmental education centers
- Link to some commercial activities with enough mutual interest/draw to form a viable activity
- Links with science centers, education institutions
- Make the site available to the public with historical and cultural elements built in.
- Opportunities for wildlife viewing
- Photographic tourism (education, workshops)
- Public canopy crane component (second crane)
- Proximity to USFS land and facilities
- Public/educational access to a second canopy crane
- Reforestation training
- River restoration demonstration center
- Summer environmental/arts camp
- Teacher training
- Wildlife biology study opportunities

The County Work Yard (Maintenance or Other Services)

County Vehicle Storage
County Training Facilities

Pros	*Cons*
Allows better uses for existing yard	Additional travel time from work areas
Interim uses for existing building	No income to county (unless fr. other counties)
Warehouse, parking, storage available	Truck traffic on site
Works on isolated portion of site	Material storage, potential toxins, oil, salt, etc
Develop services on site	Might pre-empt other uses

Possible Activities

- County uses: shops, sheds, storage
- Headquarters for a P.U.D for the WRN
- Public Works shed or shop location
- Rainwater collection facility
- Sale or lease to other public entities
- Training centers – fire, rescue, support
- Weed board relocation

The Cascade Events Grounds

Arts Events Facilities
Campgrounds / Services

Models:
Aspen
Chattauqua
Olympic Music Festival
Leavenworth

Pros	*Cons*
Link with regional arts organizations	Large numbers of people, depending on venue
As an occasional use, this would work well with partner uses	Potential impact in sound, traffic, soil compaction
Public cultural resource	Rest room facilities required
Seasonal contracting opportunities	Seasonal, unless indoor facilities provided
Bring visitors to county	
Link to overnight accommodation, services, etc	

Possible Activities

- Seasonal festival setting: regional links to
  - Symphony
  - Theater
  - Art schools
  - Local artists
- Arts center
- Field sports starting points, base for races, etc
- Jamboree or fair grounds
- Native American festival site, pow wows, workshops, etc.
- Performing arts facility, indoor and/or outdoor

Skamania Farms

Agricultural Growing Areas
Agricultural Research
Value Added Processing
Tourist-oriented Products

Pros	*Cons*
Putting land back to work	Irrigation is still an unknown
Wide range of jobs, labor-to-research	Soil/growing conditions still some unknowns
Research/production both possible	Low lease income to county
Organic Christmas trees could be an "interim" crop, or longer term at Pacific Crest Field	Production may preclude some housing/resort uses or adjacencies
Identifiable label/branding for county	Bio-remediation would likely be necessary for soil clean up
Botanicals likely to bring in most income/interest	
Low infrastructure costs	
Low administration costs to county	
Good uses for processing building	
Martha Creek Field may have best soils	

Possible Activities

- Animal rehabilitation center
- Berry crops – Huckleberries, etc.
  Jams and Jellies produced on site
- Brewery, organic beer, (hops grown off site)
- Cheese production (Milk or entire product from off site)
- Christmas tree farm
- Cooperative project, farm or agriculture
- Diverse plants
- Ecological restoration program
- Food product to be identified with the Gorge
- Forest reforestation experiments and training
- Goats or llamas
- Grasses or ferns – landscape materials, ornamentals
- Herbs
- Horses
- Interpret historic agricultural uses
- Landscaping plants/nursery model
- Links between timber and agriculture
- Medicinal crops, herbs: possible focus on high-value specialty crops
- Mushrooms
- Native plants or seeds for habitat restoration, public spaces, or domestic home improvement
- Native plants research – agriculture or forestry
- Rainwater collection during summer
- Research for agricultural community
- Tie agriculture jobs to research for higher paying jobs in region
- Value-added component should be prioritized
- Wildlife Sanctuary, linked to forest management
- Winery (Grapes from off site)
- Working farm

Wind River Institute

Consortium of Universities
Research Facilities
Preserved Areas
Agriculture, Forestry and Ecological Research

Pros	*Cons*
Could be "seed project" for private industry	Conditional uses at Pacific Crest Field
Historic roots for this research at site	Water system is issue for agricultural research
Historically cutting edge activities at site	
Link to NW Universities	
Potential offices at Pacific Crest Field near Canopy shack	
Potential administration/Housing at Martha Creek Field cluster	
Areas (small plots, etc) could be interpreted for visitors	
Open field areas still compatible with resort uses	
Many potential partners	
Training jobs	

Possible Activities

- Bunks and facilities for researchers and staff
- Develop alternative Canopy Crane experiences for public or educational uses
- Develop second Crane for second-growth forest research
- Expanded presence of Pacific Northwest Research Station and Canopy Crane research facilities
- Incorporate and expand canopy crane to include other resource topic.
- Link to a working farm use
- Link to grade school and high school programs as well
- Link to other learning opportunities
- Plant research, botany
- Possible to involve UW, WSU, U of O and any other interested groups.
- Remote campus, class work, research
- Research-oriented conference center

Community Social Services

Vocational Training
Rehabilitation Facilities
Teen Services
Therapeutic programs

Pros	*Cons*
State and other-county money may be available	Limited income to county
Jobs	NIMBY issues
Reuse of existing buildings	
Beneficial to community	
Off season use of camp/summer facilities	
Flexibility with other uses	

Possible Activities

- Community kitchens
- Community services –temporary or event/crisis based uses
- Job training in environmental education and other areas
- Law enforcement training center
- Meeting rooms
- Residential boarding school or youth program
- Skate park for teens
- Social Services headquarters
- Substance abuse recovery facility
- Training centers – fire, rescue, support

Inn at Wind River

Rustic Lodge
Conference Center
Banquet / Event Facilities
Cabin Rentals
Spa and Resort functions

Models

Sleeping Lady Resort
Rock Springs
Note: 30 rooms at $100,000 per room construction cost = $3 million

Pros	*Cons*
Easier to assess comparable markets (low risk)	Potential attendance/traffic impacts
Skamania Lodge as potential partner	Off season uses needed
Jobs	High capital investment
Link to recreation opportunities, e.g. 2nd canopy crane	Are the site and climate attractive enough to draw people?
Good to locate at edge of one of the fields for views, adjacencies	No mountain views
Possible locations at Trout Creek Field or in Martha Creek Field near historic buildings	Utility requirements similar to residential
Sustainable development link: water recycling, reclamation, eco-tourism	
Portal to forest	

Possible Activities

- Banquet facilities
- Bed and breakfast
- Business meetings and seminars
- Conference center
- Dude ranch model or similar destination-oriented activity
- Equestrian activities
- Family cabins
- Hiking and biking trails/connection to Pacific Crest Trail and back country
- Inn or Lodge – higher cost lodging
- Keep jobs at top of list.
- Possible links to Skamania Lodge
- Retreat programs
- Rustic overnight options
- Spa and resort facilities
- Wedding facilities
- Wellness retreats
- Yurts on site for meetings, camping, etc

Hemlock Business Campus

Agriculture-related business
High Tech Campus
Gorge-Related Retail
Small incubator company spaces

Pros	*Cons*
Jobs	Higher costs for new buildings
Dollars to county with sales tax	Speculative (unclear on current demand)
Re-use processing center and other buildings	Possible pollution issues
Model development project	High administration costs
Strong potential relationship to agricultural uses	Challenge for transport to site (goods and customers)
Small tenants, high overhead	Question: Is there a demand in the county for small business space

Possible Activities:

- Incubator for small businesses
- Light manufacturing
- Link business use to agriculture – Herb Farm model
- Link to entrepreneurs and small businesses
- Link to higher education
- Recycling on site
- "REI" type outlet mall – service business and supplies for outdoors people
- Rent coolers to food or water bottle companies
- Small business focus – incubator model
- Telecommuting option – fiber optic or satellite technology required
- Value-added component from agriculture should be considered

Pacific Crest Estates

Residential Properties
Services and Amenities

Potential Program:

Surround Martha Creek Field with housing clusters: 40 lots at 1-3 acres.
Place housing at edge of Trout Creek Field: 15 lots at 0.5-1 acre.
High end properties at $300,000 for lot and home ($80,000 lots).
35 x $80K = $2.8 million sales income
Infrastructure at sites = ($1.2 million) costs
35 x $300K = $10.5 million property values
3% of property values = $315,000 per year
4% of building costs ($9.3 million) for construction/sales/BO taxes in county = $372,000 over const.

Models:

Black Butte Ranch (Oregon)
Metolis Meadows (Oregon)

Pros	*Cons*
Dollars to county	Lose public access to site
Possible model project	No permanent jobs
Temporary jobs and construction income	Site character is altered
	High impact on community and research

Possible Activities:

- Amenities for residential development
- Housing Development Model Options
  - High end parcels and homes
  - Residential development, limited
  - Rent existing homes
  - Low density housing
  - Affordable housing for special groups
  - Ecologically sensitive living center
- Equestrian center
- Golf courses
- Hiking and biking trails/connection to Pacific Crest Trail and back country
- Summer homes
- The "small village" character model for new uses

Values and Suggestions (Use to evaluate various options):

- Prioritize bringing money into the county
- Sustainability (environmental and economic) is important
- Acknowledge water issues on site, including water quality and conservation
- Year round uses are important
- Consider the future as well as the past: could be a progressive, state of the art facility
- Demonstrate sustainable techniques in how land is built on and used
- Develop design standards for all new buildings that incorporate essential character traits
- Do not recommend only one dominating activity
- Fill in edges – new buildings at perimeters
- Keep and maintain arboretum, meadows and landscape setting
- Maintain character of historic buildings
- Recognize that non-use is a preservation/use option
- Preserve and interpret Chapman Avenue - Maple Boulevard
- Preserve and interpret the forest canopy
- Prioritize family wage jobs
- Respect experimental forest

5.6.5 PUBLIC MEETING #2: COMMUNITY INPUT REGARDING THREE INITIAL SITE CONCEPTS

The following comments were solicited in response to the three initial site concepts, presented to the public at Public Meeting #2 in November of 1999. The questions appear in *italics*, with the responses listed in random order.

Please review each site concept. Let us know what you like, what you don't like, and whether you think these site concepts are consistent with the Mission for the Wind River Nursery.

Site Concept #1:

- Best. No negative impact. But does it really bring in community members?
- Best for me. Fewest neighborhood impacts and costs
- Collect water to use when needed.
- Not enough data to make a decision.
- Ownership: Where does the interest come from for growing the suggested plants? Jobs created may not be worthwhile for local workers to work at home and not drive away.
- A crane for recreational purposes should be in all three sites as I am sure a lot of people would pay to ride up and view.
- Don't see this as balancing the various components of the mission statement as well as Concept #2 does. Like the research component, though.
- I don't like the idea of depending on government grants and money in general. It is always a yo-yo of when are funds being cut and do we have the money to keep going.
- I like this best. This could be done in phases. Seasonal agriculture would provide some labor type work for county. Like the old Nursery site. This would also keep the property closest to its original state of development. Maybe get 4 or 5 options going at once. There are something like 20 tent platforms close to crest trail in back of bunker hill.
- Need parking and access to Pacific Crest Trail. Also need youth and senior hostel associated with hiking and treking.
- Is this economically viable? Maybe 70%. Water is the biggest concern.
- Do not make a "wally world" crane attraction.
- Is sufficient water available, after breaching the dam and eliminating the lake? Until this issue is resolved, the concept is not a viable option. If there is enough water, this concept is a good one.
- This site produced the best, by far, seedlings for planting logged areas. There were 300+ part time and permanent jobs. We have about 60% of our working public leaving the county every morning to go to work and with them goes money. They spend out of the county what should remain in Skamania County. This concept should look at another nursery as well, be it private or otherwise.
- Unlikely economics unless water issue is dealt with. Questionable economic benefit.
- Has great potential, especially combined with aspects of #2.

Site Concept #2:

- Large infrastructure investment. But seems to pay well in community enhancement. Add business campus. Promote County [engineers? Engravers?] activity here.
- Not enough data to make a decision.
- Who will partner with the county to develop the Inn? This would cost the county a lot for the services?
- Like the Wind River Inn idea – think it would be more profitable than a seasonal camp. Like the learning center, but also

feel that research and business should be incorporated into the plan.

- I think the Inn concept meets a rustic but nice niche that is not currently met. Also could enhance business traffic in Carson and Stevenson.
- Many youth groups (church, school, women's and men's groups) are always desperate to find accommodations within a reasonable distance from Portland and for a modest price for bed and food services. Portlanders are seeking "different types of experiences." We had a cabin for 3 years before we built our house here and loved to come and get away from it all – no electricity, running water, but peace and quiet. Why is Kah-Nee-Tah so successful? It is the experience.
- Promote as site of family reunions, weddings, romantic getaways for couples. A destination such as Skamania Lodge with a more modest price tag and a more undeveloped area – not everyone plays golf and tennis. Accentuate the quiet and solitude!
- May be OK.
- Most public access. Needs parking for PCT, hostel, etc.
- May be 30% Economically viable. Need balance between 1 and 2.
- Any potential developers? This option should be developer driven. It is the best option for job creation which should be our #1 priority.
- This would generate jobs, sales tax revenue, destination resort facilities, tourists who will leave money here and come back to do it again and again because it is a good time at the Wind River Retreat. A good long term project is on the horizon with this option.
- Supports mission more strongly than other alternatives. Strong economic benefits.
- Best if incorporated with some eco-agricultural products and education. Tourism is here as an industry – the problem is there is nothing to keep the tourist here. Recreationalists do not stay at Skamania Lodge. Need other alternatives.

Site Concept #3:

- Does it make sense to sell? Not to me! Adding more people here also affects schools, fire district, road crews, police, etc. Hidden costs. Only property taxes pay here – after the sale the income is gone.
- No. Doesn't bring employment. Too much expense.
- Not enough data to make a decision.
- This would produce revenue for the county and then taxes but it would put a real stress on county services. Where is the money going to come from to provide sewer and water services to the lots developed? As far as I know there isn't a lot of grant money for developing new services.
- Don't like the housing idea – least consistent with preserving the character of the site. Would it attract people who appreciate natural benefits of the site, and would be active members of the community? Or would it become a second-home community where the owners have less permanent ties to the community? Also, limits public access to a large portion of the site. The meadows seem to be attached to the housing rather than public open space.
- Big issue: How big are lots. Too many people on the space will kill the solitude and quiet that would be a big selling point. If it is just another "neighborhood" it won't draw people to put up with harsh winters. Market more as summer homes, winter retreats, gentlemen's ranches – go to 5 acre lots, fewer homes, quality not quantity.
- Last resort only.
- Least amount of public access.
- NFW.
- Who would want to live there, with employment opportunities in the area so limited? This is the least viable option.
- I would not support this option unless it would produce low income housing which is badly needed throughout the county.

- Concept does not promote mission.
- Absolutely NOT! This benefits those whose financial status is already greater than the majority. I would actively protest this choice.

Of the three site concepts, is there one you would strongly support? Why?

- #2. Best money mix with enhancements for the community.
- No!!!
- Still up in the air. Any of the sites that can put 300 people to work at good paying jobs would be my first choice (not minimum wage or tourism). Development will need a good water source.
- Number 1 decision is to decide whether long term jobs or money for the county is most important. Number 2 question is when will all the necessary partners for the Wind River Retreat show their heads? We have Skamania Lodge and soon North Bonneville hot springs. Do we need a third place to retreat to?
- #2 with inclusion of a strong research component and small business component.
- Probably #2, although #3 if bigger lots might mean less impact on the area. Since it is my neighborhood I am jealous of my peace and quiet.
- #2. If #2 is not viable then #1. 2 is the top job creator. 1 is the most readily compatible use.
- #2.
- #2.
- #2 combined with parts of #1.

5.6.6 COMMUNITY INPUT: MONDAY APRIL 24, 1999

The following comments and questions were recorded at Public Meeting #3 in April, 2000. The discussion followed a presentation of the phased Redevelopment Plan. Responses were given verbally at the meeting, and several of the issues are addressed in this report.

- What are the conditions of the soil at the Nursery? Can products for human consumption be grown there?
- What is the actual cash outlay by the county for the Redevelopment Plan?
- Agricultural use is tied to the issue of the removal of the dam. Describe the water impact study that will be undertaken.
- How will storm water be controlled so that it does not impact adjacent properties?
- Is providing jobs an appropriate activity for a governmental agency or entity?
- Describe the new sewer and drainfields that will be used. Is the infrastructure intact?
- Is there still a possibility for selling portions of the property?
- What are the USFS plans for the dam?
- Remember the Kayakers in the plans for the recreational components.
- Partnerships should be examined with non-profit organizations.

WIND RIVER NURSERY
SITE AND FACILITY PLAN
SKAMANIA COUNTY, WASHINGTON

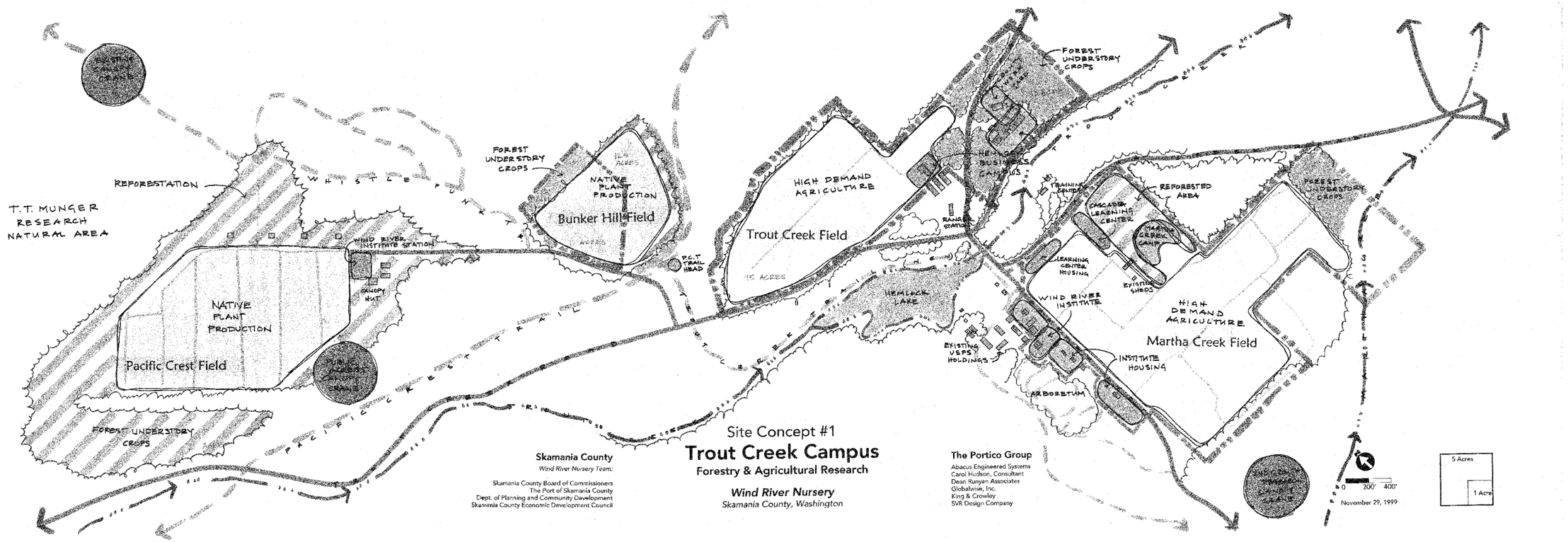


FIGURE 5.10

WIND RIVER NURSERY
SITE AND FACILITY PLAN
SKAMANIA COUNTY, WASHINGTON

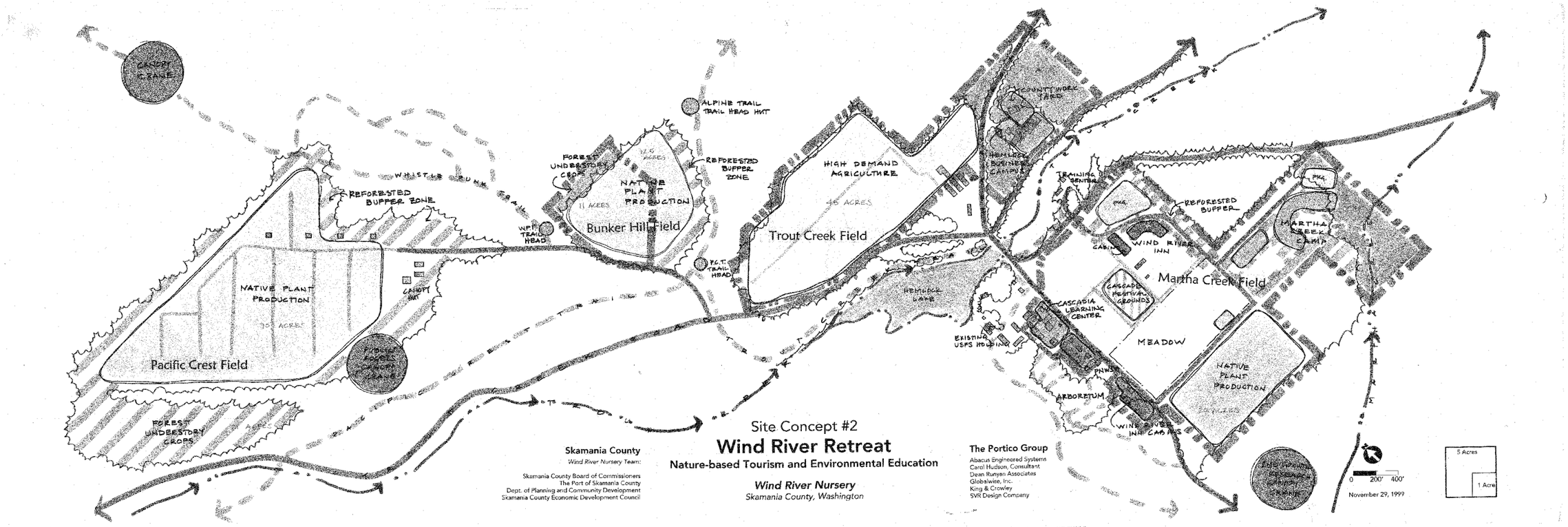


FIGURE 5.11

WIND RIVER NURSERY
SITE AND FACILITY PLAN
SKAMANIA COUNTY, WASHINGTON

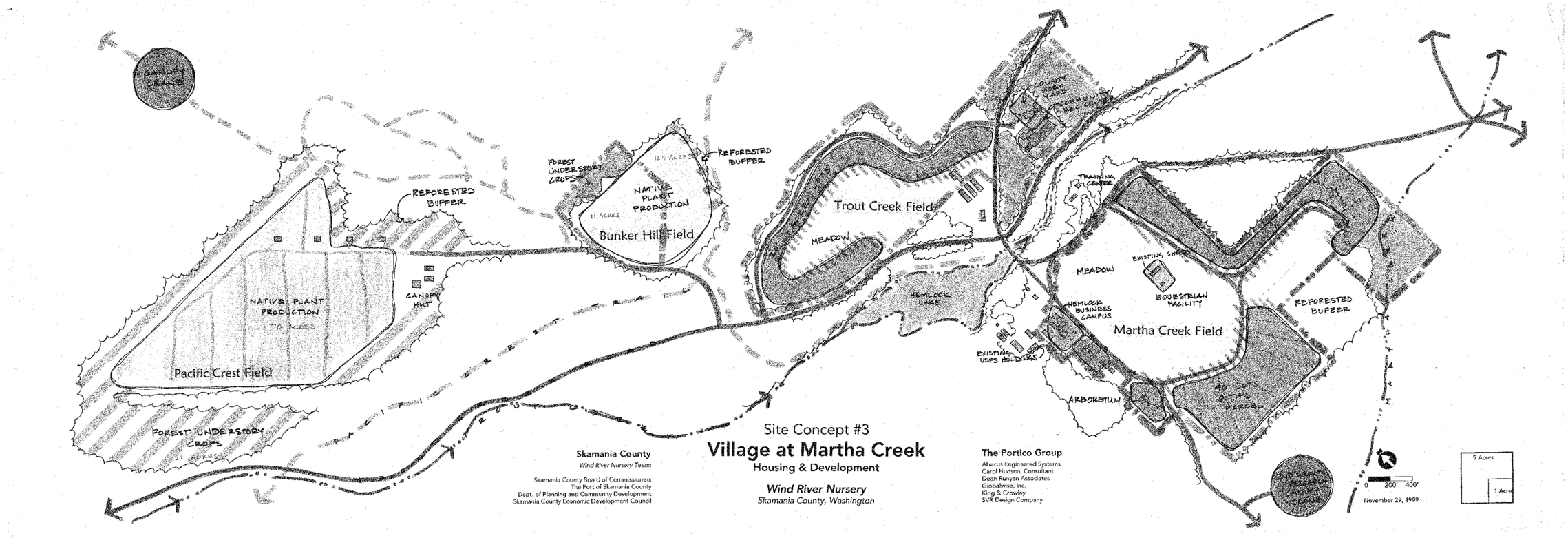


FIGURE 5.12

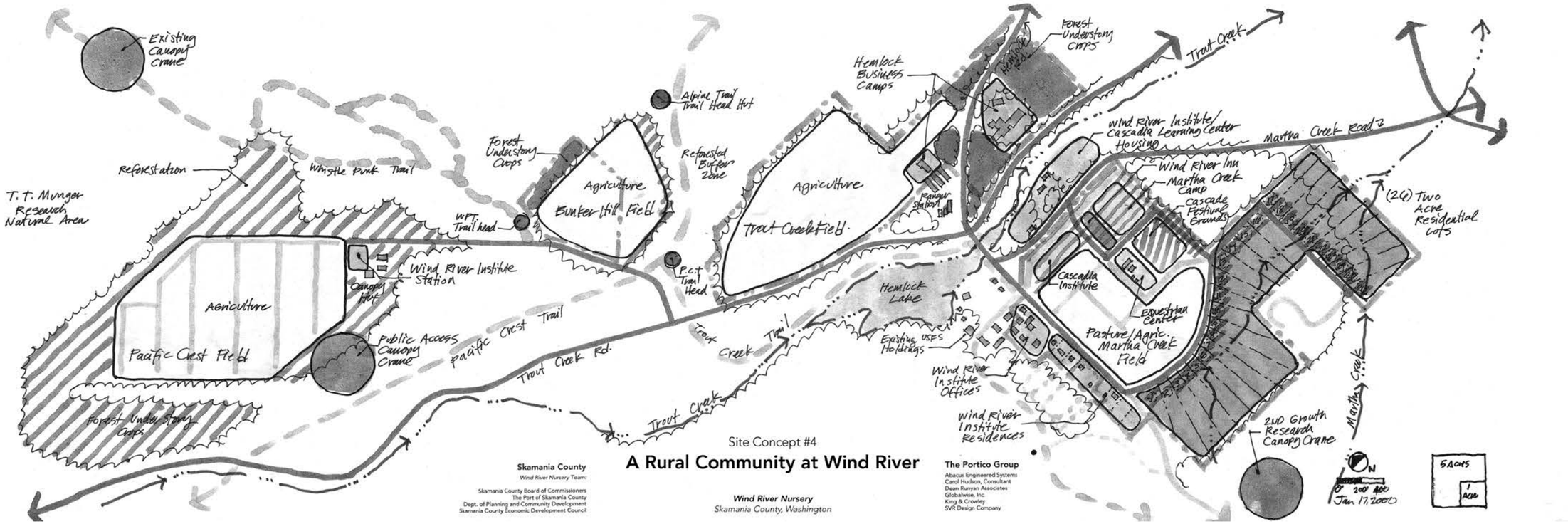

Existing Cougar Crane
Reforestation
Whistle Punk Trail
T. T. Munger Research Natural Area
Alpine Trail Trail Head Hut
Forest Understory Crops
Reforested Buffer Zone
Agriculture
Bunker Hill Field
WPT Trail head
P.C.T. Trail Head
Wind River Institute Station
Canopy Net
Agriculture
Pacific Crest Field
Public Access Canopy Crane
Pacific Crest Trail
Trout Creek Rd.
Trout Creek
Trout Creek
Forest Understory Crops
Hemlock Business Camps
Agriculture
Tract Creek Field
Ranger Station
Hemlock Lake
Existing USFS Holdings
Wind River Institute Offices
Wind River Institute Residences
Forest Understory Crops
Trout Creek
Wind River Institute/ Cascadia Learning Center Housing
Martha Creek Road
Wind River Inn
Martha Creek Camp
Cascade Festival Grounds
(24) Two Acre Residential Lots
Cascadia Institute
Equestrian Center
Pasture/Agric. Martha Creek Field
2ND Growth Research Canopy Crane
Martha Creek
N
0' 200' 400'
Jan. 17, 2000
5 ACRES
1 ACRE
Site Concept #4
A Rural Community at Wind River
Wind River Nursery
Skamania County, Washington
Skamania County
Wind River Nursery Team:
Skamania County Board of Commissioners
The Port of Skamania County
Dept. of Planning and Community Development
Skamania County Economic Development Council
The Portico Group
Abacus Engineered Systems
Carol Hudson, Consultant
Dean Runyan Associates
Globalwise, Inc.
King & Crowley
SVR Design Company

FIGURE 5.13

5.7 DESCRIPTION OF PRELIMINARY SITE CONCEPTS

5.7.1 SITE CONCEPT #1: TROUT CREEK CAMPUS

Forestry and Agricultural Research
An alternative based predominately on agricultural use of the parcels to be acquired from the USFS, as well as areas that may be available to the county by special use permit. It builds on and expands the site's long history as a forestry and agricultural research station.

GOALS:
Generate income for the county through leases, sales tax receipts and additional employment in the county.

PROGRAM:
Major Land Uses
- Skamania Farms
- Wind River Institute

Minor Land Uses:
- Forest Reserve
- Cascadia Learning Center
- Martha Creek Camp
- Hemlock Business Campus

DESIGN NARRATIVE:
Major Land Uses:
Skamania Farms
The Skamania Farms portion of the site would develop agricultural production opportunities on all four fields. Martha Creek and Trout Creek are proposed primarily for high demand botanical crops. The Bunker Hill and Pacific Crest Fields may be used for native plant production including trees, mushrooms, salal and ferns, and high demand botanical crops.

Wind River Institute
The Wind River Institute research activities could be located at an expanded canopy hut in the Pacific Crest Field; the existing office and warehouses along Chapman Avenue and the existing processing center would also be available for research and for the processing of plant materials. Expansion of Canopy Hut would be as determined by UW and PNWRS.

A second canopy crane facility could be developed along the southwest corner of the Pacific Crest Field for use by visitors and education groups. An additional research crane, within a second growth forest stand, could be located along the southwest edge of Martha Creek Field for expanded research uses.

The existing CCC era homes along Chapman Avenue would be available for researcher's quarters. A renovated Mess Hall could be used as a dining facility or community gathering area.

Minor Land Uses:

The Forest Reserve
The Forest Reserve portion would restore the forest meadow ecotone of the Pacific Crest Field and provide a buffer for research activities in that area. The existing forested edge on the north side of the Bunker Hill Field and the east

edge of the Martha Creek Field could be used for forest understory crops.

A portion of the USFS portion of the Bunker Hill Field along its southern edge adjacent to the Pacific Crest Trail would be reforested in this scheme, as would the perimeter, and land located around new uses, in Martha Creek field. This would allow the existing feeling of "forested edges" at the fields to be maintained.

Cascadia Learning Center & Martha Creek Camp

Cascadia Learning Center and Martha Creek Camp would be located at the north and northeastern perimeter of the Martha Creek Field. Access is provided by connecting one of the existing roads in the field to Martha Creek Road. The new learning center buildings would align with the existing pole shed in the field, bringing to mind the former historic nursery row buildings at that location. The camp would be located within the reforested northeast corner of the field.

Hemlock Business Campus

The Hemlock Business Campus would reuse the existing offices, storage, warehouse, and parking at the existing Processing Center.

5.7.2 SITE CONCEPT #2: WIND RIVER RETREAT

Nature-based Tourism and Environmental Education
An alternative based on development of the site for nature-based tourism and life-long learning opportunities related to the Columbia River Gorge and Cascade Mountain environment.

GOALS:
Generate income for the county through the sale of land, land leases, sales tax receipts, increased numbers of visitors to the county and additional employment in the county.

PROGRAM:
Major Land Uses
- Inn at Wind River

Minor Land Uses:
- Equestrian Center
- Cascade Events Grounds
- Cascadia Learning Center
- Martha Creek Camp
- Skamania Farms
- Forest Reserve
- Hemlock Business Campus

DESIGN NARRATIVE:
Major Land Uses
The Inn at Wind River
The Inn at Wind River would be the primary use of the Martha Creek Field. To preserve the existing pastoral character of the site, development would be limited to the edges of either the existing or reduced meadow. Location of the Inn and adjacent cabins could be at the northeastern end of the fields to take advantage of views of the surrounding foothills and solar access. The cabins would align with the existing pole shed in the field at the site of the former historic nursery row buildings.

Access would be provided via a new loop road along the perimeter of the field. A connection could be made between the Inn and the existing training facilities on Martha Creek Road and CCC structures on Chapman Avenue.

The existing CCC era homes would be available for short- or long-term resort rental.

Minor Land Uses:

Equestrian Center
Affiliated with the Inn, the equestrian center is located at the southern end of the Martha Creek Field.

Cascade Event Grounds
Centrally located in The Martha Creek Field, the event grounds would utilize the east facing slopes for seating focused on the existing pole barn as a backdrop and stage.

Cascadia Learning Center
The existing office, warehouse and coolers could be renovated, or removed and redeveloped as The Cascadia Learning Center. The renovated Mess Hall could house a communal dining facility, convenience store and/or interpretive information regarding the Wind River Nursery.

Martha Creek Camp
Classroom and gathering areas, bunkhouses and tent or yurt sites associated with the Martha Creek Camp

would be located at the eastern perimeter of the Martha Creek Field.

Skamania Farms
The Skamania Farms program would develop opportunities at the Martha Creek, Trout Creek, Bunker Hill and Pacific Crest Fields for agricultural production. Trout Creek is proposed primarily for high-demand botanical crops. The southern portion of the Martha Creek Field, The Bunker Hill and Pacific Crest Fields would be used for native plant production.

The Forest Reserve
The Forest Reserve portion, as in Site Concept #1, would restore selected edge areas of the Pacific Crest, Bunker Hill and Martha Creek Fields.

East of the field, near the base of Bunker Hill, an alpine style trail hut could be developed as part of a network huts along the Cascade Crest.

As an opportunity for partnership with the Forest Service, a second canopy crane facility could be proposed along the southwest corner of the Pacific Crest Field for use by visitors and education groups. An additional research crane, within a second growth forest stand, could be located along the southwest edge of Martha Creek Field as in the Site Concept #1 *Wind River Institute* proposal.

Hemlock Business Campus
In this Site Concept, the Hemlock Business Campus would again reuse the existing offices, storage, warehouse, and parking at the existing Processing Center.

5.7.3 SITE CONCEPT #3: VILLAGE AT MARTHA CREEK

Housing and Development
An alternative based on sale of a portion of the property for housing and related development.

GOALS:
Generate income for the county through land sales, sales tax on construction, and subsequent property tax revenues.

PROGRAM:
Major Land Uses
- Pacific Crest Estates

Minor Land Uses:
- Forest Reserve
- Skamania Farms
- Hemlock Business Campus
- Public Services

DESIGN NARRATIVE:
Major Land Uses
Pacific Crest Estates
The housing program would develop the edges of the Martha and Trout Creek Fields for single-family residential development.

At Martha Creek Field, filtered views of the surrounding foothills would be possible for residents, and views south and east from Chapman Avenue would be maintained. A new access road on the east and south margins of the Field would complete a loop road. Similar to Chapman Avenue, the road would be lined with big-leaf maple trees and the houses would be located on the outside edge of the road. The existing pole barn located in the Field could be used as part of an equestrian center for the surrounding residences.

The new access road at the Trout Creek Field would follow the north edge of field and connect to both Hemlock and Trout Creek Roads. In this case, housing would be located on the inside of the loop road, with a reforested edge along the meadow perimeter.

Minor Land Uses:

The Forest Reserve
The Forest Reserve portion, as in Site Concepts #1 and #2, would restore the forest meadow ecotone of the Pacific Crest, Bunker Hill and Martha Creek Fields.

As an opportunity for partnership with the Forest Service, a second canopy crane facility could be proposed along the southwest corner of the Pacific Crest Field for use by visitors and education groups. An additional research crane, within a second growth forest stand, could be located along the southwest edge of Martha Creek Field as in Site Concepts #1 and #2.

The Skamania Farms
The Skamania Farms program would develop the Bunker Hill and Pacific Crest Fields for the low risk agricultural production alternatives, including trees, native plants (salal and ferns), or mushrooms.

Hemlock Business Campus
In this Site Concept, the Hemlock business campus is located in the former offices and warehouse spaces along

Chapman Avenue to provide small-scale retail and service businesses to support the residential community.

Public Services

The large open room of the processing center could be utilized for community services including indoor recreational activities, as well as social events sponsored by the residential community. Maintenance and operation costs for the community services building would be financed by home owners' association dues.

The former garage at the former Processing Center could be used for public services (e.g. County Search and Rescue programs) and storage.

5.7.4 SITE CONCEPT #4: A RURAL COMMUNITY AT WIND RIVER

An alternative based on the development of a rural community centered around the Martha Creek Field. It combines residential land uses with nature-based tourism and life-long learning opportunities related to the site and region. The three remaining fields are reserved for agricultural use and build on and expand the site's long history as a forestry and agricultural research station.

GOALS:
Generate income for the county through land sales, sales tax on construction, and subsequent property tax revenues, leases, sales tax receipts and additional employment in the county.

PROGRAM:
Land Uses

- Wind River Institute
- Cascadia Learning Center
- Martha Creek Camp
- Inn at Wind River
- Cascade Event Grounds
- Equestrian Center
- Pacific Crest Estates

- Hemlock Business Campus
- Public Services

- Skamania Farms
- Forest Reserve

DESIGN NARRATIVE:
Land Uses

Wind River Institute
The Wind River Institute program is as described in Site Concept #1.

Cascadia Learning Center
Classroom and gathering areas associated with Cascadia Learning Center would be located at the north end of the Martha Creek Field.

Martha Creek Camp
Bunkhouses, yurts or tent sites associated with the Martha Creek Camp would be located at the northeastern corner of the Martha Creek Field.

The Inn at Wind River
The Inn at Wind River would also be located at the north end the Martha Creek Field. The location of the Inn is selected in order to take advantage of views of the surrounding foothills and solar access. The Inn would align with the existing pole shed in the field at the site of the former historic nursery row buildings.

Access would be provided via a new loop road along the perimeter of the field. A connection could be made between the Inn and the existing training facilities on Martha Creek Road and Chapman Avenue.

Equestrian Center
In this Concept, the equestrian center is sited at the southern portion of Bunker Hill Field, close to the trails and roads of the adjacent national forest. It is an opportunity for partnership with the

Forest Service, as it would require a Special Use permit at this location.

Cascade Event Grounds
In possible affiliation with the Inn, the Cascade Events Grounds would remain Centrally located in The Martha Creek Field. The grounds would utilize the west facing slopes for seating focused on the existing pole barn as a backdrop and stage.

Pacific Crest Estates
The housing program would develop the southern edge of the Martha Creek Field for single-family residential development at density of 1 unit per 2-acre lot. A new access road on the south and east margins of the Field would complete a loop road. Similar to Chapman Avenue, the road would be lined with big-leaf maple trees and the houses would be located on the outside edge of the road.

Hemlock Business Campus
The Hemlock Business Campus would reuse the existing offices, storage, warehouse, and parking at the existing Processing Center.

Public Services
The former garage at the former Processing Center could be used for public services (e.g. County Search and Rescue programs) and storage.

Skamania Farms
The Skamania Farms program would develop opportunities at the Trout Creek, Bunker Hill and Pacific Crest Fields for agricultural production.

The Forest Reserve
The Forest Reserve portion would restore the forest meadow ecotone of the Pacific Crest and Bunker Hill Fields, similar to the proposal in Site Concept #1.

A second canopy crane facility could be developed along the southwest corner of the Pacific Crest Field. An additional research crane, within a second growth forest stand, could be located along the southwest edge of Martha Creek Field for expanded research uses.

TABLE 5-6 CONSTRUCTION COSTS: BUILDINGS AND NATURAL AREAS													
Concept #1: Trout Creek Campus							**County Costs**			**Developer/Leaseholder Costs**		
	Unit	QTY	Unit Cost	# Units	Cost	1-3 Yr. Cost	10 Yr. Cost	25 Yr. Cost	1-3 Yr. Cost	10 Yr. Cost	25 Yr. Cost
Skamania Farms											
Reforest Buffer Zones: Bunker Hill Field	Acre	1.5	$300		$450	$225	$225				
[Reforest Buffer Zones by USFS]	Acre	40.0	$300		$12,000						
Wind River Institute											
New Station at Pacific Crest Field	SF	1,000	$100	1	$100,000					$100,000	
Housing at Chapman Avenue homes	Allow	1	$3,000	3	$9,000				$9,000		
Renovate housing at Chapman Avenue	Allow	1	$50,000	3	$150,000					$150,000	
Cascadia Learning Center											
5 New Classrooms at Pole Shed Drive	SF	1,500	$120		$180,000					$180,000	
Cabins at north edge of Martha Creek Fld	SF	600	$85	5	$255,000						$255,000
Martha Creek Camp											
Tent Platforms	Each	10	$2,000		$20,000				$20,000	$10,000	$20,000
Yurts	Each	5	$7,890		$39,450				$39,450	$78,900	$78,900
Cabins	SF	700	$60	4	$168,000						$168,000
Reforestation at Martha Creek Field	Acre	9.0	$300		$2,700	$1,350	$1,350				
Hemlock Business Campus											
Renovation of Seed Processing Center	Allow	1	$550,000		$550,000				$550,000		
Cascade Festival Grounds											
NA											
Inn at Wind River											
NA											
Pacific Crest Estates											
NA											
Equestrian Center											
Renovate existing Pole Shed											
Enhanced Trail System											
Trail link from PCT to Martha Creek Field	LF	4,000	$9		$36,000		$36,000				
Trails around Martha Creek Field	LF	8,000	$9		$72,000	$36,000	$36,000				
Trail head at PCT for County	Allow	1	$20,000		$20,000		$20,000				
Construction/Renovation Subtotal						$37,575	$93,575	$0	$618,450	$518,900	$521,900
Soft Costs											
Design, Fees, Contingency	% cost	50%				$18,788	$46,788	$0	$309,225	$259,450	$260,950
Construction Costs: Total						**$56,363**	**$140,363**	**$0**	**$927,675**	**$778,350**	**$782,850**

TABLE 5-7 CONSTRUCTION COSTS: BUILDINGS AND NATURAL AREAS													
Concept #2: Wind River Retreat							**County Costs**			**Developer/Leaseholder Costs**		
	Unit	QTY	Unit Cost	# Units	Cost	1-3 Yr. Cost	10 Yr. Cost	25 Yr. Cost	1-3 Yr. Cost	10 Yr. Cost	25 Yr. Cost
Skamania Farms											
Reforest Buffer Zones: Bunker Hill Field	Acre	1.5	$300		$450		$450				
Reforest Buffer Zones: PCF (By USFS)	Acre	40.0	$300		$12,000						
Wind River Institute											
NA											
Cascadia Learning Center											
5 New Classrooms at N side of Martha Creek	SF	1,500	$120		$180,000					$180,000	
Renovate existing buildings on Chapman Av	Allow	5	$130,000		$650,000					$650,000	
Martha Creek Camp											
Tent Platforms	Each	10	$2,000		$20,000				$20,000	$10,000	$20,000
Yurts	Each	5	$7,890		$39,450				$39,450	$78,900	$78,900
Cabins	SF	700	$60		$42,000						$42,000
Reforestation at Martha Creek Field	Acre	9.0	$300		$2,700	$1,350	$1,350				
Hemlock Business Campus											
Renovation of Seed Processing Center	Allow	1	$500,000		$500,000				$500,000		
Cascade Festival Grounds											
Ground preparation for festival	SF	165,528	$0.20	3.8ac.)	$33,106		$33,106				
Renovation of lunch shed for rest rooms	Allow	1	$20,000		$20,000		$20,000				
Inn at Wind River											
Lodge with 60 rooms	Each	1	$200,000	60	#########				$12,000,000		
New cabins at Pole Shed Drive	Each	1	$150,000	5	$750,000					$1,500,000	
Renovate existing homes for use as cabin	Each	1	$40,000	3	$120,000					$240,000	
Pacific Crest Estates											
NA											
Equestrian Center											
New stables at south side of Martha Creek F	SF	3,000	$75		$225,000				$225,000		
New Trail System											
Trail from PCT to Martha Creek Field	LF	4,000	$9		$36,000		$36,000				
Trails around Martha Creek Field	LF	8,000	$9		$72,000	$36,000	$36,000				
Trail head at PCT for County	Allow	1	$20,000		$20,000		$20,000				
Construction/Renovation Subtotal						$37,350	$146,906	$0	$12,784,450	$2,658,900	$140,900
Soft Costs											
Design, Fees, Contingency	% cost	50%				$18,675	$73,453	$0	$6,392,225	$1,329,450	$70,450
Construction Costs: Total						**$56,025**	**$220,358**	**$0**	**$19,176,675**	**$3,988,350**	**$211,350**

TABLE 5-8 CONSTRUCTION COSTS: BUILDINGS AND NATURAL AREAS													
Concept #3: Pacific Crest Estates							**County Costs**			**Developer/Leaseholder Costs**		
	Unit	QTY	Unit Cost	# Units	Cost	1-3 Yr. Cost	10 Yr. Cost	25 Yr. Cost	1-3 Yr. Cost	10 Yr. Cost	25 Yr. Cost
Skamania Farms											
Reforest Buffer Zones: Bunker Hill Field	Acre	1.5	$300		$450		$450				
Reforest Buffer Zones: PCF (By USFS)	Acre	40.0	$300		$12,000						
Wind River Institute											
NA											
Cascadia Learning Center											
NA											
Martha Creek Camp											
NA											
Hemlock Business Campus											
Move into bldgs. at Chapman Avenue	Allow	1	$10,000		$10,000				$10,000		
New construction at Chapman Avenue	SF	6,000	$100		$600,000					$600,000	
Cascade Festival Grounds											
NA											
Inn at Wind River											
NA											
Pacific Crest Estates											
Developer construction costs TBD											
Reforest at home site edges	SF	740,520	$0.50		$370,260				$185,130	$185,130	
Equestrian Center											
Renovate existing Pole Shed	Allow	1	$133,599		$133,599				$133,599		
Renovate existing Lunch Shed	Allow	1	$5,000		$5,000				$5,000		
New Trail System											
Trail from PCT to Martha Creek Field	LF	4,000	$9		$36,000		$36,000				
New trail head at PCT	Allow	1	$20,000		$20,000		$20,000				
Construction/Renovation Subtotal						$0	$56,450	$0	$333,729	$785,130	$0
Soft Costs											
Design, Fees, Contingency	% cost	50%				$0	$28,225	$0	$166,865	$392,565	$0
Construction Costs: Total						**$0**	**$84,675**	**$0**	**$500,594**	**$1,177,695**	**$0**

5.8 ECONOMIC ASSESSMENT OF PRELIMINARY SITE CONCEPTS

This section provides a preliminary assessment of economic impacts associated with each of the alternative site concepts for the Wind River Nursery. The purpose of this section is to describe the primary elements of an economic and financial assessment that was part of the planning process involved in establishing the Redevelopment Plan. This assessment was used as a starting point to consider the relative strengths of each preliminary site concept and part of the evaluation process that led to the Redevelopment Plan. Accordingly, the assumptions, limitations, and economic impacts shown in this section do not necessarily represent those of the Redevelopment Plan.

Fiscal and employment-related impacts for Skamania County were considered for each of the four alternative site concepts. As just described, four site concepts were evaluated and considered: Trout Creek Campus, Wind River Retreat, Village at Martha Creek, and A Rural Community at Wind River—a concept that combined elements from each of the other three.

A 30-year period of analysis was used to assess all project impacts. The base year for the analysis was 2000. Benefits and costs incurred during the period of analysis are discounted to the beginning of this period (2000) using a 3% discount rate to represent adjustment for inflation.

Revenue estimates relate specifically to revenue generated for Skamania County and do not reflect revenue generation that may accrue to other public and private entities. Revenue projections for Skamania County vary by concept, and where appropriate are based on estimates of annual lease income and income from the sale of undeveloped land, as well as additional revenue generated from sales, leasehold, hotel/motel, and property taxes that would accrue to Skamania County under the current (2000) tax system.

Cost estimates shown in this section also relate to Skamania County and were considered necessary implementation costs, particularly in the early stages of site concept development. County costs include infrastructure development, building maintenance, field restoration, and trail system enhancement. Costs incurred by other entities including those borne by private developers were not considered as part of the costs incurred by Skamania County and were not analyzed or discussed in terms of site concept feasibility.

Site Concept #1: Trout Creek Campus

In this initial site concept, the primary source of County revenue is related to agricultural lease income from three of the fields and the processing building. This site concept was considered the most appealing for full-scale botanical herb production and research, with 140 acres allocated to this type of use.

Site Concept #2: Wind River Retreat

Under the Wind River Retreat site concept, Skamania County would lease a large portion of the Martha Creek Field for visitor- and recreation-oriented activities. This concept considered the opportunity for an investor and lessee to construct and operate a small (30-60 room) lodge. Additional visitor related uses included an

equestrian center, events grounds, a learning center and campgrounds.

Agricultural leases for native plant production were considered for the three other fields – Trout Creek, Bunker Hill and Pacific Crest. Native plant crops included trees, mushrooms, salal and ferns, which could generate lease income for the County.

Site Concept #3: Village at Martha Creek

Under the Village at Martha Creek site concept, Skamania County would generate cash from the sale of property that could be invested or used to off-set infrastructure and maintenance costs in the early stages of development. This concept explored the option of selling property as single-family residential lots along the edges of the Martha Creek and Trout Creek fields. In addition to the income from the sale of land, the County would also receive additional property tax revenue.

Options related to agricultural uses were the most limited under this site concept due to fewer acres available for agricultural production, as well as compatibility issues which appeared likely to arise with close proximity to residential home owners. Although this site concept appeared the most beneficial in terms of revenue generation to the County, it would generate fewer jobs as compared to the other three concepts (preliminary analysis did not include potential short-term jobs generated from housing construction).

Site Concept #4: A Rural Community at Wind River

As compared to the Village at Martha Creek site concept, this alternative was developed as an opportunity for Skamania County to take advantage of the potential to generate income from the sale of land and the receipt of property taxes, but retain more of the site's character and potential for recreational use and agricultural production.

Results of the preliminary economic assessment showed positive revenue generation for the county with job creation potential similar to the Wind River Retreat Site Concept. In addition, limiting residential land sales to the edge of the Martha Creek field significantly reduced potential conflicts with agriculture and residential use.

GENERAL ASSUMPTIONS AND LIMITATIONS FOR PRELIMINARY ECONOMIC ASSESSMENT

- Revenue generation projected for 30-year time horizon.
- Future revenue discounted at a rate of 3% per year to bring into year 2000 dollars.
- County leasehold tax revenue equals 6.14% of annual lease payment.
- County sales tax revenue of .5% of taxable sales.
- 10% of gross earnings spent and subject to sales tax in Skamania County.
- County incurs maintenance costs of existing buildings for the first three years and new roof for processing center.
- County incurs cost for new water/fire protection system.
- Acreage available for agricultural lease includes Pacific Crest Field.

- Agricultural lease revenue are based on the following annual lease rates:

  Botanical herbs $275 per acre
  Native plants $100 per acre
  Forest understory $50 per acre
  Pasture $50 per acre

- Martha Creek Camp lease revenue based on rental of yurts and tent cabins with an annual occupancy rate of 65%.

- Cascade Learning Center is established and attracts between 4,000-12,000 students per year.

- Wind River Institute is established and serves five full-time researchers as well as 12 seasonal graduate students.

- Hemlock Business Campus includes 5,000 sq. ft. of retail and office space leased at between $3.00-$6.00 per sq. ft. per year.

- For site concepts that included residential uses, preliminary assessment did not consider County costs related to additional maintenance and services such as roads, schools, and utilities.

Site Concept #1: Trout Creek Campus

- Botanical herb production and research organization will lease approximately 140 acres.

- Agricultural lessee will lease 2/3 of processing center and adjacent storage coolers at $1.80 per sq. ft. per year.

- Agriculture production and research generates 30 full-year and 5 seasonal jobs.

- Wind River Institute, Martha Creek Camp, Cascadia Learning Center, and Hemlock Business Campus are established on site.

Site Concept #2: Wind River Retreat

- Private developer will construct small lodge (30-60 rooms) and yurt/tent camp accommodations, and lease portions of Martha Creek field for a 30-year period.

- County receives 2% of lodging tax receipts.

- County receives 3% of gross revenue generated on site as annual lease payment.

- Lease for native plant production represents 110 acres of agricultural area.

- Agricultural lessee will lease 1/2 of processing center and adjacent storage coolers at $1.80 per sq. ft. per year.

Site Concept #3: Village at Martha Creek

- Private developer bears the cost of water, electric, and roadways.

- County sells two-acre lots for between $40,000-$45,000

- Housing is developed on two-acre lots which generate an appraised property value of between $200,000-$250,000 per lot.

- Property tax revenue projections based on current Skamania County tax levies.

- Agricultural lease for native plant and forest understory – no botanical herb production.

- Agricultural lessee will lease 1/3 of processing center and adjacent storage coolers at $1.80 per sq. ft. per year.

- Income from sale of lots invested in fund earning a 6% annual rate of return over a 30-year period.

Site Concept #4: A Rural Community at Wind River

- Agricultural lease for native plant, pasture, forest understory and limited botanical herb production.

- Agricultural lessee will lease 1/3 of processing center and adjacent storage coolers at $1.80 per sq. ft. per year.

- 26 two-acre lots sold over 30-year period.

- Allows for development of Martha Creek Camp, Wind River Inn, Wind River Institute, Cascadia Learning Center, and Hemlock Business Campus.

TABLE 4.1
PRELIMINARY ECONOMIC ASSESSMENT:
IMPACTS FOR SKAMANIA COUNTY BY SITE CONCEPT, 2000-2030

	Site Concept #1: Trout Creek Campus	Site Concept #2: Wind River Retreat	Site Concept #3: Village at Martha Creek	Site Concept #4: A Rural Community at Wind River
Revenue				
Lease Income	$2,153,036	$2,107,357	$682,756	$1,584,287
Leasehold Tax Revenue	132,196	126,248	41,921	97,275
Income from Sale	-	-	1,979,156	985,905
Investment Income	-	-	2,561,541	1,252,168
Property Taxes to County	-	-	533,103	259,127
Property Taxes to Special Districts	-	-	458,717	222,969
Sales Taxes	16,146	24,042	24,219	25,340
Hotel/Motel Taxes	-	279,695	-	194,350
Total	$2,301,379	$2,257,647	$6,281,414	$4,427,071
Development Costs				
Infrastructure Development	1,359,220	1,359,220	1,359,220	1,359,220
Processing Plant (new roof)	234,675	234,675	234,675	234,675
Building Maintenance (1-3 years)	875,135	875,135	875,135	875,135
Reforestation of Fields	239,580	130,680	32,670	130,680
Events Grounds Restoration/Restrooms	-	53,106	-	53,106
Enhanced Trail System	128,000	128,000	56,000	56,000
Total	$2,836,610	$2,780,815	$2,557,700	$2,708,815
Net Revenue	**($535,231)**	**($523,168)**	**$3,723,714**	**$1,718,256**
Number of on-site jobs				
Full-year	35	27	12	27
Seasonal	17	21	6	21

Source: Dean Runyan Associates

5.9 AGRICULTURE IN THE PRELIMINARY SITE CONCEPTS

The agricultural development associated with each of the four site concepts is briefly described here.

Site Concept #1: Trout Creek Campus

In the Trout Creek Campus concept, Skamania Farms utilized each of the four fields for agriculture. There is a total agricultural crop production area of 171 acres (this included 30.5 acres of forested understory crop land which would grow mushrooms, floral greens or other crops that need the shade of trees. A total of 140.5 acres was considered irrigated for the production of high demand crops (i.e. irrigation water would be supplied to all 140.5 acres). The projected high demand crops include botanical medicinal plants and ornamental nursery plants. The expected net present value of the gross lease payments to the County was $322,700 (based on a 10-year analysis).

Site Concept #2:Wind River Retreat

In the Wind River Retreat concept, 168 acres are devoted to agricultural production. This is almost the same total amount of land as in the Trout Creek Campus concept. However, most of the crop production is native plants, not high demand crops. Irrigation would be required for approximately 35-50 acres in this concept. The net present value of the gross lease payments received by the County over 10 years was calculated to be $170,900.

Site Concept #3: Village at Martha Creek

In this concept, none of the land in the Martha Creek Field would be available for agricultural crop production. The remaining land available was determined to be 111.5 acres. The crops in this concept included native plants and forest understory crops. The gross lease revenues from this concept brought the County a net present value of $76,900 over a 10-year period.

Concept Plan #4: A Rural Community at Wind River

This concept took elements from the previous concepts and extended the analysis period to 28 years (2002 to 2030). The amount of land devoted to agricultural use was 137.5 acres in 2002, increased to 159 acres from 2006 to 2010 and then decreased to 142 acres from 2010 until 2030. No high demand agricultural crops were considered in this concept. The land was initially used for pasture or very temporary uses from 2002 through 2005. Thereafter the land would be converted to native plant crops and forest understory crops. Irrigation would be needed on 20-25 acres. The net present value of gross lease payments to Skamania County over the 28-year analysis period is $237,100.

5.10 INFRASTRUCTURE COST ANALYSES OF THE PRELIMINARY CONCEPT PLANS

For the civil aspects of the preliminary cost estimates for the Wind River site, the estimates were broken up into three main categories:

- Earthwork and Site Preparation
- Utilities
- Roadways

Our approach to the unit costs listed in the cost analysis is conservative in order to account for any uncertainties during the conceptual stage. In all cases, it is assumed that construction of the civil facilities would occur under moderate weather conditions, i.e. between April and October. The following summarizes our overall assumptions for each category along with discussion of potential funding sources for different portions of the work.

EARTHWORK AND SITE PREPARATION

For the initial alternative site concepts, areas proposed for development were identified and calculated to determine the Clearing/Grubbing and Erosion Control areas. Since most of the improvements proposed are located in already "cleared" areas, i.e. agricultural fields, the earthwork and site preparation activities for the site are expected to be minimal. As a result, the average fill in proposed development areas was estimated at three inches and the average stripping depth (to remove organic and unsuitable materials in areas with roadways and building development) was assumed as four inches. Within each cleared area, on average, it was assumed that 70% of the area would require restoration after the development of roadways and buildings. Restoration costs would include hydroseeding and some landscaping.

UTILITIES

Due to the general condition and inadequate capacity/sizing of the existing utility systems and the need to separate the utility systems from the Forest Service's system, a new utility system would be required for all three alternative site concepts. Utility costs for the analysis were divided into subcategories of Water, Storm Drain, Sanitary Sewer, Irrigation and Electrical Systems.

Water System

In order to meet current fire code standards, a new water storage tank in all three alternatives would be required. As a result of the square footage of the tree processing facility, which would be reused in all three alternatives and would be the largest facility on site, sizing for the storage tank would depend upon providing fire flow for this facility. For the analysis, it was assumed that the tank would be located near the existing water storage tank southwest of the Arboretum.

In all three alternatives, a water main would be constructed from the new water storage tank to the existing tree

processing facility. In the cost analysis, it was assumed that water mains would be installed along new roadways to serve proposed developments shown for each alternative. The unit cost for the water main includes not just the pipe material but also fittings, valves, thrust blocking, backfilling, excavation etc. as part of the installation. From the lineal footage calculated for the water main, excluding the service lines, it was assumed that a fire hydrant would be located every 400 feet in order to provide fire protection coverage for new facilities.

Cost for installing a new pump for the existing well at Trout Creek and for constructing a water treatment plant with booster pumps to fill the water storage tank were included in the analysis.

Storm Drain System

Preliminary costs for the storm drain system in each alternative includes: parallel drainage swales along new and existing roadways; new storm drain mains with access manholes; storm drain collection structures for vehicle traffic areas; and service lines with cleanouts to collect water from downspouts at proposed and renovated buildings.

For Site Concepts #1 and #2, we assumed storm drain facilities along Chapman Avenue would remain in service. However for Site Concept #3, as a result of the large housing development proposed for site, the storm drain facilities along Chapman Avenue would be replaced.

With regards to water quality facilities, it is expected that swales along roadways would be constructed to treat runoff. The swales would then direct the run-off to the storm drain collection structures and then discharge into a storm drain detention facility. Due to availability of open space at the site, the detention facility could be an open pond, which would reduce the facility cost (in comparison to an underground detention vault). Discharge from the detention facility would be regulated by a flow control structure, in order to meet Department of Ecology's requirements for Stormwater Management. The majority of the storm drain system would be funded by private developers due to their development of new facilities (i.e. roadways, parking lots, buildings etc.).

Sanitary Sewer System

For each alternative, the cost of the sanitary sewer system included a new sanitary sewer main with access manholes along all new and existing roadways and service lines with cleanouts to each renovated and proposed building. A septic treatment facility, including pumps, pretreatment chambers and drainfield are also provided. Sizing for the septic drainfield, including a reserve, was determined for each alternative and was based on the design peak number of visitors expected at the site in a day (provided by Dean Runyan Associates) and anticipated uses of the site (i.e. restaurant, hotel, or campground).

Irrigation

The water source for the irrigation system is expected to come from the existing Pacific Crest Irrigation Water Rights. As a result, the irrigation main, which currently terminates at Bunker Hill, would need to be extended to

Pacific Crest Fields. Consequently, with the water source for each alternative's irrigation system being from the Pacific Crest Field, it is expected that the existing wells at the Pacific Crest Field would require upgrade.

A state of the art irrigation drip system is proposed for irrigating the agricultural fields. Costs for the irrigation system include valves, fittings, service lines, valve control units. However, drip irrigation system can be maintenance intensive. Therefore, prior to making a decision, further comparison of the long term maintenance costs with initial capital costs would need to analyzed.

Electrical

Unit costs for the Electrical and Franchise Utility system were provided by Abacus Engineered Systems, Inc.

ROADWAYS

In the cost analysis for each alternative, asphalt overlay of the existing paved roadways is assumed along Chapman Avenue and Martha Creek Road. Roadway improvements to Trout Creek Road and the access drive from Trout Creek Road to the Pacific Crest Field were not included. Gravel roadways within each agricultural field and the maintenance road to the Water Storage Tank have been included in the analysis. For all new roadways to the different developments, i.e. Trout Creek and Martha Creek housing development, Wind River Inn or Martha Creek Camp, asphalt concrete roadways were assumed for the cost analysis. The paved roadway unit cost includes asphalt concrete and subbase preparation.

In all the alternatives, it was assumed that Skamania County and the Forest Service would equally provide funding for the overlay of Chapman Avenue to the existing Dam. However, for all other development areas, private developers would fund the infrastructure roadway costs.

WATER RIGHTS

TABLE 5-10 EXISTING WATER RIGHTS

Water Right/Source	Domestic	Irrigation (excluding frost control)
Well at Trout Creek	33 ac-ft/yr	24 ac-ft/yr for irrigation 9.5 ac-ft/yr for processing plant
Wells at Pacific Crest Field	None applicable	114 ac-ft/yr
Surface Water from Trout Creek	None applicable	228 ac-ft/yr

The current water rights may be obtainable for the different alternatives. There are four possible scenarios for the obtainable water rights.

TABLE 5-11 FUTURE WATER RIGHTS SCENARIOS

Water Right Scenario Type	**Domestic Water Source and Available Volume/yr**	**Irrigation Water Source and Available Volume/yr**
"Worst"	No usable water right	No usable water right
"Middle-Low"	Half from Well @ Trout Creek= 16.5 ac-ft/yr	Full Existing Water Right @Pacific Crest Field, Volume =114 ac-ft/yr
"Middle-High"	Half Existing Domestic Water Right from Well @ Trout Creek, Volume=16.5 ac-ft/yr	Full Existing Water Right from Well @Trout Creek and Pacific Crest Field. Volume=147.5 ac-ft/yr
"Best"	Full Existing Water Right from Well @ Trout Creek, Volume= 33 ac-ft/yr	Full Existing Water Right from Well and Surface Water @ Trout Creek and Pacific Crest Field. Volume = 375.5 ac-ft/yr

Calculations for the domestic and irrigation water demands for each alternative, Site Concept #1 - Trout Creek Campus, Site Concept #2 - Wind River Retreat, and Site Concept #3 - Village at Martha Creek are listed in the Appendix.

For Site Concept #1, Site Concept #2, the domestic water demands would fall under the "Middle-Low" water right scenario. However, due to the large agricultural needs for each site concept, the irrigation water demands would require the "Best" water rights scenario.

For Site Concept #3, Village at Martha Creek, the domestic water demands would be met under the "Best" scenario. However, the irrigation water demands would be met under the "Middle-High" scenario.

The "Middle-Low" water right scenario appears most obtainable for the site. As a result, Site Concept #1 and #2 plan would be a feasible option for development assuming there is a reduction in the areas designated for agricultural use.

TABLE 5-12a Preliminary Cost Estimate for Civil Infrastructure of Alternative #1 - Trout Creek

SvR Job # 99031			Date:	October 28, 2013	
Item	**#Units**	**Unit**	**Cost/Unit**	**Total**	**Notes/Assumptions**
Earthwork & Site Preparation					
Clearing/Grubbing	15	ac	$ 1,000	$15,000	Cascadia Learning Center, New Roadways
Erosion Control	15	ac	$ 2,000	$30,000	Cascadia Learning Center, New Roadways
Grading	6050	cy	$ 4	$24,200	Assume 3" fill avg. in areas of new buildings & roadways
Stripping/Unsuitable	7986	cy	$ 4	$31,944	Assume strip an avg. 4" in areas of new buildings & roadways
Hydroseeding & Site Restoration	10.5	ac	$ 3,500	$36,750	Assume 70% of cleared area requires restoration
	Subtotal for Earthwork & Site Prep.:			**$ 137,894**	
Utilities					
Water System					
Water Main (incl. valves & fittings)	11000	lf	$ 60	$660,000	
Fire Hydrants	30	ea	$ 2,500	$75,000	Assume 1 every 400' of water main
Water Tank	1	ea	$ 900,000	$900,000	Assume 1.2mil.gal. Tank to serve entire site - based on Tree Processing Fire Flow Req'mts
Well Pump	1	ls	$ 10,000	$10,000	
Treatment Plant & Booster Pumps	1	ls	$ 30,000	$30,000	
		Subtotal for Water:		**$ 1,675,000**	
Storm Drain System					
Storm Drain Main	10800	lf	$ 45	$486,000	
Catch Basins for Roadways	15	ea	$ 2,000	$30,000	CB for every 400' of road
Catch Basins for Parking	10	ea	$ 1,000	$10,000	CB for every 7,500 sq of parking
Cleanouts	35	ea	$ 300	$10,500	2 for each service
Manholes	25	ea	$ 2,800	$70,000	Manhole every 300' of SD main
Detention System	1	ls	$ 10,000	$10,000	Detention Pond
	Subtotal for Storm Drain:			**$ 616,500**	
Sanitary Sewer System					
Sanitary Sewer Main	8400	lf	$ 45	$378,000	
Manholes	25	ea	$ 3,000	$75,000	Manhole every 300' of SS main
Cleanouts	35	ea	$ 500	$17,500	
Septic Drainfield, Pumps, Treatment	2.28	ac	$ 50,000	$114,000	
	Subtotal for Sanitary Sewer System:			**$ 584,500**	
Irrigation					
Irrigation Distribution Main	2500	lf	$ 60	$150,000	Extend Main from Pacific Crest Fields to main at Dam
Modifications to Pumps @ Pacific Crest	5	ea	$ 5,000	$25,000	Adjust for new pressure reqmts for serving additional fields - Martha Creek, Bunker Hill, Trout Creek etc.
Irrigation System	140.5	ac	$ 2,500	$351,250	Area provided by Globalwise
	Subtotal for Irrigation System:			**$ 526,250**	
Electrical					
Franchise Utilities	1	ls		$0	
Electrical	1	ls		$0	
	Subtotal for Electrical System:			**$ -**	
Roadways					
Paved Roadways	28100	sy	$ 20	$562,000	Asphalt
Sidewalks	2400	sy	$ 30	$72,000	Cement Concrete
Curb & Gutter	8400	lf	$ 18	$151,200	Cement Concrete
Paved Parking Lots	6300	sy	$ 18	$113,400	Asphalt
Gravel Roadways	27320	sy	$ 10	$273,200	Assume 6" of CSTC
Gravel Parking Lots	350	sy	$ 10	$3,500	Assume 6" of CSTC
		Subtotal for Roadways:		**$ 1,175,300**	
			Total:	**$ 4,715,444**	
		Contingency (30%):		**$ 1,414,633**	
		Design, Fees (20%):		**$ 1,226,015**	
		Estimate Total*:		**$ 7,356,093**	
*Mobilization and Taxes not included in estimate					

TABLE 5-12b Preliminary Cost Estimate for Civil Infrastructure of Alternative #2 - Wind River Retreat

SvR Job # 99031			Date:	October 28, 2013	
Item	**#Units**	**Unit**	**Cost/Unit**	**Total**	**Notes/Assumptions**
Earthwork & Site Preparation					
Clearing/Grubbing	45.5	ac	$ 1,000	$45,500	Cascadia Learning Center, New Roadways
Erosion Control	45.5	ac	$ 2,000	$91,000	Cascadia Learning Center, New Roadways
Grading	18351.66667	cy	$ 4	$73,407	Assume 3" fill avg. in areas of new buildings & roadways
Stripping/Unsuitable	24224.2	cy	$ 4	$96,897	Assume strip an avg. 4" in areas of new buildings & roadways
Hydroseeding & Site Restoration	31.85	ac	$ 3,500	$111,475	Assume 70% of cleared area requires restoration
	Subtotal for Earthwork & Site Prep.:			**$ 418,278**	
Utilities					
Water System					
Water Main (incl. valves, fittings)	15450	lf	$ 60	$927,000	
Fire Hydrants	40	ea	$ 2,500	$100,000	Assume 1 every 400' of water main
Water Tank	1	ea	$ 900,000	$900,000	Assume 1.2mil.gal. Tank to serve entire site - based on Tree Processing Fire Flow Req'mts
Well Pump	1	ls	$ 10,000	$10,000	
Treatment Plant & Booster Pumps	1	ls	$ 30,000	$30,000	
		Subtotal for Water:		**$ 1,967,000**	
Storm Drain System					
Storm Drain Main	16900	lf	$ 45	$760,500	
Catch Basins for Roadways	30	ea	$ 2,000	$60,000	CB for every 400' of road
Catch Basins for Parking	25	ea	$ 1,000	$25,000	CB for every 7,500 sq of parking
Cleanouts	50	ea	$ 300	$15,000	2 for each service connection
Manholes	40	ea	$ 2,800	$112,000	Manhole every 300' of SD main
Detention System	1	ls	$ 10,000	$10,000	Detention Pond
	Subtotal for Storm Drain:			**$ 982,500**	
Sanitary Sewer System					
Sanitary Sewer Main	10100	lf	$ 45	$454,500	
Manholes	25	ea	$ 3,000	$75,000	Manhole every 300' of SS main
Cleanouts	50	ea	$ 500	$25,000	2 for each service connection
Septic Drainfield, Pumps, Treatment	5.18	ac	$ 50,000	$259,000	
	Subtotal for Sanitary Sewer System:			**$ 813,500**	
Irrigation					
Irrigation Distribution Main	2500	lf	$ 60	$150,000	Extend Main from Pacific Crest Fields to main at Dam
Modifications to Pumps @ Pacific Crest	5	ea	$ 5,000	$25,000	Adjust for new pressure reqmts for serving additional fields - Martha Creek, Bunker Hill, Trout Creek etc.
Irrigation System	35	ac	$ 2,500	$87,500	Area provided by Globalwise
	Subtotal for Irrigation System:			**$ 262,500**	
Electrical					
Franchise Utilities	1	ls		$0	
Electrical	1	ls		$0	
	Subtotal for Electrical System:			**$0**	
Roadways					
Paved Roadways	37000	sy	$ 20	$740,000	Asphalt
Sidewalks	4120	sy	$ 30	$123,600	Cement Concrete
Curb & Gutter	14800	lf	$ 18	$266,400	Cement Concrete
Paved Parking Lots	18350	sy	$ 18	$330,300	Asphalt
Gravel Roadways	26120	sy	$ 10	$261,200	Assume 6" of CSTC
Gravel Parking Lots	450	sy	$ 10	$4,500	Assume 6" of CSTC
		Subtotal for Roadways:		**$ 1,726,000**	
			Total:	**$ 6,169,778**	
		Contingency (30%):		**$ 1,850,934**	
		Design, Fees (20%):		**$ 1,604,142**	
		Estimate Total*:		**$ 9,624,854**	
*Mobilization and Taxes not included in estimate					

TABLE 12c Preliminary Cost Estimate for Civil Infrastructure of Alternative #3 - Village at Martha Creek

SvR Job # 99031			Date:	October 28, 2013	
Item	**#Units**	**Unit**	**Cost/Unit**	**Total**	**Notes/Assumptions**
Earthwork & Site Preparation					
Clearing/Grubbing	102.00	ac	$ 1,000	$102,000	Cascadia Learning Center, New Roadways
Erosion Control	102.00	ac	$ 2,000	$204,000	Cascadia Learning Center, New Roadways
Grading	41140.00	cy	$ 4	$164,560	Assume 3" fill avg. in areas of new buildings & roadways
Stripping/Unsuitable	54304.80	cy	$ 4	$217,219	Assume strip an avg. 4" in areas of new buildings & roadways
Hydroseeding & Site Restoration	86.70	ac	$ 3,500	$303,450	Assume 70% of cleared area requires restoration
	Subtotal for Earthwork & Site Prep.:			**$ 991,229**	
Utilities					
Water System					
Water Main (incl. valves & fittings)	27100.00	lf	$ 60	$1,626,000	
Fire Hydrants	40.00	ea	$ 2,500	$100,000	Assume 1 every 400' of water main
Water Tank	1.00	ea	$ 900,000	$900,000	Assume 1.2mil.gal. Tank to serve entire site - based on Tree Processing Fire Flow Req'mts
Well Pump	1.00	ls	$ 10,000	$10,000	
Treatment Plant & Booster Pumps	1.00	ls	$ 30,000	$30,000	
		Subtotal for Water:		**$ 2,666,000**	
Storm Drain System					
Storm Drain Main	24000.00	lf	$ 45	$1,080,000	
Catch Basins for Roadways	35.00	ea	$ 2,000	$70,000	CB for every 400' of road
Catch Basins for Parking	5.00	ea	$ 1,000	$5,000	CB for every 7,500 sq of parking
Cleanouts	130.00	ea	$ 300	$39,000	2 for each service
Manholes	45.00	ea	$ 2,800	$126,000	Manhole every 300' of SD main
Detention System	2.00	ls	$ 10,000	$20,000	Detention Pond
	Subtotal for Storm Drain:			**$ 1,340,000**	
Sanitary Sewer System					
Sanitary Sewer Main	21500.00	lf	$ 45	$967,500	
Manholes	40.00	ea	$ 3,000	$120,000	Manhole every 300' of SS main
Cleanouts	140.00	ea	$ 500	$70,000	
Septic Drainfield, Pumps, Treatment	6.39	ac	$ 50,000	$319,500	
	Subtotal for Sanitary Sewer System:			**$ 1,477,000**	
Irrigation					
Irrigation Distribution Main	0.00	lf	$ 60	$0	Extend Main from Pacific Crest Fields to main at Dam
Modifications to Pumps @ Pacific Crest	0.00	ea	$ 5,000	$0	Adjust for new pressure reqmts for serving additional fields - Martha Creek, Bunker Hill, Trout Creek etc.
Irrigation System	0.00	ac	$ 2,500	$0	Area provided by Globalwise
	Subtotal for Irrigation System:			**$ -**	
Electrical					
Franchise Utilities	1.00	ls		$0	
Electrical	1.00	ls		$0	
	Subtotal for Electrical System:			**$ -**	
Roadways					
Paved Roadways	47500.00	sy	$ 20	$950,000	Asphalt
Sidewalks	7450.00	sy	$ 30	$223,500	Cement Concrete
Curb & Gutter	27800.00	lf	$ 18	$500,400	Cement Concrete
Paved Parking Lots	8600.00	sy	$ 18	$154,800	Asphalt
Gravel Roadways	16450.00	sy	$ 10	$164,500	Assume 6" of CSTC
Gravel Parking Lots/Dwys for Hsg.	7900.00	sy	$ 10	$79,000	Assume 6" of CSTC
		Subtotal for Roadways:		**$ 2,072,200**	
			Total:	**$ 8,546,429**	
		Contingency (30%):		**$ 2,563,929**	
		Design, Fees (20%):		**$ 2,222,072**	
		Estimate Total*:		**$ 13,332,430**	
*Mobilization and Taxes not included in estimate					

Figure 9.3d: Preliminary Estimate of Water Usage Demands and Effluent Drainfield Acreage for Alternatives #1-3

Water Right Scenario Type*	Domestic (ac-ft/yr)	Irrigation (ac-ft/yr)
Worst	0	0
Middle-Low	16.5	114
Middle-High	16.5	147.5
Best	33	375.5

*Descriptions for Water Right Scenario Types listed in the written report

Notes:
Domestic Water Availability = 1/2 Exist. Domestic Water Rights (Half of 33 ac-ft/yr per Certif. #G2-25679 - Well near Trout Creek) = **16.5ac-ft/yr**
Well at Trout Creek Irrigation Water Right = **24 ac-ft/yr** (per Certif. #G2-25679)
Pacific Crest Field's Irrigation Water Right = **114 ac-ft/yr** per Certif. #G2-26789
Trout Creek Irrigation Water Right = **228 ac-ft/yr** per Certif. #G2-26789
Note: Frost Control Water Rights not included Irrigation Agricultural Areas provided by Globalwise Inc.A27
Visitor Peak Year and Day provided by Dean Runyan Associates

	Water Design Usage						**Wastewater Effluent Drainfield Design Plus Reserve**								
	Type of Use for Determining Flow (per Table 4-8 in EPA design manual)	#EPA Units/yr	Assumption for EPA Unit for determining flow	EPA Unit for determining flow	Typical Water Flow from EPA (gal/unit/day)	Water Use (Gal/yr)	Type of Use for Determining Flow (per Table 4-8 in EPA design manual)	Assumptions of Peak Day Use	Peak # of Units/day	EPA Unit	Typical Water Flow from EPA (gal/unit/day	Estimated Peak Loading (gpd)*	Drainfield Area (sf)	Reserve (sf)	Total Acre for Drainfield + Reserve
Alternative #1 - Trout Creek															
Martha Creek Camp Annual Visitation	Cabin, Resort	10,260	Assume overnight campground	person	42.3	433,998	Cabin, Resort	Assume overnight campground	211	person	42.3	8,925	49,585	49,585	2.28
Cascade Learning Center Annual Visitation	School, w/cafeteria	15,800	Assume stay for the day and eat one meal	student	15.9	251,220									
Skamania Farms Annual Visitation	Office	470	Assume employees or workers visiting for the day	employee	14.5	6,815									
Total Annual Visitor Projection:		**26,530**	**Alternate #1 Total Domestic Water (Gal/yr):**			**692,033**						**Alternate # 1 Total Drainfield & Reserve (ac):**			**2.28**
			Domestic Water Right Requirements met by Scenario Type*:			**Middle-Low**									
Skamania Farms Annual Irrigation Use	**Area**	**Unit**	**Water use per acre (ft/ac/yr)**	**Total Water Vol. Req'd(ac-ft/yr)**											
Martha Creek	40.0	ac	1.5	60.0											
Trout Creek	35.0	ac	1.5	52.5											
Bunker Hill	20.5	ac	1.5	30.8											
Pacific Crest	45.0	ac	1.5	67.5											
Total Irrigation Area (ac):	140.5														
	Alternate #1 Total Irrigation Water (ac-ft/yr):			**210.8**											
	Irrigation Water Right Requirements met by Scenario Type*:			**"Best"**											
Alternative #2 - Wind River Retreat															
The Inn @Wind River Annual Visitation	Cabin, Resort	20,160	Assume overnight stays	person	42.3	852,768	Cabin, Resort	Assume overnight campground	480	person	42.3	20,304	112,800	112,800	5.18
Martha Creek Camp Annual Visitation	Cabin, Resort	10,260	Assume overnight stays	person	42.3	433,998									
Cascade Festival Grounds Annual Visitation	Dining Hall, meal	2,100	Assume visitors eat one meal	meal	7.9	16,590									
Cascadia Learning Center Annual Visitation	School, w/cafeteria	15,800	Assume stay for the day and eat one meal	student	15.9	251,220						**Alternate # 2 Total Drainfield & Reserve (ac):**			**5.18**
Skamania Farms Annual Visitation	Office	235	Assume employees or workers visiting for the day	employee	14.5	3,408									
Total Annual Visitor Projection:		**48,555**	**Alternate #2 Total Domestic Water (Gal/yr):**			**1,557,984**									
			Domestic Water Right Requirements met by Scenario Type*:			**"Middle-Low"**									
Skamania Farms Annual Irrigation Use	**Area**	**Unit**	**Water use per acre (ft/ac/yr)**	**Total Water Vol. Req'd(ac-ft/yr)**											
Martha Creek	0.0	ac	1.5	0.0											
Trout Creek	35.0	ac	1.5	52.5											
Bunker Hill	0.0	ac	1.5	0.0											
Pacific Crest	0.0	ac	1.5	0.0											
Total Irrigation Area (ac):	35.0	ac													
	Alternate #2 Total Irrigation (ac-ft/yr):			**52.5**											
	Irrigation Water Right Requirements met by Scenario Type*:			**"Middle Low"**											
Alternative #3 - Village at Martha Creek															
Pacific Crest Estates	Residential Home	21900	60 single family residential lots	per 3 bedroom house	360	7,884,000	Residence	3-bedroom single family homes	60	house	360	21,600	120,000	120,000	5.51
Skamania Farms Annual Visitation	Office	215	Assume employees or workers visiting for the day	employee	14.5	3,118	Other Uses of Site	Visitors	237	employee	14.5	3,437	19,092	19,092	0.88
Hemlock Business Campus	Office	165	Assume employees or workers visiting for the day	employee	14.5	2,393									
Public Services	Day Camp (no meals)	260	Assume person visits site but no meals served	person	13.2	3,432						**Alternate # 3 Total Drainfield & Reserve (ac)*:**			**6.39**
Total Annual Visitor Projection (including residents):		**22,540**	**Alternate #3 Total Domestic Water (Gal/yr):**			**7,892,942**			***Department of Ecology reviews large on-site systems with flows over 14,500gpd**						
			Domestic Water Right Requirements met by Scenario Type*:			**"Best"**									
Skamania Farms Annual Irrigation Use	**Area**	**Unit**	**Water use per acre (ft/ac/yr)**	**Total Water Vol. Req'd(ac-ft/yr)**											
Martha Creek	0.0	ac	1.5	0.0											
Trout Creek	0.0	ac	1.5	0.0											
Bunker Hill	0.0	ac	1.5	0.0											
Pacific Crest	0.0	ac	1.5	0.0											
Total Irrigation Area (ac):	0.0	ac													
	Alternate #3 Irrigation Water (ac-ft/yr):			**0.0**											
	Irrigation Water Right Requirements met by Scenario Type*:			**No Water Right Needed**											

5.11 ELECTRICAL UPGRADES FOR PRELIMINARY SITE CONCEPTS

ELECTRICAL UPGRADES FOR CONCEPTS 1, 2 AND 3

The purpose of this section is to document assumptions and criteria used in developing electrical cost estimates for the Concepts 1, 2 and 3 at Wind River Nursery.

PRIMARY SERVICE

The three site concepts were discussed with Cliff Hollis, Line Foreman with Skamania County P.U.D. He expressed the following:

- The main primary service terminates near the bridge at Hemlock Lake. There are branches of primary which extend beyond, but they have less capacity.
- Any of the three current concepts could be accommodated with the existing primary service from Carson.
- He estimated costs for extending primary cables underground to new locations. For commercial users, the owner provides the ditch. The utility provides cable and backfill on a time and materials basis.
- $6 per foot for single-phase underground primary.
- $9 per foot for three-phase underground primary.
- For industrial uses at Hemlock Business Campus, the estimated a cost to upgrade the primary from Carson is $350,000.

SITE CONCEPT 1: TROUT CREEK CAMPUS

A. New Fire Protection Water Tank
   1. Provide electrical service to pumps and treatment plant. Location near Hemlock Lake Dam.
   2. Provide 4" underground conduit from Martha Creek area to the tank (approx. 2000') for telemetry.

B. Skamania Farms
   1. No apparent electrical service upgrades required.

C. Wind River Institute
   1. Electrical Service to Canopy Hut at Pacific Crest Field. 100 amp single phase.
   2. Upgrade secondary electrical services to Chapman Ave. office and warehouses.
   3. Provide primary and secondary services to Canopy Crane at Pacific Crest Field.
   4. Provide primary and secondary services to Canopy Crane at Martha Creek Field.
   5. Existing home electrical remains unchanged.
   6. Upgrade secondary electrical service to Mess Hall.
      a) Estimated service: 400 amp, three phase.

D. Forest Reserve
   1. No apparent electrical service upgrades required.

E. Cascadia Learning Center
   1. Provide primary and secondary services to Learning Center.
   2. Estimated service: 400 amps, single phase.

F. Martha Creek Camp
   1. Provide primary and secondary services to Camp.
   2. Estimated service: 400 amps, single phase.

G. Hemlock Business Campus (Old Seed Extraction Area)
   1. Existing electrical service is probably adequate for most potential business uses.

SITE CONCEPT 2: WIND RIVER RETREAT

A. New Fire Protection Water Tank

1. Provide electrical service to pumps and treatment plant. Location near Hemlock Lake Dam.
2. Provide 4" underground conduit from Martha Creek area to the tank (approx. 2000') for telemetry.

B. Inn at Wind River
   1. Provide primary and secondary services to Inn.
   2. Assuming 50,000 SF, 100 guest rooms, approx 10 W/ SF.
   3. Estimated service: 1200 amps, three phase.

C. Equestrian Center
   1. Provide primary and secondary services to Center.
   2. Assuming general lighting and small, heated office.
   3. Site lighting.
   4. Estimated service: 200 amps, single phase.

D. Cascade Festival Grounds
   1. Provide primary and secondary services to stage area.
   2. Assuming power requirements for lighting, sound equipment, etc.
   3. Estimated service: 400 amps, single phase.

E. Cascadia Learning Center
   1. Upgrade secondary services to renovated existing buildings.
   2. Assuming five new secondary underground services.
   3. Estimated services: 200 amps, three phase for each building.

F. Martha Creek Camp
   1. Provide primary and secondary services to camp area.
   2. Assuming
      a) Limited site lighting.
      b) One heated classroom buildings.
      c) Approx. three semi-heated restroom buildings.
      d) Approx. three heated bunkhouses.
      e) Approx. ten electrical 'hitching post" electrical connections at campsites.

G. Skamania Farms
   1. No anticipated electrical upgrades.

H. Forest Reserve
   1. Provide primary and secondary services to Canopy Crane at Pacific Crest Field.
   2. Provide primary and secondary services to Canopy Crane at Martha Creek Field.

I. Hemlock Business Campus (Former Seedling Processing Center)
   1. No anticipated electrical service upgrades.

SITE CONCEPT 3: VILLAGE AT MARTHA CREEK

A. New Fire Protection Water Tank
   1. Provide electrical service to pumps and treatment plant. Location near Hemlock Lake Dam.
   2. Provide 4" underground conduit from Martha Creek area to the tank (approx. 2000') for telemetry.

B. Pacific Crest Estates
   1. Provide primary and secondary services to 20 homes at Trout Creek.
      a) Assume 400 amp single-phase service, each home.
      b) Assume electric heat.
   2. Provide primary and secondary services to 40 homes at Martha Creek.
      a) Assume 400 amp single-phase service, each home.
      b) Assume electric heat.
   3. Provide street lighting. Assume poles at 200' intervals, 400 W per pole.

C. Equestrian Center
   1. Provide primary and secondary services to Center.
   2. Assuming general lighting and small, heated office.
   3. Estimated service: 200 amps, single phase.

D. Forest Reserve
   1. Provide primary and secondary services to Canopy Crane at Martha Creek Field.

E. Skamania Farms
   1. No anticipated electrical upgrades.

F. Hemlock Business Campus (Chapman Ave. Complex)
   1. Provide primary electrical upgrade to Campus area.
   2. Provide underground secondary service upgrades to five buildings.
      a) Assume 200 amp single phase service to each building.
      b) Assume light commercial.

G. Public Services
   1. Upgrade fire protection sprinklers in Processing Building.
   2. Modify HVAC to serve recreational activities in large open room.

TABLE 5-14 Preliminary Cost Estimate for Electrical Infrastructure						
Concept #1 - Trout Creek						
Abacus Engineered Systems, Inc. 2760-001						
Item	**# Units**	**Unit**	**Cost/Unit**	**Total Elec**	**Total Utility**	**Notes/Assumptions**
New Fire Protection Water Tank						
Primary to pumps/treatment	250	lf	$ 9.00		$ 2,250	400 amp 3 phase
Trenching	250	lf	$ 1.50	$ 375		
4" telemetry conduit to tank	2000	lf	$ 11.00	$22,000		Conduit and pullstring
Trenching and backfill	2000	lf	$ 2.00	$ 4,000		
Pullboxes	5	ea	$ 500.00	$ 2,500		
Wind River Institute						
Elec Svc to Canopy Hut	100	lf	$ 6.00		$ 600	Pacific Crest Field
Upgrade 2ndary Svc	400	lf	$ 9.00		$ 3,600	Chapman Ave Complex
Trenching	400	lf	$ 1.50	$ 600		
Canopy Crane Service - Primar	7000	lf	$ 9.00		$ 63,000	Pacific Crest Field
Trenching	7000	lf	$ 1.50	$10,500		
Secondary	200	lf	$ 15.00	$ 3,000		400 amp, three phase
Canopy Crane Service - Primar	3500	lf	$ 9.00		$ 31,500	Martha Creek Field
Trenching	3500	lf	$ 1.50	$ 5,250		
Secondary,	200	lf	$ 15.00	$ 3,000		400 amp, three phase
Mess Hall svc upgrade 2ndary	1	ls	########	$ 9,000		400 amp, three phase
Cascadia Learning Center						
Primary Service	1200	lf	$ 6.00		$ 7,200	
Trenching	1200	lf	$ 1.50	$ 1,800		
Secondary Service	200	lf	$ 15.00	$ 3,000		400 amp, single phase
Martha Creek Camp						
Primary Service	600	lf	$ 6.00		$ 3,600	
Trenching	600	lf	$ 1.50	$ 900		
Secondary Service	100	lf	$ 15.00	$ 1,500		400 amp, single phase
Pacific Crest Trail Head Facility						
Primary Service	400	lf	$ 6.00		$ 2,400	
Trenching	400	lf	$ 1.50	$ 600		
Secondary Service	100	lf	$ 15.00	$ 1,500		200 amp, single phase
Total Franchise Utility Costs					$ 114,150	
Total Electrical Contractor Costs				$69,525		

Preliminary Cost Estimate for Electrical Infrastructure						
Concept #2 Wind River Retreat						
Abacus Engineered Systems, Inc. 2760-001						
Item	**# Units**	**Unit**	**Cost/Unit**	**Total Elec Contractor**	**Total Utility**	**Notes/Assumptions**
New Fire Protection Water Tank						
Primary to pumps/treatment	250	lf	$ 9.00		$ 2,250	400 amp 3 phase
Trenching	250	lf	$ 1.50	$ 375		
4" telemetry conduit to tank	2000	lf	$ 11.00	$ 22,000		Conduit and pullstring
Trenching and backfill	2000	lf	$ 2.00	$ 4,000		
Pullboxes	5	ea	$ 500.00	$ 2,500		
Inn at Wind River						
Primary Service	1600	lf	$ 9.00		$ 14,400	1200 amps, 3 phase
Trenching	1600	lf	$ 1.50	$ 2,400		
Secondary Service	200	lf	$ 50.00	$ 10,000		
Equestrian Center						
Primary Service	300	lf	$ 6.00		$ 1,800	200 amps, 1 phase
Trenching	300	lf	$ 1.50	$ 450		
Secondary Service	100	lf	$ 15.00	$ 1,500		
Site lighting	1	ls	$ 10,000.00	$ 10,000		
Cascade Festival Grounds						
Primary Service	500	lf	$ 6.00		$ 3,000	400 amp, 1 phase
Trenching	500	lf	$ 1.50	$ 750		
Secondary Service	100	lf	$ 15.00	$ 1,500		
Site lighting	1	ls	$ 10,000.00	$ 10,000		
Cascadia Learning Center						
Upgrade secondary to exist bldg	5	ls	$ 3,000.00	$ 15,000		
Underground services	1000	lf	$ 15.00	$ 15,000		
Martha Creeek Camp						
Primary Service	2000	lf	$ 6.00		$ 12,000	
Trenching	2000	lf	$ 1.50	$ 3,000		
Secondary Svc to Class bldg	200	lf	$ 15.00	$ 3,000		
Secondary Svc to Restrm Bldgs	200	lf	$ 15.00	$ 3,000		
Secondary Svc to Bunkhouses	200	lf	$ 15.00	$ 3,000		
Svc to "hitching posts"	10	ls	$ 2,500.00	$ 25,000		
Site lighting	1	ls	$ 20,000.00	$ 20,000		
Forest Reserve						
Canopy Crane Service - Primar	7000	lf	$ 9.00		$ 63,000	Pacific Crest Field
Trenching	7000	lf	$ 1.50	$ 10,500		
Secondary	200	lf	$ 15.00	$ 3,000		400 amp, three phase
Canopy Crane Service - Primar	3500	lf	$ 9.00		$ 31,500	Martha Creek Field
Trenching	3500	lf	$ 1.50	$ 5,250		
Secondary	200	lf	$ 15.00	$ 3,000		400 amp, three phase
Pacific Crest Trail Head Facility						
Primary Service	400	lf	$ 6.00		$ 2,400	
Trenching	400	lf	$ 1.50	$ 600		
Secondary Service	200	lf	$ 15.00	$ 3,000		200 amp, 1-phase
Total Franchise Utility Costs					$ 130,350	
Total Electrical Contractor Costs				$ 177,825		

Preliminary Cost Estimate for Electrical Infrastructure						
Concept #3 - Village at Martha Creek						
Abacus Engineered Systems, Inc. 2760-001						
Item	**# Units**	**Unit**	**Cost/Unit**	**Total Elec Contractor**	**Total Utility**	**Notes/Assumptions**
New Fire Protection Water Tank						
Primary to pumps/treatment	250	lf	$ 9.00		$ 2,250	400 amp 3 phase
Trenching	250	lf	$ 1.50	$ 375		
4" telemetry conduit to tank	2000	lf	$ 11.00	$ 22,000		Conduit and pullstring
Trenching and backfill	2000	lf	$ 2.00	$ 4,000		
Pullboxes	5	ea	$ 500.00	$ 2,500		
Pacific Crest Estates						
Primary service to Trout Creek	5000	lf	$ 6.00		$ 30,000	
Trenching	5000	lf	$ 1.50	$ 7,500		
Secondary services to homes	20	ls	$ 2,000.00	$ 40,000		400 amp, 1 phase
Primary service to Martha Creek	5200	lf	$ 6.00		$ 31,200	
Trenching	5200	lf	$ 1.50	$ 7,800		
Secondary services to homes	40	ls	$ 2,000.00	$ 80,000		400 amp, 1 phase
Street Lighting	50	ea	$ 1,500.00	$ 75,000		Poles at 200'
Street Light power	10000	lf	$ 7.00	$ 70,000		Conduit and wire
Equestrian Center						
Primary Service	400	lf	$ 6.00		$ 2,400	200 amps, 1 phase
Trenching	400	lf	$ 1.50	$ 600		
Secondary Service	100	lf	$ 6.00	$ 600		
Site lighting	1	ls	$ 10,000.00	$ 10,000		
Site lighting power	300	lf	$ 7.00	$ 2,100		Conduit and wire
Forest Reserve						
Canopy Crane Service - Primary	3500	lf	$ 9.00		$ 31,500	Martha Creek Field
Trenching	3500	lf	$ 1.50	$ 5,250		
Secondary	200	lf	$ 15.00	$ 3,000		400 amp, 3 phase
Hemlock Business Campus						
Upgrade secondary to exist bldg	5	ls	$ 2,000.00	$ 10,000		
Underground services	2000	lf	$ 6.00	$ 12,000		
Total Franchise Utility Costs					$ 97,350	
Total Electrical Contractor Costs				$ 352,725		