

## FINDING AND DATING CATHLAPOTLE

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### ABSTRACT

*The people of the Cathlapotle town played a significant role in the fur trade era history of the Lower Columbia River, including Lewis and Clark's visit on March 29th, 1806. Archaeologists and others have sought the town's location for years. Long-term research has established that archaeological site 45CL1 on the US Fish and Wildlife Refuge near Ridgefield, Washington is Cathlapotle. This determination is based on the close match between site details with various ethnohistoric accounts of Cathlapotle. The site was occupied by ca. AD 1450 and probably moved there from another nearby location. It was abandoned sometime in the 1830s or 1840s. This chronology is based on 54 radiocarbon dates, historic trade goods including glass beads and ceramics, and documentary accounts.*

### INTRODUCTION

Scholars have sought to locate and identify the physical remains of Cathlapotle, a major fur-trade era Middle Chinookan town, for some time (e.g., Hudziak and Smith 1948; Minor and Toepel 1984, 1993; Starkey et al. 1974; Strong 1959). Portland State University has conducted archaeological and ethnohistorical research at 45CL1 (Figure 1) since 1991. That research identified 45CL1 as Cathlapotle early in the course of the project and the project has published on the site using the name "Cathlapotle." Our reasons for doing so are scattered across a number of documents (e.g.,

Sobel 2004, Ames et al. 1999, Ames et al. 2008 ) but we have not to date published a summary of those reasons. One purpose of this paper is to do so. The relevant lines of evidence include ethnohistoric sources, site chronology, topography and site contents.

A second purpose of the paper is to present a summary of the extensive chronological evidence developed for 45CL1 since the project there began in 1991. Several issues drive the radiocarbon dating program at 45CL1. Among them are these:

1) Did the site have a long occupation span? Early assessment suggested the site was deep, raising the possibility of a long occupation span ending in the fur-trade era. Very few such sites have been professionally tested or excavated in the Wapato Valley (aka Portland Basin). To assess this, there was a focus in collecting datable samples from the site's deepest deposits.

2) Had the settlement expanded through time? The size of the site (see below) and ethnohistoric documentation (see below) indicated that Cathlapotle was among the largest communities along the Lower Columbia River during the fur-trade era. We wished to establish the time depth of its size. There seemed to be three possible alternatives:

- The settlement has always been large;
- The settlement started small but grew to its documented size prior to the fur-trade;

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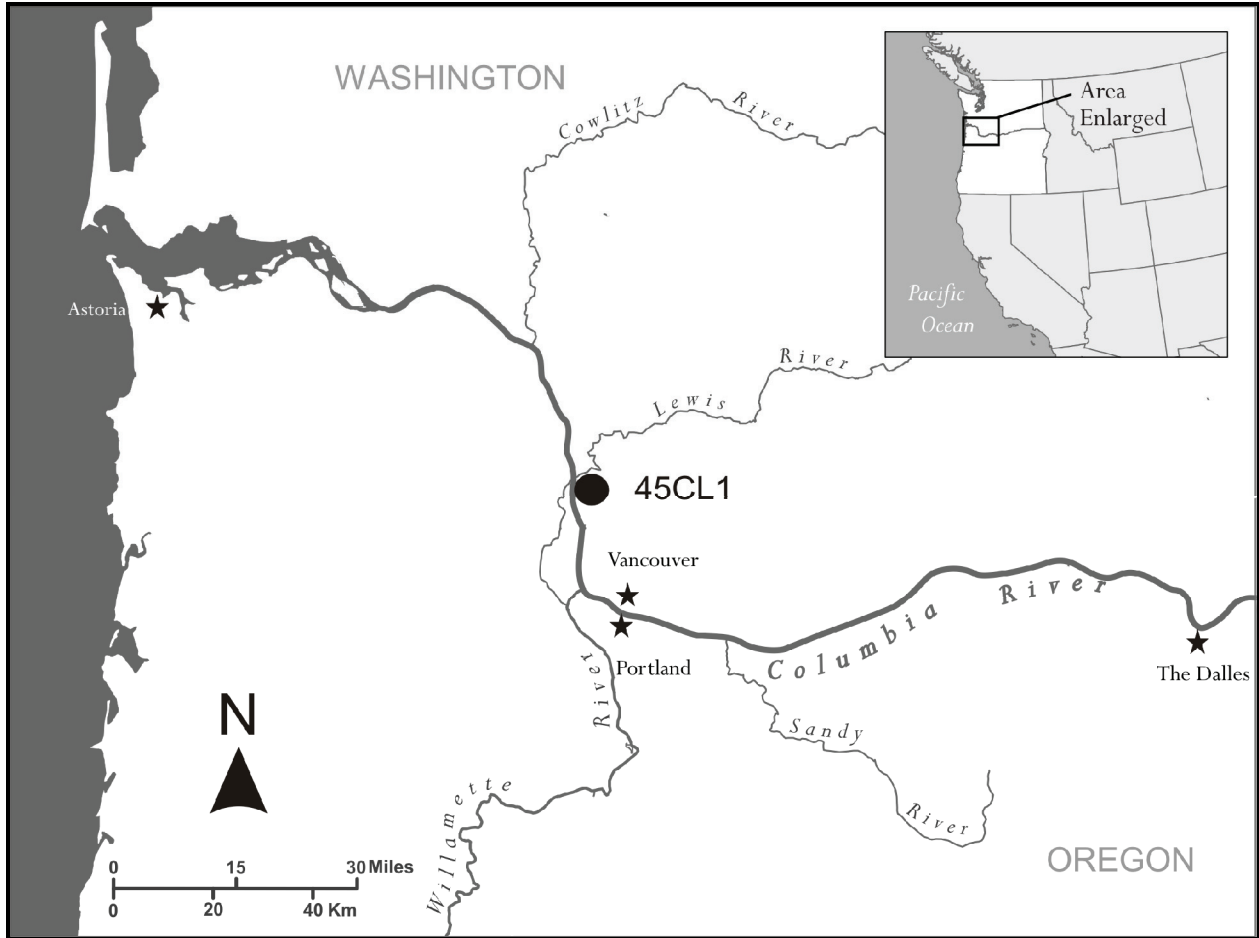


Figure 1. Map showing the location of 45CL1.

- The settlement started small but expanded to its documented size during the fur-trade. This latter pattern might suggest the site's recorded size was a product of regional population redistribution and aggregation caused by epidemics, the fur trade, or other contact era dynamics.

To assess this, samples for dating were collected from widely dispersed basal deposits to determine whether deposition in all sampled portions of the site began at the same time. Samples were also collected to provide initial construction dates for houses in the site's two house rows, to determine whether both rows were always present.

- 3) Were all house compartments contemporary? A number of 45CL1's houses were divided into compartments. The issue was whether these compartments were built at the same time or whether they had been added to expand an original structure. This is issue #2 at the household level: if there was evidence for settlement expansion, was there also evidence for household expansion?

### FINDING CATHLAPOTLE

Minor and Toepel (1993) review the alternative locations for Cathlapotle proposed by different archaeologists and others. These alternatives focused on two sites located on what is now the Carty Unit of the Ridgefield

Wildlife Refuge, 45CL1, and 45CL4. 45CL1 was originally placed in a meadow on what was then private land near the confluences of Gee Creek, Lake River, the Lewis River, and the Columbia River (Hudziak and Smith 1948). A second survey of the area concluded that this location was not an archaeological site and proposed that 45CL4, which is located on Lake River about 3 km above 45CL1, also on the Carty Unit (Ross and Starkey 1975), represents Cathlapotle. Subsequent work (Abramowitz 1980) reinforced that opinion. In 1984, Minor and Toepel tested 45CL4 and concluded that it was the location of several small camps and was probably the campsite for the Lewis and Clark expedition on the night of March 29-March 30, 1806, after their visit to Cathlapotle (Minor and Toepel 1984, 1993). This assignment was not based on archaeological data but on the fit between the description of the camp locale in the Lewis and Clark journals (Moulton 1991) and the physical setting of 45CL4. They found no archaeological support for 45CL4 being the large village described in various fur-trade documents. From this they concluded that Cathlapotle had to be in the vicinity of 45CL1.

### **ETHNOHISTORICAL AND ETHNOGRAPHIC DOCUMENTATION OF CATHLAPOTLE**

While Cathlapotle is mentioned in many documents dating between ca. 1792 and the 1840s (see Sobel 2004), two lengthy, early accounts provide virtually all of the available detailed fur-trade era descriptions.

#### **Broughton, 1792**

The earliest possible references date to 1792 and come from journals of George Vancouver's British exploring party. On the evening of October 28th, Lieutenant William R. Broughton led a group of Vancouver's men

in two small boats up the Columbia River from its mouth – the first known Europeans on the river. During this venture, Broughton and his men arguably met Cathlapotle residents. As told to him by Broughton, Vancouver relates the following:

About three miles and a half from Oak Point Mr. Broughton arrived at another, which he called 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 prepared for combat. On these strangers discoursing with the friendly Indians who had 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 neither part with their copper swords, nor a kind of battle axe made of iron [Vancouver 1798:61].

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 [Vancouver 1798:61].

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 before been experienced by Mr. Broughton during his excursion, but having found them to be unnecessary cautions, he proceeded up that which he considered to be the main branch of the river, until eight in the evening; when, under the shelter of some willows, they took up their lodging for the night on a low sandy point, accompanied by twelve of the natives in a canoe, who fixed their abode very near to them [Vancouver 1798:61].

In this account, “Call’s River” undoubtedly refers to Multnomah channel, “Rushleigh’s River” likely refers to the Lewis River, and the “Indian Village” to Cathlapotle (Barry 1926:410-11; Ames et al. 1999:14-15). A journal account probably written by Broughton’s clerk, Edward Bell, records the same incident:

On the 28th in the Evening we pass’d a very large Village, from whence a considerable number of Canoes came off, many of which carried 10 & 12 men, the greater part of whom were dressed in their War Garments, and arm’d with Bows & Arrows, we computed that there were near two hundred Indians about us, their behavior was friendly & peacable, but they seem’d much surprised at seeing us. A large Stout Man who sat in the Canoe nearest to us seem’d to be the leading Chief amongst them. In case of a sudden attack from this powerful fleet, we had regulated everything in the best manner for our defence, the Swivel was primed, and a Match kept burning, all the Muskets & Pistols in the two Boats were loaded with Ball, and every man had his Cartouch Box buckled on him, with his Musket by

his side, together with a Cutlass, Pistols &c. Mr. Broughton by way of shewing them that our Arms were loaded and in good order, fired a Musket with a Ball in it into the Water, which at first seem’d to terrify the Chief, and all the Indians, for they immediately hid their heads beneath the Gunwhales of the Canoes, and it was some time before they could be persuaded to hold them up again. Soon after this perceiving that our intentions were peaceable, as their own, they took off all their War Garments, and every man seem’d eager to dispose of Bows and Arrows for old Buttons, Beads, &c. nor was the Chief the least eager among the number. Towards dark they gradually dropt off and about 20 of them (the Chief, among them) attended us during the Night as usual. The next morning we were joined by the Canoes that left us the Evening before, and by others that came off from some small Villages that we pass’d (Barry 1932:143-4).

If the village described in both accounts was indeed Cathlapotle, the accounts suggest that in late October of 1792:

- The village was located at or immediately near the confluence of three rivers.
- A population of several hundred men, and roughly one thousand individuals in all, inhabited Cathlapotle.
- Cathlapotle appeared “large” compared to other Native villages passed by Broughton’s crew downstream on the Columbia; it is unclear whether the term “large” refers to structures size, number of structures, or population size.
- Cathlapotle residents were skilled traders and eager to trade for

Euroamerican goods including buttons and beads.

- Cathlapotle residents attached high values to metal (specifically copper and iron) weapons.
- Few if any Euroamericans had previously passed by Cathlapotle.
- Cathlapotle residents were not greatly familiar with firearms.
- The Euroamericans perceived one Native man, apparently from Cathlapotle, to be a leader.
- Their territoriality and/or desire to monopolize trade with the Euroamericans likely motivated Cathlapotle residents to camp overnight with the Broughton crew; the latter probably also explains why Cathlapotle residents discouraged Broughton from upstream travel (See Sobel 2004 for full discussion of these points).

#### **Lewis and Clark, 1805-06**

The Lewis and Clark expedition observed Cathlapotle in November 1805 on their downriver trek to the mouth of the Columbia, and visited it in March 1806 on their return trip. In his journal, Lt. William Clark records a November 5th 1805 interaction with Cathlapotle residents:

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 occupied nearly  $\frac{1}{4}$  of a mile fronting the Chanel, and closely Connected, I counted 14 houses [NB: Quathlapotle nation] in front here the river widens to about  $1\frac{1}{2}$  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 few

miles and returned back [Moulton 1990:23].

Of the same incident expedition member John Ordway notes: “we proceeded on about 10 miles and passed a verry large village at the foot of an Island on the Stard. Side they have a number of canoes Some of the Savages came out in the River in their canoes to See us they wanted to trade with us for muskets offered us dressed Elk Skins” (Moulton 1995a:250).

Over three months later, on the return trip, on March 28, 1806, Clark records another interaction with Cathlapotle residents, at a point about 14 miles downriver of the Cathlapotle settlement: “Since we landed here 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” (Moulton 1990:23). The next day, March 29th 1806, the Lewis and Clark party visited Cathlapotle. Captain Merriwether Lewis provides the most detailed description of this visit:

[W]e arrived at the village of the Cath...-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 their 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 customs &c as far as we could discover are the same. their women wear their ornaments robes and hair as those do below tho’...here their hair is

more frequently braided in two tresses and hang over each ear in front of the body. in stead of the tissue of bark worn by the women below, they wear a kind of leather breach clout about the width of a common pocket handkerchief and reather longer. 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 bundle is drawn tight and the corners a little spread in front and tucked at the groin over and around the part first confined 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 litte 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 bearyl 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 pieces 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 dried 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

neighboring ponds, which are numerous and extensive in the river bottoms and islands. the wappetoe furnishes the principal article of traffic with these people 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 quantity 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 ourcustom on those occasions with which they seemed perfectly satisfied. we gave the 1st chief a small medal, which he soon transferred 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 1991:26-29].

Clark also records the March 29, 1806 visit to Cathlapotle:

[W]e proceeded on to the lower point of the Said island accompanied by 3 Indians, & were met by 2 canoes of natives 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 coming into the columbia at this time it being high. The indians inform us that this river is crowded 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 is 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 oClock 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 place, where the natives make a portage of their Canoes and Wappato roots to and from a large pond at a short distance. in this pond

the natives inform us that 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 natives came up with Wappato to Sell a part of which we purchased [Moulton 1991:30].

Of the March 29th visit crew member John Ordway records:

[L]ittle above we arrived at the village of the [blank] nation which is a large village and most of their huts join. this village is more decent than any I have Seen below. we delayed at this village about 3 hours. Capt Clark bought a Robe which was made of 2 Sea otter Skins from the princepal man who he made a chief Gave him a meddle. he put it on his wife. Capt. Clark Gave the chief a blue blanket edges with red & Small also an old flag, which he was Satisfied with. we bought Several fat dogs and some wa pa toes from the natives. towards evening we proceed [Moulton 1995b:282-83].

Lewis and Clark also locate Cathlapotle on three maps or drafts of maps. All three versions are quite clear on the local geography. Their map of the confluence of the Willamette and Columbia Rivers (Moulton 1991: 69), for example, places the “Quath.lah.pohtle” nation at the confluences of the Lake River, the “Cah.wah.na.hi.ooks River” (Lewis River),

Multnomah Channel, and the Columbia River. The map clearly shows Bachelor Island and the downstream end of Sauvie Island. This placement is identical in the two Atlas maps (Moulton 1983: 80, 89). However, their maps vary in the number of houses at Cathlapotle. Map 80 in the atlas has 14 houses, in line with their journal entries, in three rows of five, five, and four houses, while map #89 shows seven houses in a double row. This map also has a notation that includes “14 or more hs.” The map in the text (Moulton 1991: 69) has six houses in two rows. It is probably important not to make too much of this variation, given the clear counts of 14 houses in both the fall and spring accounts and the notation on map 89.

In the original manuscript version of their journals, Lewis and Clark suggest a population of 300 for Cathlapotle, based on their downriver observations. In a later estimate, likely based on the subsequent upriver visit, Lewis and Clark estimate a population of 900 for Cathlapotle (Moulton 1990[6]:477, 481). Boyd and Hajda (1987) argue the significant increase in estimated population size, which characterizes the two sets of Lewis and Clark population estimates for the entire Lower Columbia, reflects seasonal population movement. The Lewis and Clark journal entries have several implications regarding Cathlapotle ca. 1805-1806:

- Cathlapotle appeared “large” compared to other villages observed by the expedition further upstream along the Columbia River.
- Cathlapotle was located at or very near the confluence of four rivers.
- Cathlapotle stretched for ca. 0.25 miles along a river bank.
- Some or all Cathlapotle “houses” (or “huts”) were “attached” or “joined” to others.

- Cathlapotle contained roughly 14 wooden houses; it is unclear whether all of these were plankhouses, and whether Lewis and Clark counted two “attached” houses as one structure or two separate structures.
- Cathlapotle was visible to one traveling by boat on the Columbia.
- Cathlapotle residents were familiar with Euroamericans and eager to trade with them.
- Clark’s March 28, 1806 journal entry indicates that the people of Cathlapotle monitored activity on nearby parts of the Columbia River, reflecting territoriality and/or efforts to monopolize trade in the area.
- To Lewis and Clark, the house architecture, men’s clothing, and behavior of Cathlapotle appeared similar to that of downriver people, while the language seemed slightly different and the women’s clothing somewhat different.
- The elevation of the interior floor surface in most houses was similar to the elevation of the outside ground surface, but in several houses was lower than the outside ground surface.
- House interior architectural features, particularly central roof support posts and areas around doorways and beds, exhibited carved and painted images.
- While being stored and/or processed, eulachon (“Anchovies”) were strung on cordage and hung from ceilings inside houses
- Cathlapotle residents harvested high quantities of wapato and traded much of this plant food to downriver peoples.
- Cathlapotle obtained Euroamerican goods by trading with downriver Native intermediaries.



- Cathlapotle residents possessed iron sword-like implements ca. three or four feet in length
- Lewis and Clark perceived one man to be the primary leader, but not the only leader, at Cathlapotle.
- The Cathlapotle population may have fluctuated seasonally between a spring high and a summer/fall/winter low.
- In July of 1812, Stuart estimated that the “Cathlapotles” included 180 men of fighting ability. If such men composed about 20% of the population, then the “Cathlapotles” consisted of about 900 individuals in total. This number is the same as Lewis and Clark’s estimate of the population of the town of Cathlapotle in Spring 1806, and only slightly lower than Broughton’s estimate of population of the town in Fall 1792.
- Cathlapotle appeared “large” compared to other villages observed by Franchere along the Columbia River.

### **Other Accounts**

Beyond these accounts, Cathlapotle is mentioned frequently but often only in passing in subsequent accounts of land-based fur traders affiliated with the Pacific Fur Company based at Fort Astoria, near the Columbia River’s mouth, and of employees of the Hudson’s Bay Fur Company (Franchere 1967; Henry 1992; Jones 1999; Stuart 1935). However, while these accounts place Cathlapotle in the Wapato Valley and even on or near the Lewis River, they are not specific enough for our purposes here. However, they offer additional detail about Cathlapotle in the period 1811 – 1814:

- The Euroamerican fur traders at Fort Astoria/George interacted with Cathlapotle men who they perceived as leaders or “chiefs.”
- The Euroamerican fur traders at Fort Astoria/George tried to please Cathlapotle chiefs and other Native leaders in the Lower Columbia, as they believed that these individuals held substantial influence over other indigenous people in the region.
- On at least two occasions, Euroamerican men separated from fur trade parties spent several days or more at Cathlapotle.
- Cathlapotle residents traveled occasionally to Fort Astoria/George and traded with the Euroamericans there.

Several sources dating from the 1820s to the 1850s reference Cathlapotle by name or location (Sobel 2004). A map produced during an 1825 survey by the Hudson’s Bay company shows a “village” at the exact location where the archaeological site is located (1825 survey of the Lower Columbia River, Presented at the Lithographic Establishment, Quarter Master General’s Office, October, 1826, curated at Washington State Historical Society, reproduced in Kaehler 2002:15).

References dating from the 1830s to the 1850s (see Sobel 2004) imply that regular Native habitation in plankhouses or other substantial structures at Cathlapotle ceased in the early 1830s, probably between 1830 and 1832, as a result of malaria epidemics. However, some sort of occupation, perhaps sporadic and short-term, by surviving Chinookans as well as Cowlitz and Klickitat people, apparently characterized the site vicinity by 1834 and continued through the early 1850s. After that time, the forced removal of Native Americans to reservations and an expansion of Euroamerican settlement largely curtailed traditional Native settlement and subsistence around Cathlapotle and throughout the Lower Columbia.

## **45CL1: THE ARCHAEOLOGICAL SITE**

### **Location**

45CL1 is located where virtually all sources place Cathlapotle. It is near the town of Ridgefield in Clark County, Washington. The site lies on the Wapato Valley (aka Portland Basin) floodplain just east of the uplands that define the valley, close to the convergence of three major waterways – the Lake River, the Lewis River, and the Columbia River (Figure 1) - and one small waterway – Gee Creek - and just upstream of the confluence of the Columbia with another major waterway, Multnomah Channel.

### **Size**

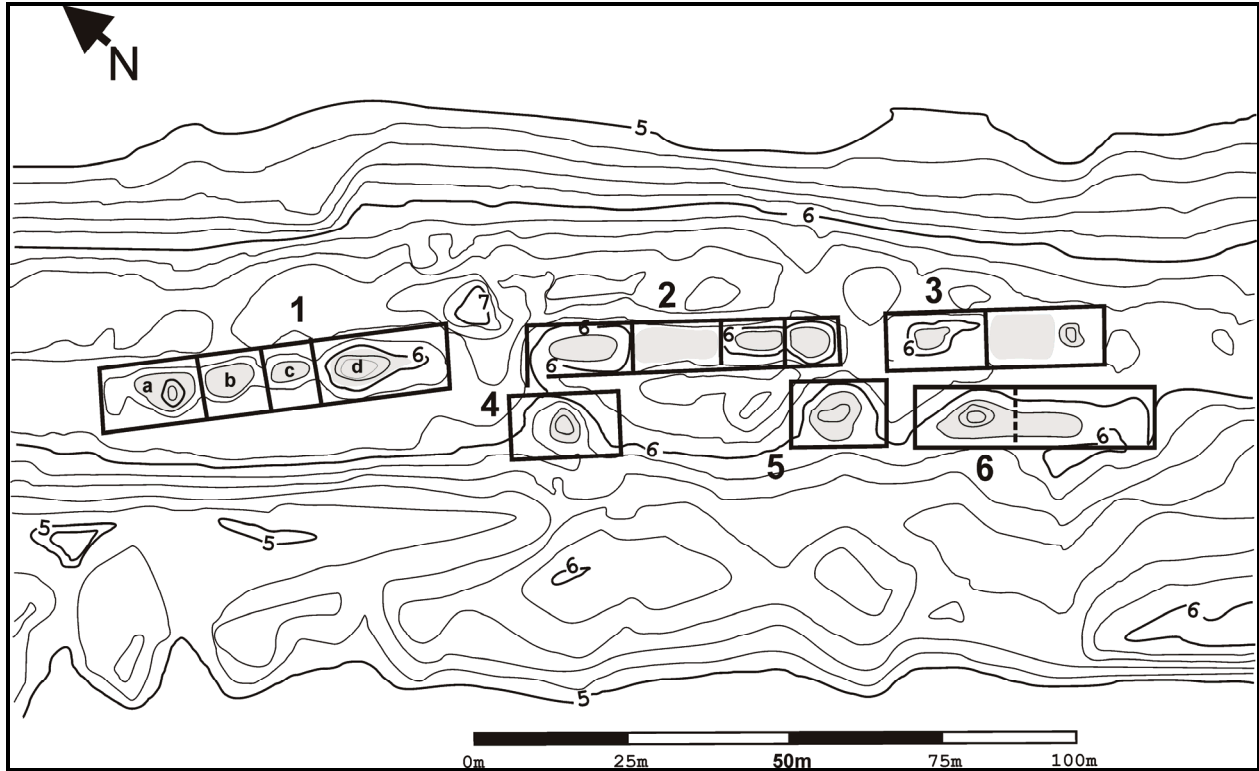
45CL1 extends 250 meters (0.155 mile) N-S and 70 meters E-W, covering an area of roughly six hectares (four acres) on Site Ridge, the easternmost of three ridges collectively known as Brush Ridge. The three ridges run parallel to Lake River on the east. The site would have been visible from boats off Warrior Point at the downstream end of Sauvie Island, especially with no tree cover.

45CL1 lies in an active fluvial environment that played (and still plays) a major role in forming the landscape within and around the site. Geoarchaeological research (Hodges 1999) indicates that Brush Ridge was originally a point bar formed through the accretion of alluvium along the east bank of the Lake River during the late Holocene, ca. A.D. 1 to A.D. 1000. When 45CL1 was established ca. A.D. 1400 - 1450, Site Ridge composed the whole of Brush Ridge and the Lake River flowed by the western edge of the site. The two western ridges within Brush Ridge formed at later dates, after 45CL1 was first occupied, presumably during major flood episodes. Hence the Lake River has migrated roughly 100 meters westward of 45CL1 and

left two ridges in its wake over the ca. 600 years since the settlement was established (Hodges 1999).

The site contains cultural deposits generally two meters in depth (Ames et al. 1999). The site's surface is marked by six large depressions (Figure 2). The depressions are aligned in two rows paralleling the Lake River, hence running north-south. The largest depressions, Houses 1, 2 and 3 are in the back (farthest from the river) row. They are higher in elevation than the three depressions comprising the front row. Excavations over a five-year period demonstrated that these depressions are the surface remnants of post and beam – plank – houses (Ames et al 1999). The floors of the depressions are as much as two meters below the surrounding terrain. The deposits in the depressions contain extensive features such as wall molds, post molds, plank molds, postholes, hearths, extensive subfloor storage pits as well as large quantities of artifacts and ecofacts. All visible structures were “winter” (Hajda 1994) or permanent houses. However there were two variant forms of structure, what we are calling “simple” and “compartmented” houses.

Simple houses had open undivided interiors with a row of hearths down the middle and sleeping platforms around the interiors. Compartmented houses were comprised of several “simple” structures - compartments - built end—to-end (Figure 2) in a row, all placed within a single depression. These are marked on the site's surface by multiple low ridges crossing the house depressions at right angles, creating sub-depressions. Excavation demonstrated these ridges formed where the end walls of the compartments meet. Each compartment had its own interior hearth or hearths and sleeping platforms. Houses 1, 2, and 6 are definitely compartmented, House 3 is probably compartmented, and Houses 4 and 5 are probably simple houses. Evidence for a



**Figure 2.** Map of 45CL1. The structures and compartments are indicated by the black rectilinear lines. These are based on excavations and microtopography. The dashed line in House 6 is a likely position for a wall. The shaded areas within the structures show the sub-depressions in the larger depressions.

seventh, early structure, House 7, was exposed at the bottom of midden deposits between Houses 2 and 3. House 7 is very probably a precursor of House 2. There is also structural evidence in the sheet midden deposits in front of the visible houses including walls and load bearing posts. The nature of these structures is unknown at present.

Lewis and Clark's journal entries for their visit of March 29th, 1806 are explicit about there being 14 houses at Cathlapotle. A conservative reconstruction of the compartment houses at Cathlapotle suggests 12 compartments plus Houses 4 and 5, yielding 14 houses if the compartments are counted separately as houses. The reader will recall these were constructed end to end with their walls abutting. A case can be made for 14 compartments, in addition to Houses 4 and

5 (Figure 2), yielding 16 houses. The houses and house compartments are large (Table 1).

### Chronology

The archaeological chronology of 45CL1 is based on 54 radiocarbon dates (Table 2, Figure 3) and temporally sensitive fur-trade era artifacts. The site's occupation span is sufficiently brief that we have found little evidence of change in temporally sensitive traditional artifacts, such as projectile points, although at this writing, analyses are continuing. It is not our intent here to discuss the radiocarbon chronology in detail; that is more appropriate for a monograph.

**Table 1. House and Compartment Sizes at Cathlapotle**

| House          | Width (m) | Length (m) | Area (m <sup>2</sup> ) |
|----------------|-----------|------------|------------------------|
| 1a             | 10.0      | 16.0       | 160                    |
| 1b             | 10.0      | 6.6        | 66                     |
| 1c             | 10.0      | 11.3       | 113                    |
| 1d             | 10.0      | 18.7       | 187                    |
| 1 Total        |           |            | 526                    |
| 2a             | 8.0       | 16.0       | 128                    |
| 2b             | 8.0       | 14.5       | 116                    |
| 2c             | 8.0       | 10.5       | 84                     |
| 2d             | 7.0       | 8.0        | 56                     |
| 2 Total        |           |            | 384                    |
| 3a             | 9.0       | 14.5       | 131                    |
| 3b             | 8.0       | 18.0       | 144                    |
| 3 Total        |           |            | 275                    |
| 4              | 8.1       | 11.3       | 92                     |
| 5              | 9.0       | 13.0       | 117                    |
| 6 <sup>a</sup> | 9.0       | 24.0       | 216                    |

<sup>a</sup> Microtopography indicates that House 6 is compartmented but it is not clear whether it had two or three compartments.

### *Radiocarbon Chronology*

Building a large sample of radiocarbon dates was a major priority of the project from its inception. To that end, datable materials were uniformly treated as samples; they were assigned a sample number in the field, and, when possible, recorded with 3-point provenience. Datable materials were recovered both during excavation and in screening. During the testing phases of

excavation (1991-1993) sediments were screened through ¼ in hardware cloth; during the first full season (1994) of excavation, all sediments were screened through ¼ in mesh. Additionally, for each excavation level, one 1 x 1 m quadrant of each excavation unit (either 2 x 2 m or 1 x 4 m) and samples from specific contexts (e.g., features) were field screened through 1/8 in mesh and bulk samples were collected. For a variety of reasons, screening through 1/8 in mesh was found to be unsatisfactory. In the following two seasons, while ¼ in mesh continued to be used for screening, a standard 10 liter bulk sample was taken from the northwest 1 x 1 m quadrant of every level in all excavation units. Bulk samples were also collected for all features and when it was deemed to be a good idea. These bulk samples were then water screened through a set of four nested screens of diminishing size (4 mm, 2 mm, 1 mm, 0.5 mm). Datable materials were taken from these bulk samples. During the first years of the project, the budget precluded large numbers of AMS dates, so all dates were standard dates. Large volumes of datable charcoal were required for these to ensure the dates had narrow sigmas. In Table 2, the WGC and Beta dates are AMS; the rest are standard dates.

The first issue to be addressed here is the site's occupation span. During 1991-1993, work at Cathlapotle was limited to augering, and excavating one 1 x 4 m and one 2 x 2 m test unit. This initial work produced relatively early dates which have not been strongly duplicated in the more extensive sampling from 1994-1996. The earliest date of 2346±53 (TX 8286) is on charcoal recovered from a stratum of high charcoal, high organic content within a scroll bar underlying midden immediately west of House 1. Three samples (TX 7742, 7744, and 7745) collected during the augering program produced dates suggesting midden deposition began between ca. AD 1000 and 1200. Two samples were

Table 2 Radiocarbon Dates from 45CL1

| C14 Lab#    | Unit              | Assoc.  | Date   | StdDev | 1 sigma<br>Calibration <sup>a</sup> | Probability <sup>a</sup> | 2 sigma<br>Calibration <sup>a</sup> | Probability <sup>a</sup> |
|-------------|-------------------|---------|--------|--------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|
| Beta 131610 | N159-160/W103-107 | Midden  | Modern | NA     | Modern                              | --                       | Modern                              | --                       |
| Beta 131604 | N128-130/W96-98   | House 4 | Modern | NA     | Modern                              | --                       | Modern                              | --                       |
| TX 8292     | N168-172/W88-89   | House 1 | 9      | 41     | Modern                              | --                       | Modern                              | --                       |
| Beta 131607 | N155-157/W84-86   | House 1 | 50     | 60     | AD 1867 - 1918                      | 0.43                     | AD 1801 - 1939                      | 0.68                     |
| DRI 3544    | N70-72/W93-95     | Midden  | 76     | 35     | AD 1877 - 1917                      | 0.45                     | AD 1807 - 1928                      | 0.45                     |
| DRI 3542    | N159-160/W103-107 | Midden  | 84     | 46     | AD 1867 - 1918                      | 0.43                     | AD 1801 - 1938                      | 0.68                     |
| DRI 3541    | N75-77/W76-78     | Midden  | 150    | 94     | AD 1719 - 1782                      | 0.29                     | AD 1630 - 1950                      | 0.97                     |
| TX 8285     | N159-160/W87-91   | House 1 | 166    | 40     | AD 1727 - 1784                      | 0.44                     | AD 1718 - 1827                      | 0.48                     |
| Beta 131609 | N159-160/W103-107 | Midden  | 170    | 60     | AD 1726 - 1813                      | 0.51                     | AD 1649 - 1894                      | 0.83                     |
| DRI 3510    | N130-132/W99-101  | House 4 | 177    | 52     | AD 1727 - 1812                      | 0.56                     | AD 1716 - 1891                      | 0.61                     |
| DRI 3534    | N128-130/W96-98   | House 4 | 179    | 35     | AD 1733 - 1785                      | 0.5                      | AD 1722 - 1817                      | 0.53                     |
| TX 8270     | N179-181/W101-103 | Midden  | 180    | 40     | AD 1732 - 1809                      | 0.62                     | AD 1720 - 1819                      | 0.50                     |
| DRI 3543    | N138-140/W86-88   | House 4 | 186    | 61     | AD 1727 - 1813                      | 0.52                     | AD 1636 - 1950                      | 0.99                     |
| TX 7743     | Auger 92-12       | Midden  | 200    | 60     | AD 1727 - 1812                      | 0.53                     | AD 1631 - 1896                      | 0.81                     |
| DRI 3536    | N157-159/W90-92   | House 1 | 216    | 37     | AD 1764 - 1800                      | 0.46                     | AD 1727 - 1812                      | 0.49                     |
| Beta 131613 | N179-181/W101-103 | House 1 | 220    | 60     | AD 1729 - 1810                      | 0.48                     | AD 1717 - 1891                      | 0.46                     |
| DRI 3511    | N130-132/W99-101  | House 4 | 225    | 50     | AD 1736 - 1805                      | 0.5                      | AD 1722 - 1817                      | 0.40                     |
| TX 8276     | N107-109/W98-100  | Midden  | 236    | 51     | AD 1634 - 1681                      | 0.42                     | AD 1614 - 1695                      | 0.34                     |
| TX 8273     | N136-138/W94-96   | House 4 | 240    | 40     | AD 1635 - 1677                      | 0.55                     | AD 1619 - 1685                      | 0.43                     |
| DRI 3535    | N149-151/W84-86   | House 1 | 243    | 63     | AD 1626 - 1682                      | 0.35                     | AD 1473 - 1698                      | 0.59                     |
| TX 8271     | N136-138/W94-96   | House 4 | 250    | 30     | AD 1639 - 1667                      | 0.75                     | AD 1626 - 1680                      | 0.59                     |
| DRI 3531    | N128-130/W96-98   | House 4 | 252    | 35     | AD 1634 - 1668                      | 0.63                     | AD 1618 - 1681                      | 0.51                     |
| TX 8278     | N107-109/W98-100  | Midden  | 253    | 40     | AD 1632 - 1669                      | 0.53                     | AD 1616 - 1682                      | 0.45                     |
| TX 8290     | N159-160/W99-103  | Midden  | 260    | 38     | AD 1631 - 1668                      | 0.55                     | AD 1615 - 1680                      | 0.45                     |
| DRI 3514    | N52-54/W99-101    | Midden  | 269    | 73     | AD 1491 - 1602                      | 0.55                     | AD 1449 - 1695                      | 0.75                     |

| C14 Lab#    | Unit             | Assoc.  | Date | StDev | 1 sigma                  |                          | 2 sigma                  |                          |
|-------------|------------------|---------|------|-------|--------------------------|--------------------------|--------------------------|--------------------------|
|             |                  |         |      |       | Calibration <sup>a</sup> | Probability <sup>a</sup> | Calibration <sup>a</sup> | Probability <sup>a</sup> |
| TX 8280     | N107-109/W98-100 | Midden  | 281  | 43    | AD 1521 - 1577           | 0.54                     | AD 1477 - 1669           | 0.95                     |
| DRI 3540    | N147-149/W86-88  | House 1 | 286  | 81    | AD 1485 - 1667           | 0.95                     | AD 1441 - 1695           | 0.8                      |
| DRI 3513    | N155-157/W90-92  | House 1 | 289  | 71    | AD 1490 - 1603           | 0.67                     | AD 1446 - 1684           | 0.86                     |
| TX 8289     | N159-160/W99-103 | Midden  | 295  | 37    | AD 1521 - 1577           | 0.62                     | AD 1483 - 1663           | 1.00                     |
| TX 8272     | N136-138/W94-96  | House 4 | 340  | 50    | AD 1551 - 1634           | 0.66                     | AD 1453 - 1644           | 1.00                     |
| TX 8275     | N107-109/W98-100 | Midden  | 340  | 50    | AD 1551 - 1634           | 0.66                     | AD 1453 - 1644           | 1.00                     |
| TX 8274     | N107-109/W98-100 | House 4 | 344  | 41    | AS 1556 - 1632           | 0.65                     | AD 1459 - 1641           | 1.00                     |
| TX 8294     | N159-160/W99-103 | Midden  | 350  | 50    | AD 1558 - 1631           | 0.59                     | AD 1451 - 1642           | 1.00                     |
| Beta 131612 | N174-176/W90-92  | House 1 | 350  | 60    | AD 1556 - 1632           | 0.58                     | AD 1444 - 1648           | 1.00                     |
| TX 8288     | N159-160/W99-103 | Midden  | 356  | 37    | AD 1572 - 1629           | 0.5                      | AD 1536 - 1635           | 0.54                     |
| DRI 3538    | N155-157/W90-92  | House 1 | 362  | 65    | AD 1455 - 1524           | 0.52                     | AD 1437 - 1649           | 1.00                     |
| DRI 3539    | N75-77/W76-78    | House 7 | 374  | 43    | AD 1450 - 1521           | 0.68                     | AD 1444 - 1530           | 0.53                     |
| Beta 131606 | N153-155/W86-88  | House 1 | 380  | 70    | AD 1446 - 1523           | 0.59                     | AD 1426 - 1648           | 1.00                     |
| TX 8282     | N107-109/W98-100 | Midden  | 397  | 40    | AD 1443-1513             | 0.83                     | AD 1443 - 1527           | 0.68                     |
| TX 8279     | N107-109/W98-100 | Midden  | 410  | 40    | AD 1437 - 1496           | 0.84                     | AD 1427 - 1524           | 0.76                     |
| TX 8283     | N159-160/W83-87  | House 1 | 428  | 38    | AD 1431 - 1485           | 1                        | AD 1415 - 1521           | 0.89                     |
| DRI 3512    | N75-77/W76-78    | House 7 | 429  | 57    | AD 1422 - 1512           | 0.89                     | AD 1408 - 1529           | 0.73                     |
| Beta 131605 | N138-140/W86-88  | House 4 | 430  | 70    | AD 1417 - 1529           | 0.84                     | AD 1398 - 1643           | 0.99                     |
| TX 8281     | N107-109/W98-100 | Midden  | 434  | 60    | AD 1418 - 1512           | 0.9                      | AD 1404 - 1530           | 0.84                     |
| DRI 3515    | N52-54/W99-101   | Midden  | 444  | 89    | AD 1406 - 1522           | 0.77                     | AD 1386 - 1646           | 0.92                     |
| TX 8277     | N107-109/W98-100 | Midden  | 450  | 60    | AD 1409 - 1493           | 0.92                     | AD 1393 - 1528           | 0.79                     |
| WG 549      | N107-109/W98-100 | Midden  | 505  | 45    | AD 1402 - 1444           | 1                        | AD 1387 - 1459           | 0.83                     |
| Beta 131614 | N180-182/W88-90  | House 1 | 520  | 70    | AD 1398 - 1446           | 0.68                     | AD 1287 - 1493           | 0.99                     |
| WG548       | N107-109/W98-100 | Midden  | 690  | 70    | AD 1261 - 1320           | 0.61                     | AD 1227 - 1408           | 1.00                     |
| TX 7745     | Auger 92-19      | Midden  | 720  | 150   | AD 1166 - 1404           | 1                        | AD 993 - 1404            | 1.00                     |
| TX 8293     | N168-172/W88-89  | House 1 | 727  | 58    | AD 1224-1298             | 0.95                     | AD 1185 - 1324           | 0.83                     |

| C14 Lab# | Unit            | Assoc.  | Date | StDev | 1 sigma Calibration <sup>a</sup> | Probability <sup>a</sup> | 2 sigma Calibration <sup>a</sup> | Probability <sup>a</sup> |
|----------|-----------------|---------|------|-------|----------------------------------|--------------------------|----------------------------------|--------------------------|
| TX 7744  | Auger 92-17     | Midden  | 740  | 140   | AD 1157-1330                     | 0.76                     | AD 1019 - 1465                   | 1.00                     |
| TX 8284  | N159-160/W87-91 | Midden  | 781  | 38    | ERROR (Dates in the future)      |                          |                                  |                          |
| TX 7742  | Auger 92-19     | Midden  | 910  | 210   | AD 942-1284                      | 0.94                     | AD 760 -1412                     | 0.97                     |
| TX 8286  | N159-160/W95-99 | House 1 | 2346 | 53    | 515 - 376 BC                     | 1                        | 555-352 BC                       | 0.82                     |

<sup>a</sup> The calibrations in the table were done with CALIB 5.0.1 (Stuiver et al. 2005).

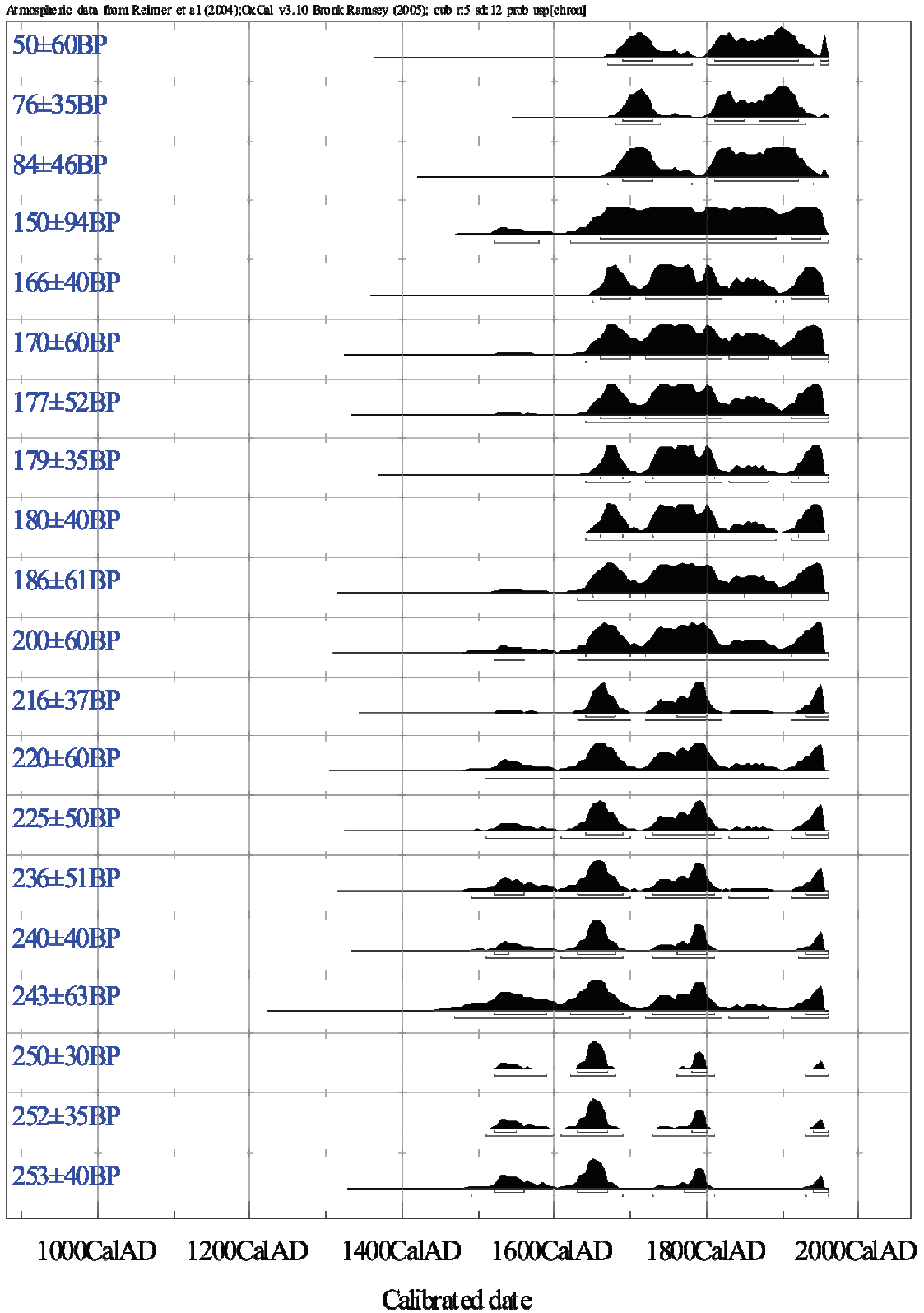
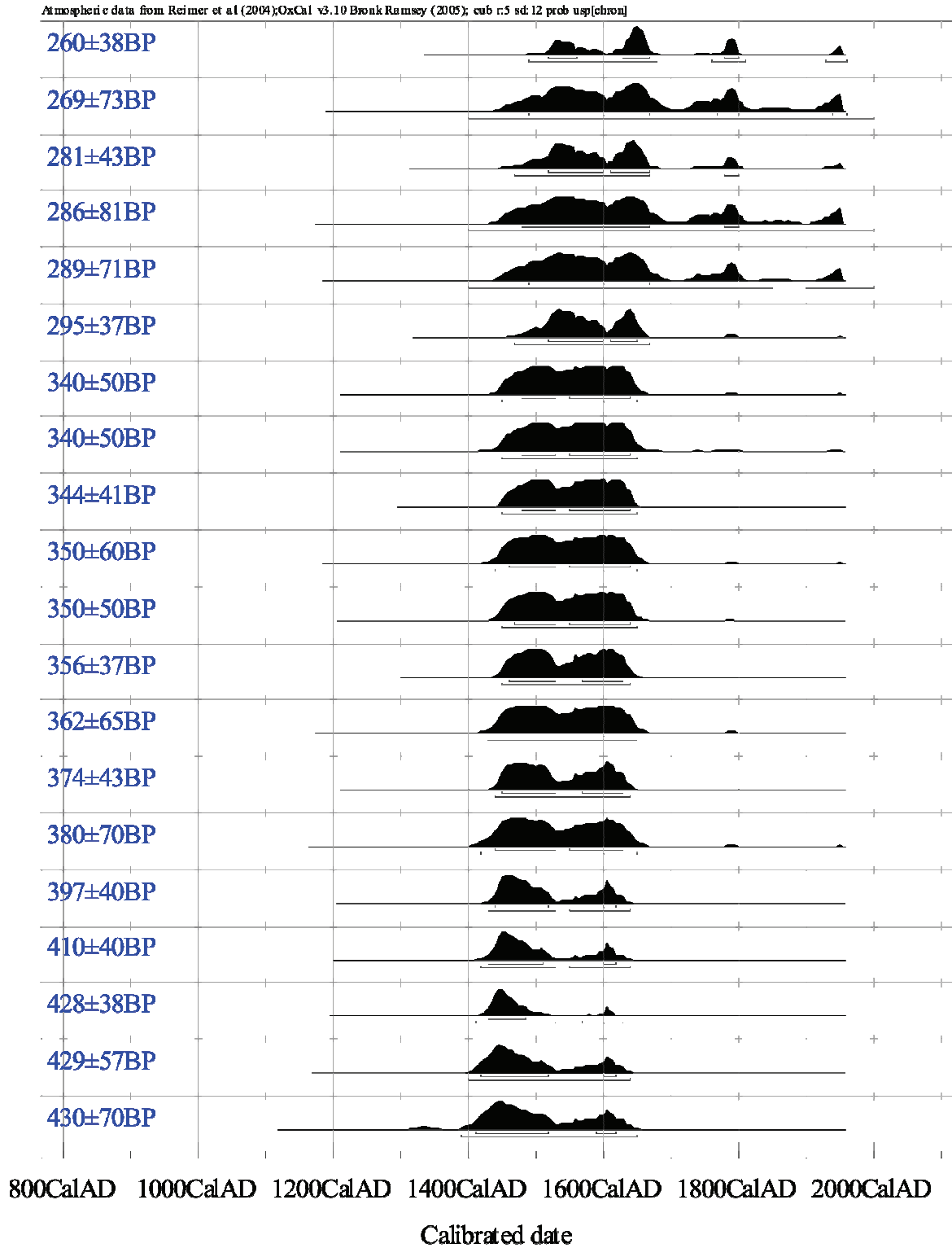
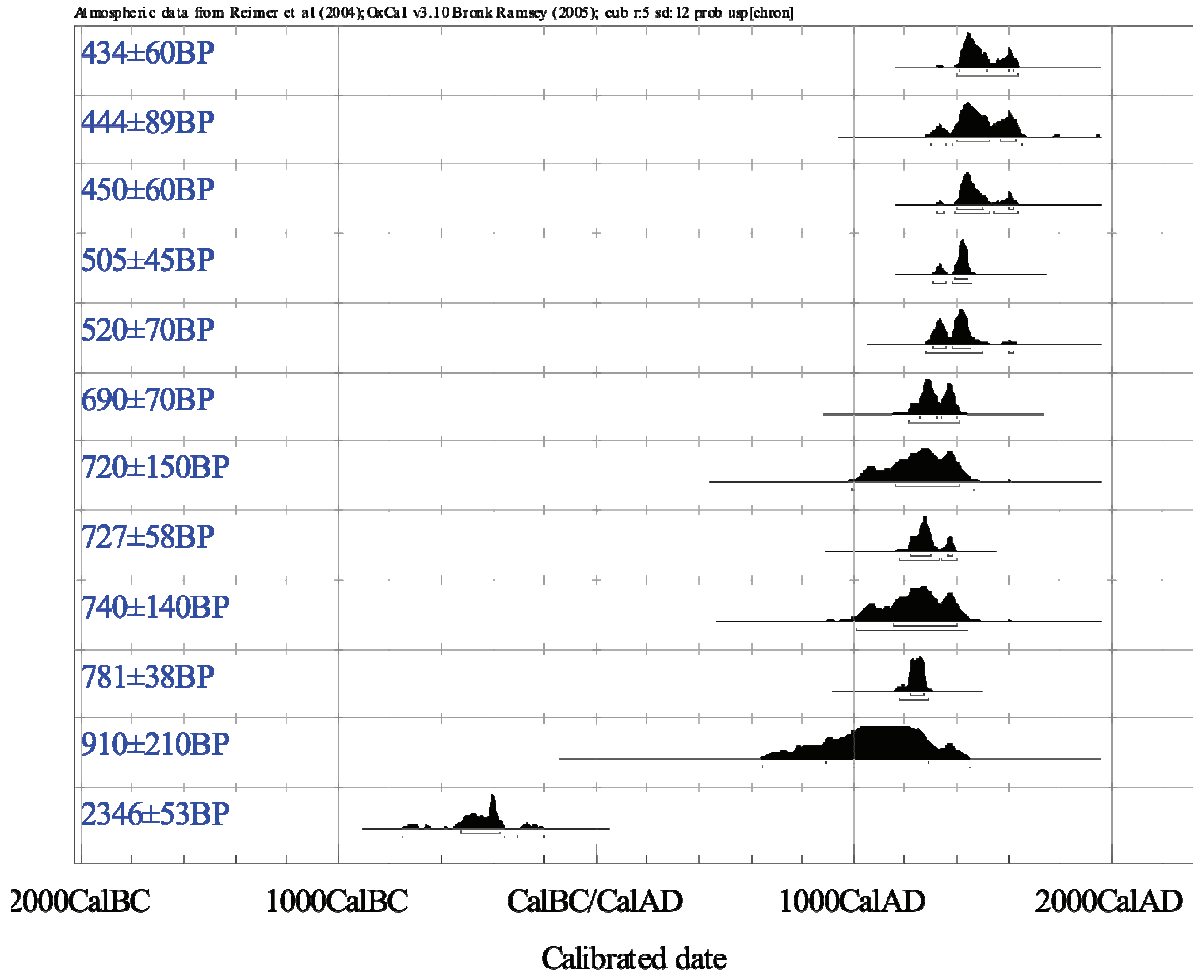


Figure 3. Calibrated radiocarbon dates from 45CL1. Calibration and graph done in OxCal 3.1.0 (Bronk Ramsey 2005). The dates are in the same order as Table 2.





**Figure 3 (continued).** Calibrated radiocarbon dates from 45CL1. Calibration and graph done in OxCal 3.1.0 (Bronk Ramsey 2005). The dates are in the same order as Table 2.



**Figure 3 (continued).** Calibrated radiocarbon dates from 45CL1. Calibration and graph done in OxCal 3.1.0 (Bronk Ramsey 2005). The dates are in the same order as Table 2.

from the same auger (92-19) and the resulting dates were in good stratigraphic order. The third sample came from an auger at least 150 meters away. These samples together suggested an occupation of a millennium and perhaps significantly longer in length. However, these samples have been replicated only twice, and one of these, TX 8293, is probably on old wood, given its context. That sample was taken from a large architectural feature in house 1, but only about 30 cm below the modern surface. The other sample, WG 548, was collected just below the bottom of the midden in front of House 2. It is on acorn meat and associated with five other

dated samples, WG549, TX 8277, 8279, 8281, and 8282, more than 2 m below the surface. These five dates are statistically identical, using the CALIB 5.0.1. t-test module (Stuiver et al. 2005). Their pooled mean is 434±20 B.P. with a calibrated single sigma age span of AD 1443-1513 (p%=0.83). However, WG 548 is not statistically identical to these five dates. It is statistically identical to the three auger dates. These four dates together produce a pooled mean of 718 ± 56 BP, with a single sigma calibrated range of AD 1251-1303 (p% = 0.76) and a 2 sigma range of AD 1211-1328 (p%= 0.78). A 2 x 8 m trench was excavated near the location of auger 92-19 partially in

the hopes of duplicating its early dates, but without success. When WG 548 is included with the other 17 oldest Cathlapotle dates (excluding TX 8286 and TX 7742), the dates are statistically identical and produce a pooled mean of  $408\pm 9$  BP for a single sigma calibrated age span of AD 1448-1462 ( $p\% = 1$ ) and a two-sigma span of AD 1444-1475 ( $p\% = 1$ ). Where we have dates on initial house construction, they indicate house building started during that span. In fact, a large sample of dates indicates midden deposition and house construction, at least of the back row, began ca. AD 1450.

However, before moving on to the sequence of house construction, a few more comments on the three auger dates and WG548 are in order. They do not fit with an initial date for the site of ca. AD 1450 that is indicated by the full radiocarbon sample. One explanation is that the three Texas dates are, like TX 8293, on old wood. However, evidence presented below suggests that these three dates cannot easily be dismissed as old wood dates. Furthermore, WG548 is on a charred acorn shell, selected explicitly to avoid the old wood problem. It was recovered associated with the other samples reported here and other cultural material (e.g., animal bones, lithics) from sands below the midden. One might argue that it had washed in. However, the other five dates from this context, while younger, are internally consistent enough to preclude multiple origins. One of them, WG549, is also on a charred acorn shell. In any case, these dates raise the unresolved possibility that cultural deposition at Cathlapotle began around ca. AD 1300. Minor and Toepel (1993) report a date of  $720\pm 80$  BP (Beta 12290) from 45CL4 and Daehnke recovered a date of  $770\pm 40$  (Beta 226407; Daehnke 2007) south of Cathlapotle. These indicate activity in the general vicinity at that time.

Turning back to the houses, House 7 is stratigraphically below House 2 and is certainly an earlier version of House 2. The two dates associated with its south wall are statistically identical and produce a pooled mean  $394\pm 34$  BP, with a calibrated single sigma age range of AD 1445-1498 ( $p\% = 0.78$ ) and a two sigma range of AD 1438-1524 ( $p\% = 0.71$ ). The two oldest reliable dates in House 1 (Beta 131614, TX 8283) are statistically identical, producing a pooled mean of  $449\pm 33$  and a calibrated single sigma age range of AD 1426-1455 ( $p\% = 1$ ) and a 2 sigma range of 1412-1489 ( $p\% = .99$ ). These dates were collected from different compartments within the house (1b and 1d) indicating that the house's compartments were initially built at the same time.

We have not directly dated House 3. However, deposits in the sheet midden west of House 6 (towards the front of the site) rest at an angle suggesting they originate from House 3 and were truncated by the construction of House 6. The basal date on this midden (DRI 3515) indicates deposition began in the mid-1400s. At present, we take this to indirectly date the initial construction of House 3.

Dates from House 4 (Table 2) encompass Cathlapotle's entire occupation span from the mid-1400s into the fur-trade era, so it is contemporary with Houses 1 and 2 and probably 3. There are no dates on House 5 or directly on House 6. House 6 contains fur-trade era trade goods. It is stratigraphically superior to DRI 3515 and DRI 3514, which suggests it may post-date the 1500s. However, caution at this point is warranted given the difficulties of using radiocarbon dates to parse the period between 1500 and 1650 (see below).

Temporally subdividing the deposits using radiocarbon is difficult. Because of the

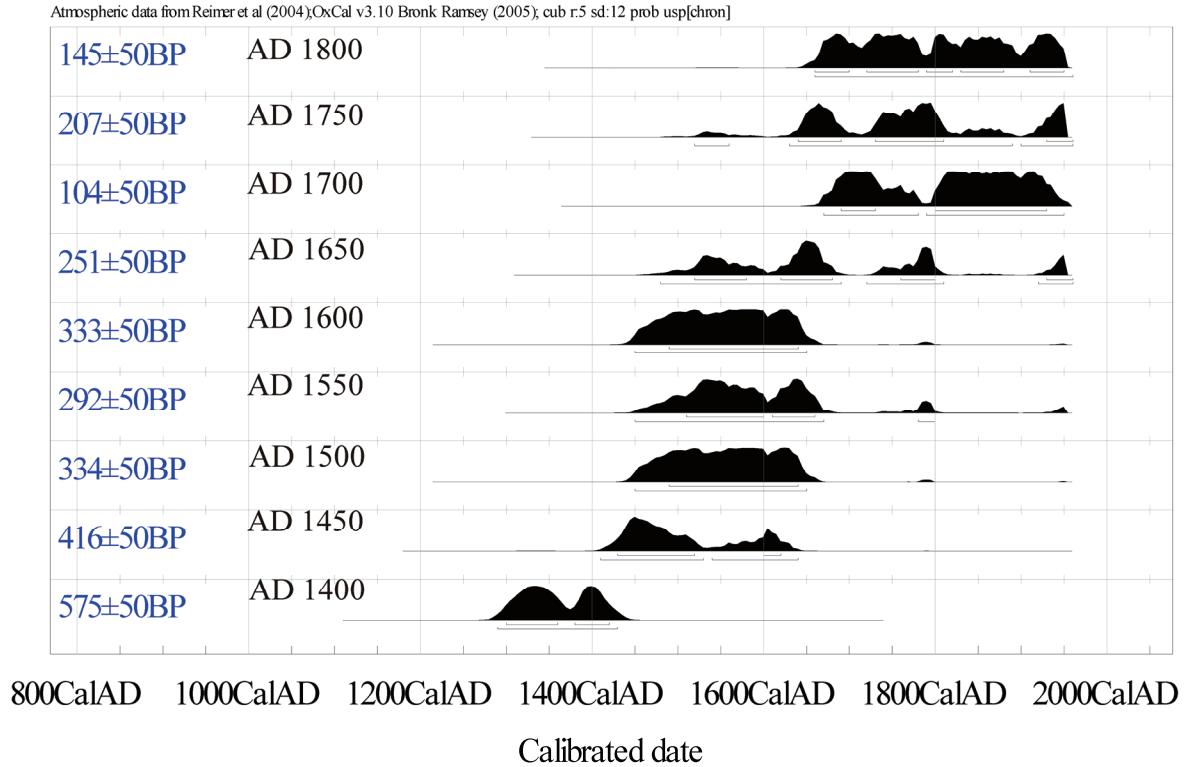
complexity of the radiocarbon calibration curve over the past 500 years, even dates with narrow sigmas can have multiple calibrations, and the calibrated age spans can be broader than the uncalibrated age spans (Figure 3). The difficulties are compounded by the short time period involved. To illustrate this, we simulated radiocarbon dates for 50-year increments between AD 1400 and AD 1800 using the radiocarbon simulation module of OxCal 3.0.1 (Bronk Ramsey 2005). With this module, one enters a calendar year (e.g., AD 1400) and a sigma (e.g.,  $\pm 50$ ). For this simulation we entered each year 10 times which produced varied calibrations (e.g., for AD  $1400 \pm 50$  the ten simulated dates are 559, 639, 637, 607, 572, 536, 674, 499, 511 and 512 years BP  $\pm 50$ ). We originally calibrated and plotted all of the simulated dates, using OxCal, but for brevity's sake, we took the mean of the ten simulated dates ( $575 \pm 50$ ) and calibrated those (AD 1290-1430) and plotted the resulting calibrations (Figure 4).

The figure illustrates how difficult it is to distinguish deposits spanning the period from AD 1450 to AD 1600 based on radiocarbon dates. It is possible with large samples to reduce the indeterminacy by, as has been done here, averaging dates and by so-called "wobble matching" but even with large samples, there may not be enough dates of the right time period to produce a useful average. The time period around AD 1700 is another source of difficulty for this project. The mean simulated date for AD 1650 is  $251 \pm 50$  BP, AD 1700 is  $104 \pm 50$  BP, for 1750 it is  $207 \pm 50$ , and for 1800 it is  $145 \pm 50$ . Thus samples from ca. AD 1700 may produce radiocarbon dates younger than samples dating ca. AD 1750 and 1800. This is not detected by calibration, however. The highest probability (.5) 1 sigma calibrated age span for  $104 \pm 50$  is 1800-1930. The accurate calibrated age span of 1690-1730 has a probability of 0.18. Most archaeologists would simply pick the high probability

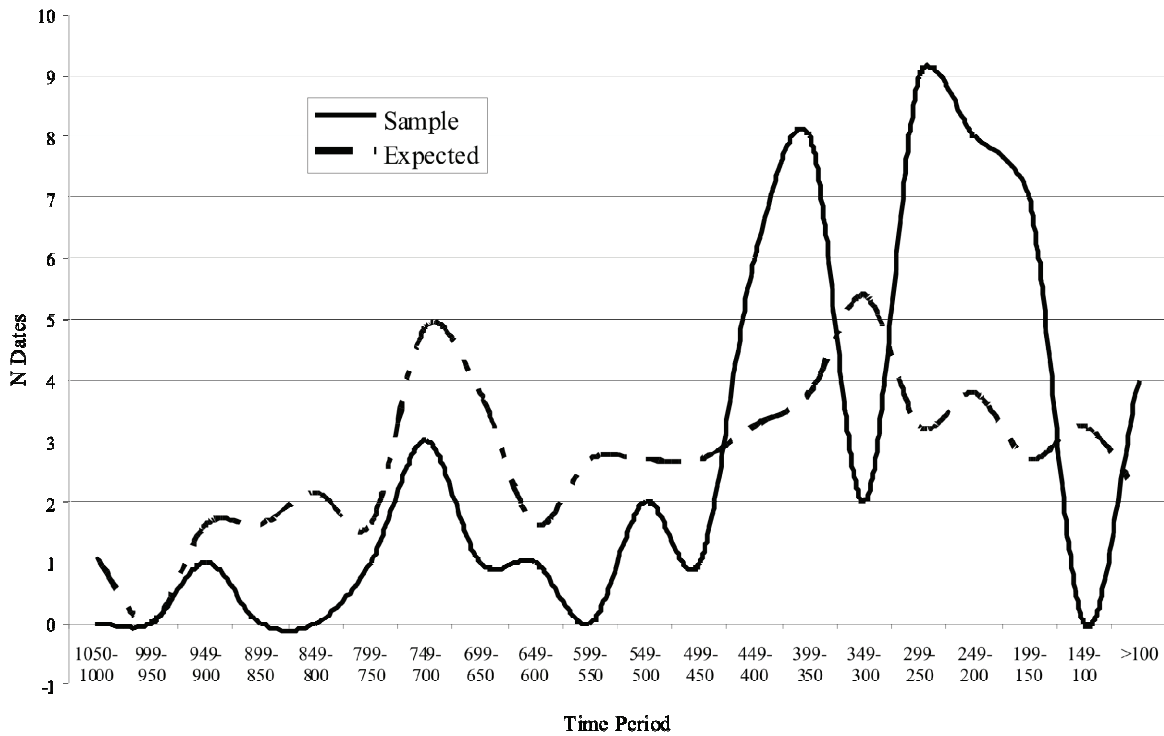
calibration, which, in this instance, is the incorrect one.

To address some of these issues, the radiocarbon sample from 45CL1 was compared with a simulated sample of dates spanning the last millennium. The simulation was done as part of a larger project in which radiocarbon dates from the last 12,000 years were simulated on a year-by-year basis producing a set of 96,602 simulated dates, or more precisely, simulated intercept dates. A subsample of dates spanning the period from AD 1799 to AD 1000 was used to generate expected frequencies of dates for Cathlapotle (Figure 5). The assumption is that fluctuations in the radiocarbon curve affect the probability of having dates from a particular time period. The simulation was used to derive expected numbers of radiocarbon dates in the same way expected numbers are generated for chi square analysis. The simulated dates were assigned to 50-year bins from 1000 BP to  $< 100$  BP. The percentage of dates/bin was calculated by dividing the number of simulated dates/bin by the sum of simulated dates for the total time period. Expecteds were derived by multiplying the bin percentage by 54, the number of dates in the 45CL1 data set (Figure 5).

The simulation suggests that the frequency of real dates roughly follows the simulation's predictions for the period between ca. 1000 BP and 450 BP although there are fewer dates in the real sample. The small spike in dates at ca. 750-700 BP is predicted by the simulation. This is what suggests that some of these dates may not be on old wood and that midden accumulation actually began earlier than ca. AD 1450. After AD 1450, the pattern of radiocarbon dates departs significantly from that predicted. There are many more dates than expected, and their distribution is strongly bimodal with peaks at ca. 399-350 BP and 300-250 BP, with a distinct gap in



**Figure 4.** Simulation of radiocarbon dates between AD 1400 and AD 1800 in 50 year increments, using OxCal 3.1.0 (Bronk Ramsey 2005).



**Figure 5.** Expected frequencies of radiocarbon intercept dates between AD 1000 and AD 1900 in 50 year bins compared with the frequencies of 45CL1 intercept dates.

between at a time the simulation predicts a single modal peak. The gap corresponds to the late 1400s, early 1500s. The simulation indicates this pattern cannot be attributed to the calibration curve. The first peak could reflect our sampling strategy of procuring multiple dates from the base of the cultural deposits across the site. However, a comparison of the temporal distribution of dates from 45CL1 with those from other Wapato Valley sites for the same period indicates the pattern is not due solely to our sampling methodology since it is broadly replicated in the Wapato Valley data set (Figure 6).

Geoarchaeological studies of House 1 indicate it was flooded not long after the initial house construction. The house appears to have required some resetting or rebuilding of its frame as a consequence (Hodges 1999). The gap in dates at 45CL1 suggests the site was briefly abandoned, perhaps as a consequence of this flood. The regional gap in dates further suggests it represents a widespread event. One obvious candidate is the flood resulting from the Bonneville Landslide. This landslide blocked the Columbia River at the current location of the Bonneville Dam in the Columbia River Gorge. This event is currently dated to AD 1415-1453 (O'Connor 2004). It is generally expected that the Columbia subsequently breached this dam producing downstream flooding. However, the timing and scale of this flooding remains unclear (Pierson et al. 2003). It appears to have occurred between AD 1400 and 1480.

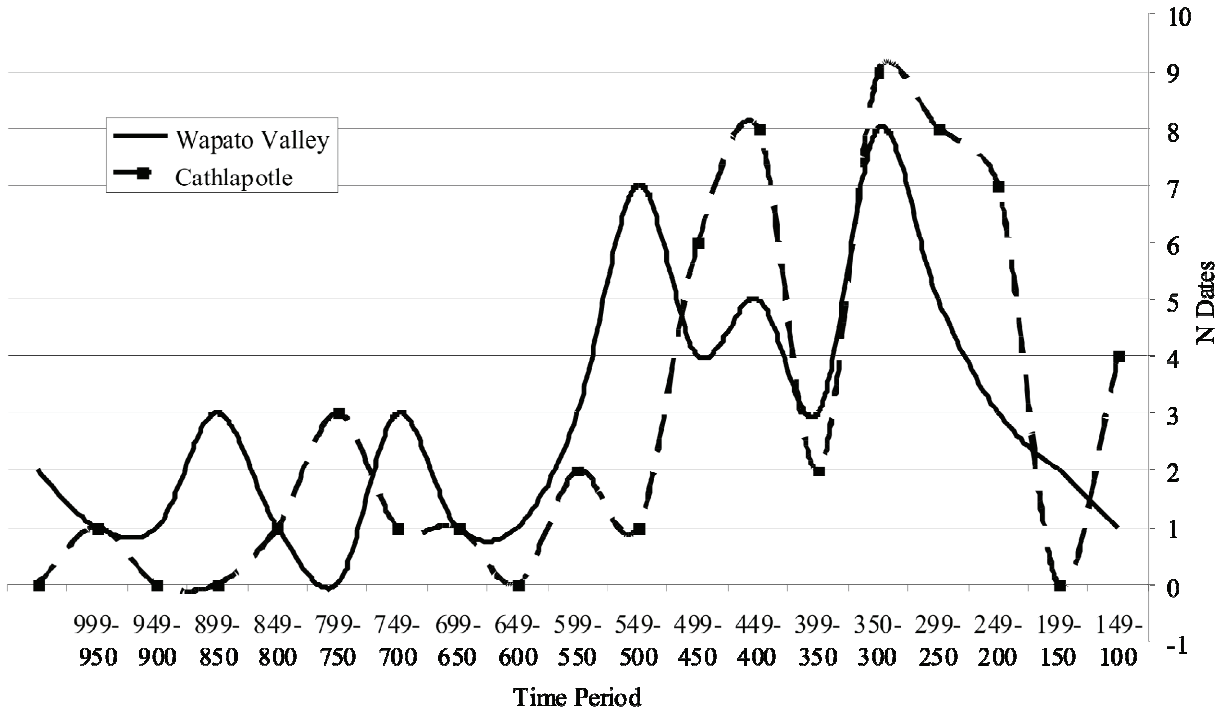
#### *Fur Trade Era Artifacts*

45CL1 produced a rich assemblage of historic trade goods including items certainly acquired from maritime traders as well as from Ft. Vancouver. Glass beads (n = 704 [Kaehler 2002]) are the most common, followed by non-cupreous metal (n = approx. 287) and

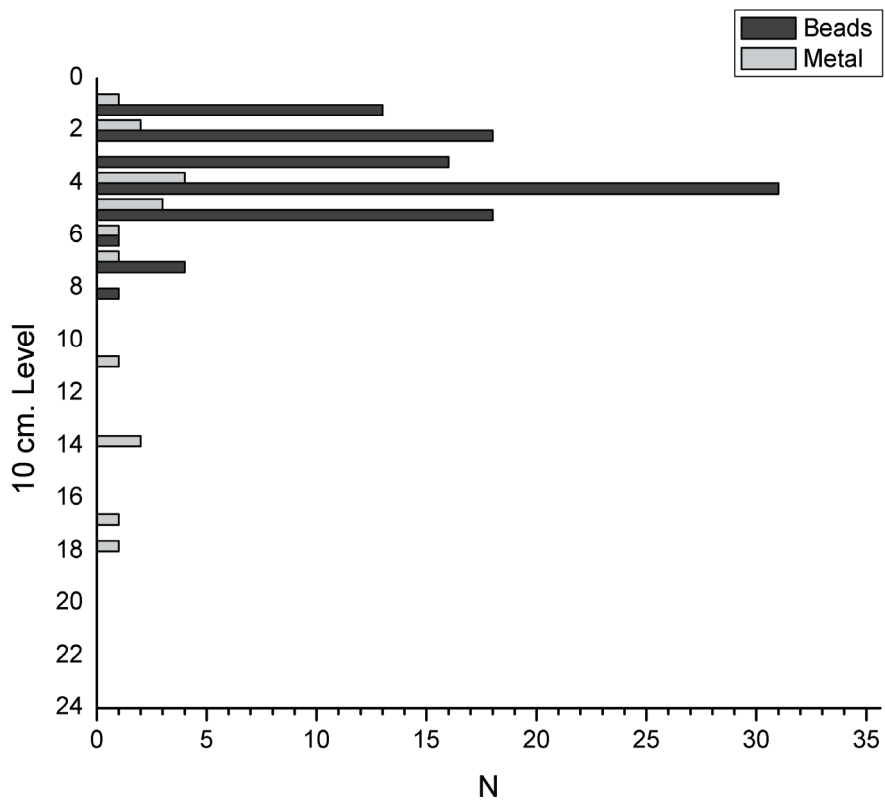
cupreous metal (n = approx. 159 [Banach 2002]). The assemblage also contains glass other than beads (n= 147) and ceramics (n = 37).

Historic artifacts are generally in the upper 30 to 70 cm of the deposits, although in some units, particularly within houses with large storage pit complexes (Ames et al. 2008), historic materials are distributed throughout. The typical sequence of trade goods is first iron, followed by beads, copper, and the other material (Figure 7). However, iron sometimes occurs quite deeply.

In one unit, for example, an iron adz blade was recovered more than 2 m below the surface. This object was associated with the five radiocarbon dates averaging ca. AD 1450. No other deep iron has yet been directly dated. However, because of that early date, iron at Cathlapotle cannot be taken to indicate the beginning of the fur trade. Additionally, there are suggestions of differential access to trade goods both at the site and household level. Trade goods are generally more plentiful in middens in the northern portion of the site than in the southern. It is possible that the southern end of the site is older (auger 91-19 was placed in the southern section of the site) and so trade goods are more limited in the more southern deposits but they are numerous in the test of House 6. Segment D of House 1 (Figure 2) is the largest house segment at the site and appears to have housed an elite household. The storage pits along its east wall are rich in trade goods, including iron daggers and other prestige goods while the complex against the west wall has almost no trade goods. It is very unlikely that the two complexes are not contemporary, given their close proximity to each across a hearth. The ambiguities of radiocarbon dates from the late 17th and the 18th century makes it difficult to date these sediments independently. All of the



**Figure 6.** Comparison of the frequencies of Cathlapotle radiocarbon intercept dates in 50 year bins with the Portland Basin sample of radiocarbon dates (with Cathlapotle excluded).



**Figure 7.** Distribution of trade goods in unit N107-109/W 98 – 100 illustrating both the general distribution of glass and metal objects and precontact metal in deeper levels.

sampled surface structures (Houses 1, 2, 4 and 6) contain trade goods, including glass beads.

Kaehler analyzed the trade ceramics (Kaehler n.d.) and the glass beads (Kaehler 2002) from 45CL1. Her analysis of the ceramics suggests their age to be between ca. 1790 and the 1820s. This fits with the documentary evidence. Kaehler used the known manufacturing dates for the thirteen classes of Cathlapotle glass bead (n = 344) with known manufacturing dates (Table 3) to calculate a mean bead date of 1834.

**Table 3. Median Manufacturing Dates for Glass Trade Beads from 45CL1**

| Bead Class | N   | Date Range  | Median Date |
|------------|-----|-------------|-------------|
| FOVA 2021  | 2   | 1790 – 1800 | 1795        |
| FOVA 1003  | 121 | 1844 – 1860 | 1852        |
| FOVA 2002  | 89  | 1790 – 1829 | 1810        |
| FOVA 1038  | 18  | 1800 – 1854 | 1823        |
| FOVA 1063  | 76  | 1810 – 1840 | 1825        |
| FOVA 1040  | 110 | 1800 – 1845 | 1823        |
| CAT 288    | 1   | 1790 – 1800 | 1795        |
| CAT 722    | 1   | 1790 – 1800 | 1795        |
| FOVA 2049  | 1   | 1820 – 1860 | 1840        |
| FOVA 2009  | 10  | 1800 – 1830 | 1815        |
| FOVA 2065  | 27  | 1829 – 1860 | 1845        |
| FOVA 1067  | 7   | 1840 – 1860 | 1850        |
| CAT 286    | 2   | 1790 – 1800 | 1795        |

*Note:* Data from Kaehler (2002: 138); mean bead date is 1834.

The 1834 date is actually the generally accepted date for the site's abandonment. However, three bead classes have manufacturing spans that significantly post-date this, including Fort Vancouver bead class FOVA 1003, which is also among the most common beads at Cathlapotle. It has a manufacturing range of 1844 to 1860, suggesting activity at the site into the 1840s and perhaps later. There is very limited archaeological evidence for activity at the site that late. Most of these beads were recovered

from a single pit feature. Kaehler believes they came from a single beaded object (Kaehler 2002). Removing this bead type from the mean bead date calculation produces a date of 1821, which probably better reflects trading activity and intensity of occupation at Cathlapotle than does the 1834 date. Additionally, Kaehler recognized 68 classes of bead at Cathlapotle but was only able to use 13 classes (19%) encompassing 344 beads (49% of the total) in her mean bead date calculations. It seems likely the bulk of the other beads predate 1834.

## SUMMARY AND CONCLUSIONS

45CL1 is clearly the large village observed by Broughton and Bell, and is Lewis and Clark's Cathlapotle. It fits their descriptions remarkably well in terms of location, size, number of houses, etc. It was obviously thriving before 1792 and well into the fur-trade era. Whether occupation began in the late thirteenth century remains an unresolved issue. Widespread midden accumulation and documented house construction began in the mid to late 1400s. At that time it was a two-row village and had about the same dimensions and area as now. It is possible houses were added to the village after this but before the fur-trade began. The establishment of Cathlapotle may correspond generally with a major flood event that forced rebuilding of House 1 sometime in the mid to late 1400s. This event is possibly reflected in the gap in Cathlapotle and Wapato Valley radiocarbon dates between 400 and 350 radiocarbon years ago.

Work by McDonald and Daehnke reported in this issue of *Archaeology in Washington* and elsewhere (Daehnke 2007) raise the clear possibility that 45CL1 was but the most recent Cathlapotle; that a village existed in the vicinity for at least two millennia, its precise placement shifting as the landscape evolved,



but remaining essentially in the same spot. If so, then Cathlapotle was moved to 45CL1; it did not originate there. What remains currently unknown is whether Cathlapotle and the other large villages described in the early documents were persistently large villages or represented aggregation events in the past, prior to the fur trade or perhaps AD 1450. Cathlapotle also raises questions about the dynamics of the early fur-trade era along the Lower Columbia.

The widespread distribution of trade goods in Cathlapotle and their generally clear stratigraphic order makes it possible to separate pre-contact and contact era components readily in most excavation units. Trade goods are not uniformly distributed within the site, particularly in the middens, making it currently difficult in a few circumstances to determine whether the sparseness or absence of trade goods reflects time or differential access. The weight of evidence indicates differential access. The presence of iron by itself, especially in deep deposits (> 1 m) is not a good temporal marker at Cathlapotle because it clearly is present at the site from the time of its founding. Cathlapotle appears to have been occupied into the 1830s. There is some evidence for very light, sporadic occupation after that.

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