ARCHEOLOGICAL SURVEY PLAN FOR THE COLUMBIA-CASCADE CLUSTER OF THE NATIONAL PARK SERVICE

NPS Systemwide Archeological Inventory Program

DRAFT

by

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1. INTRODUCTION

The National Park Service (NPS) developed the Systemwide Archeological Inventory Program (SAIP) as a part of its National Archeology Survey Initiative in 1992. The SAIP is

> ...a long-term, systemwide research program designed to locate, evaluate, and document archeological resources located within the National Park System areas. The program is founded on standards of fully professional, scholarly archeological research that will address significant questions and problems relating to past human uses of the lands and waters now contained within the National Park System. The research results will enable park managers, planners, interpreters, law enforcement officers, and other specialists to make marker improvements in the ways in which archeological resources in park areas are conserved, protected, preserved in situ, managed, and interpreted (Aubrey et al. 1992:1).

Development of the SAIP is a response to substantial inadequacies in data necessary for informed archeological resource management or for planning, interpretation, and law enforcement relating to those resources in National Parks. In addition to determining the nature and extent of archeological resources on National Park lands, objectives of the SAIP also include site documentation and evaluation, National Register of Historic Places nominations, and recommendations for management.

The general objectives of the systemwide plan are to be achieved through the development of regionwide plans, prepared for each of the 10 regional offices. The present study is the regionwide plan for the Columbia-Cascade Cluster (formerly the Pacific Northwest Region) of the National Park Service (see Figure 1). As with all other regions, the Columbia-Cascade Cluster plan is expected to minimally provide the following seven types of information (Aubrey et al. 1992:17):

(1) Identify and briefly describe the National Park System lands within the region;
(2) Provide a general overview of the region's prehistory, history, and state of archeological research;
(3) Briefly discuss the nature and extent of prior archeological activities in park areas;
(4) Establish regionwide strategies to locate, identify, evaluate, and document archeological resources in park areas;
(5) Briefly describe the proposed archeological inventory projects;
(6) List the proposed projects, in priority order; and
(7) Provide an estimate of costs for undertaking each project.

The SAIP plans for regionwide archeological survey are "intended to be working documents that will be modified, refined, and adjusted (in part or *in toto*) as changing conditions require (Aubrey et al. 1992:27)." It is anticipated that regional offices will review their regionwide plan at five year intervals

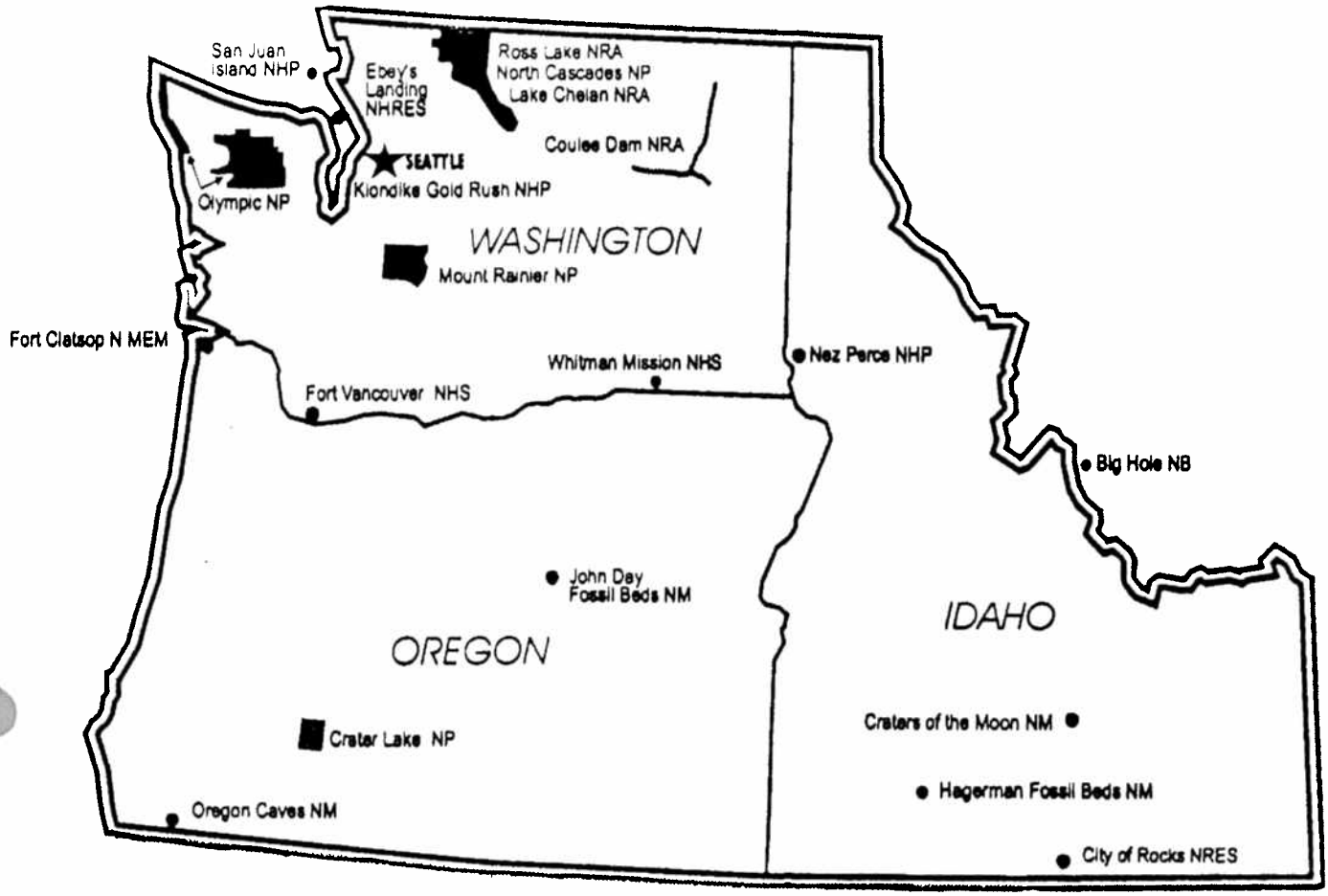

Figure 1 Park Units of the Columbia-Cascade Cluster

to evaluate accomplishments and accomodate changing priorities, funding allocations, scientific knowledge and research questions, and possibly newly-acquired NPS lands.

The Columbia-Cascade Cluster regionwide plan is the product of joint efforts by NPS archeologists and consultants. The information presented in this report was compiled from records in the Northwest Regional Office of NPS as well as at each of the individual parks. Park archeologists, park managers and staff, and a number of non-NPS personnel have contributed information that has been included in this report. In addition, the SHPOs for Washington, Oregon, and Idaho were consulted in an effort to identify survey needs in National Parks that they perceived for their respective states.

The overall structure of this regionwide plan follows the sequence of information classes set forth in the SAIP (Aubrey et al. 1992) and also was developed using the Western Region's previously completed regionwide plan (Wells et al. 1994) as a model for the formatting of tables and the general structure for presentation of data. The primary deviation of the present report from that for the Western Region, is that attention was directed at identification and discussion of general research topics that have potential relevance to many or most of the park units in the cluster. Development of broad archeological research domains for the entire Columbia-Cascade Cluster is appropriate not only because of the environmental and cultural cohesiveness of this region but because certain research topics are already being investigated over widely separated parts of that region.

Each of the SAIP information requirements identified is presented for the Columbia-Cascade Cluster in the following sections of this report. Section II describes the various NPS parks in the Cluster. Section III summarizes regional archeological research relating to both prehistoric and historic period cultural resources. Sections IV and V characterize the status of archaeological inventory and regionwide stregies for survey for the CC-Cluster. In Section VI, proposed projects, their priority, and estimated costs are set forth.

2. Description of Park Lands

Parks of the Columbia-Cascade Cluster

(1) Number of Park Areas

The Columbia-Cascade Cluster includes 18 areas that are managed by the National Park Service. These areas are located in the states of Washington, Oregon, Idaho, and part of western Montana. Figure ?? shows the locations of these 18 service units.

(2) Park Size

A total land area of 2,228,155.1 acres is included within the Columbia-Cascades Cluster park units. This represents about 2.8 percent of the total acreage managed by NPS systemwide. Of this total, 2,194,491 acres are owned by the National Park Service while 33,664.1 acres are non-NPS lands managed as part of various park units. Park units range from one that contains no land holding (Klondike-Seattle National Monument) to the largest with 922,653 acres (Olympic National Park). Arranged by size classes, the 18 park units are distributed as follows: one unit is less than a hundred acres, three are between 100 and 1000 acres, four are between 1,000 and 10,000 acres, three are between 10,000 and 100,000 acres, and five are between 100,000 and a million acres. Table 2.xx presents acreage for each park.

(3) Park Type and Archeological Values In Enabling Legislation

Nine different types of park units may be distinguished for the Columbia-Cascades Cluster and these are as follows:

- 3 National Parks (CRLA, OLYM, MORA)
- 1 National Park Service Complex (NOCA)
- 7 National Monuments (CRMO, HAFO, FOCL, JODA, ORCA, KLSE, WHMI)
- 1 National Recreation Area (CODA) now LARO
- 1 National Reserve (CIRO)
- 2 National Historic Parks (SAJH, NEPE)
- 1 National Historic Site (FOVA)
- 1 National Historical Reserve (EBLA)
- 2 Trails

missing: ROLA, LACH, BIHO

Examination of enabling legislation for the park units revealed that cultural resources or historic values were a prime consideration in establishing five park units, are mentioned for three units, and are not mentioned in the enabling legislation for eight parks. Of the latter, however, cultural resources are mentioned in subsequent legislation for two park units. Further details about the nature of enabling legislation are provided in Table 2.1.

(4) Park Locations and Access

The park units in the Columbia-Cascade Cluster are located in three types of settings: rural, remote, and urban. Twelve parks are located in rural settings, three are in remote settings, and two are in urban

TABLE 1 DESCRIPTION OF PARK LANDS IN COLUMBIA-CASCADES CLUSTER

NPS UNIT	SIZE IN ACRES	CULTURAL RESOURCES IN ENABLING LEGISLATION	LOCATION/ ACCESSIBILITY	OWNERSHIP OF PARK LANDS	PHYSICAL ENVIRONMENT/SURVEY CONDITIONS	NEIGHBORING LANDOWNERS
City of Rocks NR CIRO	14,407	Yes	Remote; private inholdings make access difficult.	7,001 NPS, 7,406 Non-NPS	High mountains surround deep valleys. Vegetative cover is variable.	BLM, Private
Coulee Dam NRA CODA	100,390.31	Not specifically mentioned	Rural; entire NRA is accessible by boat or car.	No NPS owned land; NRA manages lands purchased by the BOR for the Columbia Basin Project; roughly all those lands are below the 1310' elevation.	Open Ponderosa Pine Forest or steppe vegetation above the high water line of the reservoir; Seasonally inundated areas of the reservoir are devoid of vegetation.	Colville Confederate Tribes Spokane Tribe of Indians Colville National Forest Stevens County Ferry County Lincoln County BOR Project Lands Various Municipalities Private industrial/Forest lands Private residences/Farm lands
Craters of the Moon NM CRMO	53,545.05	No	Rural; terrain is rugged.	All federally owned	Mostly young lava flows. Difficult terrain.	BLM, Private
Crater Lake NP CRLA	183,224	Not specifically mentioned; Subsequent legislation includes cultural resources (Organic and Redwood Acts).	Remote; 98% of park is designated wilderness; backcountry access can be rugged and difficult.	183,223.77 NPS 0.28 Non-NPS	Elevation: 4400-8926 ft. Open forest in areas, thick ceanothus stands in SE, and treeless pumice flats. The volcanic landscape is rugged. Survey conditions vary.	Winema National Forest Umpqua National Forest Rogue River National Forest Private Land (SE corner of Park's border).
Ebey's Landing NHR EBLA	8,000	Cultural resource values a prime mover in creating Historical Reserve in 1978.	Rural; visitor access is limited to publicly owned land and other clearly designated public use areas.	1,355.1 NPS 6,644.9 Non-NPS 83.1 % of park is privately owned.	Elevation ranges from sea level to 300 ft amsl. Visibility ranges from good (8 mi coastal strip) to poor (3 prairies) to extremely poor (2 woodland areas); Rolling pasture hills are privately owned and have been plowed fields.	Private Property State Parks State Game Farm Environmental Reserve
Fort Clatsop NM FOCL	125.2	Commemorating winter Lewis and Clark Expedition winter encampment	Rural; accessible by vehicle. Fort trail is short and even.	All Federally owned.	Fort Clatsop is reconstructed on the Lewis and Clark River's western bank five miles south of Astoria, OR. The reconstructed Salt Cairn is in Seaside, OR. Vegetation is dense and ground visibility is zero in most undisturvbed areas.	Oregon State Land Private Land

NPS UNIT	SIZE IN ACRES	CULTURAL RESOURCES IN ENABLING LEGISLATION	LOCATION/ ACCESSIBILITY	OWNERSHIP OF PARK LANDS	PHYSICAL ENVIRONMENT/SURVEY CONDITIONS	NEIGHBORING LANDOWNERS
Fort Vancouver NHS FOVA	208.89	Established to commemorate the exploration, settlement, and development of the Pacific Northwest.	Urban; accessible to visitors with vehicles.	201.73 acres NPS, 7.16 acres Non-NPS	Fort Vancouver has been reconstructed on its original location on the northern flood plain of the Columbia River in South-Central Washington State, The area has been extensively excavated over the past 45+ years.	City of Vancouver State of Washington US Army Burlington Northern
Hagerman Fossil Beds NM HAFO	4,280.00	No	Rural; terrain is rugged.	3,787.62 NPS 492.38 Non-NPS	High bluffs, visibility is variable.	BLM, Private
John Day Fossil Beds NM JODA	14,014 (in 3 admin.units : Clarno, Painted Hills, and Sheep Rock)	None	Remote; vehicle access to portions of all three admin. units; short interpretive trails to several scenic and fossil-bearing locations. Ca. 80% of Monument is roadless wilderness	11,022.19 NPS 2,991.9 Non-NPS	Survey conditions generally good. All three JODA units support variable sage/grassland to juniper parkland floral associations. Open sediment exposure ranges from as high as 100% to circa 5%, with 20 to 30% common on exposures where cultural resources are most common.	Bureau of Land Management Prineville District Private
Klondike-Seattle NM KLSE	NA	NA	Urban; easy access for all visitors.	NA	NA	City of Seattle
Mount Rainier NP MORA	235,612	Not mentioned	Remote; 97% of park is designated wilderness; mountain access difficult.	All NPS	Survey conditions highly variable, ranging from fair to good. The park is composed mostly of the volcanic peak itself, with an elevation range of 1800- 14,410 ft. About 10% of the land area under permanent snowfields and glaciers. Vegetation cover ranges from barren rock to sparsely covered alpine meadows, to subalpine parkland and forest, to dense, closed-canopy coniferous forest.	Gifford-Pinchot National Forest Mt. Baker-Snoqualmie National Forest Wenatchee National Forest State of Washington Private
Nez Perce NHP NEPE	2,109.61	Yes	Rural; accessible to visitors with vehicles.	1,833.71 NPS 275.9 Non-NPS	The 38 park sites span four states and physical environment varies; alpine meadows, dry grasslands, riparian vegetation in deep river-carved canyons. Survey conditions vary.	Nez Perce Reservation Private Land Forest Service Land (Wallowa, Whitman, Clearwater, Nez Perce) State of Montana State of Idaho

NPS UNIT	SIZE IN ACRES	CULTURAL RESOURCES IN ENABLING LEGISLATION	LOCATION/ ACCESSIBILITY	OWNERSHIP OF PARK LANDS	PHYSICAL ENVIRONMENT/SURVEY CONDITIONS	NEIGHBORING LANDOWNERS
North Cascades NP NOCA	684.242.5	To provide for the conservation of scientific and historic values in the Ross Lake and Lake Chelan National Recreation Areas	Remote; 93% of NOCA designated wilderness by act of Congress in 1988; mountain access difficult	679,706.3 NPS 4,536.2 Non-NPS <500 acres private	Low elevation valleys with montane forests, glacial lakes, and alpine summits above timberline; visibility good to nonexistent due to dense vegetation; survey conditions are demanding	Okanogan, Mt. Baker-Snoqualmie, and Wenatchee National Forests; City of Seattle; Manning Provincial Park and Skagit Provincial Forest in British Columbia, Canada.
Oregon Caves NM ORCA	487.98	Not specifically mentioned; subsequent legislation includes cultural resources (Organic and Redwood Acts).	Remote; easy access to visitors with vehicles.	484.03 NPS, 3.95 Non-NPS	The cave is a small part of the part. There are several day-hike trails within the park, and connecting trails lead into Siskiyou National Forest.	Siskiyou National Forest
Olympic NP OLYM	922,653	Not specifically mentioned	Remote; much of the park is designated wilderness, Mountain access difficult	912,869 Federal 9,784 Non-Federal	Elevation from sea level to 8,000 feet with rain forest, montane forest, subalpine and alpine settings. Variable visibility and survey conditions.	Olympic Nation Forest State of Washington Hoh Tribe Makah Tribe Quileute Tribe Quinault Tribe Skokomish Tribe NOAA Private
San Juan NHP SAJH	4,268	Interpretation and protection of sites at American and English camps and "commemorating events between 1853-1871 settling the boundary of the Oregon Territory, including the Pig War of 1859."	Rural; easily accessible by vehicle. Park is divided into two units, British Camp at the north end of the island, and American Camp at the south end.	1,725 acres NPS 27 acres non-federal 3,032.00 NPS 1,725.45 Non-NPS	Conditions for survey are generally good. At English Camp, elev. from sea level to 600'; mostly open/transitional forest and dry coniferous forest. American Camp elev. from sea level to 200'; mostly flat to rolling open grassland, with some dry, open coniferous forest and coastal marshland.	Private
Whitman Mission NHS WHMI	98.15	Historic values include Westward expansion, Oregon Trail, Mission Site and Battle Site.	Rural; easily accessible by vehicle; road leads to the Visitor Center and there are self-guiding trails to the Mission site, grave, and the monument	NPS		

settings.

Access ranges from park units that are entirely accessible by vehicle to remote wilderness areas that have extensive areas that are only backpacker-accessible. Access to rugged and remote back-country park units designated as wilderness represents the extreme end of this range (NOCA, OLYM, MORA, JODA). All wilderness area park units are also characterized by steep, mountainous terrain where high relief poses challenges well beyond simple distance from road access. For most of these wilderness parks, dense forest vegetation is an additional obstacle to access for pedestrian survey. Vehicle access in the wilderness parks is typically limited to relatively small and marginal portions of the entire land holding. Efficient access to some areas of certain parks (e.g., CODA) requires the use of boats. Another factor influencing access is the presence of private inholdings (e.g., CIRO, EBLA).

(5) Land Ownership

There are five park units in the Columbia-Cascades Cluster that are entirely NPS land holdings. The other 11 park unit include lands owned by federal agencies other than NPS, the State of Washington, and private owners. Table 2.2 summarizes land ownership; lists of landholders for individual park units are shown in Table 2.1. Portions of the two historic trails are within NPS park units; the Oregon Trail passes through CRMO and and CIRO while a part of the Lewis and Clark Trail is included within Fort Clatsop.

Table 2 Land Ownership Classes for Columbia Cascade Park Units

Land Ownership Category	Number	Park Units
All NPS lands	5	CRMO, FOCL, FOVA, MORA, WHMI
More than 90% NPS lands	4	CRLA, NOCA, ORCA, OLYM
50-89 % NPS lands	4	HAFO, JODA, NEPE, SAJH
1-49%	2	CIRO, EBLA
No NPS land	3	KLSE, CODA, Oregon Trail, Lewis and Clark Trail

(6) Nature of the Physical Environment

Moisture from the Pacific Ocean moves eastward across the Northwest where it is intercepted in decreasing amounts as it rises over the Coast-Olympic, Cascade, and northern Rocky Mountain ranges. A major consequence of this climatic pattern is that vegetation zones are arranged in a series of north-south oriented bands with mesic vegetation communities on the windward sides of mountain ranges and drier intermontane communities on their leeward sides. Forest communities are characteristic on the windward sides of these ranges and are a major factor restricting ground visibility for archaeological survey. The degree to which the ground is obscured seems to vary directly with the amount of precipitation and seems to be most pronounced along the coastal margin. Leeward of the Coastal Range

and Olympics, the Willamette Valley, Puget Trough, and San Juan Islands are considerably drier. Vegetation in these areas ranges from the relatively open prairies or grasslands and oak woodlands of the Willamette Valley to the coniferous forests and more limited prairie vegetation types in the interior areas to the north. Vegetation density and ground cover, although generally better than on the outer coast, can still be a major factor limiting archaeological visibility. Some of the best conditions for archeological survey in the Pacific Northwest are encountered on the Columbia Plateau where steppe vegetation communities typically offer relatively good ground visibility. Optimal conditions for ground surface visibility occur in reservoir drawdown zones which are essentially devoid of vegetation.

The topographic conditions that account for the complex vegetational zonation in the Northwest also influence archeological survey conditions. Elevations in park units range from sea level to 14,410 ft. Terrain can be extremely rugged and difficult of access in a number of parks, especially the montane wilderness parks. Back-country access conditions place major logistical constraints on archeological survey in these parks. Substantial areas in the mountains and the Columbia Plateau are snow-covered for substantial portions of the year and reservoir impoundments deny pedestrian access to submerged lands seasonally or throughout the year.

For purposes of this report, five regions are distinguished on the basis of important environmental characteristics. These regions include the Olympic Peninsula-Puget Sound Basin, the Lower Columbia, the Cascades Mountains, the Columbia Plateau, and the Upper Snake River Basin. These regions and the park units included in each are listed in Table 2.3 and depicted in Figure 2.2.

Natural Region	Number	Park Units
Olympic Peninsula-Puget Sound Basin	4	SAJH, EBLA, OLYM, KLSE
Lower Columbia Valley	2	FOVA, FOCL
Cascade Mountains	4	NOCA, MORA, CRLA,ORCA
Columbia Plateau	4	CODA, NEPE, WHMI, JODA
Upper Snake River Basin	3	CRMO, CIRO, HAFO

Brief descriptions of the five regions follow; more detailed discussions of environment as it pertains to the prehistoric and historical records of these regions are presented in Chapter 3.

Olympic Peninsula-Puget Sound Basin

Four park units, OLYM, SAJH, EBLA, and KLSE are included in this region. Three of these parks were created to commemorate historical events. Elevations range from over 8,000 ft. to sea level. Vegetation conditions, as these relate to ground visibility and efficacy of archeological survey, are variable. Coniferous forests of variable density constitute the most widespread vegetation communities in this region and survey visibility conditions in these forests are generally poor. Prairies, salt water shorelines, subalpine parklands, or areas maintained in early successional stages by human actions tend to provide

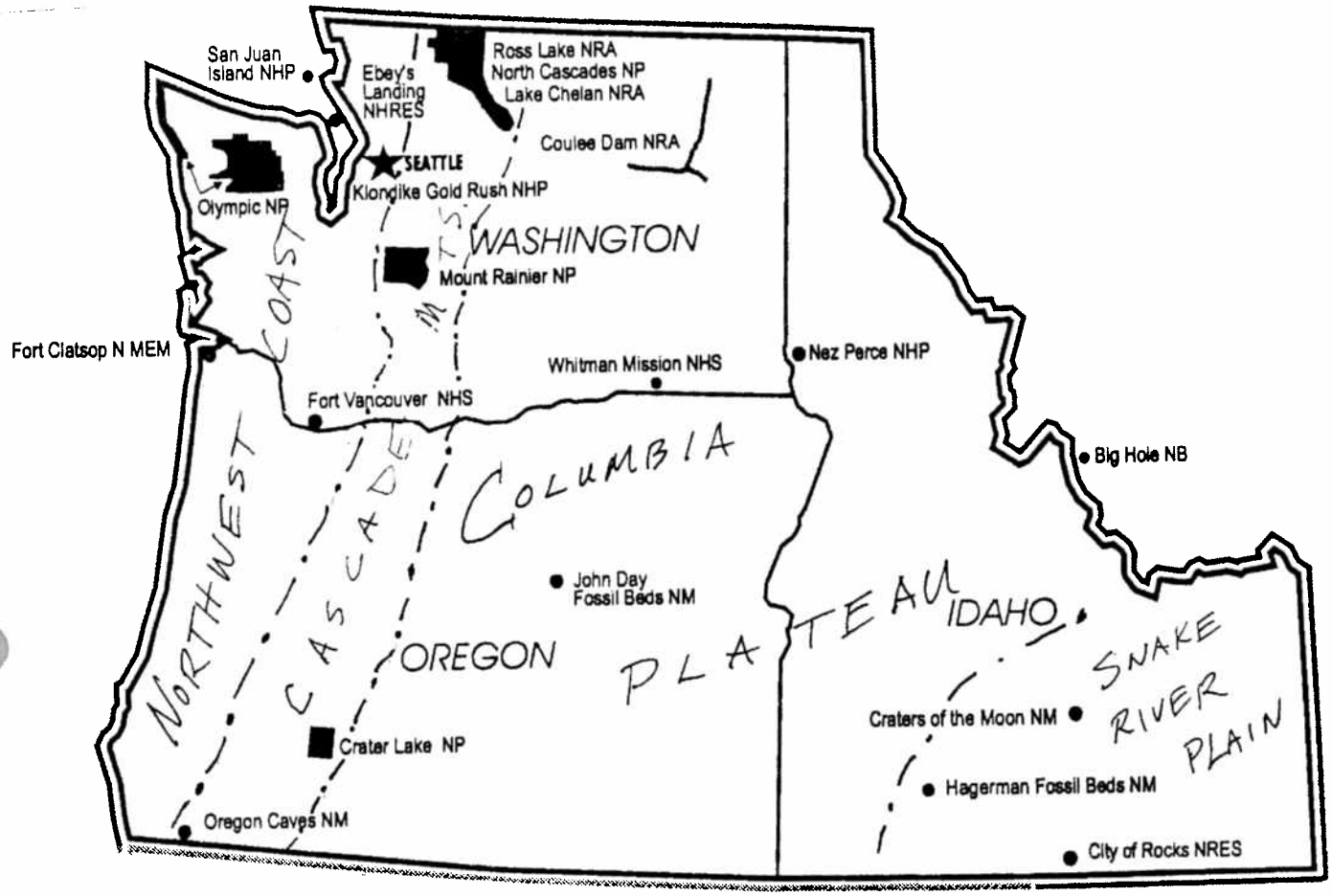

Figure 2 Natural Areas of the Columbia-Cascade Cluster

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better visibility.

Lower Columbia Valley

Two parks units are located in the Lower Columbia Valley, FOCL and FOVA. Both units commemorate historical events and are comprised of relatively small land holdings with limited environmental diversity. Relief is relatively low and vegetation moderately dense. Ground visibility ranges from fair to good.

Cascade Mountains

Four parks are located within the Cascades Mountains region---NOCA, MORA, CRLA, and ORCA. All but the latter encompass substantial areas of wilderness with high relief and limited access making logistics a major consideration for archeological survey. On the western slopes of the Cascades, closed-canopy coniferous forests offer low visibility; eastern slopes and subalpine areas tend to have more open vegetation and greater ground visibility.

Columbia Plateau

Four park units, CODA, WHMI, JODA and NEPE, are located in the Columbia Plateau region. Although steppe vegetation is characteristic over the lower elevation areas but these grade into parkland and forest communities with increasing elevation. The steppe vegetation offers some of the best conditions for survey in the Northwest and while forests of the Plateau offer reduced visibility relative to the steppe, ground surface visibility tends to be better than in the mesic forests west of the Cascades.

Upper Snake River Basin

Three parks are located in the Upper Snake River Basin, CRMO, CIRO, and HAFO. Visibility conditions are variable but generally good due to the open nature of vegetation communities in the relatively dry settings of the region.

(7) Adjacent Federal Landholdings

Neighboring lands to park units in the Columbia-Cascades Cluster are listed in Table 2.1 Federal landholders include the Department of Agriculture (U.S. Forest Service), Bureau of Reclamation, Bureau of Land Management, United States Army, and numerous Indian reservations. Along the international border with Canada, British Columbia Provincial park lands border one park unit State landholdings adjoin park units in Washington, Oregon, Idaho, and Montana. Various county and city governments own lands neighboring NPS units and numerous private landholdings are located near or within the boundaries of a number of units.

3: GENERAL RESEARCH DOMAINS

INTRODUCTION

A number of archeological research problems have relatively broad relevance currently in the Northwest and are of importance to many if not all park units with sizeable land holdings and diverse cultural resources. By considering these broader research topics for the entire Northwest, the later discussions of the sub-areas and individual parks focus on problems of a more localized nature. Research domains for prehistoric and historic archeology are the subject of the following sections.

PREHISTORIC RESEARCH DOMAINS

Paleoenvironmental Research

Archeology in those parks that contain extensive natural areas may be expected to play an increasingly important role in research on ecosystem history. As human modifications continue to produce ever more profound changes in the surrounding ecosystems, natural areas assume a more critical role as preserves within which biodiversity is maintained and as baselines for the measurement of change in human-dominated ecosystems. Maintenance of biodiversity depends on insuring potential for dynamic change. Therefore, attention is shifting away from the concept of natural areas as places statically locked into time as they were first observed by Europeans. Although this emergent philosophy places less emphasis on the "reconstruction" of past ecosystems as a management objective, it will demand better knowledge about the history of individual ecosystems. Anticipating how ecosystems will change in the future may be enhanced by understanding how they have responded to various kinds of change in the past. In view of predictions for global warming, archeofaunal data are likely to be an important information source on wildlife range responses to climatic changes of various amplitudes in the past.

Archeological data are relatively unique in their potential for providing information on how species distributions have changed since the late Pleistocene. Maintenance of biodiversity in natural areas may depend on knowledge about how various species have co-evolved. Archeology is often the only source of information on biogeography of fauna during the Holocene and offers a means of assessing whether a species is native or exotic. For example, archeological data figure importantly in recent research aimed at assessing the status of mountain goats in the Olympic mountains (Lyman 1988, 1994; Schalk 1993). If mountain goats were not present in this ecosystem prior to the twentieth century, then their presence there now is likely to have very different implications than if these mammals were present for centuries prior to the historic period. Similar questions have been raised about elk in Mt. Rainier National Park and the western Cascades (Gustafson 1983) and in Yellowstone National Park (Kay 1994) and about bison in the Wrangell-St. Elias National Park and Preserve (Peek et al. 1987). The probability seems high that archeology will increasingly be called upon to assess the deeper history of various wildlife species or sub-species, how biogeographic patterns change over time, and how populations have fluctuated.

A closely related area of research involves the study of how distributions of particular species have been

influenced by human actions in the past. A diverse array of mammals, birds, and invertebrates was exploited by the Northwest's native people. For certain animals, humans have been the major predators over long periods of time. Human influence on prehistoric ecosystems is not limited to simple predation on resource species but also may involve more complex environmental interactions such as modification of regional vegetation through the use of controlled burning (Boyd 1986; Norton 1979). Burning provides one of the most dramatic examples of a human action that can profoundly influence the character of plants and animals over large areas. Understanding these long-term interactions may be necessary for making informed management decisions regarding preservation of biodiversity.

Evolutionary Change in Native Land Use Systems

Research on hunter-gatherer settlement and subsistence systems, often referred to as land use systems, has been the focus of numerous archeological projects in the Northwest in recent years. Much of this work involves investigation of the ecological correlates of the shift from early Holocene populations that lived in small, nomadic bands to the more sedentary populations that were described across much of the Northwest at the time of initial European contact. This settling-in process culminates in what are widely recognized as relatively complex non-agricultural adaptations with sizeable population aggregates, winter sedentism, and substantial dependence on stored food resources. In certain areas such as the Olympic Peninsula and portions of the Columbia Valley, large villages, social stratification, and still higher levels of complexity emerged in the later part of the prehistoric record.

Many of the central questions in Northwest archeology relate to aspects of this general process. What role did climatically-driven changes over the past 10,000 years have on human land use systems? To what extent are specific changes responses to environmental change or, alternatively, intensification of land use caused by increasing human population? How have changes in the availability of food resources such as salmon, bison, deer, shellfish, and various vegetal resources influenced human subsistence? When and why did cedar plank longhouses and semi-subterranean houses appear in various areas? What changes in resource usage and food storage were associated with the appearance of winter sedentism in various areas of the Northwest?

Addressing these and many other related questions is complicated by the lack of direct archeological measures of many important variables. For example, in the absence of better measures, pithouses are often used as indicators of sedentism but it is clear that there is no consensus among archeologists about the *degree* of sedentism indicated. While many archeologists interpret these features as evidence of winter sedentism, others have proposed that they represent permanent year-round occupations (Chatters 1989; Lohse 198?). Resolution of such differences will probably require not only better seasonality data from faunal and floral remains but systematic analyses of archaeological assemblages from sites associated with a wide variety of environmental settings. Increased attention is being given in recent studies to toolstone procurement systems and the lithic production technology as ways of measuring mobility among hunter-gatherers (see below).

Although resources that can be harvested in bulk such as salmon, Lomatium, and camas seem to be prerequisite to the emergence of land use systems like those described historically over much of the Northwest, much work remains to be done in assessing the relative importance of such food resources

in specific times and places. Valuable information relevant to these questions will undoubtedly come from field research aimed at the recovery of large samples of archeofaunal and archeobotanical remains. However, site distribution patterns across different habitats, environmental zones, and landforms can also be sources of insight on human-resource relationships.

Prehistoric human use of alpine and subalpine environments in the montane wilderness park units of the Columbia-Cascade Cluster (e.g., NOCA, OLYM, MORA) was largely unknown prior to the NPS surveys carried out over the past decade. The typically unobtrusive montane sites had long been neglected in favor of easy to find, large, stratified, artifact-rich sites along the Northwest's rivers and coastlines. The growing realization that such sites can only provide an incomplete picture of hunter-gatherer land-use has resulted in a new appreciation for the value of small, low visibility sites in the Northwest's rugged montane environments.

An important component of land use research involves documentation of changes over time in the way particular environmental zones were used. Several park units have taken important steps in this direction by subdividing their units into ecological/management zones, documenting the kinds of cultural resources associated with each zone, and developing methodological strategies appropriate to the specific floristic and geomorphological conditions within each zone.

Recent studies of fossil pollen suggest the possibility that there have been major shifts in the elevation of upper treeline in the Cascades and other mountain ranges of the Northwest (Sea and Whitlock 1995). Consequently, the extent of subalpine habitat and its productivity during the past 9000 years may have been dynamic. The implications of such changes for biotic resources in the mountains and their usage by humans are largely unknown. Understanding the long-term changes in archeological site distribution patterns, toolstone sources, and assemblage content in these seasonally accessible environments is essential in the development of a complete picture of human land use systems at various times in the past. This research is only just beginning.

Discontinuities in the radiocarbon records from several regions of the Pacific Northwest have been identified in recent years (Ames 1991; Chatters 1989; Schalk 1988; Schalk et al. 1995). In some cases, the gaps encompass intervals of many centuries but whether these represent some change in land use (e.g., reversion to nomadism) or unknown sampling errors is as yet unclear.

Toolstone Procurement Systems and Lithic Technology

Over broad areas of the Columbia-Cascades Cluster, the archeological record is largely comprised of stone tools and the debris produced in their manufacture. Acid soils in the forests west of the Cascades and at higher elevations around the Columbia Basin are not favorable for the preservation of animal bones. Erosional landscapes that dominate areas outside the floodplains of the major interior river valleys are also not conducive to the preservation of organic remains--either faunal or floral. The result of these patterns is that lithic artifacts are the most ubiquitous and usually the most abundant artifacts encountered during archeological surveys. The development of research methods that can maximize the information potentials of these sites is clearly of importance in Northwest archeology.

In recent years, the analysis of lithic artifact assemblages has gone beyond the use of a few tools,

especially projectile points, for making crude age and functional inferences. The use of XRF analysis of obsidian is now being widely used to identify the quarry sources of this raw material. The tracing of the archeological distribution of lithic raw materials from a known quarry source provides information on patterns of movement within a region. Obsidian source analysis also now provides the primary data source for the study of trade and exchange in the Northwest (Carlson1991; Galm 1994). Some cherts are also sufficiently distinctive to permit the investigation of how these move within and between regions (Mierendorf 1993).

In addition to identifying new quarry sources, archeological surveys can provide useful information on the nature of tool manufacturing technology by documenting the kinds of lithic debitage present on sites. A number of recent studies have suggested that the nature and degree of residential mobility in a land use system are major factors influencing the distinctive technologies for producing tools from raw material (Kelly 1988, 1992; Parry and Kelly 1987; Parry and Christenson 1987). When differences in the distribution of raw material sources are taken into account, variations in lithic technology reflected in the lithic assemblages may be useful for gaining insights into land use and mobility systems.

Impact of the European Contact on Native Cultural Systems

The earliest European descriptions of the native cultures of the Northwest were preceded by major disease epidemics, perhaps as early as the 16th century (Campbell 1989). Population reductions from disease were dramatic throughout the Northwest in the late 1700s and for many decades to follow (Boyd 1990). Over much of the Columbia Plateau and the Upper Snake River Basin, horses arrived decades ahead of the first European explorers. Although archeologists have generally used the cultures depicted in ethnographic and ethnohistoric records as models of the later prehistoric cultures, the extent to which this analogy is reliable is debatable. An essential step to advancing knowledge in this area is the development of a sound model of ethnographic adaptations along with models for testing these with archeological data. In park units for which good ethnographic overviews have been prepared (e.g., Smith 1964, 1988), archeological research has proceeded with the benefit of clear expectations for the kinds of sites likely to occur in various settings. Having such expectations increases the probability of recognizing non-conforming evidence when it is encountered.

The Emergence of Complex Hunting and Gathering Systems

The Northwest Coast of North America has long been recognized as distinctive for the level of socio-cultural complexity recorded at the time of European contact. Research aimed at explaining the conditions and causes for the evolution of such systems lies at the center of much of the recent archeological research in that region (Matson and Coupland 1994). For areas of the Olympic peninsula, the Puget Sound and Lower Columbia, the archeological record that leads up to the ethnographically documented cultural systems will continue to be an important source of data for addressing questions pertaining to the evolution of social complexity.

Although much less attention has been given to the origins of complexity in the interior Northwest, the potentials there are only recently being recognized. On the Columbia Plateau there are at least two cultural developments that are noteworthy. The first is the development and pre-contact disappearance

in certain areas along main stem rivers of large large pithouse villages during the last 2,000 years (Hayden 1992) and the second is the rise of equestrian hunting and gathering over the southern Columbia Plateau and Upper Snake River. Both of these developments seem to represent patterns that are unusual among hunter-gatherers and both have archeological implications for a number of Columbia-Cascade park units in the interior Northwest.

HISTORICAL ARCHAEOLOGY

The following historical archeology discussion is organized into five parts. First is a brief review of historical development of the Northwest, including the inception of the nation's parks. Second is a reassessment of the Park Service paradigm of "historic sites" archaeology. The third section discusses the archeological significance of historical sites. Next, a framework for historical archeological research is presented, including specific research topics to provide a coherent structure for historical resources within the Columbia-Cascades System. Finally, recommendations are presented to enhance historical archeological research in the Northwest.

Historical Perspective

Historical Development of the Northwest. The Columbia-Cascades System primarily encompasses a tri-state region that is linked historically by a common economic geography. Early exploration of the area began in the mid-1500s with ocean travelers. These explorers/traders probably did not venture far inland. A few centuries later, Lewis and Clark explored the region and provided accounts of open lands with bountiful resources. World capitalization of the region continued with the Hudson's Bay Company and other trappers who established trading posts and influenced the location of transportation routes and towns. The region was bound by these early economic ties and strengthened by settlers, emigrants, and sojourners searching for precious metals. By the 1900s timber harvesting, agricultural enterprises, and stock raising had diversified the region's economy. The military likewise provided an economic stimulus to the region, establishing its presence to thwart foreign interests and provide protection for settlers. A series of forts and outposts along major transportation corridors reflects this strategy.

Transportation networks spurred settlement and trade from the East. Early trails were turned into roads, while water travel connected the interior settlements. However, it was the railroad that brought about the greatest change in the West, affecting settlement patterns, expanding timber and agricultural industries, and providing access to national markets. Many railroads received extensive land grants from the federal government to finance construction and promote homesteading and town-building along the rail lines. Expanded railroad networks created important transportation hubs for national and international trade. Railroads dominated until motorized vehicles caused a shift in transportation routes in the early twentieth-century.

Disposition of land in the West is another important economic factor. A variety of federal land acts

(Gates 1968; Hibbard 1924) parceled out large tracts of land in the Northwest in an effort to relocate urban residents, develop agricultural and extractive processes, and expand the national economy and individual income. The lure of free land created an impetus for settlers, including ethnic populations and Native Americans, to relocate and establish new farms and ranches. These acts also provided land for timber and mining interests. Timber harvesting became a large-scale enterprise by using railroad logging in conjunction with logging camps. Mining changed from simple prospecting to placer and hard-rock extraction. Mining camps were established to support the huge capital investments and cities grew to supply commodities for the camps. The dynamics of the West changed from that of a largely unsettled area to one of an industrialized landscape.

Park Development in the Northwest. As settlers ventured into the West, they were rewarded with splendid views of spectacular scenery and majestic natural features. Although some valued the natural environment for its ascetics, others viewed it as an economic resource. Due to increasing development activities, Yosemite (1864) and Yellowstone (1872) received protection to preserve lands for use "as a public park . . . for the benefit and enjoyment of the people" (Everhart 1983:8). There followed additional legislation, such as the Forestry Reserve Act of 1891 which provided the president the ability to set aside large tracts of forested land for the public. Lands which contained scenic wonders could be set aside as national parks or national monuments. Examples are Mount Rainier (1899), Crater Lake (1902), and the Oregon Caves (1909).

The Antiquities Act (1906) gave protection to historic and prehistoric features on public lands. Parks could be set aside for reasons other than their scenic values including historic and scientific. Mesa Verde (1906) was set aside as a national park and in the same year four more parks were set aside as either Historic or Scientific National Parks. The first historic park in the Northwest was the Whitman Mission, established in 1936.

The NPS was created (1916) to "promote and regulate the use of the national parks and monuments, taking such measures as conform to the fundamental purpose of the preserve" (Everhart 1983:16). To increase economic support for the parks, special camping trips for political and business leaders were arranged. Tourism was promoted as a way of increasing public support. Railroads provided the first access to many of the parks and railroad companies developed many of the great resort hotels. The automobile brought even greater numbers of visitors to the parks. Visitors to Mt. Rainier gained access as early as 1908. Regardless of the type of park, amenities such as visitor and interpretive centers, campgrounds, and trails were built to accommodate the visitors. During the 1930s-1940s the Civilian Conservation Corps (CCC) rehabilitated existing facilities, restored historic buildings and sites, and constructed new campgrounds, visitor centers, roads, and trails. Many historical and natural parks have been added through the years, including Coulee Dam National Recreation Area in 1946. Regardless of the park classification and management philosophy, however, all NPS land reflects past cultural activities, including previous economic uses and park development.

Historic Sites Archeology in the National Park Service

The emergence of historical archeology as a recognized discipline in the 1930s was spurred as well as constrained by the desire to preserve and reconstruct famous historic sites like Fort Vancouver (Schuyler 1978:1). Historical archeology was used as a tool to answer specific questions about the architecture and history of a place. A key provision of the Historic Sites Act of 1935 called for the

establishment of museums and markers, thus initiating the Park Service's commitment to interpreting past events. In the Northwest, historical archeological investigations began through projects financed by the Columbia Basin Project and the River Basin Surveys of the 1940s and 1950s (Sprague 1973:262).

Excavations at Fort Vancouver and American Camp (SAJH) have received the greatest attention to date but other forts Fort Spokane and Fort Clatsop have been excavated as well. The primary focus of these excavations is related to architectural reconstruction, supplementation of the historic record, reconstruction of past lifeways, and promotion of tourism. Cultural resource management has guided more recent archeological investigations at many parks. Cultural resources on NPS land may or may not be associated with the park's mission. In some cases, activities associated with the park development, such as CCC-era projects, are recognized as important but a broader definition of historical archeology would be beneficial.

Assessing the Archeological Significance of Historical Sites

The NPS categorizes parks based on themes and chronology and as such links historic contexts with property types. The range of properties is commonly limited to standing buildings and structures or designed landscapes. And if not squarely within the focus of the park's mission, historical archeological processes and values for addressing cultural behavior are overlooked in federal preservation projects (Lees and Noble 1990:10) unless they are of national significance. Debris scatters noted as historic dumps and less than perfect buildings and structures are disregarded for their archeological or historical potential.

The language set forth in the National Register of Historic Places (NRHP) is the standard by which archeological significance is evaluated. The problem lies in providing a consistent definition of significance. To resolve this dilemma, a context is used to assist in the evaluation of eligibility. National Register Bulletin 36 defines a historic context "as a body of thematically, geographically, and temporally linked information that provides for an understanding of a property's place or role in prehistory or history" (Townsend et al. 1993:25). A historic context becomes the analytic framework by which to evaluate the site and the information it can contribute to research domains.

The limitation of contexts for historical archeological sites is that the narrative is a historical background of the property, describing it thematically, geographically, and temporally. Contexts primarily are used to evaluate historic resources under Criteria A, B, and C. What often is lacking is an adequate archeological research design to address the data sets likely associated with the historical component (Hardesty 1990:42-43). Kathleen Deagan (1988:9) states that "other questions appropriate to . . . historical archeology focus on understanding general cultural phenomena that transcend specific time and space." Several researchers (Cleland 1988; Deagan 1988; Hardesty 1988; Leone 1988; Mrozowski 1988; Schuyler 1988; and South 1988) provide a list of relevant research topics for historical archeology.

Donald Hardesty (1988) developed a matrix to systematically evaluate the significance of mining properties under Criterion D (Table x). This approach also can be used for other archeological property types. The evaluation matrix, a two-dimensional table encompasses key research domains (demography, technology, economics, social organization, and ideology) and research levels (world

systems theory, mining district, and feature system) to which research questions are applied. The evaluation matrix encompasses a theoretical framework, middle-range theory that links the data sets to relevant research questions, and the data sets that comprise the archeological component. Historical archeological properties that would be eligible to the NRHP would contain applicable data and integrity that could be used to address at least one of the research topics.

Table 4. An Evaluation Matrix of Mining Properties (Hardesty 1990:48).

Research Level/ Research Domain	World System	District or Region	Locality or Feature System
Demography	Comparative data on patterns of mining frontier demography	Patterns of occupation / abandonment in district	Reconstruction of household population
Technology	Adaptive variety and change in industrial and appropriate technologies on the mining frontier	Adaptive change in industrial technologies imported into district	Reconstruction of mining/milling technologies
Economics	Adaptive patterns of economic production and distributions on the mining frontier	Patterns of economic distribution and production within the district	Reconstruction of household consumption and production
Social Organization	Patterns of mining frontier social structure and change	Patterns of "colony" social structure and ethnic relations	Reconstruction of household status and ethnicity
Ideology	Emergence of "syncretic" mining frontier ideology	Interaction of Victorian and ethnic folk cultures	Reconstruction of household ideology

Research Domains: Toward a Historical Archeology of the Pacific Northwest

Introduction. Contained within research domains are the important questions framed within an explanatory context based on NRHP criteria. One difficulty formulating research questions in the West is that there are no well-developed regional research strategies. Research questions focus primarily on site specific relationships; revelations about regional patterns are accidental (Hardesty 1991:29). This *ad hoc* approach to the West contrasts to research strategies developed for the East, including Colonial New England (Deetz 1977) and Spanish colonies of the Southeast (Deagan 1982). This discrepancy does not reflect on the abilities of trained researchers, but is due in part to the lack of a clear identity for historical archeology. For prehistoric archeologists in the Northwest, questions are often framed in an evolutionary perspective from an ecological viewpoint that encompasses the Northwest Coast, the Plateau, and the Great Basin. No such idiom is available for historical systems. A Northwest regional identity should encompass the major economic developments in the region, social and cultural variables, the variety of economic endeavors, the vast parcels of a federally-managed land, and the legacy of conquest. After almost three centuries as an evolving frontier, the PNW experienced periods of rapid economic growth in the mid to late nineteenth-century.

An approach is needed that discusses the increasingly complex cultural expressions of the West. The

following sections outline an overarching theoretical framework (world-systems), linked with middle-range theories (socio-technological systems), and coupled with research domains to address the variety of historical resources within the Columbia-Cascades System.

World-Systems Theory. A unifying and cohesive approach for the PNW is to link its transformation with a world-systems explanatory framework (Braudel 1981; Wallerstein 1974, 1980, 1989; Wolf 1982). World-systems theory emerged as a framework for understanding economic underdevelopment in the modern world. This approach concentrates upon the general processes that cross-cut political boundaries and ideologies of nations or regions. This theory views the developed countries or regions as having gained their position,wealth or power, by exploiting the natural resources and manipulating the labor force in underdeveloped areas.

To effectively study this complex global system, historical archeology must examine both written and material by-products of the cultural system. Comprehensive studies of the modern world should seek to discern and/or explain the processes in which individuals, the household, and the settlement are affected by social and ecological relationships. Historical archeologists have applied Wallerstein's concepts to North American studies to cover a variety of topics in differing temporal and geographic areas: English Colonial South Carolina (Lewis 1984, 1985); political power relations (Paynter 1982, 1985); arctic frontier (McGovern 1985); Nevada mining (Hardesty 1988); and Spanish Colonialism in New Spain (Farnsworth and Williams 1992).

Regardless of the particular economic structure, temporal period, or geographic location, interactions of materials, population, and information are universal, crosscutting time, space, and technology (Hardesty 1988:1-5). Data sets and the types of information may vary, yet interaction spheres link technological processes, settlements, and the household to a world-system.

Socio-Technological Systems as Historic Contexts. In many respects, from the gathering of food to the operation of timber mills, social systems are organized around technology. As technological systems developed into complex and expansive organizations, the emerging technology dramatically altered social relationships. These systems serve as middle-range theory for linking the theoretical framework to archeological data sets.

Modern socio-technological systems encompass an ecological, evolutionary approach by stressing the relations of social components within a natural environment. This interrelationship has resulted in distinct settlement patterns and feature systems (features within an individual technological process or activity locus) that are arranged for effective production, communication, and transportation. Socio-technological systems are comprised of the technology itself and the residential settlement or household. Despite the fact that technological processes are usually extensive and leave distinct patterns on the landscape, more often the domestic aspects of the community are studied archeologically. The technological processes are encompassing and macro-patterned, too large to effectively observe, when compared to the residential patterns, which are micro-patterned and produce easily recognizable features system and artifacts.

Historical documents provide quantitative data and information on the technology for various extraction processes including logging, mining, fishing, and farming. However, it is the relation

between the technological framework (capital investment, labor relations, management organization, extraction, and abandonment) and the social sphere (household composition, social status, subsistence production, and wage income) that is the primary avenue of investigation. Socio-technological systems are studied through a problem-oriented approach that encompasses the material culture of the work place and the worker (Teague 1987) in context with a world systems approach.

Because of the Northwest's diverse natural resources, several socio-technical systems are present that comprise the cultural landscape. These systems can be viewed as an adaptive strategy within an evolutionary framework. For the PNW, the primary economic activities or socio-technological systems include: *Exploration/Trade*; *Military*; *Fisheries*; *Water conveyance*; *Mining*; *Agriculture*; *Railroad*; and *Timber*. Although, these activities are interconnected, they are distinct because of functional differences that produce discrete sites. Other systems came about as a result of capitalist expansion during the industrial age, including *Urbanism* and *Tourism*. Tourism provides an example in which to understand socio-cultural variables.

Tourism as a Socio-Technological System. The Columbia-Cascades System of parks (natural or historical) captures a diverse environment. Setting aside huge tracts of land for recreation and scenic values was inconsistent with policies of the day which were affected by a second wave of manifest destiny. In addition, the federal government encouraged the growth of extractive industries and made available free land to individuals and industries. To foster support for the creation of parks, tourism was promoted by the government. William Hunt, Jr. (1990) utilizes the context of Tourism as an approach for understanding the development of Yellowstone National Park. "Tourism is considered that activity characterized by travel, conspicuous consumption, and pursuit of other than normal (secular) activities" (Hunt 1990:26). Features of tourism are that: 1) it is marginal because it is a service industry, produces no tangible product, and is usually supported by seasonal workers paid minimal wages (similar to other industries); 2) it is dynamic because it is an enterprise governed by fashion; and 3) it is multi-dimensional for it includes transportation, lodging, food-service, and concessionaires. Tourism as reflected on the landscape can be viewed as distinct components each with their own feature system: 1) the tourist; 2) the internal facilitator; and 3) the external facilitator (Hunt 1990:26).

Characteristics of the tourist have changed through the years. Wealthy tourists arrived via primitive transportation and were self-sufficient upon arrival. Improved transportation routes led to greater access and in turn necessitated accommodations primarily for the upper class. Transportation, including the automobile, democratized the parks and led to car camps and group lodging. This diversity of overnight accommodations, food services, and activities continues to reflect the changing park dynamics.

According to Hunt (1990:27), changes in the socio-economics of the tourist should be expressed in the archeological record in three ways: 1) fluctuations in the ratios of various kinds of lodging ranging from informal to formal campsites and luxury hotels; 2) variations in accommodation formality and site plan; and 3) changes in quantity and diversity of foodstuffs and products available to the tourist as demonstrated by artifacts deposited in occupational sites and associated refuse areas.

The internal facilitator component is comprised of those activities that provide physical support and

services to the tourist. Specific features include park management, transportation, and support services for the park. Related support services can include military activities, logging, fish hatcheries, museums, camps, and so on. The external facilitator are those amenities outside the park and are the least studied.

Each of these components has been affected by socioeconomic conditions and transportation developments which, in turn, should be reflected by features on the landscape. The internal facilitator and tourist can be studied through landscape patterning, features, and the material culture within the park confines. As times change, so does the tourist — which affects the development of the park itself. Parks have developed into self-contained land units set aside for visitors to view and enjoy. This model for Tourism unifies the PNW parks and can be viewed chronologically and compared across the Columbia-Cascades region and other park systems. Feature systems of Tourism also can be compared with other socio-technological systems such as logging, agricultural, mining, and the urban setting.

Research Topics. As stated earlier, research questions are not and should not be developed outside the National Register process. The link between the explanatory context (e.g., world-systems) and archeological data (feature systems of the socio-technological systems) provides impetus for developing research questions. The development of questions within an explanatory context prevents vague and trivial research questions and assists in the evaluation of archeological significance under Criterion D (Hardesty 1995:7). Although information must be assessed in context with redundancy as well, redundancy cannot be addressed until contexts are developed, important research questions posed, data analyzed, data similarities documented, and a determination made as to how much new data is required. A number of research questions can be developed in context with the following topics.

Settlement/Landscape Patterns. National Park lands usually are delineated on political boundaries and do not encompass the entire ecosystem or cultural pattern. However, parks are in themselves an entire project area in which to evaluate and assess the redundancy issue of quantitative site types. The frequency of site types is an issue of importance when determining significance. To accomplish this task, a systematic approach must gather and evaluate the data from a region (Goodyear 1977; House 1977; Lewis 1984; Lanhorne 1976; McManamon and Childs 1986; Paynter 1982; Thorbahn and Mrozowski 1979; Wilson 1990). Recent studies on settlement patterning (Beaudry 1986; O'Brien 1984; Rubertone 1986) show that it "has also proven itself to be flexible enough to be utilized in the investigation of . . . social and economic organization, particularly when combined with an environmental approach" (Linebaugh and Robinson 1994:4). This model for understanding settlements fits into the overarching world-systems approach when examined in context with socio-technological systems.

Archeology can "not only reconstruct and interpret how people shaped past ecosystems, but also look at how this information can help restore and sustain them in the future" (Forney 1995:19). Sandra Jo Forney (1995:20) in a short article entitled *Both Artifact and Habitat: The Nature of Our National Forests* details how "[s]tudies of early logging—of its methods, techniques, and associated archeological features—have been useful in determining the industry's impact on terrestrial as well as aquatic environment." Analysis of plant and animal remains are investigated to understand change

in habitat and the introduction and diversification of species (Flanagan 1995; Forney 1995). This ecological approach to archeology is encompassed within a variety of socio-technological systems.

Consumer Behavior. Consumer behavior has been a research topic only for about 10 years, since the publication of *Consumer Choice in Historical Archeology* (Spencer-Wood 1987). Most of the research to date has focused on urban environments (Spencer-Wood 1987; Henry 1987, 1991). Consumer behavior studies have resulted in a variety of issues, including status (Baugher and Veneables 1987; Spencer-Wood 1987), ethnicity (Costello and Maniery 1988; Wegars 1993), gender (Brashler 1991; Seifert 1991), socioeconomic status (Garrow 1987; Miller 1980, 1991; Spencer-Wood and Heberling 1987), and communication (Purser 1992). A recent investigation focused on rural consumer strategies in the West, including Idaho, Oregon, and Washington (Bowyer et al. 1995; Ross et al. 1995; Speulda et al 1995). Models to identify cultural attributes associated with rural consumer strategies are commodity markets, distribution networks, and market access (Riordan and Adams 1985), subsistence practices (Holt 1991; Huelsbeck 1991; Scott 1991), and cultural influences toward consumer procurement, use, and discard (Henry 1991; Schiffer 1987). The study of consumer behavior centers on the individual, yet the analytic unit for consumer behavior is the household. Archeological research can be used to identify patterns of behavior manifested in the types of materials accumulated at historical sites.

Consumer behavior primarily is a late nineteenth- to early twentieth-century research topic because it is tied to changes caused by the Industrial Revolution. This technological phenomena brought about the accessibility and increasing variability of products available to the consumer. This research topic is closely related to world-systems theory as products are manufactured, shipped, and purchased worldwide.

Twentieth Century. Numerous research topics can be applied to twentieth-century sites for "dramatic social, economic, technological changes occurred during the first part of the 20th century that profoundly affected every aspect of daily life. These changes transformed America from a 19th-century agrarian, Victorian culture into a 20th-century urban, technological culture" (Henry 1995:11). These changes are many and varied because of two World Wars, labor laws, prohibition, the Depression, governmental programs, technological advances in the home, the automobile, and mass marketing. Questions of settlement patterns, social stratification, population size, subsistence, acculturation, adaptation, technological innovations, ecological constraints, artifact patterning, and culture change are pertinent for the twentieth-century. In order to understand twentieth-century archeological variables we must review these sites from a broad theoretical perspective rather than negate their significance simply because abundant documentation exists for this property type.

Historical Documentation and Archeological Data Variability: Material Culture and Social Complexity. This research topic crosscuts all previous research domains and socio-technological systems. This topic is viewed concomitantly as a research domain for all archeological investigations, providing a method for independently evaluating data from the historical and archeological records and indicating elements of convergence and divergence for identifying specific research variables. The study of *Material Culture* variability provides opportunities for the development of new temporal sequences, the identification of unique technological innovations, and the evaluation of existing historical inferences. Most published studies of material culture focus on assemblages that predate

machine-made products. *Social Complexity* as a research topic compares historical documents with the archeological features and artifacts. When incompatible inferences from historical and archeological research are isolated and contrasted, then new methods for determining and validating inferences of cultural behavior (Bowyer et al. 1995; Ross et al. 1995; Speulda et al. 1995).{GARY?}

Historical archeology in the Columbia-Cascades System is associated with human activities that span more than one hundred years. Although cultural activities are limited in parks today, economic endeavors have taken place in the past even in "wilderness" areas. The Northwest lacks a unified regional research strategy to investigate the multitude of historical resources. One possible approach is the development of a research framework that incorporates world-systems theory. A world-systems approach encompasses the technology, the community, and the household to understand economic development. Historic contexts can be developed, but these documents must include an archeological framework of relevant research questions coupled with historical documentation that links the context. Such an approach is needed to unify historical archeology in the Columbia-Cascades System.

4. REGIONAL OVERVIEW

Introduction

This section presents brief overviews of the environment for each of the five natural areas that are distinguished within the Columbia-Cascade Cluster. Under each of these five sections, the individual park units are discussed--in terms of distinctive environmental features and previous archeological investigations.

Olympic Peninsula-Puget Lowlands

Physiographically, the Olympic Peninsula-Puget Lowlands is one of the most complex and varied areas within the Columbia-Cascades Cluster. Saltwater coastline ranges from open outer ocean coast, the semi-protected Strait of Juan de Fuca, and the more protected inner waters of Puget Sound, Hood Canal, and the San Juan Islands. All of these features as well as the Olympic Mountains strongly reflect Pleistocene glacial sculpting as the predominant geological process reflected on the modern landscape. Elevations range from sea level to nearly 8,000 ft in the Olympic Mountains. While the Olympic Peninsula is a roughly circular mountain massif with rugged relief everywhere except a narrow coastal plain, the Puget Lowlands are characterized by relatively gentle relief. Bedrock geology of the Olympic Peninsula is composed of oceanic rocks, primarily basalts, and although the Puget Lowlands are obscured under deep glacial sediments, similar bedrock probably extends into that area as well (Alt and Hyndman 1984). Rivers are mostly of small to medium size with the larger drainages entering along the eastern margin of Puget Sound.

Climate is maritime with relatively mild temperatures at all seasons. Annual precipitation averages vary markedly from the peaks in excess of 200 in. a year at higher elevations on the west slopes of the Olympics to less than 15 in per year in the rainshadow areas of the northwestern Olympic Peninsula and the San Juan Islands.

A mesic temperate coniferous forest dominates throughout the region and three forest types may be distinguished: the Sitka spruce Zone along the outer coast of the Olympic Peninsula, the western hemlock zone found at intermediate elevations of the peninsula and throughout the Puget Lowlands, and the subalpine forest zone that occurs at higher elevations in the Olympic mountains (Franklin and Dyrness 1973). The only significant interruptions to the coniferous forests are relatively limited areas of subalpine vegetation at elevations over 4,500 ft. and by scattered lowland prairies. Parkland vegetation exists or was formerly present in the San Juan Islands and northern Whidby Island (Suttles 1990:21), probably reflecting the rainshadow combined with some controlled burning. While prairies occur at lower elevations in both the Olympic Peninsula and northern Puget Lowlands, the size of these was generally small compared to those that were present historically in the southern Puget Lowlands.

Consistent with the complexity of the region's physiography, a wide range of biotic resources is present. The marine environments, ranging from open coast to highly reticulate bays and fiords, provide very

different suites of resources from one locality to another within the overall area. Although salmon were widely available in virtually all streams throughout the area that had accessible spawning habitat, there were major differences in the species available and their abundance. Major salmon runs (e.g., sockeye) bound for the Fraser pass through the San Juan Islands where they could be intercepted in saltwater passes with the appropriate fishing technology. Some of the larger rivers like the Skagit supported runs of four or five different species of the Pacific salmon. Areas with small streams such as the northwestern peninsula, had access to fewer salmon because of the small size of that areas drainages but this deficiency was compensated by access to offshore halibut fisheries and a number of large sea mammal species including whales and fur seals that were uniquely accessible from that area. The variety of sea mammals declines in Puget Sound, but a greater abundance and variety of shellfish were present along its lengthy and heavily dissected shoreline.

Deer and elk were the most widely occurring and abundant ungulate resources throughout the area. After spending summers in the mountains, migratory herds of both species return to winter ranges in the foothills and lowlands along the margins of the Olympics and Cascades. Non-migratory or resident populations of both deer and elk are distributed across low elevation areas. Although numerous other mammalian species are indigenous to the region and were exploited by native peoples, none are sufficiently abundant to offer the potential for status as food staples.

Edible vegetal resources were quite scarce in the wetter, more densely forested parts of the region. Maintenance of prairies through controlled burning offered a means of enhancing productivity of tubers, berries, and nuts as well as ungulates (i.e., deer and elk) that benefit from the forage provided in areas of arrested succession. Although plant resources were probably of lesser importance to the outer coastal populations than those of Puget Sound, this difference was dietary difference was probably counterbalanced by a higher dependence on fat-rich resources such as sea mammals.

In general, the Olympic Peninsula-Puget Sound region is most distinctive within the Northwest Coast for the amount of interregional variation there is in the productivity of marine resources, salmon, vegetal resources, and land mammals. Terrestrial resources decline northward of this region, giving subsistence a more maritime orientation. Southward from the Olympic Peninsula, the diversity and abundance of marine resources drops substantially. The region might be seen as straddling a major boundary between subsistence systems dominated by marine resources and those in which salmon and terrestrial resources were of primary importance.

Olympic National Park

Located in a mostly rural section of Northwest Washington's Olympic Peninsula, Olympic National Park includes two noncontiguous areas totaling over 900,000 acres. A 53 mile long coastal strip encompasses much of the northern Washington coastline while a much larger, interior section makes up the remainder of the park.

Physiographically, the coastal strip includes gentle sandy beaches juxtaposed against vertical bedrock cliffs that emerge directly from the ocean. Most of the coastal strip falls somewhere between these two extremes. Generally, the coast line can be characterized as rugged with beaches that are often steep and

rocky. Numerous near-shore sea stacks buffer parts of the coast from the full force of ocean waves forming protected intertidal zones, rich in plant and animal life. In most cases, the major rivers and streams flow, full-force into the ocean and have small to nonexistent estuaries. Behind this dynamic and varied coastline lies a dense, often jungle-like forest dominated by sitka spruce and a sometimes impenetrable array of understory species.

The bulk of Olympic National Park is included within the interior region of the peninsula. Here the physical environment also exhibits extreme variability. True temperate rainforests and dense montane forests dominate the lower elevations, while expansive subalpine meadows predominate in the higher elevations. These in turn, extend up into the rugged alpine settings, culminating in the nearly 8,000 foot, glacier-clad summit of Mount Olympus. A complex geological history has resulted in the Olympics exhibiting great topographic relief. The uplift that formed the Olympic Range occurred relatively recently so peaks and ridges are often steep and knife-like. Pleistocene alpine glaciations have carved classic U-shaped valleys and formed cirque basins at higher elevations.

Much of the park is designated wilderness and therefore access is essentially restricted to foot and stock traffic, a fact that has serious implications regarding the way archeological surveys are conducted. In some of the more remote areas of the park access requires up to three days travel on foot. This sometimes lengthy travel time and the need to backpack creates serious logistical constraints on research in these settings. Even when access is not a serious problem, the generally dense vegetation imposes significant limitations to standard archeological survey techniques. Further complicating matters are the rapidly changing weather patterns that can make archeological fieldwork uncomfortable or even impossible at nearly any time of the year. This is especially true for work in the subalpine and alpine zones where the field season is short even in the best of years.

Archeological investigations on the Olympic Peninsula began with several survey projects carried out along the coast (Reagan 1917, Daugherty 1948 and Stallard and Denman 1955). Survey of interior locations was nearly non-existent until the 1970s when Wessen (1978) conducted a survey of several lowland river valley locations across the western peninsula. Small-scale CRM projects completed by the USFS have been conducted in areas adjacent to the park. It was not until the early 1980s that systematic archeological surveys were undertaken in high elevations settings within the park. Bergland (1984) conducted limited survey of several subalpine locales in conjunction with the Olympic Basemap Study. Schalk (1988) followed this with a survey of several hundred acres in similar settings. Both of these initial subalpine investigations were important because they documented cultural resources in an area of the park where the archeological potential was completely unknown and in which some park staff, and managers, thought to be devoid of cultural resources.

The number of archeological surveys completed has increased dramatically since the establishment of a park-based cultural resource program in 1992. While most of these have been limited in scope they have greatly expanded the range of territory surveyed. Several larger park-based projects have been completed as well; ongoing Olympic SAIP surveys are probably the largest and most extensive of the park-based projects conducted to date(Conca 1994, Conca and Haertel 1995). These surveys have again centered mainly on the subalpine zone of the park, but work is beginning to shift to the more challenging, lower elevations.

A cultural resource inventory completed recently in conjunction with the Elwha River Ecosystem Restoration Project (Schalk et al. 1995) included survey of approximately 500 acres of park land in a lowland setting. This project was completed in cooperation with the park service and Lower Elwha S'Klallam tribal members and their representatives.

The previous archeological investigations have been most intensively focused on a few late prehistoric (<2500 years old) coastal middens located on the northwestern peninsula. These projects have suggested a direct correspondence between the subsistence systems of the historic period and those of recent prehistory but the time depth of these fully maritime adaptations is less clear. Large portions of this region's Holocene record remain undocumented by dated archeological remains. This may be partially attributed to the the spatial and temporal biases of previous work but probably also the number of undated assemblages as well. Outside of the shellmiddens which seem to largely a late prehistoric site type, most sites have yielded little that can be dated with radiocarbon, tephra, or other means. The surveys of interior portions of OLYM that were initiated in the early 1980s have greatly expanded the information on earlier portions of the record, especially subalpine land use, but opportunities for dating deposits by means other than artifact typology are rare. Specific artifact forms and lithic technology of a number of assemblages that have been described from high country and foothill sites suggest a human presence that may span much of the early and middle Holocene. Until these sampling and dating problems are overcome, it will not be possible to determine whether the archeological sequence is really as discontinuous as it presently appears.

One of the greatest methodological challenges to archeological survey in the park is the general lack of ground visibility. Because of this, appropriate archeological field methods vary with physiographic setting. The park has adopted the "controlled wander" method of pedestrian survey. Controlled wanders are survey transects that are non-random and allow a surveyor to exploit all mineral soil exposures (i.e. rodent burrows, tree throws, or stream cutbanks) instead of being bound to a compass bearing, for example. In the subalpine zone of the park, controlled wanders have been very successful. While ground visibility is highly variable, there are enough natural and cultural "sediment windows" to be able to locate sites. Accurately defining site extent by surface inspection remains problematical, and because of the fragile nature of the vegetation, extensive ground clearing is not feasible in most cases.

Archeological survey in much of the lower elevations presents a similar but more complex set of difficulties. Ground visibility across much of the park below the 4,000 foot level is extremely low. Dense forest cover and a thick understory, severely limits the utility of standard pedestrian survey techniques. Several approaches have been used to overcome this difficult situation. For most of the small-scale surveys the standard technique involves an initial pedestrian survey (controlled wanders) to assess the project area. This assessment includes an evaluation of the ground visibility and, more importantly, the topographical expression of the area. Questions include, does the project area lie on an older(ancient?), stable landform (late Pleistocene terrace) or on a more recent or less stable landform (floodplain)? Is it near a water source? Is there a good southern exposure? With this initial assessment completed a number of screened shovel probes are then excavated in areas thought to have a high likelihood of containing archeological materials. In cases where historic remains are anticipated, a metal detector is used to sweep the area. If the survey area is large landform information is recorded on a simple form and then different landforms identified within the survey area are prioritized as to their

archeological potential. This is again followed by excavation of screened shovel probes across the landforms selected for further subsurface survey.

A cultural resource inventory covering 100 percent of Olympic National Park is not necessary, due in large part to highly variable archeological potential. Vast areas of the park, such as glacier covered peaks and steep valley sides have little or no potential for containing archeological materials. In direct contrast are areas with much higher archeological potential, including large areas along the coastal strip, low gradient subalpine and alpine locations, and late Pleistocene- early Holocene fluvial and lacustrine terraces. By combining this type of landform information with data from the park's archeological overview and assessment and data entered into the park's GIS the enormous tracts of unsurveyed land can be stratified into units that optimize logistics and the potential for success.

San Juan Island National Historic Park

San Juan Island National Historic Park is located in the San Juan Archipelago, a group of islands at the north end of Puget Sound in Washington State. The park can be reached by ferry and automobile from the mainland. The park consists of two separate units, British Camp at the north end of the island, and American Camp at the south.

Conditions for survey are generally quite good. Elevation at British Camp ranges from sea level to 600 ft amsl, with a vegetation cover of mostly open/transitional forest to dry coniferous forest, and some barren rock outcrops. Maximum elevation at American Camp is only 200 ft amsl, and consists of mostly flat to rolling, open grasslands, with some dry, open coniferous forest, coastal marshes, and sand dunes. Park areas are small, and are easily accessed by vehicle and on foot.

The park area was inhabited at the time of European contact by several groups who spoke dialects of the Coast Salish language family. The earliest firmly-dated archeological deposits are from the Marpole period (ca. 2,500-1,500 BP), although one site at American Camp yielded artifacts whose stylistic attributes indicate an occupation possibly as old as 5,000 BP (Stein 1994) or older (Mitchell 1971:60). Prehistoric archeology resources in the park consist primarily of shell-bearing sites ("shell middens"). In addition, the park has a substantial historical component which includes a Hudson's Bay Company provisioning station, 19th century American frontier settlements, and two military posts that are the park's *raison d'etre*.

The extent of previous reconnaissance coverage is unknown, nor was important information recorded regarding survey methods, personnel, or number of acres surveyed (Wessen 1988). At least four excavation projects were undertaken in the park, two of which occurred before the unit joined the National Park System. The two earlier excavations were conducted by the University of Washington in the 1950s, and focused on prehistoric shell-bearing sites at both British and American Camps. Extensive historic archeological investigations were undertaken by the University of Idaho in the 1970s at both British and American Camps (Sprague 1982). Another excavation was carried out by the University of Washington in the 1980s at British Camp, focusing on a prehistoric shell-bearing site and addressing a research question pertaining to site formation processes (Stein 1992). NPS staff have monitored ground-disturbing projects at least once.

Although the park is probably one of the most intensively studied in terms of archeology, much of the work has not resulted in basic information necessary for effective management of cultural resources. Basic information about what areas have been surveyed, survey techniques, and site boundaries does not exist. Because of its small size and the presence of known large, significant prehistoric and historic archeology remains, complete 100% pedestrian survey of the park would be feasible and beneficial. Some areas would benefit from other discovery techniques, such as shovel probing, especially where vegetation cover is dense. Creating a dynamic base map using GIS technology would make the information much more accessible for management decision-making.

Ebey's Landing National Historical Reserve

Ebey's landing is located on central Whidbey Island in northern Puget Sound, Washington. Seattle is twenty-seven miles south of Whidbey and the Canadian border is fifty miles north. The climate is uniform and temparate with moderate wet and dry seasons. Two mountain ranges moderate the conditions on the San Juan Islands. To the east of the Sound, the Cascade Range deflects continental winds. Roughly one hundred miles to the west is Washington's Pacific Coast and the Olympic mountains. Despite the mountain barrier to the west, Whidbey Island still receives abundant, if gentler, winter precipitation, which occasionally turns to snow. The northern half of Whidbey Island is in the Olympic rainshadow, and averages less than 20 inches annually, while the southern half of the island receives 30 inches. The only streams are in the south, and these are small and intermittent. Water is limited, particularly in the north (McKinley:1993).

Prairies cover approximately five percent of Whidbey Island, and provide some of the richest farmland in the state. Portions of the island were once heavily forested with gigantic Douglas fir, western hemlock and red cedar, the island is still fifty-eight percent forest, although little or no old growth remains. The southern portion of Whidbey Island is hilly with the highest plateaus on the island. The north is mostly prairie, coastal peat bog, and forested lowland. Garry oak grows near Oak Harbor, while red alder, maple, ash, alder, and willow grow in wet areas and at shoreline. Other common trees and shrubs on the island include rhododendron (confined largely to a small area east of Coupeville), salal, cascara, madrona, Oregon grape, black berries, huckleberries, snowberries, brackenfern (in open areas) and swordfern (in shady places). Nettles grow on disturbed sites; sedges cattails, skunk cabbage, sphagnum moss and other species are common in fresh water bogs. Wolves and bears once lived on the Island. It is still home to at least 38 species of mammals, including weasels, red-tailed foxes, raccoons, and black-tailed deer. Migrating waterfowl use the shoreline and wetlands for stopovers and for nesting and breeding" (McKinley:1993). The reserve low relief (< 500") but includes an eight mile coastline, prairies, rolling hills, woodlands, coves, and the historic town of Coupeville.

Klondike-Seattle National Monument

Thousands of miners were provisioned and departed from Seattle on their way to the Yukon during the Klondike gold rush of 1898. The Kondike-Seattle National Monument interprets this historical legacy. This unit has no land holding and, therefore, requires no further treatment relative to cultural resource survey planning.

Lower Columbia Valley

Physiographically this province of the Northwest can be defined as that portion of the Columbia River's basin that lies west of the Cascade Range. The Willamette Valley and a part of the Puget Trough lying south of the Chehalis River Valley are included in this area. Although characterized by milder temperatures and more precipitation than areas east of the Cascades, significant precipitation gradients are discernible within the Lower Columbia Valley. The most pronounced gradient runs east and west from the hills and low mountains of the Coastal Range which may receive average annual precipitation in excess of 300 cm (118 in.), to the inland valleys to the east which average less than cm. 100 (39 in.). Astoria (Fort Clatsop) represents the wet end of this gradient while Vancouver (Fort Vancouver) lies near the dry end. A less pronounced north-south gradient of declining precipitation is apparent between the southern Puget Lowlands (e.g., Cowlitz Valley) and the Willamette Valley.

The coastal margin vegetation of Oregon and Washington is classified as *Picea sitchensis* Zone, a coniferous forest community dominated by Sitka spruce and western hemlock (Franklin and Dyrness 1973). The coastal range, Puget Trough, and the western slopes of the Cascade Range are included in the *Tsuga heterophylla* Zone (Franklin and Dyrness 1973). Although hemlock dominates climax vegetation stands of this zone, Douglas fir dominates in extensive seral stands. Although the seral status of this zone is primarily the result of logging today, the use of fire by native peoples to maintain early successional stages or "prairies" is well documented for the Puget Trough and Willamette Valley (Habeck 1961; Norton 1979).

The Columbia River, by cutting through the Cascade and Coastal ranges, provides a unique transportation corridor connecting the Pacific Northwest's coast and interior. The value of this corridor to humans for trade and for travel cannot be underestimated but, equally important, the river was a travel route for anadromous fish runs that migrated to spawning habitats throughout large areas of Oregon, Washington, Idaho, and British Columbia. Although access to marine resources is limited in this region, the productivity and diversity of anadromous fish (salmon, steelhead, sturgeon, smelt) was unsurpassed in the Northwest. Owing to its size and habitat diversity, runs were available in the Columbia or its tributaries during much of the year.

Productivity of its plant and mammal resources was also high compared to much of the Northwest Coast owing to the amount of early successional vegetation maintained on prairies and the seasonal inundation of the Columbia's floodplain. Vegetal resources of importance for humans included wapato, camas, hazel nut, bracken fern, and berries. Elk and deer populations also benefited from the extent of seral vegetation and carrying capacity for these species was probably higher than in the more mesic areas of the Coast to the north.

Fort Vancouver National Historic Site

Fort Vancouver National Historic Site is located on the Columbia River northern flood plain in Vancouver, Washington, roughly 100 miles upstream from the mouth of the river. Fort Vancouver was authorized as a National Monument to preserve, according to the Senate report, "the site of the original Hudson's Bay stockade and sufficient surrounding land...". In 1961, Congress redesignated Fort Vancouver the monument a National Historic Site and had it listed on the National Register of Historic

Sites (Park Index:1993 and Thomas:1992).

Environmental characteristics of the area of strategic importance to siting of the fort were proximity to the Columbia, the main travel route between the coast and the interior as well as proximity to the mouth of the Willamette River, portal to the Willamette Valley. The local availability of prairies and deep alluvial soils that could be used as pasture or placed under cultivation without the necessity of clearing forest were other important features of the location that were factors in the establishment of the fort at this location.

Numerous and extensive archeological excavations have been undertaken at the fort over the past 40 years. Investigations here have focused on reconstruction of various architectural elements, supplementation of the historical record, and public interpretation.

Fort Clatsop National Monument

Fort Clatsop National Monument is located near the mouth of the Columbia River a few miles south of Astoria, Oregon. The Lewis and Clark expedition wintered at this location and the monument commemorates the western terminus of the expedition.

Although the original fort is believed to be within the 125 acres of the park, exploratory excavations have not definitively located its remains (Karsmizki 1995).

Cascade Mountains

The Cascade Range extends for over 700 miles from Mt. Giribaldi in southern British Columbia to Mt. Lassen in northern California. The range may be divided north to south into two major physiographic provinces. The broad northern province (or *North Cascades*) extends from Mt. Giribaldi south, across the Fraser River, to Snoqualmie Pass in west-central Washington. The more elongate, narrower *South Cascades* province extends from the pass south, across the Columbia River, ultimately terminating at California's Lassen Peak (see Harris 1988 and Whitney 1983:15-30; cf., Burtchard 1990:33-36). Park units within the Cascade Range include North Cascades National Park Service Complex and Mount Rainier National Park in Washington, and Crater Lake National Park in Oregon.

Because of their latitude and position relative to Pacific air masses, the Cascades share general environmental qualities. Perhaps foremost among these is their combined impact on regional climate and environmental patterns; an effect that has held, to varying degrees, at least since Pliocene vulcanism built the high Cascade peaks. Because they are the first high mountains to intercept Pacific westerlies, the Cascades maintain a relatively mild, seasonally wet maritime climate along the foothills and western slopes, and induce drier climatic regimes inland to the east. Dense hemlock and fir forests carpet the western and upper portions of the eastern slopes. With increasing elevation, this northwest maritime forest gives way to subalpine parkland, alpine tundra, and, on the highest peaks, to glacial snowpack and rubble. Downslope to the east, maritime fir forests grade to more xeric interior pine stands and ultimately to the shrub steppe of the Columbia Plateau and high Great Basin.

Because of its tendency toward uniform, high maturity stands, the expansive west slope maritime forest limits availability of edible non-woody forage capable of sustaining terrestrial animals and game birds (see Burtchard and Keeler 1991:33). Edible biomass, however, is greater in patchy to open Cascade habitats. Consequently, in the Cascades, the highest seasonal availability of edible plants, terrestrial mammals and birds tends to be found in upper elevation parkland and tundra habitats, and in patchy interior pine forests. Laced through this general pattern are numerous salmon rivers and tributaries; many of which (principally at lower elevations) are capable of sustaining substantial human use.

Substantial differences exist between the North and South Cascade physiographic provinces. The *North Cascades* is a massive montane province composed largely of old metamorphic and sedimentary rock rafted ashore over 50 million years ago. In origin, these mountains are more closely related to British Columbia's Coast Mountains and to Washington's Olympics than to the Cascades further south. The North Cascades differ in physical character. The province is a substantially broader massif composed of rugged high elevation peaks with deeply incised valleys. Overall, these mountains are higher than the South Cascades. The North Cascades extend from sea level to a relatively large number of adjacent summits exceeding 9000 feet in elevation. Due to its elevation, breadth and proximity to moist Pacific storms, the province supports the largest number of active glaciers in the lower forty-eight states. Situated in its approximate center, North Cascades National Park models much of the province's physiographic and environmental variability.

Complex bedrock geology and breadth of the North Cascades strongly influence regional climate and the structure of exploitable resources. Associated with the geological structure is a wide variety of rock types and exposures, a number of which are suitable for lithic tool manufacture. Characteristic of the Cascades generally, forest cover is dictated by exposure and elevation. Maritime forests blanket the western slopes from sea level to an upper timberline at about 5500 ft. East of the range's crest is a lower timberline at about 1000 ft and an upper timberline at 6500 ft. The lower timberline is controlled by low precipitation while the upper timberline is controlled by deep snow pack that persists into mid-summer. Extensive snowpack shortens the effective growing season and produces extensive patchy subalpine forest and alpine tundra. Perhaps to a greater extent than the in the South Cascades, presence of expansive open habitat supports relatively abundant and varied floral and faunal resources. As in the south, rivers and tributary systems provide entry for anadromous fish. Combined, available resources were sufficient for seasonal use by local populations that adjusted exploitive patterns and logistics to the North Cascades' short growing season, rugged terrain, massive breadth, and upper elevation climatic instability.

The *South Cascades* province is a generally narrower band of old, highly weathered volcanic mountains, tilted and partially overlain by high, spatially isolated volcanic peaks along its eastern axis (e.g., Rainier, Adams, Hood, Jefferson, McLoughlin, Shasta and Lassen among others). Parks representing the South Cascades province are Mt. Rainier to the north and Crater Lake in southern Oregon.

Except for the high peaks along its eastern flank, the South Cascades province is characterized by lower, more weathered mountains than the northern province. Few of these lower, western mountains rise above timberline. In a mature state, they tend toward the general northwest maritime forest pattern throughout; grading to interior pine forests on the east. The high Cascade peaks, of course, interrupt the pattern. A number of these mountains are over 10,000 feet high, with the highest peak--Mt. Rainier--

exceeding 14,000 feet. Like the North Cascades, the high South Cascade peaks are ringed by subalpine and alpine zones that support a variety of floral and faunal resources. As a group, the South Cascades also are associated with complex drainage systems, many of which support anadromous fish. Unlike the north, however, parkland and tundra zones are seldom interconnected, but tend to occur as large, independent patches within the more uniform forest cover of the lower mountain structure.[1]

Clearly, both the South and North Cascades offer a range of similar economic opportunities and pose roughly comparable constraints to prehistoric populations. Both offer seasonally available food, fiber, and lithic resources of utility to groups resident in the region. Severe weather effectively precludes overwinter residence in both provinces, and montane landscapes pose varying degrees of transportation difficulty. Because of their narrower breadth, and gentler physiographic and environmental structure, however, the South Cascades are likely to have placed somewhat different constraints on prehistoric land-use patterns. With the exception of the northernmost extreme around Mt. Rainier, the South Cascades pose less severe impediments to seasonal use by lowland based populations. The transportation barrier and distances are less imposing; and, with the exception of the high Cascade peaks, climate is more predictable, affording longer warm season use overall. These effects are counterbalanced to an unknown extent by the lower acreage and patchier character of the most productive subalpine and alpine resources which may have focused usage on fewer resource-rich places.

In sum, the Cascade Mountains may be viewed as a single elongated montane band sharing generally similar environmental characteristics by virtue of its roughly comparable elevation range, latitude and position relative to moist Pacific westerlies. Physiographic variation between the North and South Cascade provinces, however, imposes environmental and resource variation sufficient to have induced corresponding variation in past human land-use practices.

North Cascades National Park Complex (NOCA)

This complex of three park units (North Cascades National Park, Ross Lake National Recreation Area, and Lake Chelan National Recreation Area) encompasses the most rugged and untracked portion of the Cascade Range. The lowest physiographic area of the complex is characterized by broad, glacially scoured and filled U-shaped valleys. On the west slopes, these support dense lowland coniferous forests dominated by hemlock and Douglas-fir; on the east slopes these support open communities of ponderosa pine and Douglas-fir. With increasing elevation the mountainsides support a variety of more mesic forest communities. The high elevation landscapes are characterized by complex mosaic of alpine tundra, cirque lakes, moraine systems, glaciers, glacial aretes and horns, and subalpine meadows. The complex bedrock geology of the North Cascades offered a wide variety of rock types that were exploited for the manufacture of tools.

The hunting-gathering-fishing economies of the Native groups exploited the spectrum of diverse resources adapted to these temperature and precipitation gradients. Ungulates and other mammals, and anadromous fish, particularly salmon, provided staple subsistence foods. Trees, berries, roots, and other

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[1]Perhaps because of these characteristics, there presently is no unequivocal evidence for mountain goats or sheep south of the Columbia River.

plant products provided building and utilitarian materials, foods, and medicines. The complex bedrock geology of the North Cascades offered a wide variety of rock types that were exploited for the manufacture of tools.

Beginning in the historic period, the Euroamerican perspective maintained that the North Cascades was an unexplored "wilderness", and that it was for the most part unvisited by coastal and interior Native groups except to expedite trade and travel across the main passes and the few rivers that breach the range. Until the 1980s, few archeological investigations have been conducted in the range, particularly in high elevation or interior sections. Since this time however, archeological fieldwork in these landscapes has revealed evidence of intensive use of lithic, faunal, and floral resources for over eight millennia. There is also evidence of spiritual and ceremonial uses of the mountains. As a consequence, there is a growing awareness among archeologists, anthropologists, and Native people of the importance of the Cascade Range for understanding prehistoric and historic Native settlement and subsistence practices. Park units within the Cascade Range include North Cascades National Park Service Complex and Mount Rainier National Park in Washington, and Crater Lake National Park in Oregon.

The first exploration of the North Cascades by non-Native people began in the early 1800s by fur trappers. Exploration for precious metals began in earnest after the 1850s, and the onset of non-Native settlement began in earnest in the 1880s. The more rugged and scenic sections of the North Cascades resisted wholesale development and resource-consumptive activities, and were never penetrated by roads. Today these sections consist of large blocks of protected areas managed as designated "wilderness" by the National Park Service and the U.S. Forest Service.

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Archeological investigations in the North Cascades only began about twenty years ago, and there is insufficient excavation data to build a cultural chronology. About 2.5% of NOCA has been surveyed for archeological sites. Most surveys have focused on developed areas and lower elevation zones sustaining on-going disturbances. These include the single highway corridor traversing the park, four reservoirs, numerous campgrounds and trails, administrative facilities, and other similar areas. Utilizing the park's archeological overview and predictive land-use model (Mierendorf 1986), more limited surveys have been conducted in other zones of the park, including steep slopes and subalpine ridgelines. Observed site densities range from widely from 0 to 32 sites/km^2, with the average density between 3 and 5 sites/km^2. More than any other factor, the differences in observed site densities is controlled by the differential visibility of mineral soil, which is in turn a function of vegetative groundcover. The visibility of rockshelters and archeological remains observable on the ground surface are influenced by access which is controlled by degree of slope and forest community type. The cumulative effect of these conditions is to make the North Cascades a difficult and challenging terrain in which to conduct

systematic archeological inventory surveys.

Generally, the prehistory of the North Cascades suggests a shift in Native hunter-gatherer economies between the time of initial occupation in the early Holocene (sometime before 8000 years ago) and the onset of the historic period, which began in the last century. In the early periods, highly mobile bands of foragers subsisted on a broad-spectrum of resources. By the late prehistoric period, more sedentary bands of foragers subsisted on a narrower range of staple resources and resided in permanent settlements. One objective of the archeological program at NOCA is the resolution of the various transformations in settlement and subsistence experienced by prehistoric inhabitants over the last 8000 or so years.

The earliest well-established occupation of the North Cascades, 7600 years ago, is represented by a radiocarbon-dated component from an extensive (>15 acres) chert quarry in the Ross Lake National Recreation Area (Mierendorf 1993a). Time-sensitive projectile point forms and radiocarbon dates indicate intensive use of interior valleys in the middle prehistoric period, between about 8000 and 4000 years ago. Projectile point styles suggest a major Old Cordilleran occupation in the park during this period; however, the wide diversity of styles also suggests that groups from areas adjacent to both sides of the mountains traveled through the interior and utilized the local resources. Based on the current sample of radiocarbon dated assemblages, the most intensive periods of occupation of the mountains were 2000-1000 BP and 600-200 BP. Use of the bow and arrow began about 2000 years ago. Other well-developed technologies in the late prehistoric time period include the manufacture and use of microblades of chert and quartz crystal, decorative stone carving on locally procured soapstone (talc), mountain goat procurement and use, the procurement of local sources of obsidian, and participation in regional exchange systems, particularly those involved in the acquisition of obsidian from California an Oregon sources. Although permanent settlements are described historically in the lowest elevation segments of the major river valleys, test excavated components to date have uncovered seasonal base camps and food and resource processing features and locations. In the last 2000 years at least, extensive use was made of the subalpine zones of the North Cascades.

The transition in Native land-use from the late prehistoric to the historic period is one of the least understood cultural events in the North Cascades. At the time of historic contact, tribes speaking both Coast Salish and Interior Salish languages inhabited the North Cascades. The former include various bands of Skagit, Sauk-Suiattle, Nooksack, and Upriver Halkomelem; and the latter include bands of Lower Thompson, Chelan, Methow, and Okanogan (Smith 1988, Suttles 1990). Although today's elders retain an oral tradition of the use of the mountainous interior, most historically documented villages were located outside of today's park boundaries and few Native people were encountered in the interior by non-Native explorers. It appears that decimation of Indian populations from historically introduced diseases resulted in drastic shifts in Native American land uses, including abandonment of the montane portion of the seasonal round, aggregation of surviving populations into fewer villages, and a downriver shift in the selection of permanent villages. Regardless of the causes, there are likely to be historic archeological sites reflecting such changes in Native settlement and subsistence. There are also likely to be important historic archeological sites reflecting non-Native land-use patterns. Early historic fur trapping by the Hudson's Bay Company is reported in the park complex but is virtually undocumented in the historic record. Exploring and survey parties also may have left material remains of their presence. An unknown number of historic archeological mining sites are scattered throughout the park complex,

reflecting the attempts (usually failed) to extract ores between the 1870s and the modern era. Finally, a few historic homesteads and settlements dating from 1890 and thereafter may contain significant archeological remains.

Because a 100% survey of the park is not attainable, a predictive model has been used to stratify and prioritize the park landscape for survey purposes. The park's archeological overview and assessment (Mierendorf 1986) includes a quantitative predictive model employing archeological site densities. As designed, the model divides the entire park landscape into six prehistoric land-use zones and it recognizes that all of these zones are likely to contain archeological resources. However, three of the zones are predicted to have relatively high site densities. These zones correspond to landform categories as follows: zone 2 is flood plain; zone 3 is comprised of abandoned river and glacial terraces, alluvial fans, and bedrock benches between the flood plain and steep slopes; zone 5 is comprised of ridgeline, meadow, glacial lake basin, alps slope, and other landform categories near upper timberline. The proportion of park lands within zones 2, 3, and 5 is estimated to be 30-40%

Mount Rainier National Park

Mt. Rainier National Park is situated at the northern extreme of the South Cascades physiographic province as described above. At 14, 410 feet, Mt. Rainier is the single highest mountain in the Cascade range and the fifth largest mountain in North America. It is surrounded by a relatively broad massif of lesser, though locally precipitous, mountains most in the range of 6-7000 feet in elevation. Because the moist maritime climate and exceptionally great high elevation land mass, Mt. Rainier supports the single largest glacier system in the 48 contingent ?? states. These glaciers are the source of several major Northwest rivers--the Nisqually, Mowich/Puyallup, Carbon and White Rivers ultimately draining into the Puget Sound; and the Ohanapecosh/Cowlitz system emptying into the Columbia River at Longview north of Portland (Harris 1988:231).

The Park itself forms an irregular square, 235,612-acre box around the base of the mountain and the northern edge of the Tatoosh Range on Rainier's southern flank. Environmental characteristics change with elevation, relative moisture (e.g., lee versus windward sites of the mountain), and landform. For present purposes, it is reasonable to divide the Park into five environmental zones, each with characteristic floral and faunal associations and each with somewhat different implications for human use --1) perpetual snowfields, glaciers and glacial scree slopes; 2) alpine tundra; 3) subalpine parkland; 4) mid-elevation maritime forests; and 5) major rivers and associated floodplains.

Perpetual snowfields with standing glaciers and associated barren rubble fields range from Mt. Rainier's summit down to the modern firnline at about 7500 feet. Individual glacial tongues and young recessional moraines extend further downslope in major glacial valleys to circa 5500 feet. The largest of these -- Carbon, Winthrop, Emmons, Ingraham, Nisqually, Tahoma, and Mowich Glaciers-- extend below 5000 feet. Above the firnline, vegetation is limited to mosses and lichens with very few grasses and flowering plants (Brockman 1947:6). A few marmots, pika, mice, and shrews have been observed as high as 8000 to 10,000 feet (Schamberger n.d.), and mountain goats use upper elevation rock fields and cleavers for travel and predator escape. For the most part, however, Mt. Rainier's glacial zone is largely devoid of economically useful plant and animal life. Given logistical difficulty, relatively high risk and low return, human use of high elevation Mt. Rainier was probably very limited prior to 20th century recreational

climbing, though short-term use for hunting or spiritual purposes should not be discounted altogether.

Alpine tundra is sandwiched between the firnline and timberline (ca. 7500 and 6500 ft). While found to a limited extent on all sides of the mountain, its greatest expression is found on the drier northeastern slope at places like Goat Island Mtn., Burroughs Mtn. and the terrain around Frozen Lake and Mt. Fremont. Terrain is open and treeless, with tundra grasses and forbes growing in moderate density over variously exposed volcanic lapili and shallow lithosols. The growing season is short with substantial diurnal temperature variation. Mountain goats, pika, marmots and other smaller rodents are common alpine tundra grazers during the brief warm season from July through September. While extirpated from the Park by the late 1800s or earlier, elk are also likely to have been warm-season grazers in the alpine tundra zone. The onset of winter weather varies from year to year. Generally, however, by early to mid-October, pika and marmots have moved to their dens and deer and elk have begun their migration to lower elevation forage. Goats move downslope to somewhat lower wintering areas such as Tum Tum Peak on Mt. Rainier's southwest slope (Schamberger n.d.:75).

It is likely that elk, goats, marmots, and possibly alpine lilies provided sufficiently productive food sources to attract humans to the alpine tundra zone throughout much of the Holocene (though, as with all zones, the actual elevation and location tundra habitat would have shifted with variable climatic circumstances). Local exposures of cryptocrystalline silicates (principally jasper and chalcedony) may have provided lithic procurement incentive, or at least eased the need to transport tool kits to the mountain.

Subalpine parkland ranges from approximately 6500 to 5000 feet, with vegetation regimes essentially transitional between alpine tundra above and maritime forests below. Typically the zone is characterized by open grassy to shrubby meadows with variably dense patches of principally subalpine fir and mountain hemlock. Meadows tend to be larger near timberline and on the drier leeward side of Mt. Rainier. Grand Park, a large mesa-like landform at about 5500 feet northeast of the mountain, for example, has extensive open meadows maintained less by elevation than by marginal moisture and repeated fires. Near the bottom of the zone and in wetter areas, forest patches increase in size and composition more closely mimicking closed forest associations --Pacific silver fir, western hemlock, Alaska yellow cedar, noble fir and western white pine.

Subalpine parkland is perhaps the most productive of Mt. Rainier's environmental zones. The mixed floral regime supports nearly the complete faunal range found in the tundra above and forest below. In addition to fauna found in the tundra (with the exception of goats????), large terrestrial mammals include deer, bear, mountain lion, lynx, and coyote. Equally important is increased presence of huckleberries of several varieties. Huckleberries not only enhance forage for deer, bear and game birds (e.g., grouse and ptarmigan), but, in highly productive areas, provide a concentrated resource potentially suitable for human exploitation as well.

Northwest maritime forest associations dominate slopes below 5000 feet and cover the major river valleys as described below. As elsewhere in the maritime Northwest, the forest tends to achieve closed canopy with openings limited to saturated headwater meadows and stream courses. Forests grade from silver fir-yellow cedar at upper elevations to western hemlock-Douglas fir on the lower slopes and in the river valleys. Edible forage is limited primarily to huckleberries and other shrubs, grasses and forbes

in meadows and disturbed areas. Reflecting limited forage availability, forest mammals are constrained to lower density populations of deer and small animals. Forest slope streams and mid to high elevation lakes do not contain substantial native fish populations and anadromous fish do not penetrate into mid-elevation stream systems.

Major river valleys and floodplains lie below about 3500 feet. Plant and animal associations are similar to those of the lower elevation forest. Principal variation from the pattern is in the form of repeated mud and debris flow hazard and presence of anadromous fish in some of the larger rivers. The largest and best known of the mudflow events is the 5000 year old Osceola flow that inundated the both branches of the White River floodplain almost to Puget Sound. The Electron mudflow circa 500 years ago inundated the Puyallup River valley for a comparable distance. Lesser flows are documented on many of the Park's rivers (see Crandell and Mullineaux 1967 and Scott, Vallance and Pringle 1995). Such events repress forest maturity, temporarily opening the affected floodplains to more productive early succession plant and animal associations.

Debris flows negatively impact fish populations, making prehistoric patterns difficult to reconstruct. Limited salmon and steelhead runs presently are reported in the Carbon River and main fork of the White River within Park boundaries. Unfortunately, not only have the flows muddied prehistoric fishery patterns, they have periodically obscured the river valley archaeological record as well.
In summary, Mt. Rainier National Park displays the range of environmental characteristics and landforms common to the Cascades generally. That is, floral and faunal patterns encompass the full range of northwest maritime forest through alpine tundra environmental zones common to both North and South Cascade provinces. Though physiographically part of the South Cascades, due to its elevation and the breadth of surrounding montane landforms, Mt. Rainier assumes many of the resource characteristics and logistical difficulties for human use common to the North Cascades. The extant archaeological record indicates human use at least through the mid to late Holocene. The full extent of this use, and the character and manner in which resources were extracted have only recently begun to be studied in detail.

Little systematic archeological fieldwork has been conducted in Mount Rainier National Park. Since its establishment in 1899, there has been a general awareness and acknowledgment that Native peoples came to the area around the mountain to gather resources in the park area. The first European-American visitors to Mount Rainier were led by Native American guides, who seemed to know the area well from regular hunting expeditions (Schullery 1987). Individuals from surrounding tribes continued to make regular visits to gather plants and berries and hunt animals, even after the park was established (Turek and Keller 1991). Yet the park never generated much professional interest on the part of professional archeologists in the region, who tended to focus their research on larger residential sites located on Puget Sound and in the Columbia River valley.

Based on the small amount of fieldwork to date, all prehistoric archeological sites recorded in the park generally fall into three categories: small, open-air lithic scatters, rockshelters, and isolated artifacts. Most seem to represent activities related to hunting of land mammals. There are several reports of possible lithic procurement sites in the park, but these have not been recorded in great detail. A number of other site types have been recorded in the Naches ranger district of Wenatchee National Forest, just east of the park (Zweifel and Reid 1991). Features related to processing and storage of foods are likely to occur in the park, and include such things as talus pits and earth ovens. Features associated with

spiritual life, such as cairns and rock art, may also be present. The only two excavated sites in the park, both small rockshelters, appear to be no older than 1,200 BP, based on radiocarbon dates (Bergland 1988; Rice 1965). Yet, several isolated projectile points found in and around the park possess stylistic features which date to earlier time periods in other areas, suggesting the potential at least that older archeological deposits may be found. One site, as yet unexcavated and possibly a seasonally occupied base camp, appears to be older than 2,300 years, based on tephrochronology (Burtchard 1995).

The historical archeological record is not well documented in the park, but includes remains related to development and operation of the park, and to early 20th century mining. These include mining camps, features and associated debris; Depression-era public work camps and associated debris, and small camps and structures associated with park backcountry patrols (Thompson 1981).

From several archeological investigations conducted in the park since the early 1960s, only about 1.5% of the park area has been surveyed using adequate methods of discovery and documentation. In 1963, a group of six archeologists from Washington State University conducted surface reconnaissance of most of the river valleys, hilltops, and some meadows in the park (Daugherty 1964). They found only one site, a rockshelter, and one isolated projectile point. No details are given about their specific survey methods, but a map of areas visited during the survey is provided. The results of this early attempt at survey are unreliable for use in management decisions, because subsequent surveys in the same areas have revealed many new archeological sites. Since then, at least five other surveys have been conducted in the park, three of which can be considered compliance surveys of limited scope (Bohannon 1975a, 1975b; Forrest 1989), and two which can be considered inventory surveys (Bergland 1986; McClure n.d.). Two test excavations have been conducted in the park, one at Fryingpan Rockshelter (45-PI-43) in 1964 (Rice 1965), and another at Berkeley Rockshelter (45-PI-303) (Bergland 1988). In August 1995, a park-based archeology program was initiated. That summer, the largest single inventory survey in the park to date took place, elevating the number of recorded sites from 8 to 22, and bringing to 19 the total number of isolated finds (Burtchard 1995). In addition, five more compliance surveys were conducted (Sullivan 1995a, 1995b, 1995c, 1996a, 1996b). At least two more test excavations are planned for summer of 1996, as well as more inventory and compliance surveys.

Crater Lake National Park

Crater Lake National Park is located in the Cascade Range of southern Oregon. The park itself is one contiguous preserve around Mount Mazama's caldera, now filled by Crater Lake. The park roads tend to be winding and narrow, but lead to the caldera rim and to "The Pinnacles" in the southeastern part of the park. The park is approximately 120 miles (195 km) inland from the coast and receives 175 centimeters (69 inches) of annual precipitation. At higher elevations, snow covers the landscape from October to July.

Since Crater Lake is part of the volcanic Cascade Range, the climate, topography, and ecosystems have shifted during the late Pleistocene and Holocene. Mt. Mazama erupted approximately 6,850 years ago. Prehistoric cultural patterns in the Pacific Northwest and Great Basin are well documented, but prehistoric use of Crater Lake National Park and its vicinity is far less understood. The indigenous people that lived close to the mountain were subjected to the volcanic activity of Mazama and, according

to oral legend, interpreted the eruptions before its collapse as a war between two gods, Llao and Skell. Historically, Shamans forbade most natives to view the lake and no information about the lake was relayed to the pioneers who settled in the area. The deep blue lake was kept secret for nearly fifty years before prospectors, who were searching for the Lost Cabin Gold Mine, came upon Crater Lake in 1853.

Oregon Caves National Monument

Oregon Caves National Monument is located 50 miles south from Grants Pass, Oregon and neighbors Siskiyou National Forest. The "Marble Halls of Oregon" were discovered by Elijah Davidson in 1874 when he followed his hunting dog into the cave entrance. The cave was visited infrequently by explorers even after it was "opened" by developers in the late 1890's. The area was too remote for the average traveller to make the trek. It wasn't until a party including "Poet of the Sierra", Joaquin Miller returned from visiting and wrote about the splendors of "The Marble Halls of Oregon" that the cave received significant publicity to draw the attention of federal officials. President Taft in 1909 proclaimed a tract of 480 acres as Oregon Caves National Monument.

Only the one cave has been discovered at the monument and it is still the center of attention. The dramatic marble halls lead from room to room and display formations of dripstone, flowstone, soda straw stalactites, banded draperies, marble columns and other natural sculptures. The cave is located within a natural flora transition from the mixed forest of broadleaf and conifer trees at the lower elevations and the all-conifer forest at the higher elevations.

Columbia Plateau

Coulee Dam Recreation Area

Lake Roosevelt, created by the impoundment of the Columbia River behind Grand Coulee, inundates 130 miles of the Columbia River valley, 29 miles of the lower Spokane River Valley, and the lower reaches of a number of smaller tributaries. The reservoir is as much as 300 ft deep, with a maximum surface elevation of 1290'. Except for reservoir lands adjacent to tribal reservations, the Park administers all those lands purchased by the U.S. Bureau of Reclamation (USBR) for Lake Roosevelt, generally land below the 1310' elevation. Thus, the Park-administered lands include a narrow strip of non-reservation land between the 1290' and 1310' elevations and approximately 2/3 of the land inundated by the reservoir.

The Reservoir flows through 100 miles of the Okanagan Highlands, a forested mountainous region with peaks averaging between 4000 and 5000 ft in elevation. The upper reservoir is in the ponderosa pine zone which grades into a ponderosa pine/steppe transition zone around the confluence of the Spokane and Columbia Rivers. The lower third of the reservoir is located along the northern edge of the Columbia Basin province, characterized by extensive Miocene basalt flows and sagebrush steppe. Sediments in the Columbia and Spokane Valleys consist of glacial till and outwash deposits, glaciolacustrine deposits, and flood sediments deposited by Late Wisconsin Missoula Floods. Various

lake levels and erosional cycles during the Pleistocene has resulted in the creation of a series of terraces in the Columbia drainage.

The first professional archaeological investigations in the reservoir began with the Columbia Basin Archaeological Survey (CBAS), which was initiated in response to the imminent inundation of the valley behind Grand Coulee Dam. The CBAS, conducted in 1939 and 1940, recorded 39 sites and tested or excavated 29 of them. Unfortunately, the type of excavations conducted produced little data useful for addressing current research questions on settlement/subsistence adaptations over time or even chronology along the Upper Columbia River. This is not meant as a criticism of the investigators in charge of the survey because a number of factors, the largest being the lack of funds and time, prevented them from addressing those data elements pertinent to research questions of interest today. Still, it is unfortunate for the CBAS had the only opportunity to investigate the sites on the lower river terraces in the downstream half of the reservoir.

Archaeological surveys conducted 1966, 1967, 1970, and 1974 resulted in the recording of 168 sites. The investigators were confined to the upper 40 ft of the reservoir due to the drawdowns, but 10 sites recorded by CBAS were relocated. Eighteen sites were also tested during this period. NPS funded archaeological excavations were conducted almost annually between 1967 and 1978. These investigations became focused on salvage excavations in the Kettle Falls area because of the importance of the Falls during ethnographic times and the fact that stratified, first-terrace sites in the upper reservoir were exposed during the average 40' drawdown. This is not true further downriver where the reservoir is much deeper and the first terraces above the river will never be exposed as long as the dam still stands. Testing and excavations led to the development of a chronology for the Kettle Falls area, a chronology spanning 9000 years of occupation. Other investigators in the Plateau have commented on the seeming lack of accord between the Kettle Falls assemblages and the remainder of the Plateau. Kettle Falls was the second most popular fishing location in the NW and it is probable that the cultural assemblages recovered from fishing locations at the Kettle Falls represent a constellation of cultural elements not seen elsewhere on the Plateau.

Major salvage excavations funded by the USBR ceased in 1978. NPS did fund minor excavations at St. Paul's Mission and at Fort Spokane. A number of compliance-driven surveys were also conducted through the 1980's and 1990's, the largest being the USBR-funded surveys of burial sites and debris removal projects. NPS also funded a number of small surveys related to development projects during this period. In 1991, David Chance tested 45ST201 at the mouth of the Colville River and HRA conducted test excavations at Lion's Island in 1995. With BPA funding, a survey of the entire reservoir was begun in 1995 in order to provide site location and assessment data for the development of a reservoir-wide action plan for cultural resource management on the Lake. This survey employs GPS recording to address the problem of determining actual site locations in the field due to the constantly changing landscape as a result of erosion/deposition cycles of the reservoir. A second emphasis of the survey was an assessment of site condition to document the affects of reservoir erosion or deposition on cultural resources and to determine the likelihood of intact deposits.

The survey ought to be completed in the 1996 drawdown, but further survey and site assessment will need to be conducted should the reservoir ever be drawn down below 1250'. In 1991, the annual drawdown went to 1220 ft, exposing large areas of lower terraces. Such a drawdown would provide the

opportunity to acquire much needed data on location and condition for sites on lower terraces in the reservoir. It would also provide the opportunity to determine whether artifact assemblages differ on these lower terraces.

Whitman Mission National Historic Site

Whitman Mission National Historic Site is located in the southeastern Washington's Palouse Hills about seven miles west of Walla Walla, Washington. A Protestant mission established there in 1836 became one of the major stations along the Oregon Trail. The setting is dominated by the gently rolling loess hills; vegetation is dominated by grasses with scattered trees in moist areas. Although ground visibility is relatively good, the potential for prehistoric sites in this setting is not high.

John Day Fossil Beds National Monument

The John Day Fossil Beds National Monument (JODA) is divided into three administrative units dispersed along Oregon's middle John Day River and its tributaries. While individually variable, these units encompass a variety of canyon lands, slopes, ridges, streamside terraces and other landforms widely characteristic of the region's sage/grassland steppe and juniper parklands. While known for its visually dramatic exposures of colorful fossil-bearing Oligocene and Miocene clays, many of JODA landforms and environmental associations typify lower elevations of the Oregon's central mountain region. This region, while part of the greater Columbia River drainage basin, is dominated by uplifted and eroded volcanic and old sedimentary landforms that contrast with the main body of the Columbia Plateau to the north. Though lying on the dry leeward side of the high South Cascades, the central mountain region is characterized by greater relief, rainfall and environmental variability than either the Plateau to the north, or the high lava plains or Great Basin to the south.

The three Monument units are located on semi-arid, mid-elevation landforms characteristic of the middle reaches of the river system. The largest unit--Sheep Rock with its detached Foree Area and Cathedral Rock-- borders the John Day trunk stream north of Picture Gorge between Dayville and Kimberly, Oregon. Slopes rising sharply east and west of the river expose a variety of landforms, such as the river floodplain, sideslope benches, outwash stream channels, dissected canyons, and rolling uplands. Painted Hills Unit is located near Mitchell, Oregon. It is characterized by highly eroded Oligocene landforms between Bridge and Bear Creeks. The southern margin of the unit rises onto the lower foothills of Sheep Mountain; the eastern margin to lower Sutton Mountain. The smallest unit --Clarno-- is characterized by abrupt ignimbrite outcrops, hills and rolling plains north of Pine Creek on the lower southern flanks of Iron Mountain.

To varying degrees, all three of the major JODA administrative units now support predominantly sage/grassland, grassland or patchy juniper parkland floral associations. Though present in all units, Painted Hills has the single largest expanse of colorful, denuded badlands from which the unit takes its name. Even here, the southern uplands, western and eastern flanks, and riverine floodplains sustain substantial grass and juniper parkland flora and fauna. Surrounding uplands of the Ochoco, Aldrich, Strawberry, Greenhorn, Umatilla and Elkhorn Mountains (with the Wallowas, collectively the *Blue Mountains*) add substantial areas of interior pine and maritime forest to the region's complex

environmental matrix.

It is likely that variations of this complex environmental patchwork dominated the region throughout the Holocene. Concomitant complexity in spatial and temporal resource variation also can be expected to have influenced human economic and residential strategies in a manner visible in the the regional archaeological record. Importantly, presence of substantial upper elevation forest communities affords a suite of summer exploitable resources within relatively easy reach of the low to mid elevation associations found in all Monument units. It is plausible that the Monument's grassland to parkland habitats provided a suite of resources better suited to winter through spring use -- e.g., antelope, deer, possibly elk, biscuit root, bitter root, wild rye, Indian rice grass, and spring salmon in the John Day and its tributary streams. Some JODA units, particularly Clarno, also offer ready access to surface exposed cryptocrystalline silicate lithic material for tool manufacture. Fuel wood and water are available near tributary streams in juniper-parkland vegatative zones.

Because of the relatively high variety and abundance of exploitable food resources, headwater streams in parkland habitat may have been particularly desirable over-winter locations in the central mountain region. Such locations are found in all Monument units. It is plausible, then, that throughout much of the Holocene, terrain encompassed by the John Day Fossil Beds National Monument were used as part of a larger mobile foraging system focusing on upper elevation resources in early summer through fall, with at least moderate-term residence at mid-elevation juniper parkland settings during the winter and spring.

The archaeological record of the interior montane region and John Day Fossil Beds National Monument has only recently begun to be studied in a manner amenable to evaluating such environmentally driven land-use models. Long term human/environmental relationships for the Monument and wider region should become clearer as such research efforts continue.

Nez Perce National Historic Site

Nez Perce National Historical Park is a series of thirty-eight small park units (most of which are owned by other entities) scattered throughout Idaho, Western Montana, Southeastern Washington, and Northeastern Oregon. The headquarters area for the Park is in Spalding, Idaho approximately ten miles east of Lewiston on US 95. The physical environment varies: alpine meadows, dry grasslands, riparian vegetation in deep river-carved canyons.

The park owns six sites that total 1,833.71 acres and has cooperative agreements with other agencies for interpretation at the other 32 sites.

White Bird Battlefield (Idaho): 1,100 acres (+458 acre viewshed)
Located between new and old US highway 95, about 15 miles south of Grangeville, Idaho. White Bird Battlefield is where the first battle of the Nez Perce was fought on June 17, 1877.

Big Hole Battlefield (Montana): 655 acres. Located 10 miles west of Wisdom, Montana on State Route 43. Big Hole Battlefield commemorates the battle between five bands of the Nez Perce and the United

States Army.

Spalding (Idaho): 99 acres. Located 10 miles east of Lewiston, Idaho, on US Highway 95. "The Spalding site, with its rich depositional character, contains features dating from nearly 11,000 years ago to remains of modern occupations." There are seven loci in the Spalding Unit: Lapwai Mission Cemetery, Watson's Store, Spalding Presbyterian Church, Indian Agency Cabin, Gristmill, Sawmill and millrace, Spalding Mission.

Canoe Camp (Idaho): 3 acres. There are archeological features associated with the larger Ahsahka Village that was located on the Clearwater at its junction with its North Fork. Apart from the prehistoric site, the park has put up an interpretive sign that points across the river to where Lewis and Clark were believed to have had their canoe camp.

East Kamiah (Idaho): 40 acres. Two land features, Heart of the Monster and Liver of the Monster, are on park property and are part of the Nez Perce creation story. This area is adjacent to the prehistoric and historic Nez Perce village, Nikesa and the McBeth Presbyterian mission and church.

The other sites that are not owned by the National Park Service are usually overlooks or roadside interpretation signs that explain historic events, land features and campsites of the Nez Perce and historic structures.

Snake River Plain

The Snake River Plain, a vast lava-filled basin flanked by mountains, descends about 4,500 ft from an elevation of 8,000 ft in Yellowstone to its western margin in the vicinity of Hagerman, Idaho. Forests are present at the higher elevations but at about 7,000 ft open into parklands; juniper, pinyon, and mountain mahogany are found from about 6,000 ft down to about 5,000 ft; sagebrush-grassland dominates below 5,000 ft. Although structurally this region is quite similar to the Columbia Plateau in terms of geology, landforms, and soil types, floristically it shares strong similarities with the Great Basin. The presence of pinyon nuts and a wide variety of seed resources are characteristics that lead archeologists to include this area within the northern Great Basin (Butler 1978).

A wide variety of ungulates are indigenous to the region and include deer, antelope, elk, bison, and mountain sheep. Herds of these large animals were most abundant above 5,000 ft. elevation (Swanson 1974:2). In such an arid region, small changes in precipitation in the past would have had strong consequences for plants, herd animals, and humans that exploited both. It is, therefore, not surprising that archeologists have described a correspondence between Holocene climatic shifts and the intensity of human usage of different elevational zones in the region (Swanson 1974).

Two species of anadromous fish use were available in the Snake River and accessible reaches of its tributaries below the impassable Shoshone Falls with a drop of 210 ft are a total barrier to anadromous fish.

The archeological sequence has been divided into three major intervals: Early Big-Game Hunting,

Archaic, and Equestrian (Butler 1978). The first of these is very similar to the Paleo-Indian complexes of the High Plains and includes Clovis, Folson, and Plano assemblages and the same major faunal resources as found east of the continental divide (elephant, bison, horse, camel). The Archaic period, subdivided into Early, Middle, and Late intervals, is largely equivalent to the Archaic of the Great Basin except for the continued importance of big-game hunting focusing on bison and mountain sheep. The Late Archaic, which spans the interval between A.D. 1200 and A.D. 1800, is noteworthy for the introduction of pottery (Butler 1978). From about A.D. 1200 onward, intra-regional variations may have involved varying emphases on salmon fishing, root collecting, and big-game hunting (Plew 1990). The introduction of Spanish horses around 1700 or slightly earlier was particularly important in causing fundamental changes in land use leading up to the ethnographically described cultural systems.

Hagerman Fossil Beds National Monument

Craters of the Moon National Monument

Craters of the Moon National Monument encompasses a landscape that is unique in the West as a huge lava plateau that was created by massive episodic lava flows that were active as recently as 2,000 years ago. Productivity of human food resources in this area is very limited by the youth of this landscape and the slow rate at which vegetation is reestablished. As an environmental setting that is marginal in this respect, human use of this landscape must have required some unusual land use strategies. Various flows occurred between 15,000 and 2,000 years ago and these have been dated during previous geological research. The temporal control on these different dated flows has interesting implications for chronological control over archeological sites that would otherwise be difficult to date.

City of Rocks National Reserve

Unusual rock formations after which the reserve was named consist of two different metamorphized volcanic rocks---the 2.5 billion year old Green river Complex granite and the 25 million year old Alma Pluton quartz.

5. STATUS OF ARCHAEOLOGICAL INVENTORY

This chapter summarizes the status of archeological inventory for each of the parks in the Columbia-Cascades Cluster. Table 4.1 summarizes the status of overviews and resource management plans, previous archeological projects, acres surveyed in each park, total sites recorded, total sites recorded to modern standards, the kinds of site forms completed, base maps, site data bases, collection curation and cataloging, and National Register listings. The following sections summarize these data.

Overviews

Archeological overviews have been completed for 10 park units in the Columbia-Cascades Cluster:CODA, CRMO, CRLA, EBLA, FOCL, FOVA, NOCA, OLYM, SAJH, and WHMI. In addition, overviews have been completed for two localities within NEPE. All of these were completed since 1986. Overviews are in preparation for an additional 3 units:CIRO, JODA, and MORA. Beyond overviews that have been prepared for specific parks, there are also planning documents that provide related information for some parks. The Resource Planning Protection documents commissioned by the Washington Office of Archaeology and Historic Preservation summarize the status of archeological knowledge for several regions of the state of Washington.

Resource Management Plans

Resource management plans have been completed for 12 park units. All but two of these were prepared after 1991.

Previous Archeological Projects

Some archeological projects have been carried out at all of the Columbia-Cascade Cluster park units that have land holdings. Most parks have had surveys and many have also had clearance surveys, testing, and excavation. Other kinds of projects that have been undertaken include site stabilization, burial monitoring review, pictograph documentation, field school exacavations, and projects that combine survey and testing. Table 4.1summarizes the types of projects that have been conducted in the cluster's park units. These data are estimated from reports and records on file at the regional office and from cultural resource specialists in various park units.

These sources indicate that approximately 700 archeological projects have been conducted in the park units. Approximately 56 surveys, 15 testing projects, 22 excavations, 19 reconnaissance surveys, and 584 clearance surveys have been performed since the first park unit was created in this region in 1899.

Acres and Percent of Park Surveyed

Of those park units within the Columbia-Cascades Cluster for which information on area surveyed is available, none have been entirely surveyed. However, surveys of varying intensity have been carried out at some parks since the 1940s and details are typically lacking on the exact nature and

extent of the earlier surveys. Estimates of survey coverage for a number of parks summarized in Table 4.1 and discussed below, therefore, are probably low. Information on areas surveyed is not available for three parks but two of these (FOVA, WHMI) are historical parks with relatively small land holdings that have probably been covered completely at some level of intensity in these previous, less systematic investigations. Types of investigations include reconnaissance, intensive, and clearance surveys; some surveys have been done in conjunction with test excavations and field school excavation projects.

For the parks that have estimates of acreage surveyed, the highest percentage is 57 percent coverage (CIRO). All others have less than 50 percent coverage. Two parks have been surveyed levels between 40 and 49, three between 10 and 20 percent, and six have had less than 5 percent coverage.

Archeological Sites Recorded and Condition of Site Forms

Archeological sites have been recorded in all park units with land holdings in the Columbia-Cascade Cluster. A total of 1,915 known sites has been recorded to date and, of these, approximately 659 (34%) have been recorded to modern standards. Because early surveys tended to focus on identification of the larger prehistoric sites and those with buried deposits, it is likely that many additional sites, especially smaller and less visible sites and many types of historic period resources, will be identified when previously surveyed areas are subject to intensive inventory. Each park unit uses its own site forms and these are subsequently transferred to forms of the respective State Historic Preservation Offices.

Base Maps

Base maps have been completed for five park units and are in preparation for two others. Other maps with related information are available for a number of parks. GIS generated archeological site maps are available for two parks (OLYM, NOCA). Excavation base maps have been completed for some historical park units (e.g., FOVA, FOCL, WIMI). Maps of specific classes of historic sites (e.g., Coast Watch and Forest Service structures) are available for one park (OLYM). An archeological zone map has been completed for three zones in one park unit (NEPE).

Site Data Bases

The status of park data bases is shown in Table 4.1. Data bases of various types have been developed for a few parks. These include site inventories, bibliographies, and lists of structures. Cultural resources information has not yet been entered into the ASMIS data base for any parks in the Columbia-Cascade Cluster.

Artifact Locations and Storage Conditions

Most artifact collections from Columbia-Cascade Cluster park units are curated in facilities located in the individual parks. Thirteen parks curate part or all of the archeological collections that have been recovered from park lands. Collections from three parks (SAJH, NEPE, MORA, EBLA) are currently stored at several non-NPS facilities (e.g., Washington State University, Thomas Burke

TABLE 5 STATUS OF ARCHEOLOGICAL INVENTORY IN COLUMBIA-CASCADES CLUSTER

NPS UNIT	OVERVIEW DATE/RMP DATE	PREVIOUS ARCHEOLOGICAL PROJECTS	ACRES SURVEYED / % PARK SURVEYED	TOTAL SITES RECORDED/ #RECORDED TO MODERN STANDARDS	STATE FORMS/ NPS FORMS	BASE MAPS	SITE DATA BASES: ASMIS/WARC	WHERE ARE ARTIFACTS// CATALOGUED IN ANCS?	NATIONAL REGISTER
City of Rocks NR CIRO	Draft	Surveys: 1 Test excavations: 1	4,000 (57 %) of NPS lands, 0% of priv. inholdings	170	Yes / Unknown	No	No	Nez Perce / No	None
Coulee Dam NRA CODA	Overview 1995 RMP 1984	Testing and Excavation: Kettle Falls 1967, 1971, 1972,1974, 1977, 1978 Survey and testing: 1939-1941, 1966-70, 1980, 1995 Excavations: Fort Colville Fort Spokane Burial review monitor.:1988-94 Project clearance requests: 153	10,000 acres in 1995 40 % of land exposed during annual drawdown; at least 60 % of land in reservoir permanently inundated; Over 30 surveys of varying extent since the 1940s but acreage cannot be estimated.	181 sites 130 recently surveyed	181/130	Arch. Base Map; BOR property acquisition maps 1938; 1":200' topo. maps of entire reservoir.	Cultural sites inventory; List of Classified Structures; CODA Biblio.	Artifacts located at Fort Spokane and at BOR, Grand Coulee; only artifacts at Fort Spokane cataloged in ANCS. Remaining artifacts to be eventually transferred to Colville Confederated Tribes and Spokane Tribe of Indians.	1 historic site, 1 arch. district
Craters of the Moon NM CRMO	Overview 1992	Surveys: 4 Clearance: 4 Test excavations: 1	6,000 (11 %)	50	Yes	No	No	CRMO / Yes	None
Crater Lake NP CRLA	Overview 1994 RMP 1993	Surveys: 8 Clearance Survey: 1 Site Document (rock cairns): 1	1,950 (1 %)	25 / 25	unknown	Crater Lake Archeo-logical Sites; Rock Feature Assemblages	unknown	Crater Lake's Museum / 90% cataloged	5 structures, 1 historical district
Ebey's Landing NHR EBLA	Overview 1988 RMP 1995	Surveys: 4 Clearance surveys: 1 Site testing surveys: 3 Excavations (coastal sites): 9	<364.6 (<2%) ??	49 / unknown	unknown	Landforms of Island County, Distrib. of Survey Coverage in Island Co., Prehist. Arch. Sites in Island County	Base information stored at Wash. OAHP	Burke Museum WA State Parks and Rec. Commission Seattle Central Community College Landowners / unknown	1 historic district
Fort Clatsop NM FOCL	Overview (no date??? RMP 1995	Survey: 1 Test excavations: 1	1.76 (0 .6 %)	1 / 1	unknown	Schumacher's Excavation Base Map	"Computerized data base"	90 % of museum collection was acquired by gift or purchase; 6 items on indefinite loan from Oregon Hist. Society; 75% of collection stored in two locked NPS approved museum cabinets. Cataloging method unknown.	1 site
Fort Vancouver NHS FOVA	Overview 1992 RMP 1993	?????	202.89 / 20%	1 / 1	1/1	Historic Base Map. Archeology Base Map.	Unknown	Visitor Center Collection Vault, loft and cellar of Chief Factor's House, loft of Indian Trade Shop. < 1 % of collection uncataloged.	Entire site

NPS UNIT	OVERVIEW DATE/RMP DATE	PREVIOUS ARCHEOLOGICAL PROJECTS	ACRES SURVEYED / % PARK SURVEYED	TOTAL SITES RECORDED/ #RECORDED TO MODERN STANDARDS	STATE FORMS/ NPS FORMS	BASE MAPS	SITE DATA BASES: ASMIS/WARC	WHERE ARE ARTIFACTS?/ CATALOGUED IN ANCS?	NATIONAL REGISTER
Hagerman Fossil Beds NM HAFO	No overview. RMP 1995.	Archeological surveys: 2	900 (20 %)	24	Yes / Yes	No	None	HAFO museum collection / Yes	None
John Day Fossil Beds JODA	Overview in prep.	General reconnaissance: 1 Surveys: 1 volunteer ?? 2 inventory Historic recon.: 1 (Cant Ranch) Project clearances: 2 Test excavations: 1 Special projects: 1 (Painted Gorge pictograph recording) Field school excav.: 9 seasons	2,700 (19 %)	79/71	81/unkn.	Basemap in preparation Sites and isolated finds fixed by optical compass bearings.	None	Prehistoric collections are catalogued and stored at the JODA headquarters in John Day, Oregon.	1 historic site
Klondike-Seattle NM KLSE		NA	NA	NA	NA	NA	NA		NA
Mount Rainier NP MORA	Overview in prep. RMP 1992 (cultural resources not included)	Inventory surveys: 3 Project clearances: 8 Test excavations: 2	3,620 (1.5 %)	22/unknown	8/22	Basemap in preparation Archaeological sites and isolated finds (GIS)	None	All collections, except for 1964 collection from 45-PI-43, catalogued and housed in the storage facility in Longmire, WA. Collection from 45-PI-43 at the Museum of Anthro. Wash. State Univ., but is being returned to the park. Not yet catalogued in ANCS.	2 districts, >38 sites or structures
Nez Perce NHP NEPE	2 overviews of Canyon Creek Battlefield Area: 1994 2 overviews of Bear's Paw Battlefield: 1994 RMP: 1995	NPS Lands: Surveys: 8 Clearance surveys: 3 Site testing surveys: 6 Excavations: 1 Other lands: Surveys: 8 Site Testing Survey: 1 Mitigation Project: 1 Site Documentation Project: 1 Excavations: 1	NPS Land: 900 (49 %)	???	Unknown / none	Archeological Zone Map: Spalding, White Bird, and East Kamiah	none	Park HQ U of I Blaine County Museum Private Collections	2 districts, 18 sites
North Cascades NP NOCA	Overview 1986 RMP 1993	Inventory surveys: 13 Reconnaissance surveys: 3 Clearance surveys: >20 Test excavations: 9 Monitoring: 3 Site stabilization: 1	17,000 acres (2.5 %)	244/234	220/244	NOCA Archeological Base Map GIS Archeological Site Location Map	Many NOCA data bases for subsets of site total	Marblemount Curation Facility/yes	27 sites, 3 historical districts
Oregon Caves NM ORCA	?????	???? No Data ?????							

NPS UNIT	OVERVIEW DATE/RMP DATE	PREVIOUS ARCHEOLOGICAL PROJECTS	ACRES SURVEYED / % PARK SURVEYED	TOTAL SITES RECORDED/ #RECORDED TO MODERN STANDARDS	STATE FORMS/ NPS FORMS	BASE MAPS	SITE DATA BASES: ASMIS/WARC	WHERE ARE ARTIFACTS?/ CATALOGUED IN ANCS?	NATIONAL REGISTER
Olympic NP OLYM	Overview 1988 RMP 1991	Basemap Study 1984 Arch. Overview 1988 Reconnaissance projs.: 7 Surveys: Elwha River Ecosystem Restoration Project 1994 Lake Ozette Housing Proj. 1995 Project Clearance Requests: 239 Monitoring projects: 2 Excavations: Ozette 1966 - 81 Toleak Point 1959 White Rock Village 1962 - 63	4171 acres (0.4 %)	147 / 147	81 / 66	1983 Basemap study, maps with recorded archeology sites and ethnohistoric sites. (Bergland 1983) <u>GIS Generated Basemaps:</u> Archeological site distributions General Land Office Back Country Historic structures Forest Service Structures Coast Watch Structures	Cultural Site Inventory List of Classified Structures Historic Structures Coast Watch General Land Office Forest Service Structures Parkwide Privy Inventory	Artifacts are located in the park archives. Cataloged in ANCS.	5 districts, 11 sites, 5 guard stations
San Juan NHP SAJH	Overview 1988 RMP 1983	Inventory surveys: 7 Excavations: 7 Monitoring projects: 1	Unknown /Unknown	21/unknown	21/21	Basemap in overview but not adequate for management purposes. Unknown if GIS maps available.	None	Prehistoric collections are being catalogued and stored at the Burke Museum, University of Washington, Seattle. Historic archaeological collections and items collected incidentally by visitors and park employees reside in the collection facility at North Cascades National Park, Marblemount, WA. Most collections are catalogued.	1 site
Whitman Mission NHS WIMI	Overview 1990 RMP 1993	Survey: 1 Test Excavations: 3 Excavations: 3	unknown	1 / 1	unknown	Schumacher's Trench Map	unknown	30,000 artifacts are housed at the Mission / 99% Cataloged	buildings on LCS

Museum, Washington State Parks and Recreation Commission, Seattle Central Community College, University of Idaho, and the Blaine County Museum.

National Register

At least one National Register property is listed for 11 of the 16 Columbia-Cascade Cluster park units that have land holdings. Three parks are listed in their entirety (SAJH, FOVA, and FOCL). National Register properties include 2 archeological sites, 113 historic sites, 4 archeological districts, and 12 historic districts. Many additional sites have been determined eligible but have not yet been listed.

6. REGIONWIDE STRATEGIES FOR ARCHAEOLOGICAL INVENTORY

At a general level, the goals of inventory in the Columbia-Cascade Cluster are the same as for all other parks. For small parks and areas that are to be subjected to impacts of development or other factors, total inventory is typically the desired goal. In the larger parks, however, sampling at some level is most cost effective and can meet the needs of both research and management. Levels of sampling appropriate to individual parks are influenced not only by park size but also by the amount of environmental and cultural diversity represented as well as the extent of natural or human-induced impacts occurring to the archeological resources. Therefore, the levels of sampling suggested for each park in this plan cannot be summarized in any simple rule or equation. They are instead judgments made by different archeologists most familiar individual parks---the levels of survey effort necessary to adequately characterize archeological variability in that park, manage and protect its archeological resources in the face of various impacts, and address specific research questions relating to that park.

Total survey is generally not realistic or attainable for the larger parks. Archaeological potentials tend to be highly variable with some environmental settings (e.g., glacier covered peaks and steep valley sides) having very low probabilities. Predictive models that stratify and prioritize the park landscape for survey purposes provide a framework within which probability samples can be developed.

Scope of Projects

Most archeological inventory in the past has been conducted on a park by park basis. The projects proposed in Section 6 of this report are aimed at meeting the goals of the Systemwide Archeological Inventory Plan for single parks. Nonetheless, SAIP encourages coordination of inventory projects between different parks and between different land managing agencies (Aubrey et al. 1992). Integration of inventory efforts across multiple parks or agencies may be appropriate for thematically related parks or to investigate general research topics that are relevant beyond the boundaries of individual parks. Research design development has not proceeded far enough for a number of park units to make realization of these kinds of coordinated research a possibility. However, Part III of this report sets forth a number of research topics that have relevance over broad geographic areas and implications for numerous different park units within the Columbia-Cascades Cluster. Identification of these research domains is intended tofacilitate more coordination across different parks and between NPS and other managers of neighboring lands in the future.

Survey Coverage and Methods

The Systemwide Archeological Inventory Program states that "regionwide archeological survey plan[s] must establish target levels of survey coverage for the region' park lands (Aubrey et al. 1992:22)."

TABLE 6 ACTUAL AND PROPOSED SURVEY COVERAGE FOR COLUMBIA-CASCADE CLUSTER PARK UNITS

PARK ACREAGE	NUMBER	PARK UNITS	ACTUAL SURVEY COVERAGE	PROPOSED SURVEY COVERAGE
0 acres	1	KLSE	NA	NA
Less than 100	1	WHMI	unknown	No project statements
Between 100 and 1,000 acres	3	FOCL	1.4%	No project statements
		ORCA	unknown	No project statements
		FOVA	96.7%	No project statements
Between 1,000 and 10,000 acres	3	HAFO	21%	82%
		SAJH	unknown	?
		NEPE	42.7%	No project statements
Between 10,000 and 100,000 acres	4	CIRO	28.5%	No project statements
		CRMO	11.%	No project statements
		JODA	19.3%	53%
		EBLA	1.9%	No project statements
Between 100,000 and 1,000,000 acres	5	CRLA	1.1%	No project statements
		MORA	1.5%	44%
		NOCA	2.5%	42%
		OLYM	0.5%	5.8%
		CODA	10%	42%

The levels of proposed survey targeted for each park in the Columbia-Cascade Cluster have been developed to meet the goals of SAIP and vary from park to park depending on size, access, types of archeological resources, cost, and other factors. The actual and proposed levels survey coverage for the region are summarized in Table 5.1. In looking at the variation in levels of coverage, it is clear that the the rationale for levels of effort need to be revisited at a later date.

Several of the parks within the Columbia-Cascades Cluster encompass environmentally diverse lands that have large elevational ranges and marked variations in vegetation, fauna, and geomorphology. These kinds of environmental variations strongly influence the nature and densities of archeological sites likely to occur in different areas within these large parks. Biotic and geomorphological variations within a park that influenced past human activities across different environmental zones also tend to influence the archeological obtrusiveness of those actitivities. Some environmental zones may present particular challenges for archeological survey because of conditions that obscure what may have already been low visibility remains (e.g., dense vegetation or alluvial deposition). Also, the nature of physical threats to archeological resources are quite variable in different areas of larger parks. Recognizing these needs for differential attention across such environmental variation, inventory strategies for the larger parks have involved subdividing the parks into appropriate management and research zones. Survey methods, sampling strategies, and data requirements relative to specific research questions have been or are being developed on a zone by zone basis. The intensity of sampling across zones is typically varied due to differences in the potential for site discovery and some zones are characterized by very low numbers of sites recorded relative to the number of acres covered. Archeological management zones have been already been defined for NOCA and OLYM and are being developed for MORA and JODA.

Experience in conducting surveys within NOCA and OLYM has shown that the most successful survey design is one that employs a combination of search techniques that respond to low ground visibility and high site potential. On low visibility survey tracts, a mix of systematic surveys aided by ground-clearing, and non-systematic judgmental selection of specific landform types is most successful and practical. An intensive subsurface strategy employing systematically placed shovel pits on a densely forested, 73-acre tract in the park complex proved highly successful in detecting small, obscure lithic scatters (Mierendorf and Harry 1993). Unfortunately, the technique is costly and time-consuming. However, this limitation can be offset through the use of key environmental factors that can serve as indicators of high site probability. In most survey tracts, for example, the presence of weathered, soil B-horizons indicates landform stability and antiquity, and archeological site location (Mierendorf 1993b). Another indicator of site location is the combination of such environmental factors as a southern solar exposure, a stable ancient landform, and close proximity to the junction of a tributary with a main stream. These are only a few of the many factors that can and should be used for implementing a successful survey. Finally, based on experience from surveys conducted throughout NOCA, it is known that steep slope and certain terrain conditions (gorges, cliff bands, on-the-ground accumulation of fallen tree trunks) can render systematic transect surveys impossible and unsafe. Yet, irregular survey routes, defined by the path of least resistance and maximization of safe travel, are important tools and have resulted in the discovery of previously unrecorded archeological sites.

Historic sites that lack above ground structural remains can also be difficult to detect in densely

vegetated settings. In cases where historic remains are anticipated, a metal detector has been effectively used as a technological aid during survey.

Project Standards

The SAIP (Aubrey et al. 1992:8-12) sets forth 10 project standards that should be met in the development and implementation archeological inventory projects in each region:

> Standard 1. Archeological inventory projects meet the requirements of the NPS's policies, guidelines, and standards.
>
> Standard 2. Archeological inventory projects are conducted in accordance with a written, professional research design, approved by the regional office.
>
> Standard 3. Archeological inventory projects are conducted using efficient and effective advanced technologies.
>
> Standard 4. Archeological inventory projects are developed and implemented in coordinated with the appropriate State Historic Preservation Officers.
>
> Standard 5. Archeological inventory projects are developed and implemented in consultation with appropriate Indian tribes and other contemporary native groups and ethnic populations.
>
> Standard 6. Since evidence of past cultural systems extend beyond the boundaries of federally-owned or controlled lands and waters in the National Park System areas, whenever possible, archeological inventory projects collect and consider data from non-Federal lands and waters within park areas as well as from adjoining lands and waters.
>
> Standard 7. Development and implementation of archeological inventory projects involve non-NPS archeologists and other specialists who have a demonstrated competence in a particular culture, geographic region, park area, or advanced technology.
>
> Standard 8. Data collected during archeological inventory projects are provided to park planners for incorporation, as appropriate, into park planning documents, and to park managers for resource management, law enforcement, interpretation, maintenance, and other park operational purposes.
>
> Standard 9. Archeological data collected during inventory projects are incorporated into Servicewide inventories, lists, catalogs, and databases.
>
> Standard 10. The results of archeological inventory projects are made available, as appropriate, to the professional community and to the public.

Research Design

Much archeological research prior to the mid-1970s was exploratory and, to the extent that goals were stated, tended to be purely descriptive. Projects were typically conducted without the benefit of adequate research designs or even explicit research questions. The importance of effective research designs is increasingly recognized by cultural resource managers and guidelines have been developed by the Advisory Council on Historic Preservation for what such designs should include. Beyond posing questions or problems of importance in contemporary archeology, research designs should clearly identify the theoretical assumptions that guide the investigation, identify data requirements for addressing the research objectives, and provide a rationale for the proposed field methods, sampling strategies, and laboratory analyses. Research designs for individual park units are an important framework within which compliance or development driven surveys can generate data of value to the overall knowledge about the past.

Table 7 PROPOSED ARCHEOLOGICAL SURVEY PROJECTS FOR THE COLUMBIA CASCADES CLUSTER

NPS UNIT	SAIP PROJECT STATEMENTS	RMP # / 10-238 NUMBER	SCOPE OF PROJECT	PROP. SURVEY ACRES	COST IN 1994 DOLLARS x 10^3		PRIORITY FACTORS							CLUSTER CATEGORY
					COST/ YR	TOTAL	1	2	3	4	5	6	7	
City of Rocks NR CIRO	1. Conduct Emigrant Inscription research			?	5	5								
	2. Conduct hist. landscape inventory			?	?	?								
	3. Survey for mining-related sites			?	?	?								
Coulee Dam NRA CODA	1. Survey below the HWL in areas missed in 1995; including about 100 river miles (one bank only)		Survey entire shoreline; record sites, take GPS readings, assess site condition.	Approx. 8,000	?	?								
	2. Survey above the 1290' HWL throughout most of park.		Survey entire shoreline; record sites, take GPS readings, assess site condition.	Approx. 12,000	?	?								
	3. Survey any areas missed during the 1995-96 survey due to reservoir elevation (requires a reservoir drawdown below 1250').		Survey below previously surveyed areas, update site forms, take GPS readings and assess site condition.	Up to 20,000	?	?								
	4. Periodically revisit sites below the HWL that were recorded in 1995-96 to assess erosion rates.		Survey below previously surveyed areas, update site forms, take GPS readings and assess site condition.	1,000	?	?								
	5. Revisit sites above the HWL that are subject to slumping to establish monitoring points along the cutbank.		Establish monitor pins along the cutbanks of eroding sites.	1,000	?	?								
Craters of the Moon NM CRMO	1. Evaluate historic structures.	110.01			5	5								
	2. Conduct archeological baseline. ??	110.02			10	30								
	3. Train staff in CRM	120			10	10								
Crater Lake NP CRLA														
	NO DATA													

NPS UNIT	SAIP PROJECT STATEMENTS	RMP # / 10-238 NUMBER	SCOPE OF PROJECT	PROP. SURVEY ACRES	COST IN 1994 DOLLARS x 10^3		PRIORITY FACTORS							CLUSTER CATEGORY
					COST/ YR	TOTAL	1	2	3	4	5	6	7	
Ebey's Landing NHR EBLA														
	NO DATA													
Fort Clatsop NM FOCL	NO DATA													
Fort Vancouver NHS FOVA	NO DATA													
Hagerman Fossil Beds NM HAFO	1. Survey rest of the monument.			3,500	20	60								
	2. Test excavate site in danger.			0	5	5								
John Day Fossil Beds JODA	1. Develop preservation and interpretive plan for Picture Gorge pictographs		-complete inventory and illustration record of Gorge pictographs -study pigment composition and ^{14}C date (AMS or other means) -develop & implement preservation strategy -develop interpretive signage	15	?	?	x	x	x				x	
	2. Expand transect survey coverage to ca. 35% of total Monument area		-complete consolidation of extant site data through interview -direct field inspection of hearsay sites and isolates -new transect survey	2,240	?	?	x				x	x	x	
	3. Selective inventory of high probability areas.		-stratify Monument by environmental/site density zones -archeological inventory -use combined data to evaluate model	2,500	?	?	x				x		x	

NPS UNIT	SAIP PROJECT STATEMENTS	RMP # / 10-238 NUMBER	SCOPE OF PROJECT	PROP. SURVEY ACRES	COST IN 1994 DOLLARS x 10^3		PRIORITY FACTORS							CLUSTER CATEGORY
					COST/ YR	TOTAL	1	2	3	4	5	6	7	
	4. Inventory land exchanges		-archeological inventory	unk.	?	?	x		x					
Mount Rainier NP MORA	1. Locate and record lithic raw material sources in the park, and archaeological sites related to lithic procurement activities.		-background check of geological records -archaeological reconnaissance -trace element and petrographic characterization				x	x			x		x	
	2. Locate and record rockshelters.		-archaeological reconnaissance				x	x			x		x	
	3. Survey subalpine parkland and alpine zones.		-archaeological reconnaissance	80,000 acres			x	x			x		x	
	4. Locate, survey and record historic Indian travel routes/trails.		-archival and ethnographic search -GIS analysis -record trails using GPS/GIS				x	x			x	x	x	
	5. Complete (100%) survey of administrative and other developed areas.		-archaeological reconnaissance -subsurface survey using systematic shovel probing where necessary	ca. 7,200 acres			x	x	x	x		x	x	
	6. Record and evaluate National Register eligibility of all historic mining sites.		-enlist services of historical archaeologist -site visit and recording				x	x			x	x	x	
	7. Survey entire trail network and backcountry camps.		-archaeological reconnaissance				x	x	x			x	x	
	8. Probability sampling and survey of different resource zones in the park, to evaluate and refine land-use model outlined in park overview.		-GIS analysis and stratified random selection of survey blocks (ca. 5% total park) -archeological reconnaissance -use of subsurface survey techniques in forested zones	ca. 11,800 acres			x	x			x	x	x	
Nez Perce NHP NEPE														
	NO DATA													
North Cascades NPSC NOCA	1. Survey land-use zones 2, 3, and 5 (flood plain, river terraces and valley margins, and subalpine)	NOCA-C-01/365	Comprises lands having the highest predicted site densities	270,000										

NPS UNIT	SAIP PROJECT STATEMENTS	RMP # / 10-238 NUMBER	SCOPE OF PROJECT	PROP. SURVEY ACRES	COST IN 1994 DOLLARS x 10^3		PRIORITY FACTORS							CLUSTER CATEGORY
					COST/ YR	TOTAL	1	2	3	4	5	6	7	
	2. Survey backcountry and frontcountry campgrounds	NOCA-C-01/365	Comprises lands devegated by heavy visitor use	????										
	3. Survey for glassy lithic raw material sources	NOCA-C-01/365	Comprises the volcanic terrain of the Silver Cr. drainage	2000										
	4. Survey for historic archeological sites	NOCA-C-02	Performed concurrent with statements 1-3 above	272,000										
	5. Survey for historic trails	NOCA-C-02	Performed concurrent with statements 1-4 above	272,000										
	6. Survey for historic mining archeological sites	NOCA-C-02	Performed concurrent with statements 1-5 above and in known mining districts	>272,000										
	7. Organize and host a Cascade Range archeology conference for archeologists and tribes		Explore interagency cooperation in the management of archeological sites by land managers and tribes											
	8. Complete National Register Nominations of eligible archeological sites	NOCA-C-01/365	20 sites											
	9. Update and revise archeological site predictive model using GIS	NOCA-C-01/365 and NOCA-C-02												
	10. GIS manipulation of archeological site survey areas, site locations, and site data	NOCA-C-01/365												
Oregon Caves NM ORCA														
Olympic NP OLYM	1. Survey entire trail network	OLYM C-100.04	Survey of backcountry trails	500		39.5	x	x	x				x	
	2. Investigate Native American burning practices at Ahlstrom's and Roose's Prairies	OLYM C-100.05	Archeological survey, soil analysis, records search	300		11.5	x	x			x	x	x	

NPS UNIT	SAIP PROJECT STATEMENTS	RMP # / 10-238 NUMBER	SCOPE OF PROJECT	PROP. SURVEY ACRES	COST IN 1994 DOLLARS x 10^3		PRIORITY FACTORS							CLUSTER CATEGORY
					COST/ YR	TOTAL	1	2	3	4	5	6	7	
	3. Survey and document culturally modified trees	OLYM C-100.06	Survey of coastal strip for modified trees	3,200		54.3	x				x		x	
	4. Adopt/develop methodology for analysis of lithic assemblages collected from sites within the park		literature search, critical review of methods used in region			9.4					x			
	5. Conduct analysis of lithic artifact assemblages		Analysis and reporting of lithic artifact data			17.3					x			
	6. Investigate possible rockshelter locations		Interview locals, conduct fieldwork	500		16.2	x	x			x		x	
	7. Update archeological site records		Update all site information to current standards	200		15.4					x			
	8. Survey Pleistocene/ Holocene fluvial and lacustrine terraces, parkwide		Identify terraces, use subsurface survey techniques	4000		1,160	x				x		x	
	9. Model site location based on resource distribution		Develop model, conduct field tests			7.5					x		x	
	10. Investigate source of dacite lithic material		Chemical analysis and field investigations to locate sources	300		17.8					x			
	11. Continue survey in Management Zone IV		Inventory large sample of Olympic high country	8,500		120.8	x				x		x	
	12. Survey for homesteads in the Lake Ozette area		Use GLO data sets, conduct field survey	3000		49.3	x	x			x		x	
	13. Survey for hist. arch. sites parkwide (homesteads, logging, mining)		Use GLO data sets, conduct field survey	20,000		313.7	x	x			x		x	
	14. Document CCC engineering features		Historic research, conduct field surveys	700		52.3	x	x			x		x	
	15. Survey all park administrative areas		Background research, conduct field surveys	8,000		153.4	x	x	x	x	x		x	
San Juan NHP SAJH	1. Complete (100%) survey of British and American Camps.	Package no. 158 in RMP (1983)	-complete pedestrian survey of park -limited shovel probing in areas of poor ground visibility.	1,752		?	x		x	x				

NPS UNIT	SAIP PROJECT STATEMENTS	RMP # / 10-238 NUMBER	SCOPE OF PROJECT	PROP. SURVEY ACRES	COST IN 1994 DOLLARS x 10^3		PRIORITY FACTORS							CLUSTER CATEGORY
					COST/ YR	TOTAL	1	2	3	4	5	6	7	
	2. Determine site boundaries for previously recorded historic and prehistoric archeology sites.		-shovel probing or coring studies around previously recorded sites.			?	x			x		x	x	
	3. Arch. study of intertidal/subtidal areas for submerged cultural resources.		-coordinate with underwater archeology section at WACC.			?					x	x		
Whitman Mission NHS WHMI														

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APPENDIX A

National Register Properties in Columbia-Cascade Park Units

Park Unit	National Register Properties		
City of Rocks NR	None		
Coulee Dam NRA	Fort Spokane Historic Site	Kettle Falls Arch. District	
Craters of the Moon NM	None		
Crater Lake NP	Superintendent's Resid. NHL Crater Lake Lodge Sinnot Memorial Bld.	Comf. Stat. # 68 Comf. Stat. # 72	Munson Valley Hist. Dist. 18 structs.
Ebey's Landing NHR	Central Whidbey Historic District has listed commercial and civic buildings and residences.		
Fort Clatsop NM	Enite site listed		
Fort Vancouver HHS	Entire site is on the Register		
Hagerman Fossil Beds NM	None		
John Day Fossil Beds NM	Cant Ranch Historic Site		
Klondike-Seattle NM	Not Applicable		
Mount Rainier NP	Longmire Buildings Paradise Inn Yakima Park Stockade Group Camp Muir Chinook Pass Entrance Arch Christine Falls Bridge Edith Creek Chlorination House Gobbler's Knob Fire Lookout Huckleberry Cr. Patrol Cabin Indian Bar Trail Shelter Indian Henry's Patrol Cabin Ipsut Creek Patrol Cabin Lake George Patrol Cabin	Longmire Campground Comf. Stat. Nos. L-302, 303, 304 Longmire Historic District Mowich Lake Patrol Cabin Mt. Fremont Fire Lookout Narada Falls Bridge Narada Falls Comf. Stat. Nisqually Entr. Hist. Dist. North Mowich Trail Shelter Ohanapecosh Comf. Stat. #s O-302, O-303 Shriner Peak Fire Lookout	South Puyallup River Bridge St. Andrews Creek Bridge St. Andrews Patrol Cabin Summerland Trail Shelter Sunrise Comfort Station Sunrise Historic District Sunset Park Patrol Cabin Sunset Park Trail Shelter Tahoma Vista Comfort Station Three Lakes Patrol Cabin Tipsoo Lake Comfort Station Tolmie Peak Fire Lookout White River Bridge White River Entrance
Nez Perce NHP	Nez Perce NHP Hasatino Village Hatwai Village Lenore Site Nez Perce Snake River Arch. District First Presbyterian Church Big Hole National Battlefield	Lower Salmon River Arch. District Sue McBeth Cabin Whitebird Battlefield Whitebird Grade Chief Joseph Battleground Bear's Paw Lolo Trail	Nez Perce Traditional Site Snake River Arch. District Chief Joseph Memorial Pierce Courthouse Weippe Prairie St. Joseph's Mission

North Cascades NP	Buckner Cabin Courtney Cabin Stehekin School Bridge Cr. Shelter Buckner Homestead Hist. Dist. Flick Cr. Shelter Golden West Lodge Hist. Dist. High Bridge R. S. Hist. District High Bridge Shelter George Miller House Purple Point--Stehekin Ranger Station House	Black Warrior Mine Bridge Cr. Cabin--R. S. Sulphide--Frisco Cabin Backus--Marblemount R S. House No. 1009 Backus--Marblemount House No. 1010 Gilbert's Cabin Rock Cabin Swamp--Meadow Cabin East Swamp--Meadow Cabin West	Beaver Pass Shelter Copper Mtn. Fire Lookout Internat. Boundary US--Can. Perry Cr. Shelter Sourdough Mtn. Lookout Devil's Corner Cliff Walk Deer Lick Cabin Desolation Pk. Lookout Fish and Game--Hozomeen Cabin
Oregon Caves NM	None		
Olympic NP	Sites: Ozette Village (45CA24) Wedding Rocks Petroglyphs (45CA31) Humes Ranch Shaube/Smith Cabin Singer's Lake Crescent Enchanted Valley Chalet Botten Cabin Elk Lick Lodge Dodger Point Lookout Elwha Campgrd.Comm. Kitchen	Altaire Campground Community Kitchen Guard Stations: Eagle Guard Station (residence, garage, generator house) Elkhorn (residence, woodshed, barn, shelter) North Fork Quinault (resid., garage, and barn) Storm King Olympus (residence)	Shelters: Fifteen Mile, Happy Four, Hyak, Pelton, Indian Creek, Canyon Creek, Three Forks, Twenty-one Mile, North Fork Soleduck Districts Rosemary Inn Peter Roose Homestead Tavern Elwha Ranger Station Park Headquarters
San Juan NHP	The entire park area is on the National Register (prehistoric elements not included).		
Whitman Mission NHS	6 buildings on LCS		