INTRODUCTION and BACKGROUND

The Cathlapotle Project is designed to address a range of substantive, historical, methodological, theoretical and cultural resources management issues. The project is part of Portland State University's (PSU) Wapato Valley Archaeological project (WVAP) which was initiated in 1987. The Wapato Valley (also known in the archaeological literature as the Portland Basin) extends from the downstream end of the Columbia River Gorge to the confluence of the Columbia River with the Cowlitz River at Longview-Kelso, Washington. The Wapato Valley includes the greater metropolitan areas of Portland, Oregon and Vancouver, Washington, an area with a population of some 1.3 million people, and is expected to grow by some 500,000 people over the next 20 years. Clark County, Washington, which contains both Vancouver and Cathlapotle, is one of the most rapidly growing counties in the United States. Ames (1994) has recently reviewed the archaeology of the region in detail.

The purpose of this report is to summarize the cumulative findings of the Cathlapotle Project from the 1991 summer field season through the 1996 field season, including the lab work performed thus far. By so doing, we will demonstrate the significance of the site and provide the basis for a site management plan. This plan, including our long-term research design, is discussed in the final chapter of the report.

The Cathlapotle Site (45CL1) is located on the Carty Unit of the Ridgefield National Wildlife Refuge, adjacent to the small community of Ridgefield, Washington. It is located in a riparian forest habitat paralleling Lake River just upstream from the confluence of the Lake, Lewis, and Columbia Rivers. This forested area is called Brush Ridge, although it is a series of three low levees separated by two swales. Inland of this wooded area is a natural meadow, known locally as "Long Meadow." The ridge farthest from the current Lake River channel, and closest to the meadow, is the one upon which the site is located, and it has been dubbed Site Ridge.

The exact location of Cathlapotle has been the subject of several decades of speculation, investigation and dispute. The scope of our project surpasses prior archaeological work done on the refuge, and has settled the question beyond any reasonable doubt. Another site on the Ridgefield Wildlife Refuge, 45CL4, was for a time identified as the site of the village (Starkey, Ross, and Hibbs, 1974). The history of site designations is lengthy and informative, and we will briefly summarize it here.

Robert Hudziak and Clarence Smith first identified 45CL1 as Cathlapotle in 1948 (Hudziak and Smith, 1948) on behalf of the Washington State Historic Preservation Office. At that time, the land was still owned by the Carty family, specifically William Carty, who acted as an informant for Hudziak and Smith. They place the site "...in a natural meadow between Gee Creek and Lake River..." (Hudziak and Smith, 1948). They locate the village itself in Long Meadow, and speculate that the "present condition" of the site "should be better than any other site on the river" (Hudziak and Smith, 1948). There is no evidence on their site survey form, however, to indicate that they conducted more than a cursory surface investigation, and they list "none" under material observed (Hudziak and Smith, 1948).

Judy Starkey, Lester Ross, and Charles Hibbs, of the Oregon Archaeological Society, resurveyed the area in 1974. The documentation of their survey contradicts Hudziak and Smith's claim that 45CL1 was the Cathlapotle site: "This is a natural river deposit containing no cultural remains" (Starkey, Ross and Hibbs, 1974). They add that, "Hudziak and Smith missed the Quathlapotle site by a mile" (Starkey, Ross and Hibbs, 1974). No notation is made of their means of discerning the nature of the deposit, nor is there any evidence proffered to support their conjecture as to the real location of the site. The site they identify, 45CL4, was subsequently proposed for listing on the National Registry of Historic Places (NRHP).

James Carty, the son of Hudziak and Smith's source, waged a spirited and ultimately successful campaign to prevent the NRHP listing proposed by Starkey, Ross and Hibbs. It bears noting that until that time, the primary "excavations" performed in the quest for Cathlapotle were Mr. Carty's attempts to recover artifacts. Mr. Carty took pains to repeatedly and explicitly stress that the subsurface portions of the site were not in Long Meadow, as Hudziak and Smith speculated, but on Brush Ridge, overgrown by dense riparian forest (Carty, unpublished correspondence). 45CL4, located along the landform known as "Big Meadow" at the south end of the Carty Unit, was a more forgiving locale, and was excavated by a Lewis and Clark College archaeological field school in 1984 and 1985. Under the direction of Rick Minor and Kathryn Anne Toepel, these excavations showed that the designation of 45CL4 as Cathlapotle proposed a decade earlier was poorly supported by archaeological evidence. Minor and Toepel suggested that the site "appears to be approximately located to represent the site where Lewis and Clark camped..." (Minor and Toepel, 1985:79). The radiocarbon dates from 45CL4 range from 1920± 100 BP to 320 ±80 BP.

These preliminary investigations were all considered in the Wapato Valley Archaeological Project's 1990-1991 effort to locate the true location of Cathlapotle village. With the site identified, a comprehensive research program was designed to incorporate a wide variety of techniques in the investigation of social and technological organization at Cathlapotle.

Geography and Geology

The Wapato Valley (WV) includes the region along the Columbia River from the Sandy River downstream to the Cowlitz River. It thus includes the greater Metropolitan areas of Portland, Oregon and Vancouver, Washington. The major physiographic features of the basin are the Columbia and Willamette Rivers. The study area encompasses the Willamette River north (downstream) from its falls at Oregon City to its confluence with the Columbia River. The main branch of the Willamette enters the Columbia at Portland. Dixie Mountain is the highest elevation in the area at 484 meters above sea level (ASL).

The area can otherwise be divided into two topographic sub-areas: (a) the alluvial bottom lands along the shores of the Columbia River; and (b) the higher plateau or table lands of East Portland, which rise to elevations between 75 and 90 meters ASL, and Clark County. Most archaeology has focused on these bottom lands — since they are where the late prehistoric population of the area was concentrated. There has been ongoing, but poorly reported, work in the Clark County uplands over the past 30 years.

The valley is part of the Puget-Willamette Lowland, which is the southerly end of the Coastal Trough that runs from southeast Alaska through to the south end of the Willamette Valley. The Puget-Willamette Lowland is the only portion of the trough that is not currently drowned by sea water. The outer mountains separate the trough from the Pacific Ocean. In western Oregon, the outer mountains are the Coast Range, while in Washington the outer mountains include the low Willapa Hills. The trough is flanked on the east by the Cascade Range.

The Willamette Valley and the Wapato Valley have a humid climate with low summer precipitation (Hansen 1941, Sprague and Hansen 1946). The majority of precipitation falls between November and March. There is minimal diurnal temperature variation and the variation between minimum and maximum seasonal temperatures ranges from 0^{o} C (32^{o} F) in January and 29^{o} C (81^{o} F) in July (Toepel 1985). The area has a long growing season.

The Portland area has an annual frost-free period of over 200 days. Annual precipitation in the Portland area varies between 33 and 45 inches (838 to 1143 mm.). Some stations have much higher rainfall, ranging from 55 inches (1400 mm) to over 90 inches (2300 mm) of rain near the Columbia Gorge. The mean summer or July temperature is around 14^{o} C on the coast and 15^{o} C inland (Heusser, Heusser, and Streeter 1980).

Flora and Fauna

The vegetation of the Wapato Valley falls into Franklin and Dryness' "*Pinus-Quercus-Pseudotsuga*" Zone. Along the rivers are riparian forests of Black cottonwood (*Populus trichocarpa*), Oregon ash (*Fraxinus latifolia*), Bigleaf maple (*Acer macrophyllum*), Oregon white oak (*Quercus garryana*), Red alder (*Alnus rubra*), and Ponderosa pine (*Pinus ponderosa*). Oak woodlands dominate the zone's forests and savannas. Riparian communities and poorly drained areas generally host a variety of minor hardwood species (Franklin and Dryness 1973:124-126). Conifer forests become predominant in the foothills of the interior valleys. The most abundant species found are Douglas fir (*Pseudotsuga menziesii*), Grand fir (*Abies grandis*), and Ponderosa pine. Western hemlock (*Tsuga heterophylla*) is almost absent from the Willamette Valley and can only be found along its periphery. Western red cedar (*Thuja plicata*), which can sustain itself in dry climates, is concentrated in the area near Portland (Franklin and Dryness 1973:118).

Saleeby (1983) and Hamilton (1989; Figure 1) reconstruct the bottom land environment as it would have been in the middle third of the 19th century. Similar, though less detailed, reconstructions have also been done of the vegetation of the south shore of the Columbia River east of the airport (e.g. Ellis and Fagan 1993). The Saleeby-Hamilton reconstruction of the flood plain indicates it was a remarkably patchy environment with seven habitat types (Fig. 1; Table 1), six of which were on the floodplain proper. It is clear that this was an extremely productive environment. It would be useful to have a better grasp of the vegetation of the uplands and the East Portland plateau areas.

The Wapato Valley was home to a rich array of terrestrial and aquatic mammals, as well as fish and birds. Those that were described as important resources for the valley's residents are listed in Table 2. Table 3 includes fauna that are significant members of zooarchaeological assemblages in the region.

Geological and Environmental History

There are no reconstructions of ancient landforms or vegetation based on data from the Wapato Valley. Beyond catastrophic flood events (see below), there is no detailed geological history available for the basin beyond Trimble's pioneering work (Trimble 1963), at least for the late Pleistocene and Holocene periods. Work has focused on two massive flood events: the Missoula (or Bretz) floods, and the Bridge of the Gods flood. The first event or series of events (Waitt 1980) occurred during the late Pleistocene, and may date as late as ca. 13,000 years ago. The Bridge of the Gods flood has recently been dated to ca. 830 BP. The Bridge of the Gods flood was the result of the damming of the Columbia River by a landslide at Bonneville in

FIGURE 1.
SALEEBY-HAMILTON ENVIRONMENTAL RECONSTRUCTION
FOR THE WAPATO VALLEY ca. 1850 AD.

the Columbia Gorge. Neither the spatial extent nor the temporal duration of the subsequent natural reservoir is known, nor are the downstream effects of the flood

TABLE 1.
SALEEBY-HAMILTON HABITAT TYPES.
(See Figure 1)

HABITAT	DESCRIPTION	FLORAL / FAUNAL RESOURCES
RIVERINE	Cold, clear waters of rivers and streams.	Cattails, freshwater mussels, freshwater turtles, salmon, steelhead, sturgeon, euchalon, cyprinids (chub, squawfish, chiselmouth), kingfisher, hawk, crow, mink, river otter, harbor seal, raccoon.
LACUSTRINE	Lakes and ponds, emergent vegetation and thick shoreline vegetation (includes some bayous and sloughs).	Cattails, wapato, sturgeon, suckers, cyprinids, waterfowl, kingfisher, freshwater turtle, mink, river otter, muskrat, beaver, raccoon.
PALUSTRINE	Freshwater marsh typified by standing water and herbaceous plants (includes some bayous and sloughs).	Wild celery, cattails, skunk cabbage, horsetail, wapato, waterfowl, sandhill crane, muskrat, beaver, raccoon.
RIPARIAN	Water edge habitat comprised of cottonwood, willow, ash, time oak and dense undergrowth.	Wild sorel, wild celery, salmonberry, dewberry, thimbleberry, blackcap, osoberry, elderberry, cow parsnip, kingfisher, various non-migratory birds, mink, river otter, raccoon, deer, wapiti (elk), brush rabbit.
OAK WOODLAND	Woodlands dominated by oak, sometimes with co-occurence of Douglas fir, and understory species such as hazelnut / swordfern, serviceberry / snowberry.	Serviceberry, osoberry, acorn, hazelnut, non-migratory birds, deer, puma.
GRASSLAND (prarie)	Grasses and forbes are dominant vegetation.	Crabapple, brackenfern, camas, wild strawberry, sandhill crane, hawk, red fox, ground squirrel, deer.
BRUSH	Brushy deciduous species such as ash, balmgilead rose and vines on ridges and banks of the floodplain.	Crabapple, gooseberry, blackberry, nettles, non-migratory birds, deer.
CONIFER FOREST	Douglas fir is the dominant species, with Grand fir, Western red cedar, bigleaf maple, and sometimes oak.	Lupine, wood sorel, kinnik-kinnik, dewberry, thimbleberry, blackcap, huckleberry, serviceberry, osoberry, elderberry, salal, hazelnut, wild strawberry, Oregon grape, non-migratory birds, mountain beaver, marten, porcupine, bear, bobcat, wapiti (elk), blacktailed deer, puma.

caused when the earth dam gave way, though the potential impact of this flood on the basin's floodplain is a topic of some controversy (Pettigrew 1990). Ellis and Fagan (1993) see no evidence for it in the eastern portions of the basin. Aside from these events, we have *no* Late Pleistocene or Holocene alluvial chronology for the basin.

TABLE 2.
ETHNOGRAPHICALLY REPORTED RESOURCES OF THE WAPATO VALLEY.
(From Boyd and Hajda 1987)

TAXONOMIC NAME	COMMON NAME	HABITAT	HARVEST MONTHS
Aquatic Class I:	**Staples**		
Onchorynchus tschawytscha	chinook salmon	Main trunk of Columbia R. and lower middle tributaries.	March - April and June - July
Onchorynchus kisutch	coho salmon	Lower tributaries of Columbia R.	August - October
Acipenser transmontanus	white sturgeon	Main trunk of Columbia R., deep water,	January - March and August - September
Thaleicthys pacificus	eulachon	Spawns in lower Cowlitz, Lewis, Sandy, Grays and Kalama rivers.	February - March
Aquatic Class II:	**Secondary Resources**		
Salmo gairdneri	trout	Streams.	-
Onchorynchus mykiss	steelhead	Major waterways.	July - September
Lampreta tridentata	lamprey eel	Taken at falls.	Summer
	clam	Seashores, bays.	-
Onchorynchus nerka	sockeye salmon	Main trunk of Columbia R.	June - July
Onchorynchus keta	chum (dog) salmon	Main trunk of Columbia R., a few tributaries.	
Animal Class I:	**Staples**		
Cervus canadensis	wapiti (elk)	Cosmopolitan, open forests.	Winter
Odocoileus hemionus	blacktailed deer	Cosmopolitan, forests.	-
Odocoileus virginianus	whitetailed deer	River bottoms, praries.	-
Animal Class II:	**Secondary Resources**		
Phoca vitulina	harbor seal	Columbia and Willamette below falls.	Spring - Summer
Eschrictus glaucus	grey whale	Coast.	April
Vegetal Class I:	**Bulbs, Roots & Greens: Staples**		
Sagittaria latifola	wapato	Middle river swamps.	Year-round, best in fall
Camassia quamash	camas	Middle river damp praries.	May - July
Vegetal Class II:	**Bulbs, Roots & Greens: Secondary Resources**		
Cirisum edule	thistle	Coast, moist ground.	-
Lupinus littoralis	lupine	Coast, especially beaches.	-
Pteridium aquiliinum	bracken	Coast, especially burns.	-
Equisetum telmateia	horsetail	Coast, especially damp ground.	-
Lomatium spp.	shapeiel	Dry rocky ground above cascades.	April - September
Vegetal Class III:	**Berries**		
Vaccinum ovatum	evergreen huckleberry	Coast clearings.	August - October
Vaccinum macrophyllum	mountain huckleberry	Mountain clearings.	August - October
Vaccinum ovalifolium	oval leaf huckleberry	Mid-latitude woods.	August - October
Rubus macropetrolus	blackberry	Middle-river clearings.	August.
Arctostaphylos uva-ursi	bearberry	Dry banks.	Fall
Gaultheria shallon	salal	Woods.	August

Sea level curves give a baseline for a chronology of the evolution of the alluvial floor of the basin. The Pacific Ocean was still some 60 meters below its modern level 10,000 years ago (Hutchinson 1992) (Figure 2). The sea rose swiftly between 10,000 and 7,000 years ago, to a level of –10 meters. Sea rise in the past 7,000 years has been relatively gradual. This gradual rise has significant implications both for the evolu-

TABLE 3.
ARCHAEOLOGICALLY COMMON FAUNA IN THE WAPATO VALLEY.
(Saleeby 1982)

Taxonomic Name	Common Name	35C05	35MU1	35CO7	35CO3	35MU6	35MU9	TOTAL
		Meier	Cholick	Pumphouse		Lyons	Merrybell	
MAMMALS								
Odocoileus spp.	deer	276	160	74	35	22	2	569
Cervus candadnsis	wapiti (elk)	103	40	7	10	17	0	177
Odocoileus / *Cervus*	deer / elk	24	37	7	6	2	0	76
Canis spp.	dog / coyote / wolf	21	36	3	6	0	1	67
Procyon lotor	raccoon	15	32	6	4	1	0	58
Ondatra zibethica	muskrat	37	5	1	0	0	1	44
Castor canadensis	beaver	13	10	8	4	0	0	35
Ursus americanus	black bear	20	3	3	1	0	0	27
Lynx rufus	bobcat	9	2	1	0	0	0	12
Mustela vison	mink	4	3	0	0	0	0	7
Lutra canadensis	river otter	6	0	0	0	0	0	6
Bos tarus	cow	0	0	0	4	0	1	5
Sylvilagus bachmani	cottontail rabbit	2	0	0	0	0	1	3
Vulpes fulva	fox	3	0	0	0	0	0	3
Phoca vitulina	harbor seal	3	0	0	0	0	0	3
Aplodontia rufa	mountain beaver	2	0	0	0	0	0	2
Enhydra lutris	sea otter	0	0	0	1	0	0	1
Erethzion dorsatum	porcupine	0	0	1	0	0	0	1
Martes americana	marten	1	0	0	0	0	0	1
	Indet. Large Mammal	446	212	68	66	23	20	853
	Indet. Medium Mammal	39	12	3	7	0	1	62
	Indet. Small Mammal	7	7	2	0	0	0	16
REPTILES								
Boidae / Colubridae	toads / frogs	0	3	0	0	0	0	3
Testudinidae	turtles	55	0	0	0	0	0	55
BIRDS								
Anas spp.	duck	46	28	12	1	1	0	88
Branta / *Anser* / *Chen* spp.	goose	12	13	5	0	3	0	33
Aix sponsa	wood duck	9	4	1	0	0	0	14
Cygnus	swan	5	7	0	0	0	0	12
Crus canadensis	sandhill crane	7	3	0	0	0	0	10
Anas crecca	teal	8	0	0	1	0	0	9
Branta canadensis	Canada goose	6	1	0	0	0	0	7
Fulica americana	American coot	0	2	0	0	0	0	2
Accipitridae spp.	hawk	0	2	0	0	0	0	2
Corvuys brachyrhynchos	common crow	2	0	0	0	0	0	
Calaptes auratus	flicker	1	1	0	0	0	0	2
Buteo spp.	hawk	0	0	2	0	0	0	2
Buteo jamaicensis	red-tailed hawk	1	1	0	0	0	0	2
Anas / *Aix*	duck	0	0	2	0	0	0	2
Accipter cooperii	Cooper’s hawk	0	1	0	0	0	0	1
Halieetus leucacephalus	bald eagle	0	0	1	0	0	0	1
Megaceryle alcyon	belted kingfisher	1	0	0	0	0	0	1
Indet. *Passerine*	-	2	2	1	0	0	0	5
Indet. species	-	13	21	5	0	0	0	39
Unidentified	-	390	141	134	9	4	73	751
FISH								
Oncorynchus spp.	salmon / steelhead	503	150	188	7	3	11	862
Acipenser transmontanus	white sturgeon	195	59	151	12	37	9	463
Catostomus macrocheilus	largescale sucker	82	72	103	0	2	0	259
Cyprinid / *Catostomid*	minnows / suckers	101	54	53	0	3	5	216
Thaleichythys pacificus	eulachon	137	1	0	0	0	0	138
Ptychocheilus oregonensis	northern squafish	30	36	46	0	0	0	112
Cyprinidae	small minnows	2	59	33	0	0	0	94
Mylofheilus caurinus	peamouth chub	27	12	4	0	1	0	44
Indet. *Cyprinid* spp.	-	8	0	10	0	0	0	10
Acrocheilus alutaceus	chiselmouth	3	0	0	0	0	0	3
Gila bicolor	tui chub	2	0	0	0	0	0	2
Unidentified	-	267	659	439	0	3	10	1378

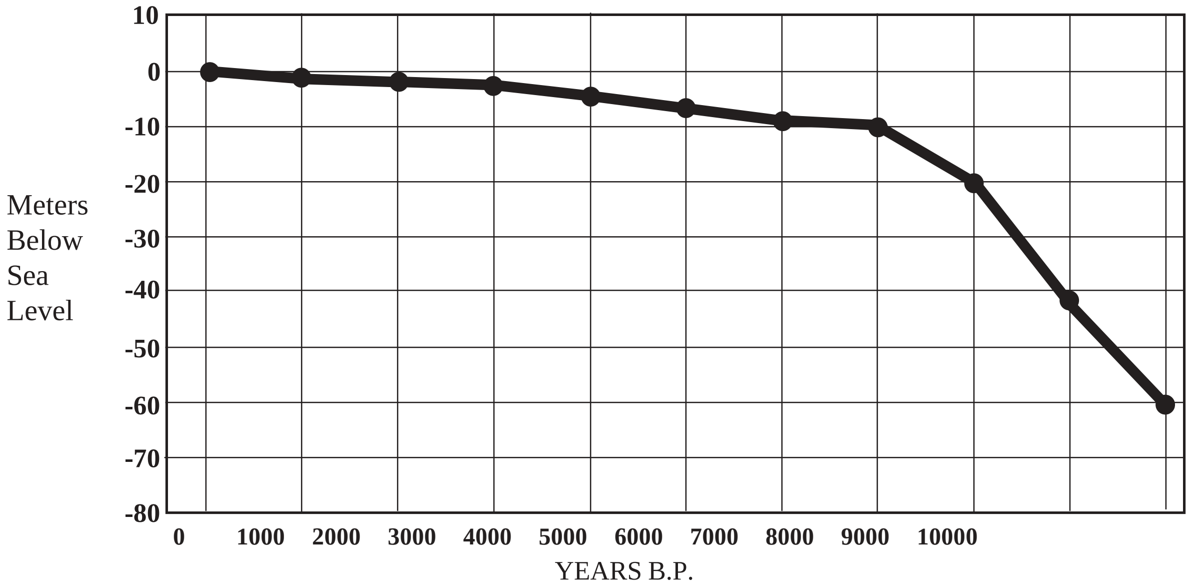

FIGURE 2. PACIFIC OCEAN SEA LEVELS TO 10,000BP.
Adapted from Hutchinson, 1992.

tion of the basin's critical wetlands, and for our understanding of settlement patterns before 1,000 years ago. The explosion in the number of sites post-dating 2000 years ago on the basin's floor (see Figure 4) may be a result of : 1) changing sea levels altering the landscape and the "livability" of the basin; 2) maturation of the region's wetlands and/or; 3) earlier occupations (even slightly earlier) on surfaces which are now submerged. Ellis and Fagan, citing evidence presented in Musil (1992), suggest that the basic topographic drainage features of the eastern floodplain — small channels — may have been stable for the last 2,400 years, Connolly and Bland suggest that levee build-up began in the same area by 2,000 years ago (Connolly and Bland 1989).

Barnowsky conducted pollen studies at three locations north of Vancouver, Washington, in the early 1980s (Barnowsky 1983, 1985), including the Orchards Peatland and Battle Ground Lake (she also cored Davis Lake north of Centralia). In the late 1970s, Heusser et al. (1980) cored Fargher Lake, located 10 km from Battle Ground Lake. Neither Fargher nor Battle Ground Lake are near the Columbia River; Battle Ground Lake has an elevation of 155 m ASL and Fargher Lake is higher at 200 m ASL. Taken together, the two pollen sequences extend back almost 35,000 years (Heusser 1985). We are concerned here with the terminal Pleistocene - Holocene portions of the record (Figure 3).

Heusser (1985) develops a general reconstruction of climatic trends in western Washington, and by extension, Northwestern Oregon, for the past 47,000 years. He suggests that the coldest, driest conditions of the period existed between 28,000 and 13,000 years ago, with mean annual temperatures of 10^{o}C and precipitation averaging 1300 mm (51 inches) — similar to current conditions in the coastal forests of Alaska. The period after 13,000 BP is marked by several climatic shifts.

Temperature increased to 13^{o}C by 8,000 BP, its postglacial maximum. Rainfall at first increased to a maximum of 2400 mm (94 inches) by 10,000 BP, then declined to 1500 mm (59 inches) by the thermal maximum at 8,000 BP. In Heusser's reconstruction, the climate in western Washington has been colder and wetter than previously since 8,000 BP, with the period between 5,000 and 2,000 BP the coldest and wettest. Barnowsky ends the postglacial climatic maximum later than does Heusser, by 6,000 BP. These trends are broadly reflected in the pollen cores from Battle Ground and Fargher Lakes.

Reconstructing subsequent vegetation changes requires combining a pollen record with data on the formation of the basin's alluvial bottom lands. There are some data which may eventually allow construction of rela-

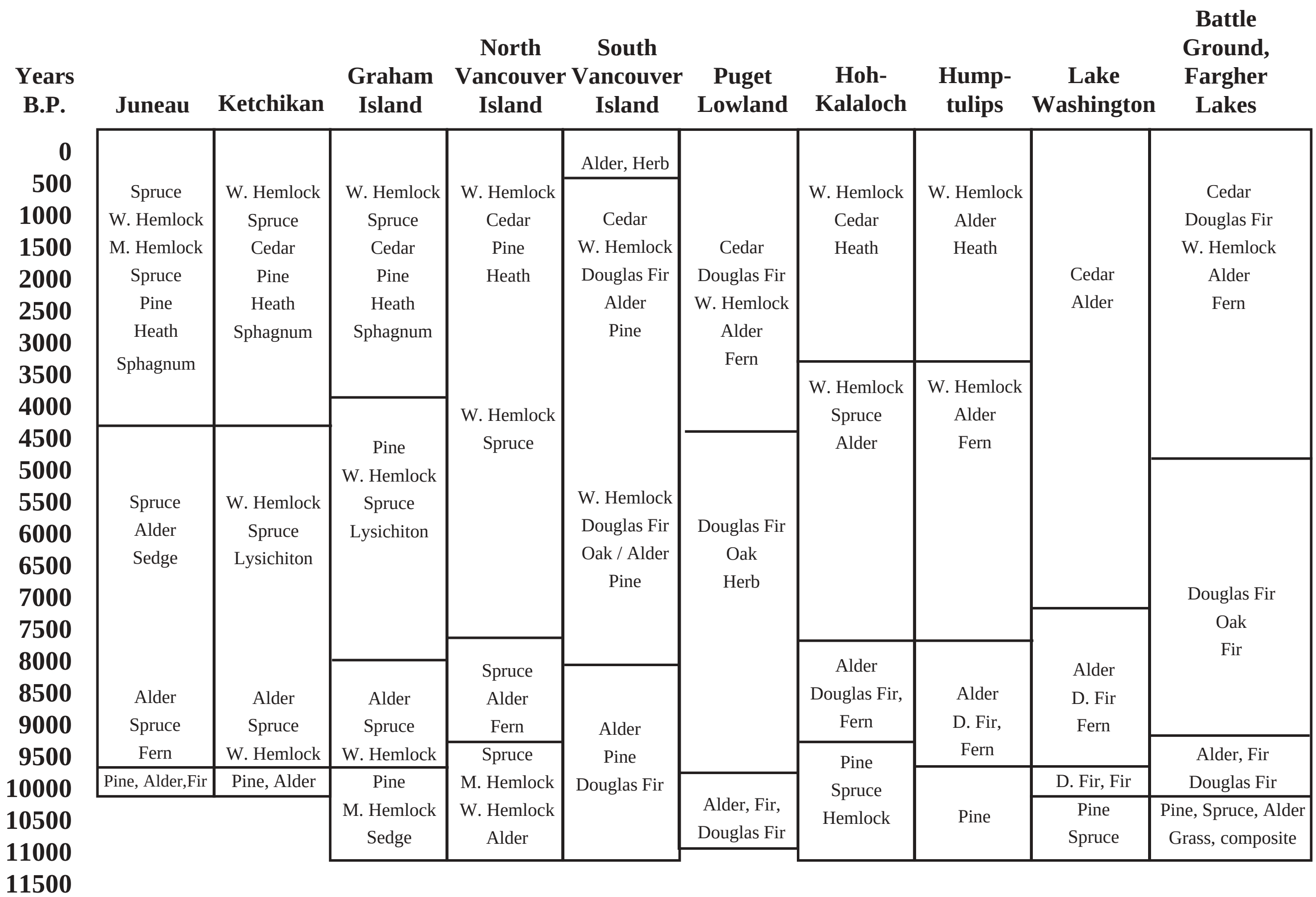

FIGURE 3.
TERMINAL PLEISTOCENE-HOLOCENE POLLEN SEQUENCE.
After Heusser 1985.

tively fine-grained models of the basin's environmental contexts over the last 1,000 years or so. Generally speaking, for the last 1000 years, the flora of the Willamette Valley floor was dominated by Douglas fir and oak. The Oregon Cascades to the east supported Douglas Fir and hemlock forests.

Wapato Valley Archaeology

The Lower Columbia River Valley has probably received the least archaeological attention of any major river valley of comparable size in the United States (Ames 1994). Pettigrew (1977) recognizes four periods in the history of archaeology for the Lower Columbia River Valley. These are the Early Amateur Period (EAP) (contact-1923), the Early Professional Period (EPP) (1924-1950), the Reservoir Survey Period (RSP) (1951-1965), and the Recent Period (1966-present). Ames (1994) renamed the latter period the "Developed Professional Period (DPP)." Archaeological work conducted in the Wapato Valley and the vicinity of Cathlapotle is discussed within this chronological framework.

Very little professional archaeology was conducted in the Wapato Valley prior to the DPP. Most preceding work was focused in the Columbia Gorge and up river at The Dalles. The only professional work in the Wapato Valley during the EAP was Harlen I. Smith's description of artifacts that had been collected by amateurs (Smith 1906).

The first professional field work conducted in the Wapato Valley was in 1924 at the onset of the EPP when University of California at Berkeley conducted limited test excavations on Sauvie Island as part of a larger, more extensive project in the Dalles region (Strong, Schenck, and Steward 1930). No other work was done until the close of the EPP, when Hudziak and Smith (1948) surveyed along Lake River, identifying four sites on the Ridgefield Wildlife Refuge (45CL1, CL2, CL3, CL4) including the general location of Cathlapotle.

The RSP marks the first major projects in response to industrialization of the area. Once again, most work was conducted up the Columbia River in the Dalles area, including Wakemap Mound (University of Washington) and the Road Cut site (University of Oregon) (Cressman et al. 1961). Fieldwork in the Wapato Valley was limited to two surveys (Touhy and Bryan 1959; Warren 1959). These projects resulted in a number of publications with discussions about cultural historical relations of the Wapato Valley inhabitants. Generally, it was argued that early inhabitants of the valley were related to Columbia Plateau groups (Butler's Old Cordilleran) and later populations with the maritime people of the coast (e.g., Bryan 1957, Touhy and Bryan 1959). The end of the RSP is marked by the first academic thesis on Wapato Valley archaeology, a University of Oregon MA thesis about projectile points from the Sauvie Island area written by Lionel Brown (1960).

Amateur archaeology flourished in the 1960s and 1970s, following the publication of the first synthesis of Lower Columbia prehistory written by a well-known amateur archaeologist, Emory Strong (1959). The Oregon Archaeological Society (OAS), comprised primarily of amateur archaeologists, excavated a number of larger sites in the western Wapato Valley, resulting in small publications for each. The OAS also began the publication of the newsletter "Screenings," which today provides important information about artifacts recovered in the valley.

The DPP for the Wapato Valley is characterized by a marked increase in professional work. The earliest projects were initiated in response to dredging and highway construction in Clark County, Washington. Among these were a series of surveys, testing programs and salvage excavations employed by the University of Washington on the Columbia River floodplain in the Lake River area. This work is discussed in more detail below.

Although located in the Columbia Gorge, the salvage excavations at 45SA11, near Bonneville Dam, from 1976-1979 are worthy of mention (Dragoo and Keeler 1978; Minor, Teopel and Beckham 1989). Among its unique qualities, the excellent preservation of architectural features for seven rectangular, semi-subterranean plank houses provides regional archaeologists with unprecedented comparative data for plank house excavations elsewhere, including at Cathlapotle.

During the early part of the DPP, a number of projects made significant contributions to the development of the region's archaeology. In the early 1970s, the University of Washington conducted the first professional excavation of a Wapato Valley site containing evidence of a Native American living structure, 45CL21 (Kirsting Site) (Jermann et al. 1975). Additionally, Dunnell et al. (1973) developed a site typology and proposed a settlement pattern model for the Wapato Valley based on survey in the Vancouver Lake-Lake River area. Concurrently, Richard Pettigrew tested seven sites in the Sauvie Island area in order to develop the framework for a cultural-historical chronology for the Wapato Valley (Pettigrew 1977). Pettigrew's cultural chronology and Dunnell's settlement pattern model were the first systematically-derived theoretical contributions to Wapato Valley archaeology.

Using the faunal material collected during Pettigrew's excavations in the Sauvie Island area, Becky Saleeby developed an ecology-based settlement pattern model for the valley (Saleeby 1983). Both Saleeby's model and Dunnell's model have undergone continual assessment by regional archaeologists and ethnohistorians (eg. Skolnik et al. 1979, Wessen 1983, Hajda 1985, Hamilton 1992, Ellis 1992), but no significant alternatives have been proposed (Ames 1994).

Complementing the University of Washington's work in Clark County, Washington, Thomas Newman of PSU oversaw a number of projects on the Oregon side of the valley in the late 1970s and early 1980s. This work included the documentation of the "Sunken Village" wet site (35MU1) on Sauvie Island (Newman 1991) and the first surveys along the southern shore of the Columbia River (Kongas 1979). To date, the most extensive excavations in the Wapato Valley were completed at the Meier site under the direction of Ken-

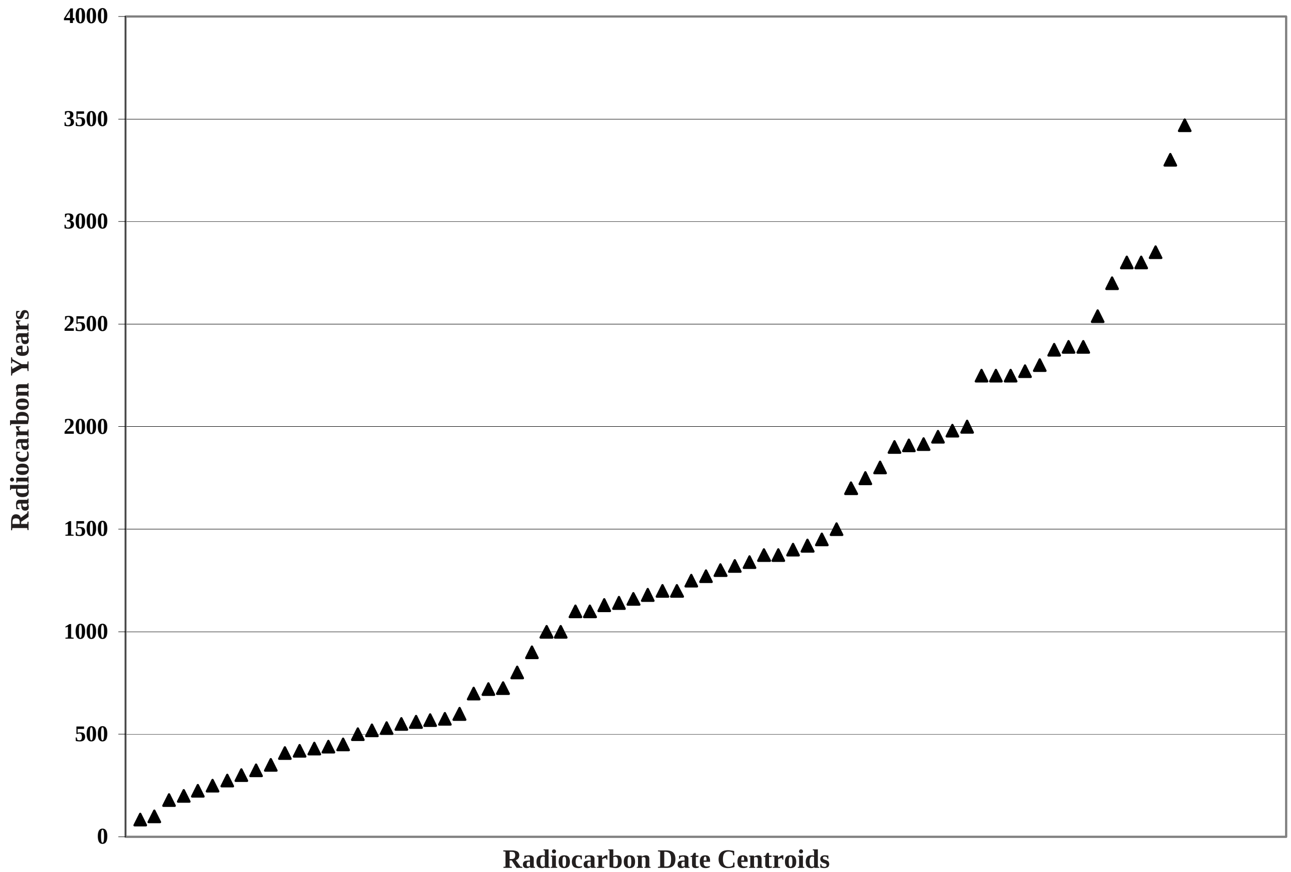

FIGURE 4.
SITE CHRONOLOGY ON THE WAPATO VALLEY FLOOR.

neth Ames, also of PSU (Ames et al. 1992). This five-season excavation (1987-1991), with ongoing analysis, initiated the "Wapato Valley Archaeological Project" of which Cathlapotle is a part.

Most professional archaeological projects in the Wapato Valley have been oriented toward cultural resource management. This work has increased dramatically in the last two decades making it difficult to review (Ames 1994). The projects include survey, testing and data recovery in many areas throughout the Wapato Valley. During the past decade, most CRM work in the Wapato Valley has focused on what is called "The Columbia South Shore."

This term encompasses the Portland Metro area along the south shore of the Columbia River east of Portland International Airport to roughly the Sandy River. This area is undergoing rapid, planned development, including construction of major highway connectors (Airport Way) and industrial campuses. This work has led to several surveys and augering projects (see Minor, Musil, and Toepel 1994 for a summary of this work) and one major data recovery excavation project at 35MU57 (Ellis and Fagan 1993) as well as numerous smaller projects.

Figure 4 plots 73 archaeological radiocarbon dates from the Wapato Valley, indicating the rapid increase in sites with time, particularly after 1500 radiocarbon years.

Refuge and Vicinity Archaeology

The Ridgefield Wildlife Refuge and vicinity, as defined here, is comprised of the narrow floodplain from Vancouver Lake to the Lewis River, including the full length of Lake River and Bachelor Island (Figure 5).

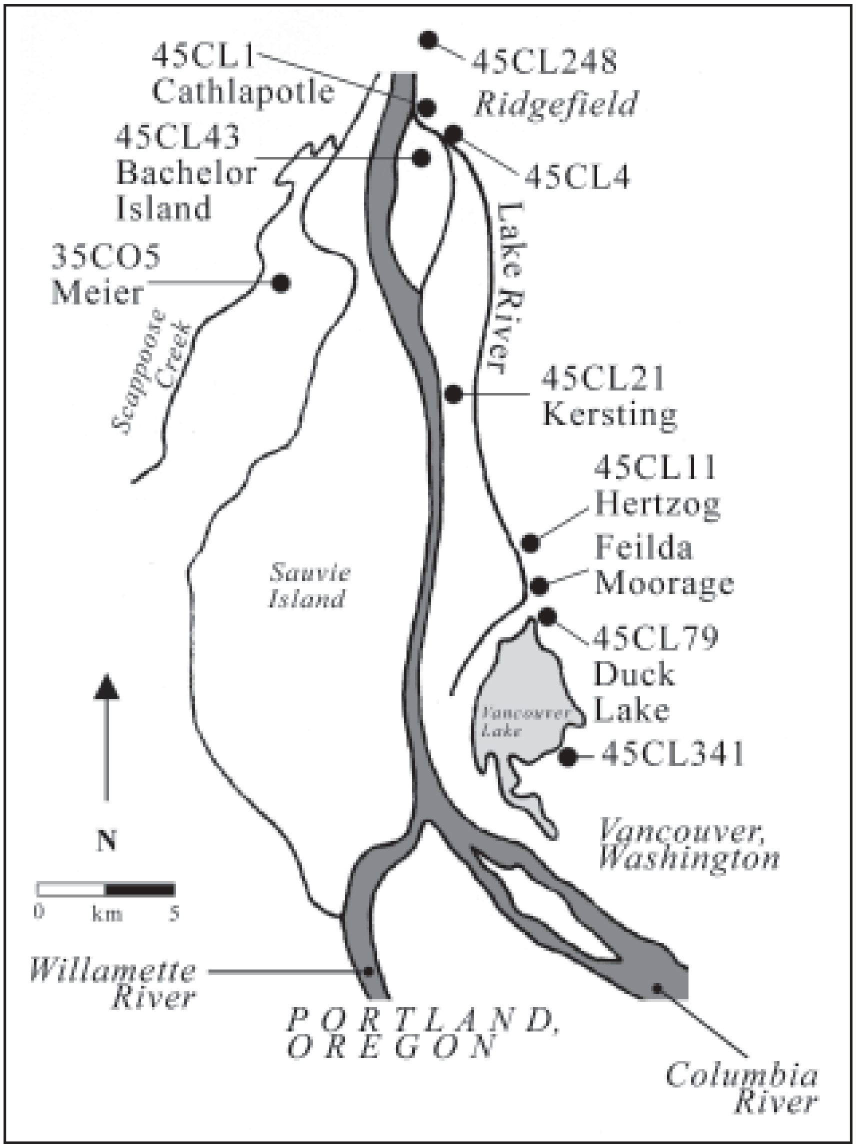

FIGURE 5.
SITE DISTRIBUTION IN THE VICINITY OF 45CL1, CATHLAPOTLE.

The natural catchment area of Cathlapotle also includes the Lewis River drainage, though our studies have yet to take us there. The work in this area has contributed significantly to the development of archaeology in the Wapato Valley, particularly in the 1970s during the early DPP. However, most of the professional work in the area has been survey.

The earliest archaeological project in the area was Hudziak and Smith's (1948) recording of Lake River sites. Most significantly, the records included 45CL4 and the approximate location of Cathlapotle. In 1954, Donald Touhy and Alan Bryan conducted a pipeline survey in Clark County, including an area along Lake River (Touhy and Bryan 1959).

To date, the most extensive excavations in the vicinity have been conducted by the Oregon Archaeological Society in the 1960s and 1970s. The relevant sites are 45CL79 (Duck Lake) (Slocum and Matsen 1972), Falida Moorage (cited in Ames 1994), 45CL11 (Herzog Site) (Foreman and Foreman 1977), and 45CL43 (Bachelor Island) (Steele 1980). These excavations, while sometimes of enormous scale, are not well reported. The OAS is an amateur society, and during that period, their excavations were not to professional standards.

Consistent professional work in the immediate Lake River area began in the late 1960s and extended into the 1980s. These were primarily surveys, but testing and salvage also occurred in response to highway construction and dredging. This work included salvage excavations at the Kirsting Site (Jermann et al. 1975); limited surveys around Vancouver Lake by Hibbs and Ross (1972); Munsell (1973), Dunnell, Chatters and Salo (1973); and a survey along lower Lake River and Bachelor Island Slough (Starkey and Ross 1975). Following these surveys in 1978, the University of Washington conducted limited testing at 45CL117, a site with a moderate lithic assemblage located on the south bank of the Lewis River (Kennedy and Jermann 1978).

The work by Dunnell et al. (1973) in the Vancouver Lake-Lake River area was followed by two survey projects with limited excavations (Skolnik et al. 1979; Wessen 1983). These works culminated in the creation of the Vancouver Lake Archaeological District, comprising a total of 91 documented archaeological sites. The district includes a wide array of Native American sites ranging from small, special-purpose sites to large residential sites with house depressions. Some of these are multicomponent sites and one (45CL31) includes a fish weir (Wessen 1983).

Subsurface testing on the Carty Unit of the Ridgefield Wildlife Refuge began in 1979. Abramowitz (1980) conducted surface reconnaissance, subsurface coring of known sites and high potential landforms, and subsurface testing of 45CL4 (see Figure 5). The project confirmed five previously recorded sites and recorded one additional Native American site (45CL284), located just northeast of Cathlapotle on the southern bank of Gee Creek and comprised of a single ash and charcoal lens with bird bone flecks.

Based on auger probes and limited testing, Abramowitz concluded that 45CL4 was the best candidate for Cathlapotle. This led to excavations by the Lewis and Clark College Archaeological Field School in 1984 and 1985, directed by Rick Minor and Kathryn Anne Toepel. They concluded that 45CL4 was probably not Cathlapotle, but rather represented a series of small encampments created by the repeated use of the landform for a long period of time (Minor and Toepel 1985). They also suggested that this was likely the location where Lewis and Clark camped on March 29, 1806, and described Chinookan women procuring Wapato from the adjacent lake. The search for Cathlapotle resumed in 1991 and is described in more detail elsewhere in this report.

The archaeology in the vicinity of Cathlapotle reveals a wide range of Native American site types on the surrounding alluvial valley floor. The most frequent sites are fire-cracked rock concentrations and some lithic scatters. These sites are probably low impact, special-purpose sites. They reveal the archaeological integrity of the area and its potential for providing information about subsistence-settlement patterns related to Cathlapotle. Most of these sites have not had much professional attention. Limited excavations have been conducted only at some of the larger sites (eg. 45CL4, 45CL117, 45CL21 and 45CL31). For the most part, this work has either been limited testing or salvage archaeology rather than goal-oriented, systematic research. We plan to fill this void in Wapato Valley archaeology, in part through research geared toward understanding the settlement and landuse patterns surrounding Cathlapotle.

Ethnographic Background

The Cathlapotle town (also spelled Quathlapotle, Cathlapoodle, etc.) was one of nineteen Chinookan towns recorded by Lewis and Clark (Thwaites 1908) in the Wapato Valley. The term Chinookan refers to the speakers of several closely related languages who occupied the Columbia River from the upstream end of the river’s gorge (near the present town of The Dalles, Oregon), and the river’s mouth, and along adjacent portions of the present coasts of Washington and Oregon, from Tillamook Bay in the south, north to Willapa Bay in southwest Washington. This region has been called the “Greater Lower Columbia River” by Hajda in her synthesis of Chinookan ethnohistory and ethnography (Hajda 1984). Hajda’s work is presently the definitive study of the Chinookan peoples at contact with Europeans, while Boyd’s work is the basic study for Chinookan demography through the first century of the Modern period. Silverstein (1991) provides a useful summary of what is known of Chinookan

TABLE 4.
WAPATO VALLEY VILLAGES AT THE TIME OF THE LEWIS AND CLARK EXPEDITION.
(from Hajda 1984)

VILLAGE	POPULATION ESTIMATE: MINIMUM	MAXIMUM
Quathlapotle	300	900
Clackstar	350	1200
Cathlacumup	150	450
Clannarminnamon	280	280
Shoto	180	460
Clannaqueh	130	130
Multnomah	200	800
Clanninata	100	200
Cathlanahquiah	150	400
Cathlacommahtup	70	170
Nemalquinner	100	200
Clackamas	800	1800
Carcowah	200	200
Cushhook	250	650
Neerchokio	40	100
Nechacolee	100	100
SUM	3400	8040
MEAN	212.50	502.50
STANDARD DEV.	173.50	457.60

life before contact and their contact history.

The Chinookan language family can be divided into two branches: Lower Chinook spoken by peoples living on both sides of the river's mouth, and Upper Chinook spoken along both sides of the Columbia from its estuary upriver through the Gorge. Upper Chinook is divisible into three languages: Cathlamet, Multnomah and Kiksht. Multnomah was spoken in the Wapato Valley, where the region's densest human populations occurred.

Boyd and Hajda (1987) suggest that the Valley's permanent winter population more than doubled every spring by people moving into the area to exploit its abundant seasonal food resources. Boyd (1985) estimated that the resident population of the basin two centuries ago was 4,000 people, with the numbers rising to perhaps 10,000 during spring and summer. His estimates are probably lower than precontact levels because the people of the region were afflicted by smallpox in the early 1770s and again in 1801. His figures translate to a winter population of approximately 16 people/100 sq km in winter and 40 people/100 sq km during the summer (Alfred Kroeber estimated 28 people/100 sq km for the Northwest Coast as a whole [Ramenofsky 1987]).

Dobyns' (1983) estimates for the pre-epidemic population of the Northwest Coast are between 116 and 120 people/100 sq km; his figures are controversial but may provide an upper limit on the winter population of the basin, which would have been between 29,000 and 30,000 people or three times the contact-period numbers. Whatever set of figures one chooses, these are high densities for hunter-gatherers (Wobst 1974, 1976).

Boyd and Hajda report 16 named Multnomah and Clackamas villages in the Wapato Valley study area (Table 4), based on Lewis and Clark's Journals (Thwaites 1904-1905). These 16 villages had a minimum population of 3,400 people, perhaps representing the permanent population of the basin, and a maximum estimated population of 8,040, representing, they argue, the effects of the annual influx. Boyd and Hajda's figure of 8,040 probably represents a minimal figure for the pre-epidemic permanent population of the Wapato Valley, with the actual figure being closer to 12,000 to 14,000 (Ames 1994).

Chinookan peoples were hunter-gatherers exploiting a wide range of terrestrial and riverine resources. The Wapato valley is an ecologically complex and productive environment (Saleeby 1983, Hamilton 1989). Its productivity is the result of its being quite fine grained in habitat structure, thus providing a wide variety of microenvironments and ecotones. As has been indicated, the area supported a diversity of plant and animal life. In addition, the Columbia River was the most productive salmon stream in the world. Among the staples in the Chinookan subsistence system in the valley were wapiti (elk, *Cervus elephas*), deer (*Odoceolious sp.*), bear (*Ursus*), wapato corns (*Sagittaria latifolia*), camas roots (*Camassia quamash*), salmon *(Oncyrhinchus*), sturgeon (*Acipenser*), and smelt (*Spirinchus thalerchthys*), among others.

Like most peoples of the Northwest Coast and Columbia Plateau, the household and village or town were the primary economic, social and politic units. The household was the most important. Households ranged in size from a score of people to well over a hundred. Households occupied large, cedar plank houses that ranged in size from as little as 90 m^2 to well over 1000 m^2. Chinookan societies were stratified, divided into classes of free individuals and slaves. Mitchell (1985) estimates that perhaps 25% of the area's population were slaves. Free people were divided into a relatively powerful elite and "commoners" who were household members but who exercised little or no power.

Towns were linguistically polyglot, given the area's marriage practices, so while a town such as Cathlapotle was within Chinookan territory, its occupants would very likely include Cowlitz and people of other regional language families.

Chinookan people generally shifted their residence twice a year from a winter village or town to various summer locations. In the Wapato Valley, it appears that the occupants were fully sedentary, with people remaining in the same settlement year-round. Excavations of a plank house at 35CO5 (the Meier Site), on the Oregon side of the Columbia River, indicate that the structure stood for 400 years and was continuously occupied.

The Chinookan peoples were deeply involved in trade. An annual trade fair at The Dalles was the largest such fair in Western North America, and any movement of materials between the coast and the fair passed through Chinookan territory. The Dalles trade fair itself was within the territories of Kitsht speakers. The Chinook were also engaged in trade up and down the coast itself.

The town of Cathlapotle appears to have been among the largest towns along the river. It also was strategically located vis-a-vis any movement up or down the river. It is perhaps suggestive that both Broughton and Lewis and Clark were met by peoples from Cathlapotle as they traveled the river.

Historic Accounts of Cathlapotle

Several Euro-American explorers and settlers in the late 18th and early 19th century described Cathlapotle and its Chinook Indian inhabitants. Many archaeologists have scrutinized these accounts in an effort to pinpoint the location of the town site. Minor and Toepel (1985) and Parchman and Hickey (1993) offer the best assessment of the site's location based on these early records. We reiterate much of their work below.

Lt. William R. Broughton

In 1792, Lt. William R. Broughton sailed up the lower Columbia River from its mouth to Pt. Vancouver, which he named for his Captain, and back. On October 28th, Broughton and his crew met a group of Chinook Indians at the lower end of Sauvie Island. He called it:

"...Point Warrior, in consequence of being there surrounded by twenty three canoes carrying from three to twelve persons each, all attired in their war garments and in every other respect prerpared for combat. On these strangers discoursing with the friendly Indians that attended our party, they soon took off their war dress, and with great civility disposed of their arms and other articles for such valuables as we presented to them, but would other niether part wirth their copper swords nor a kind of battle axe made of iron."

"At Point Warrior the river is divided into three branches; the middle one was the largest, about a quarter of a mile wide, and was considered as the main branch; the next most capacious took an easterly direction and seemed extensive; to this the name of Rushleigh's River was given; and the other that stretched to the S.S.W. was distinguished by the name of Call's River."

"On the banks of Rushleigh's River was seen a very large Indian village and such of the strangers as seemed to belong to it strongly solicited the party to proceed thither; and to enforce their request, very unequivocally represented that if the party persisted in going to the southward they would have their heads cut off. The same entreaties, urged by similar warnings had been before experienced by Mr. Broughton during his excursion, but having found them to be un-

necessary cautions he proceeded up that which he considered to be the main branch of the river..."

(Vancouver 1926:21-22)

Most readers agree that Broughton's "Call's River" is Multnomah Channel (Kennedy and Jermann 1978, Neilson 1926). "Rushleigh's River" is probably the Lewis River, or perhaps Lake River (Minor and Toepel 1985). Kennedy and Jermann (1978) name Austin Point as the location of Broughton's village on the bank of Rushleigh's River. However, later explorers never place an Indian settlement there.

We think that Broughton's village was Cathlapotle, which is at the mouth of the Lake River but so close to the mouth of the Lewis River that Broughton might have generalized his description.

Lewis and Clark

Captain Merriwether Lewis and Lt. William Clark give the best description of Cathlapotle and its location. They observed the settlement on their expedition down the Columbia River in 1805, and again on their return in 1806 (Figure 6). On November 5, 1805, Clark wrote:

"...passed an Isld. Covered with tall trees & green briers Seperated from the Stard. Shore by a narrow Chanel at 9 [8?] miles I observed on the Chanel which passes on the Stard Side of this Island a Short distance above its lower point is Situated a large village, the front of which occupies nearly 1/4 of a mile fronting the Chanel, and closely Connected, I counted 14 houses [NB: Quathlapotle nation] in front here the river widens to about 1/2 miles. Seven canoes of Indians came out from this large village to view and trade with us, they appeared orderly and well disposed, they accompanied us a fiew miles and returned back..."

(Moulton 1990[6]:23)

After wintering on the at the mouth of the Columbia River, Lewis and Clark turned back for the East. On March 28, 1806, Clark wrote:

"...we were visited by a large canoe with ten nativs of the Quathlahpohtle nation who are numerous and reside about fourteen miles above us on the N.E. side of the Columbia above the Enterance of a small river which the Indians call Chah wah-na-hi-ooks."

(Thwaites 1969: 212)

The following day, Lewis and Clark visited Cathlapotle for several hours. Lewis described the town and the people:

"*...on the North side of the columbia a little above the entrance of this inlet a considerable river discharges itself. this stream the natives call Cah-wah-na-hi-ooks. it is 150 yards wide and at present discharges a large body of water, tho'from the information of the same people it is not navigable but a short distance in consequence of falls and rappids a tribe called the Hul-lu-et-tell reside on this river above it's entr.- at the distance of three miles above the entrance of the inlet on the N. side behind the lower point of an island we arrived at the village of the Cath [X: Quath]-la-poh-tle wich consists of 14 large wooden houses. here we arrived at 3 P.M. the language of these people as well as those on the inlet and wappetoe Island differs in some measure from the nations on the lower part of the river. tho' many of the words are the same, and a great many others with the difference only of accent. the form of their houses and dress of the men, manner of living habits custom &c as far as we could discover are the same. their women wear their ornaments robes and hair as those do below tho' [NB: Indian women on Wappato Island & in that Valey] here their hair is more frequently braded in two tresses and hang over each ear in front of the body. in stead of the tissue of bark woarn by the women below, they wear a kind of leather breech clout about the width of a common pocket handkerchief and reather long. the two corners of this at one of the narrow ends are confined in front just above the hips; the other end is then brought between the legs, compressed into a narrow foalding bundel is drawn tight and the corners a little spread in front and tucked at the groin over and arround the part first confind about the waist. the small robe which dose not reach the waist is their usual and only garment commonly woarn be side that just mentioned. when the weather is a little warm this robe is thrown aside and the leather truss or breech-clout constitutes the whole of their apparel. this is a much more indecent article than the tissue of bark, and bearly covers the mons venes, to which it is drawn so close that the* *whole shape is plainly perceived. the floors of most of their houses are on level with the surface of the earth tho' some of them are sunk two or 3 feet beneath. the internal arrangement of their houses is the same with those of the nations below. they are also fond of sculpture. various figures are carved and painted on the peices which support the center of the roof, about their doors and beads. they had large quantities of dried Anchovies strung on small sticks by the gills and others which had been first dryed in this manner, were now arranged in large sheets with strings of bark and hung suspended by poles in the roofs of their houses; they had also an abundance of sturgeon and wappatoe; the latter they take in great quantities from the neighbouring bonds, which are numerous and extensive in the river bottoms and islands. the wappetoe furnishes the principal article of traffic with thesepeople which they dispose of to the nations below in exchange for beads cloth and various articles. the natives of the Sea coast and lower part of the river will dispose of their most valuable articles to obtain this root. they have a number of large symeters of Iron from 3 to 4 feet long which hang by the heads of their beads; the blade of this weapon is thickest in the center tho' thin even there. all it's edges are sharp and it's greatest width which is about 9 inches from the point is about 4 inches. the form is thus. this is a formidable weapon. they have heavy bludgeons of wood made in the same form nearly which I presume they used for the same purpose before they obtained metal. we purchased a considerable quantitiy of wappetoe, 12 dogs, and 2 Sea otter skins of these people. they were very hospitable and gave us anchovies and wappetoe to eat. notwithstanding their hospitality if it deserves that appellation, they are great begers, for we had scarcely finished our repast on the wappetoe and Anchovies which they voluntarily sat before us before they began to beg. we gave them some small articles as is our custom on those occasions with which they seemed perfectly satisfyed. we gave the 1st Cheif a small medal, which he soon transfered to his wife. after remaining at this place 2 hours we set out & continued our rout between this island, which we now call Cath-lah-poh-tle after the nation, and the Lard shore. at the distance of 2 miles we encamped in a small prarie on the main shore, having traveled 19 miles by estimate..."*

(Moulton 1990[7]:26-29)

Clark also wrote a description of the March 29, 1806, visit to Cathlapotle:

"...we proceeded on to the lower point ofthe Said island accompanied by the 3 Indians, & were met by 2 canoes of nativs of the quath-lah-pah-tal who informed us that the chanel to the N E of the Island was the proper one. we prosued their advice and Crossed into the mouth of the Chah-wah-na-hi-ooks River which is about 200 yards wide and a great portion of water into the columbia at this time it being high. The indians inform us that this river is crouded with rapids after Some distance up it. Several tribes of the Hul-lu-et-tell Nation reside on this river. at 3 oClock P. M. we arrived at the Quath lah pah tle Village of 14 Houses on main Shore to the N E. Side of a large island. those people in their habits manners Customs and language differ but little from those of the Clatsops and others below. here we exchanged our deer Skins killed yesterday for dogs, and purchased others to the Number of 12 for provisions for the party, as the deer flesh is too poore for the Men to Subsist on and work as hard as necessary. I also purchased a Sea Otter robe. we purchased wappatoe and Some pashaquar roots. gave a Medal of the Small Size to the principal Chief, and at 5 oCclock reembarked and proceeded up on the N E. of an Island to an inlet about 1 mile above the village and encamped on a butifull grassy plac, where the nativs make a portage of their Canoes and Wappato roots to and from a large pond at a short distance. in this pond the nativs inform us they Collect great quantities of wappato, which the womin collect by getting into the water, Sometimes to their necks holding by a Small canoe and with their feet loosen the wappato or bulb of the root from the bottom from the Fibers, and it imedeately rises to the top of the water. they collect & throw them into the Canoe, those deep roots are the largest and best roots. Great numbers of the whistling swan, Gees and Ducks in the Ponds. Soon after we landed 3 of the nativs came up with wappato to sell a part of which we purchased..."

(Moulton 1990[7]:30)

Another interesting note comes from Sergeant John Ordway of the Lewis and Clark expedition. He states that most of the "huts" at Cathlapotle joined together (Ordway 1916).

Other Accounts of Cathlapotle

Fur trappers and traders surged into the lower Columbia River after Lewis and Clark returned to Washington. The Chinook Indians at Cathlapotle and along the entire lower Columbia River were active participants in the fur trade (Ruby and Brown 1976). Documents left by traders, settlers, and residents from Astoria and Fort Vancouver (19 river miles from Cathlapotle) occasionally mention Cathlapotle and its Chinook inhabitants (Wuerch 1979). For example, a typical entry from an Astorian fur trapper in May 1811:

"...proceeded to another large village that our guide told us was called Katlapoutle. It was situated at the mouth of a small river..."

(Franchere 1967:50)

Beginning in 1830, the Wapato Valley was struck by annual epidemics of "fever and ague." These epidemics were of increasing ferocity until 1835, when they waned. Boyd, who has conducted the most recent research on Northwest epidemics (Boyd 1985) has demonstrated that the disease was malaria. Middle Chinookan populations were devastated, and Cathlapotle, along with much of the valley, was abandoned. The actual timing of this event is difficult to pinpoint. In 1833, William Tolmie, a Hudson's Bay Company doctor observed of Cathlapotle that "only its superior verdure distinguished the spot from the surrounding country." Presumably by verdure he is referring to the vegetation that rapidly colonizes abandoned ground in this wet area. There is no mention of structures in this all too brief remark. However, according to Meredith Gairdner, another HBC doctor, Cathlapotle was still occupied in 1835 (as cited in Wuerch 1979). It is possible that in 1835, the people at or near Cathlapotle were no longer Chinookans.

FIGURE 6.
CONFLUENCE OF WILLAMETTE AND COLUMBIA RIVERS AND ENVIRONS,
3 APRIL 1806
Missouri Historical Society Archives, Voorhis #2, William Clark Papers, Ink on paper by Clark, William, 1806

In 1836, another Hudson's Bay doctor treated a sick girl in the vicinity of Cathlapotle, "on a plain below Warrior's point...several large lodges of Kowalitsk Indians, in all probably one hundred persons." The area had clearly been reoccupied, but by Cowlitz people.

The Cathlapotle area may have been occupied by Indians as late as 1853 and after. The survey notes of the General Land Office (GLO) (USGS, 1853), refer to an "Indian lodge" on the southeastern bank of Gee Creek, where it enters the Lewis River, approximately 800 meters north of Cathlapotle. This 1853 GLO map shows a trail, perhaps blazed during the fur trade, from Vancouver which passes directly alongside Cathlapotle. However, the site is not marked on the map

In 1854, Tappan (1854) states that 140 to 200 Taitnapams were living in the valley of the Lewis River. While Taitnapams were Sahaptin speakers, the Cowlitz were speakers of a Salish language. Except for Tillamook, Cowlitz is one of the most southerly Salish languages. Sahaptin languages were spoken to the east, in the mountainous areas north of the Columbia Gorge and out onto the Columbia Plateau. The presence of Sahaptin speakers in the area of Cathlapotle suggests a downstream expansion.

The General Land Office Survey of 1854 also described an "Indian Lodge" at or near the mouth of Gee Creek north of Cathlapotle. The expansion of Salish and Sahaptin speaking groups into the Wapato Valley following the decimation of Chinookan populations is well documented. Paul Kane, an artist who visited the region in 1846 and 1847, noted that Cathlapotle and other Chinook towns were "entirely extinct as villages" (Kane 1971:21). Nevertheless, Kane produced a record of Chinook culture in his paintings and writings (Harper 1971).

The term Cathlapotle was not limited to the Chinookan town. In fact, according to Swanton (1968), the real name of the town was *Nah-poo-itle* with an additional village called *Wakanasisi* also belonging to the band (the location of Wakanasisi is not clear to this day). Lewis and Clark applied the name Cathlapotle to what is now called the Lewis River. Kane used this label for the river during his travels and it appears on various old maps of the region as well. In 1925, the *Oregonian* newspaper referred to a remote school district and election precinct called "Cathlapoodle" which was named for a "small tribe" that once dwelled on the banks of the Lewis River. Tyee Umtuch was its the last great chief, killed during the Indian war of 1855-1856. Fred Umtuch, the great grandson of Tyee Umtuch, was reported to have been buried in an old Indian cemetery near "Cathlapoodle" (Oregonian 1925).

RESEARCH AND PROBLEM ORIENTATION

The excavations at 45CL1 have been guided by a series of goals and problems. This section summarizes these as they were understood in the spring of 1994. The project was designed to meet three broad, interrelated sets of goals: 1) management and scientific goals, 2) outreach goals, and 3) public education goals.

Management and Scientific Goals

1. The primary task of the Phase I work at Cathlapotle was to: (a) determine the horizontal and vertical extent of the site, (b) establish the stratigraphic integrity of the deposits, (c) evaluate the condition of the site and its contents, (d) establish the site's age, and (e) map the site in detail.

Related management and scientific goals and tasks included the following:

2. *Locating house walls or corners.* The initial determination that the locality was indeed that of Cathlapotle was based on surface indications, including extensive scatters of fire-cracked rock and the locality's topography, particularly the presence of a series of long, linear depressions that appeared to be house depressions. Chinookan houses were sometimes semi-subterranean, and some at least had cellars (Ames et al. 1992). Abandoned semi-subterranean structures are marked by such surface depressions. However, other processes could also account for these features, and it was necessary to test several of them to confirm that they indeed were the remains of large structures. Particular attention needed to be paid to locating either the house walls or corners.

At least one of these depressions had low, narrow ridges crosscutting the depression's main axis. These ridges subdivided the larger depressions into subdepressions. Further, three of the larger depressions contained one or more subdepressions that were considerably deeper than the rest of the feature. Some large Chinookan houses, including those at Cathlapotle, have been described as having interior walls that sectioned the large dwelling into apartment-like units (e.g., Hajda 1994). The features we observed at 45CL1 were hypothesized to represent these interior walls. The differentials in depths within the larger depressions suggested either that: a) some "apartments" had cellars and others did not, or (b) that the larger depressions had been used for smaller houses placed within the larger feature, and the deeper subdepressions represented the cellars only for those smaller dwellings.

3. *Stratified testing.* Like many intact Northwest Coast residential sites, the surface of 45CL1 is topographically complex. The surface complexity was thought to reflect, at least indirectly, functional differences in how different portions of the site were used and in how debris were discarded. Ongoing research on Northwest Coast residential sites indicates that they are very heterogenous in their structure (Ames 1994). By heterogeneous we mean that the contents of these sites are spatially and functionally differentiated. Immediately adjacent deposits may have quite different contents. Therefore it was deemed important to stratify our testing of the site according to rather broad categories of the topography, and according to the spatial relationships of particular classes of surface feature to the presumed house depressions. Work at similar sites shows that the depressions (both as houses and after abandonment) are the primary factors affecting formation of the site (Ames 1991).

4. *Placing structures into their geological context.* Previous research at a large plank house (35CO5) showed us that it was essential to firmly place these structure(s) in their geological context (Ames et al. 1992). This could only be done through extensive trenching. Isolated test pits would be quite difficult to tie together later (Brown 1975, Flannery 1976) in what was potentially a very deep and complex site. The size and depth of the site indicated that except where specific excavation goals required smaller units, or conditions permitted, some form of large block excavations were needed.

Our earlier work also suggested that the ridge complex containing the site fronted either on an abandoned channel of Lake River or on a small, abandoned bay. James Carty has suggested that the eastern bank of Lake River has moved westward some 40 meters or more in the last 70 years (Carty, pers.com.). The 1994 trenching of the site was designed to produce a profile completely through one of the houses, tying deposits at the back (eastern) side of the site through to the swale fronting the site, to test whether that swale had been a bay. The resulting profile could then be used as a model against which the geology of the rest of the site could be matched and interpreted.

5. *Radiocarbon dating of deposits.* The size of the site and its stratigraphic complexity suggested that standard geological techniques of correlating sediments across the site might not work. Given that the site is located on a very dynamic flood plain, it was reasonable to expect that the same depositional regime would be represented by several, perhaps quite distinct depositional facies. Heavy reliance on cultural time stratigraphic markers such as projectile points to correlate and date deposits was questionable since the time of occupation might be shorter than the use-spans of most of the major prehistoric styles. For these reasons, it was decided that an extensive program of radiocarbon dating the deposits was necessary.

6. *Determining potential for archaeological data pertaining to precontact and contact period.* The site was known to have been occupied through the entire fur trade period, and the initial Euro-American settlement of the region. A key question was whether the site contained data relevant to: (a) reconstructing life in the area prior to contact and (b) documenting the potential effects of contact, including epidemics, social and economic disruptions and cultural changes. The effects of contact with the highest archaeological visibility were expected to appear in the residents' material cultural, but some researchers have devised methods indicating that other effects, such as population decline, can also be monitored archaeologically (e.g. Campbell 1985).

7. *Determining population sustainability methods for sedentary hunter-gatherers.* The human population densities of the Portland basin prior to prolonged contact were quite high for hunter-gatherers. Therefore, a significant research question is how were those numbers were sustained, particularly in light of the evidence that they were also rather sedentary. The long term goals of the project involve research centered on that issue (e.g., Ames 1994).

Outreach Goals

1. *Outreach to Native American Communities.* Ongoing consultation with the appropriate tribal groups is seen as absolutely essential to the project's success and was initiated in 1991. Tribes include the Chinook, whose tribal headquarters are located in Chinook, Washington; the Confederated Tribes of the Grand Ronde, in Grand Ronde, Oregon; and the Cowlitz, in Longview, Washington. Initial consultation involved meetings with all three tribal councils, and site visitations by members of the Chinook tribal council. Our long-term goals are to expand participation in the project by these groups, including the setting of project goals as well as active participation in the field research.

2. *Outreach to the Ridgefield Community*. The project staff has given several public lectures in the Ridgefield Community on the project's goals and progress. We have encouraged visitations to the site by community members when excavations are in progress. We plan to develop programs for volunteer participation in the field research.

3. *Environmental and Archaeological Education*. This goal is inseparable from the previous two. However, it expands the outreach effort to include the joint metropolitan areas of Vancouver, Washington and Portland, Oregon. Since these are major media centers for southwestern Washington and much of western Oregon, in some sense, it expands our outreach to that large area. Presently the focus of effort has been the USFWS development of a teaching kit for elementary school teachers based on the excavations at 45CL1, and of a small, portable display about the site that can be set up in almost any indoor location.

These efforts are ultimately tied to the effort by the USFWS to construct an interpretive center at the Ridgefield National Wildlife Refuge that will use the excavation's results as the basis of their displays and education programs.

Sampling

Given the scientific goals outlined above, the sampling methodology was essentially a judgmental sample, stratified by: (a) landform within the site, and (b) compass position within the site. Experience at other Northwest Coast town sites and in mapping Cathlapotle suggested that we could divide the site into several large zones:

Site rear identifies the area of the site behind the major residential features.

Rear berm describes the low ridge area immediately behind the presumed house depressions, usually created by use of the area as a dump.

House depressions are the topographic dips visible on the surface.

Site front areas at 45CL1 these tend to be quite flat with a gentle slope towards the swale. These were thought to represent activity areas and debris fields.

Dumps or middens are discrete mound-like areas which may be the result of dumping. They are located primarily between depressions.

We also wanted to distribute excavation units across the entire site area. To that end, units were distributed through all four quadrants of the site.

The main focus of the 1994 work was to develop a detailed understanding of the site's geology and a history of the site formation processes at work at 45CL1. It was felt that this was essential for evaluating results of further testing. As noted above, a series of scattered test units would be afflicted with the problems of inter-unit correlation discussed by Brown (1975) and ridiculed by Flannery (1976).

In 1993 and 1994, isolated units were therefore placed to meet very specific goals: 1) test the rear berm of the site; 2) test the interior slopes of depressions to establish that they represent structures by locating either (a) the interior wall of the excavated depression or cellar, or (b) locate the actual exterior wall of the house; and 3) test particular topographic features to determine what they are (a) a raised area which auger testing suggested was a midden deposit, and (b) house front areas thought to represent activity zones and resultant debris fields.

The rest of the testing effort was to trench one depression (that the 1993 test had shown to be a house) from the rear berm to the front swale to provide the profile needed. A second trench was placed at right angles to tie that deep subdepression to its larger depression.

In 1995, isolated units were again used to sample particular topographic features or zones of the site. These units were placed in the "midden" zones between Depressions 1 and 2, and 5 and 6. Otherwise, units were placed as parts of larger blocks, or as parts of a "checker-board" arrangement of units. A large block was excavated within the main subdepression of Depression 1 and four units were excavated across the center of Depression 4.

The 1996 excavations were intended to increase the sample of the interior of established Houses 1 and 4, provide additional stratigraphic information (in particular for tying strata in the 1994 trench to adjacent strata), and to attempt to identify a building sequence for House 4 (which is partly buried by adjacent cultural deposits: see below).

The sampling process has also been designed to acquire a sample of artifacts, ecofacts and features from the site. Recent work on sampling methodology suggests that rather large volumetric samples may be required to assure an adequate sample. Lyman (1991) indicates that at least 100 cubic meters is necessary. Ames (1994) supports that conclusion for sites on the northern British Columbia coast. However, Lyman also discusses the problem of how one actually knows one has achieved an adequate sample. He recommends sampling to redundancy, that is, sampling a site until one essentially ceases to recover new categories of artifact, ecofact, or feature. In his analysis of the fauna recovered from 35CO5 he determined that while it only took one or two seasons to recover an adequate sample indicating the number of faunal taxa present at that site, it took five seasons to recover a sufficient sample to show their relative proportions in the assemblage (Lyman 1994). The only way he knew that the 35CO5 fauna had been sampled to redundancy is because six excavations seasons (including Pettigrew's excavations) had been spent there.

The implication is that at a site of the apparent size of Cathlapotle, acquiring a statistically adequate sample will require several seasons of excavation, regardless of other project goals. One can only know that one has sampled to redundancy after one has passed redundancy.

From this perspective, four years of testing at 45CL1 may or may not be statistically adequate for some purposes; the issue is being studied. However, the four years of excavations will certainly provide adequate data to achieve the basic goals of the test and a basis for designing further testing of the site. Our present view is that it would take two to four years of excavation beyond the four years of Phase I (completed in 1996) to test 45CL1 to have adequately sampled the entire site and its constituent features.