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GREAT BASIN OBSIDIAN AT THE DALLES: IMPLICATIONS FOR THE EMERGENCE OF ELITES IN THE SOUTHWESTERN PLATEAU

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ABSTRACT

The Dalles of the Columbia River was one of the two primary centers in the late prehistoric Plateau Interaction Sphere in which elites controlled the distribution of prestige items in the Plateau culture area in northwestern North America. Among the materials used in the manufacture of prestige items was obsidian from sources in the northwestern Great Basin. It has been suggested that a system for distributing Great Basin obsidian through The Dalles and northward into the Plateau was in existence by ca. 9,000 B.P. A review of the evidence indicates, however, that obsidian is scarce in early components at The Dalles. Prestige items made of exotic materials, including obsidian, do not appear at The Dalles until ca. 3,500 B.P, and substantial obsidian use at The Dalles dates to after that time. Current evidence indicates that the distribution of obsidian from the northwestern Great Basin expanded significantly with the establishment of the Plateau Interaction Sphere and the emergence of The Dalles as a primary center for interregional exchange after ca. 2,500 B.P.

The Dalles of the Columbia River at the southwestern edge of the Plateau culture area has long been recognized as one of the major centers for interregional exchange in western North America. This activity occurred in Native American settlements concentrated along the river banks at Fivemile Rapids, which, together with Celilo Falls some 16 km (9 mi) upstream, constituted the single most productive area for fishing in the entire Plateau, and possibly in all of North America (Hewes 1947:102). Although much of this activity involved "mutual cross-utilization of economic resources" among groups within the Plateau (Walker 1967), items and products from the adjacent Northwest Coast, Plains, and Great Basin also found their way into the exchange system centered at The Dalles (Anastasio 1972; Wood 1972; Walker 1997; Stern 1998).

Archaeological evidence, as well as ethnographic and ethnohistoric accounts, indicate that The Dalles was the most culturally complex area in the Plateau, and in fact was atypical of the Plateau culture area as a whole. The characteristics that distinguished the native population at The Dalles from the rest of the Plateau—ranked societies, practice of slavery, interment in burial houses—are often attributed to the presence of the Wishram and Wasco peoples, related linguistically to Chinookan-speaking peoples downstream on the Columbia River who are placed within the Northwest Coast culture area (e.g., Spier and Sapir 1930; Strong et al. 1930; Ray 1939). However, both linguistic and archaeological evidence suggest that the Wishram and Wasco moved upriver in late prehistoric or protohistoric times (Rigsby 1965; Minor and Walker 1993). The

cultural complexity represented in the archaeological record in The Dalles area was an autochthonous development that grew out of a basal cultural stratum that was fundamentally Plateau in nature (Minor 1988, 1997).

Building on previous studies of interaction spheres, Hayden and Schulting theorized that exchanges between communities in the Plateau would have been primarily managed by high-ranking individuals or elites, and that interactions between elites should be reflected more in prestige items than common utilitarian items (Hayden and Schulting 1997). Reviewing the archaeological literature, Hayden and Schulting mapped the distribution of prestige items as a means of defining the late prehistoric "Plateau Interaction Sphere" (Hayden and Schulting 1997). The Dalles area was identified as one of the two localities in the Plateau with the greatest concentration of prestige goods, the other being the Lillooet-Lytton area at the confluence of the Thompson River with the Fraser River in British Columbia.

Hayden and Schulting's concept of a late prehistoric "Plateau Interaction Sphere" has not seen universal acceptance (e.g., Quinn 2006). Objections to this concept by some Plateau archaeologists may stem in part from the fact that the interaction sphere was centered in exchange between the Lillooet-Lytton area and The Dalles. Although "secondary centers" existed, archaeological evidence of the interaction sphere may be scarce in some areas of the Plateau. As well, the concept of an interaction sphere controlled by elites challenges the ethnographic portrayal of exchange among Plateau peoples as involving mutually beneficial activity among culturally similar groups (e.g., Walker 1967; Anastasio 1972). As noted above, ethnographers have long recognized that the native groups at The Dalles were more culturally complex than peoples elsewhere in the Plateau. The task for archaeologists, then, is to trace the origins of this cultural complexity in the archaeological record at The Dalles.

Among the materials used in the manufacture of prestige items was obsidian, generally considered an exotic material obtained from outside the region due to lack of high-quality sources of obsidian in the Plateau (Galm 1994:280). Hayden and Schulting (1997:58) noted that "[o]bsidian was available from a number of sources (the best in central Oregon), was widely traded (Nelson, D'Auria, and Bennett 1975; Carlson 1994), and also may have been a material with considerable prestige attached to it, at least in some parts of the Plateau." The recovery of obsidian artifacts in the assemblage from the earliest prehistoric component at The Dalles dating to ca. 10,000 B.P. (Cressman et al. 1960), and the presence of obsidian specimens traced to Oregon sources in early contexts at sites to the north in British Columbia, has led to the assumption that the distribution of obsidian from sources in the northwestern Great Basin northward through an interregional exchange network at The Dalles began by 9,000 B.P. (Carlson 1994:318; cf. Quinn 2006:212; Sobel 2006:165).

The time depth for the manufacture and distribution of prestige items, and the materials from which they were made, in the Plateau is in need of better documentation (Hayden and Schulting 1997:79; Quinn 2006:212). Toward that end, this study examines the occurrence of obsidian at prehistoric sites at The Dalles. Included are the results of x-ray fluorescence (XRF) analysis of 60 obsidian specimens from three late prehistoric settlements on the Oregon shore in the vicinity of Fivemile Rapids. Although only one of the many raw materials used in the manufacture of prestige items, obsidian is the material most widely preserved and available for recovery in the archaeological record. In reviewing the evidence for obsidian at The Dalles, this study contributes to an understanding of the timing of the appearance of elites at The Dalles and the emergence of The Dalles as the premiere center for interregional exchange in the southern portion of the prehistoric Plateau.

The "Great Emporium" at The Dalles

The name "The Dalles of the Columbia" refers to the former great rapids a short distance upstream from the present city of The Dalles in Wasco County, Oregon. At The Dalles, the Columbia River begins cutting through the mountains of the Cascade Range, and its narrow channel becomes so constricted that rough rapids occur along the river for many kilometers. The term "The Dalles" refers collectively to several sets of rapids that, based on their distance upstream from the landing at the city, were called "Three Mile Rapids" (present location of The Dalles Dam), "Five Mile Rapids" (The Long Narrows), and "Ten Mile Rapids" (The Short Narrows). Historically, most attention was on the 4.8-km-long Fivemile Rapids, also known as The Dalles or The Great Dalles, immediately upstream from Big Eddy (McArthur 1982:725). Some 16 km upstream on the Columbia was Celilo Falls, identified on maps prepared by Lewis and Clark as "the Great Falls of the Columbia" (Moulton 1988:322, 324). In writing about trade among Native Americans on the Columbia River, Lewis and Clark in 1806 identified "the falls," meaning The Dalles–Celilo section of the Columbia, as "the Great Mart of all this Country" (Moulton 1991:129). In his 1893 edition of the Lewis and Clark journals, historian Elliot Coues used the more colorful phrase "the great emporium . . . where all the neighboring nations assemble" to refer to The Dalles-Celilo section of the river (Coues 1893[2]:786).

The narrowing of the river channel along The Dalles–Celilo section of the Columbia River created "a first class natural dip-net and grab-hook fishery," with stations along this section of the river collectively known as "The Dalles fisheries" (Gordon 1889:80–87). The Columbia was formerly one of the world's most productive environments for salmon, and four of the five species common along the North Pacific Coast ascended upstream past The Dalles. The Columbia was also the principal center of abundance for steelhead trout on the Pacific coast, another anadromous species that migrates upstream past The Dalles. Aside from the concentration of fish in a narrow gorge where they could be caught in large numbers, another aspect of the environment at The Dalles was the warm dry winds, enabling rapidly dehydrated fish to be stored in huge amounts for consumption at other times of the year. Salmon and steelhead were most plentiful in The Dalles area during the summer (May through October) (Spier and Sapir 1930:174), and trading occurred, with dried fish as a primary commodity, from late spring into fall (Wood 1972:158; Stern 1998:641).

Wishram Ethnography, the primary description of ethnographic lifeways among the Chinookan groups at The Dalles, was based on linguistic fieldwork in 1905 by Edward Sapir and on ethnographic fieldwork in 1924 and 1925 by Leslie Spier (Spier and Sapir 1930). The section in the ethnography that describes trade at The Dalles contains little information obtained from informants, and instead draws heavily on historical accounts written by Lewis and Clark in 1805–1806 and by Alexander Henry in 1811. The Wishram occupied the north (Washington) shore at Fivemile Rapids, and the Wasco occupied the south (Oregon) shore. Spier and Sapir added that the Wishram "commonly render the name of their principal settlement, *Nixlu'idix* (now Spedis, Washington), as "trading place" (Spier and Sapir 1930:224). Although most accounts of trading activity at The Dalles have focused on the Chinookan-speaking Wishram and Wasco around Fivemile Rapids, native peoples upstream at Celilo Falls who spoke Sahaptin languages "shared in it equally" (Spier and Sapir 1930:224).

The role of the Wishram and Wasco in trading activity was entirely as middlemen (Spier and Sapir 1930:224). They served as hosts for trade fairs attended by people from native groups throughout the Plateau (Spier and Sapir 1930:228). Individuals sometimes had "special friends" or trading partners in other groups (Spier and Sapir 1930:225). A thoughtful consideration based

on ethnohistoric sources of the mechanisms by which goods were exchanged between native groups at The Dalles identified bartering, gambling, gifting among affinal kin (in-laws), and to initiate or confirm friendly relations, which might take on the appearance of tribute (Boyd 1996:64–66).

A number of writers have commented on the fact that environmental diversity within the Plateau contributed to the great variety of items brought for trade to The Dalles, with people from different areas tending to specialize in obtaining or producing different kinds of goods (Walker 1967:16; Anastasio 1972:120; Wood 1972:158; Stern 1998:642–642). Most of the exchanged items were of a perishable nature, such as skins, fur, fish, oil, roots, pemmican, feathers, robes, clothing, shells, slaves, and horses (Teit 1928:121–122; Spier and Sapir 1930:224–226). The perishable nature of most of the items known from ethnohistorical sources to have been traded contrasts with the materials represented in the archaeological record, which are overwhelmingly of stone and bone (as discussed further below). Significantly, references to obsidian as a commodity of exchange at The Dalles are conspicuously absent in the ethnographic and historical literature. The lack of references to the exchange of obsidian at The Dalles suggests that this was an aspect of traditional native lifeways that may have been discontinued early in the historic period. The study of obsidian from archaeological contexts thus has the potential to provide a temporal dimension that may illuminate aspects of interregional exchange at The Dalles not apparent in the ethnographic and ethnohistorical literature.

Previous Information about Obsidian at The Dalles

As elsewhere in the Plateau, lithic assemblages at prehistoric sites in The Dalles area are mostly composed of locally available raw materials. Chert was the preferred material for the manufacture of flaked stone tools, while basalt and quartzite were favored for the manufacture of heavy stone tools. All of these lithic materials are available in stream gravels, and often in outcrops as well, along the Columbia River. Probably in part because lithic assemblages are dominated by local materials, early reports on archaeological investigations in The Dalles area generally did not include data on the various types of lithic materials represented. Consequently, there is remarkably little site-specific information available about the occurrence of obsidian at prehistoric sites in The Dalles area.

Specific reference by Hayden and Schulting to information about obsidian use in The Dalles area was limited to a single citation, referring to excavations in the 1920s at a number of sites by Strong, Schenck, and Steward from the University of California (Strong et al. 1930:84). In their study, Hayden and Schulting listed obsidian as accounting for "~ 5% of lithics" from sites in The Dalles area (Hayden and Schulting 1997:56). Although only the use of obsidian in making projectile points (and not other artifact types) was discussed, the actual data from six site collections provided by the University of California archaeologists indicate that the proportion of obsidian points ranged from 2% to 15%, or an average of 8%. This figure was rounded up in the statement that obsidian "constituted approximately 10% of the points (Strong et al. 1930:84). Based on the occurrence of obsidian at sites of different ages, it was concluded that "obsidian was obtained and worked in our region *from the earliest times of which we have knowledge* [emphasis added]" (Strong et al. 1930:84). The investigations by the University of California archaeologists were conducted long before the invention of radiocarbon dating, but typological cross-dating of the projectile points found suggests that the sites excavated were occupied within the last 2,500 years before historic contact.

Some of the data regarding obsidian use summarized by the University of California archaeologists was derived from excavations at Wakemap Mound, the premiere late prehistoric site in The Dalles area, located at the upstream end of Fivemile Rapids. Additional information about obsidian use at Wakemap Mound can be gleaned from investigations in 1953 and 1954 by Caldwell (Caldwell 1956). Approximately 3% of the 623 "points and blades" recovered were made of obsidian. This category consists mostly of projectile points, but also appears to include items that would now be recognized as bifaces, knives, and preforms. Among the 2,500 "scrapers" found, only two, both in the subcategory "blades with parallel sides" (n = 215), were made of obsidian. The only other items in the flaked stone assemblage made of obsidian were one "elongate drill" and one "polyhedral core."

The most influential publication on the prehistory of The Dalles area, by Luther S. Cressman and his students, presented the results of excavations from 1953 to 1956 at the Roadcut Site (35-WS-4) on the Oregon shore at the head of Fivemile Rapids, where evidence of occupation was found extending back 10,000 years. Cressman noted that "[t]he river gravels provided a great wealth of material for stone tools and many varieties of rock were used" (Cressman et al. 1960:68). Unfortunately, specific data on the frequency with which various lithic materials were represented among the artifacts recovered at the Roadcut Site were not provided.

The only reference to obsidian in Cressman's publication on the Roadcut Site occurs in the description of Feature 29, a "continuous living area" with which a cache of artifacts including '"five flake scrapers of obsidian," was associated. Feature 29 was found in Level 31, near the top of Stratum 1. A composite sample of charcoal collected from throughout Stratum 1 yielded a radiocarbon date of 9,785 ± 220 RCYBP (Cressman et al. 1960:66). Stratum 2, which began in Level 30 (immediately above Feature 29) and extended upward to Level 25, produced a radiocarbon date of 7,675 ± 100 RCYBP (Cressman et al. 1960:66). According to Cressman:

> The obsidian flakes in this cache are of particular significance for the nearest obsidian is probably to be found in the Bend area some 150 miles to the south. *Obsidian does not occur otherwise in the site until quite late and then only as the material for a few arrow points* [emphasis added]. Quite often the obsidian used then is the clear variety as though the effort was made to get a material that at least looked like the chalcedonies and other cryptocrystalline rocks which had provided the raw material for points for many centuries. (Cressman et al. 1960:63)

The Roadcut Site was revisited in 1993 when excavations under the direction of Virginia L. Butler were made "through about 3.5 vertical meters of primary sediment that includes the lower half of the 7.8 m thick deposit" previously investigated by Cressman and his students (V.L. Butler 1998:9; also see V.L. Butler and O'Connor 2004). Over 160 stone artifacts and "thousands of pieces of manufacturing debris" were recovered from cultural deposits from which radiocarbon dates with calibrated ages "ranging from about 9000 to 4900 yr B.P." were obtained (V. L. Butler 1998:9–10). It was reported that "*[o]bsidian was extremely scarce; only eight small flakes were recovered* [emphasis added]. Six of these were large enough for XRF analysis (carried out by Richard Hughes) which shows they came from three locations: Obsidian Cliffs, Inman Creek, and Dooley Mt (in the Blue Mountains)" (V.L. Butler 1998:10). These are the only XRF results previously reported from a prehistoric site at The Dalles.

On the Washington shore of the Columbia River at The Dalles is a series of sites from which B.R. Butler constructed an occupation sequence comparable to that at the Roadcut Site (B.R. Butler 1959). The assemblage from the early component at Indian Well (45-KL-42) includes leaf-shaped projectile points, large oval knives, end and side scrapers, gravers, peripherally flaked

cobbles, cobble choppers, and hammerstones (B.R. Butler 1959:13). The Indian Well I component was associated with Stratum 4, the lowest artifact-bearing stratum at the site. A brief comment on the lithic materials represented among the stone tools noted that "*only one small flake of obsidian has been recovered from Stratum 4* [emphasis added]," as "most of the artifacts are made of cryptocrystalines" (B.R. Butler 1959:13). Although no radiocarbon dates were obtained, Indian Well I was viewed as most similar to and contemporaneous with the early component across the river at the Roadcut Site. These two components were in turn grouped by B.R. Butler into the Early Period in The Dalles area, estimated to date between 10,000 and 7,500 B.P. (B.R. Butler 1959:20–21).

Prestige goods, including some made of obsidian, first appear much later in the archaeological record at The Dalles. Most of what is known about prestige goods is from efforts by B.R. Butler to document evidence of prehistoric occupation along the Washington shore of Fivemile Rapids in the face of widespread and massively destructive looting by relic collectors, an activity that peaked in the years immediately prior to inundation of the prehistoric settlements along Fivemile Rapids by Lake Celilo behind The Dalles Dam in 1957 (B.R. Butler 1959, 1960, 1962, 1963, 1965). Most of the prestige goods at The Dalles apparently were recovered from mortuary contexts, and the information available from The Dalles was incorporated into a comprehensive study of mortuary variability and status differences in the Plateau by Schulting (Schulting 1995).

The earliest occurrence of prestige goods is represented at the multi-component Congdon Site (45-KL-41) located on the Washington shore along the lower center of Fivemile Rapids (B.R. Butler 1959:9–10; 1963; Schulting 1995:82–84). Overlying an older village site (Congdon I) were two major burial components. Congdon II was "a large cremation pit, noted as being especially rich in stone beads, carved stone amulets, steatite rings, and atlatl weights" (Schulting 1995:82). Congdon III was "a series of multiple mass burials which appeared to have been intrusive into one end of the Condon II cap. . . ." (B.R. Butler 1963:16). The artifacts from Congdon II and Congdon III, which were "not distinguishable" (B.R. Butler 1959:10), were characterized as follows:

> Sociotechnic artifacts include *Dentalium* and shell disc beads, a variety of stone beads, fragments of bone carvings, large zoomorphic stone carvings, red and white pigments, and so called "paint pots" (small, often decorated, mortars). A stone celt and a carved maul may also have functioned as prestige objects. Stone beads, made of steatite and sandstone or siltstone, were found up to 6.5 cm in length. *A number of the stone knives and points are made of exotic materials such as obsidian* [emphasis added] and are exceptional in their length and manufacture—these might have functioned at least partly as prestige objects as well (Schulting 1995:83).

On the basis of artifact cross-dating and without the benefit of radiocarbon dates, "*a beginning date* [emphasis added] of 1000–1500 B.C." was suggested for the burial components at the Congdon site (B.R. Butler 1959:18). In a later discussion, B.R. Butler referred to these components as "tentatively dated at 1500–1000 B.C.," which could be interpreted to imply that he thought their deposition spanned a 500-year-period between 1,500 and 1,000 BC (B.R. Butler 1963:16). An examination of photographs of projectile points from the Congdon burial components indicated the presence of broad-necked side- and corner-notched specimens, all of which according to Schulting "could be accommodated within the range of approximately 3500 to 3000 B.P." (Schulting 1995:83).

Mortuary practices and associated prestige goods similar to those at the Congdon Site were reportedly present at other sites in The Dalles area (e.g., the Big Leap and Maybe sites), but most

of these localities were destroyed by relic collectors before they could be documented in more than a cursory way (see B.R. Butler 1959; Schulting 1995). Among these mortuary sites was the later component at Indian Well (45-KL-42), which apparently included some evidence of cremation as well as talus burials. Butler (1959:14) provided a long list of associated prestige goods:

> The artifact inventory includes: innumerable tiny disk-shaped beads of felsite; larger, less numerous, bead[s] of serpentine, steatite and jet; large steatite rings, two of which have small animal heads projecting from the outer rim; small steatite animal pendants with incised ribs and dorsal-ventral perforations 1–3 in number; elliptical, two-hole stone gorgets; about 500 phyllite sticks, of varying sizes, which resemble crude tongue blades; small nephrite celts; wide-flanged mauls with incurvate grips and dome tops; large sandstone and vesicular lava pipes; thin-walled elbow pipes, of soft stone, with a narrow, flaring fin extending from the base of the bowl; various objects of vesicular lava; a single type of stone atlatl weight; a slab of basalt with a series of chevrons incised across one face; thin-walled stone vessels with elaborate geometric incisions on the exterior wall; stone sculptures, both anthropomorphic and zoomorphic, executed in Late Lower Columbia Valley styles; a stone "club" with a carefully pecked grip, rectanguloid in cross-section, with two small tit-like projections from the narrow side of the head end (its form is that of an incipient "slave killer" type of stone club); several well made blades with excurvate edges, a wide tang tapering to a straight or rounded base, and which measure up to nearly 6.5 in. in length—these are the largest tanged blades that I have seen in The Dalles Region; chipped stone points, gravers and scrapers which appear to grade into the types found at Wakemap Mound—however, the diagnostic Plateau Pentagon point found at Wakemap is not present.

Although not specifically mentioned in the account by B.R. Butler quoted above, obsidian is known to have been used in the manufacture of some of the flaked stone items that represent prestige items (Schulting 1995:45–46). Most of these kinds of items are rarely found during controlled excavations by archaeologists and are mainly known from publications by relic collectors (Strong 1959; Seaman 1967). Flaked stone items that likely served as crafted prestige items include exceptionally finely made knives (Strong 1959:Figures 61 and 64) and projectile points (e.g., Strong 1959:Figure 47); chipped stone eccentrics occurring in both zoomorphic and abstract forms (Strong 1959:Figure 62); and chipped stone crescents that may have served as "nose pieces" (Strong 1959:Figure 63). A date range from 1900 to 1400 B.P. was estimated for the Indian Well component (B.R. Butler 1959:15). However, a similar complex of artifacts at Wakemap Mound, known from radiocarbon dating to have been occupied for the most part within the last 2,000 years, suggests that the mortuary practices in evidence at Indian Well II were broadly representative of the late prehistoric period in The Dalles area.

Aside from prestige goods in mortuary contexts, evidence of elites also is represented in the distinctive Lower Columbia River art style in which, among the more common motifs, anthropomorphic figures wearing an elaborate hat or headdress indicative of special status are depicted (Strong 1945:250–251). Most known examples were looted from sites by relic collectors rather than recovered during controlled excavations by archaeologists, but a number have made their way into museums, where these figures are portrayed in a variety of materials, including stone, bone, wood and ceramics (Mercer 2005:25–37).

In summary, the limited information available indicates that obsidian at The Dalles occurs in both mortuary and midden contexts. In contrast to the situation farther downstream on the Columbia River where obsidian has been characterized as a "non-wealth good," at The Dalles obsidian was used in the manufacture of both utilitarian and crafted prestige items (Sobel 2012:18). Unfortunately, because most of the field investigations in The Dalles area were conducted more than a half-century ago, data from carefully controlled excavations are limited. At the present time, information about obsidian use at The Dalles is mainly available from two localities occupied during the late prehistoric period.

Obsidian at the Lone Pine Site

The Lone Pine Site (35-WS-247) is located on the south shore of the Columbia River about 1 km downstream from the lower end of Fivemile Rapids. This site falls within the ethnographic territory of the Chinookan Wasco, which extended along the Oregon shore of the Columbia River from Crates Point upstream to Fivemile Rapids, and corresponds to the Wasco settlement of *wotsaqs* meaning "lone pine" (Spier and Sapir 1930:168; Boyd 1996:46).

Archaeological testing was carried out in 1995 in advance of proposed improvements to the Lone Pine Treaty Fishing Access Site (Minor 1997). Treaty Fishing Access Sites (TFAS), also known as "in lieu sites," are replacements for the usual and accustomed fishing sites formerly used by the Treaty Tribes that were inundated as a result of dam construction on the Columbia River. Small-scale testing involving the excavation and screening (through 1/8-in. mesh) of approximately 10.5 m^3 of the cultural deposits resulted in the recovery of 287 flaked stone tools, 27 heavy stone tools (made on rounded river cobbles or large basalt flakes), and 25,076 pieces of flaked stone debitage. Charcoal recovered from 138 to 153 cm below surface in one test pit produced a radiocarbon date of 1,320 ± 50 RCYBP. While the lithic assemblage was mostly composed of locally available materials (chert, basalt, quartzite, petrified wood), obsidian was used in the manufacture of 11.5% of the flaked stone tools and made up 12.5% of the total debitage recovered from the Lone Pine Site.

Thirty-three obsidian specimens recovered during the 1995 investigations at the Lone Pine Site subjected to XRF sourcing analysis yielded reliable quantifiable data (Hughes 1996). Ten different obsidian sources are represented (Table 1). The most commonly represented source was Obsidian Cliffs (n = 10), followed by the Whitewater Ridge area (n = 4), Newberry Volcano (n = 3), and Cougar Mountain (n = 2). Single samples were attributed to the Inman Creek gravels, Juniper Spring area, Dog Hill, Quartz Mountain, Dooley Mountain, and Little Bear Creek obsidian. The remaining eight samples have trace element profiles unlike any of the standards currently in the regional database maintained by the Geochemical Research Laboratory. With the exception of the Inman Creek gravels in the Willamette Valley, all of the other obsidian sources represented are situated in eastern Oregon or, in the case of Obsidian Cliffs, immediately to the west in the Cascade Range.

Obsidian at Crates Point

Crates Point is a promontory on the Oregon shore of the Columbia River approximately 8 km downstream from the Lone Pine Site. Although Crates Point has been identified as the downstream boundary of Chinookan Wasco territory (Boyd 1996:46), ethnographic sources do not identify any settlements by the Wasco (or any other native group) there (Spier and Sapir1930:160).

TABLE 1. XRF ANALYSIS RESULTS FROM THE LONE PINE AND CRATES POINT SITES

Site/Artifact No.	Provenience	Artifact Class	Obsidian Source
Lone Pine (35WS247)			
TPA-2/1-6	Test Pit A, L2, S1	Projectile point tip fragment	Obsidian Cliffs
TPA-3/1-7	Test Pit A, L3, S1	Used flake	Obsidian Cliffs
TPA-3/1-8	Test Pit A, L3, S1a	Used flake	Unknown A
TPB-12/1-3	Test Pit B, L12, S1	Biface edge fragment	Newberry Volcano
TPB-12/1-4	Test Pit B, L12, S1a	Uniface	Newberry Volcano
no number	Test Pit B, L13, S1	Debitage	Quartz Mountain
TPB-13/1-9	Test Pit B, L13, S1a	Biface midsection fragment	Obsidian Cliffs
TPB-13/1-10	Test Pit B, L13, S1b	Biface midsection fragment	Whitewater Ridge
no number	Test Pit B, L14, S1	Debitage	Unknown
TPB-15/1-12	Test Pit B, L15 S1	Used flake	Unknown B
TPB-16/1-7	Test Pit B, L16, S1	Biface midsection fragment	Cougar Mountain
TPC-7/1+2-2	Test Pit C, L7, S1+2	Used flake	Inman Creek
TPC-9/2-2	Test Pit C, L9, S1	Biface tip fragment	Cougar Mountain
TPD-7/2-6	Test Pit D, L7, S2	Biface edge fragment	Dog Hill
TPE-14/3-2	Test Pit E, L14, S3	Projectile point barb fragment	Obsidian Cliffs
TPE-17/3-1	Test Pit E, L17, S3	Biface midsection fragment	Obsidian Cliffs
TPF-6/1-6	Test Pit F, L6, S1	Biface midsection fragment	Juniper Spring area
TPF-9/1+2-4	Test Pit F, L9, S1+2	Projectile point base fragment	Little Bear Creek?
TPF-10/2-1	Test Pit F, L10, S2	Biface tip fragment	Obsidian Cliffs
TPF-10/2-2	Test Pit F, L10, S2a	Biface tip fragment	Dooley Mountain
PR5-4/1-1	Probe 5, L4, S1	Biface tip fragment	Unknown A
PR6-3/1-3	Probe 6, L3, S1	Projectile point base fragment	Obsidian Cliffs
PR8-4/2-2	Probe 8, L4, S2	Used flake	Unknown
PR9-3/1-1	Probe 9, L3, S1	Biface edge fragment	Obsidian Cliffs
PR17-2/1-5	Probe 17, L2, S1	Biface edge fragment	Whitewater Ridge
PR20-2/1-1	Probe 20, L2–3, S1	Projectile point	Unknown
PR25-4/2-1	Probe 25, L4, S2	Biface midsection fragment	Obsidian Cliffs
PR26-5/2-3	Probe 26, L5, S2	Biface midsection fragment	Unknown
PR30-7/2-2	Probe 30, L7, S2	Biface tip fragment	Unknown B
PR30-8/2-1	Probe 30, L8, S2	Used flake	Newberry Volcano
PR23-7/1-2	Probe 23, L7, S1	Biface edge fragment	Obsidian Cliffs
AH7-13/2-1	AH7, L13, S2	Projectile point base fragment	Whitewater Ridge
AH7-14/2-1	AH7, L14, S2	Biface edge fragment	Whitewater Ridge
Crates Point (35WS221, 1991)			
S-30 #1	S-30, 50–60 cm	Debitage	Obsidian Cliffs
S-40 #1	S-40, 10–20 cm	Debitage	Newberry Volcano
S-60 #1	S-60, 50–60 cm	Debitage	Obsidian Cliffs
S-70 #1	S-70, 30–40 cm	Debitage	Unknown
S-70 #2	S-70, 40–50 cm	Debitage	Obsidian Cliffs
S-70 #3	S-70, 60–70 cm	Debitage	Obsidian Cliffs

Site/Artifact No.	Provenience	Artifact Class	Obsidian Source
S-80 #1	S-80, 60–70 cm	Debitage	Unknown
S-110 #1	S-110, 50–60 cm	Debitage	Obsidian Cliffs
S-110 #2	S-110, 60–70 cm	Debitage	Unknown
S-110 #3	S-110, 120–130 cm	Debitage	Obsidian Cliffs
Crates Point (35WS221, 2003)			
Landfill Con-1	Disturbed Sediments	Projectile Point	Obsidian Cliffs
Landfill 5/14/03	Disturbed Sediments	Knife Fragment	Wise Flat
B-2	Disturbed Sediments	Projectile Point	Obsidian Cliffs
Pile B	Disturbed Sediments	Debitage	Quartz Mountain
Hole B #1	Disturbed Sediments	Debitage	Obsidian Cliffs
Hole B #2	Disturbed Sediments	Debitage	Obsidian Cliffs
4/30/03	Surface	Debitage	Newberry Volcano
TP1 #1	TP1, 90–100 cm	Debitage	Obsidian Cliffs
TP1 #2	TP1, 100–110 cm	Debitage	Newberry Volcano
TP2 #1	TP2, 10–20 cm	Debitage	Obsidian Cliffs
TP3-6/1-1	TP3, 50–60 cm	Used Flake	Newberry Volcano
35WS242 (2003)			
TPA #1	TPA, 20–30 cm	Debitage	Obsidian Cliffs
TPA #2	TPA, 30–40 cm	Debitage	Obsidian Cliffs
TPA #3	TPA, 40–50 cm	Debitage	Obsidian Cliffs
TPA #4	TPA, 50–60 cm	Debitage	Newberry Volcano
TPA #5	TPA, 60–70 cm	Debitage	Obsidian Cliffs
TPA #6	TPA, 110–120 cm	Debitage	Obsidian Cliffs

Furthermore, no evidence indicating use of the area by native peoples in the historic period has so far been found at sites on Crates Point. Archaeological investigations have been conducted at Crates Point on a number of occasions, resulting in the recording of two prehistoric sites (35-WS-221, 35-WS-242).

The Crates Point Site (35-WS-221) was initially recorded in 1989 after prehistoric artifacts and human skeletal remains were exposed on the ground surface on the east side of the Union Pacific railroad tracks as a result of illicit digging by relic collectors (Minor and Hemphill 1990). Subsequent investigations in 1990 (Minor and Beckham 1991), 1994 and 1995 (Tasa 1995a, 1995b), and 2003 (Minor 2003, 2004) established that evidence of prehistoric occupation also is present, although in lighter density, on the west side of the railroad tracks as well. The single radiocarbon date available, derived from charcoal collected from a layer of angular rocks overlying the burials in the cemetery area, produced a radiocarbon date of 560 ± 180 RCYBP (Minor and Hemphill 1989:68–69). Altogether, 85 heavy stone tools, 137 flaked stone tools, and 4,857 pieces of debitage have been recovered during the various investigations. While the lithic assemblage again was mostly composed of locally available raw materials, obsidian was used in the manufacture of 5.1% of the flaked stone tools and made up 1.4% of the total debitage recovered from the Crates Point Site.

Evidence of prehistoric occupation occurs in light density over much of the rest of Crates Point, but only one area contained cultural material in sufficient density to warrant formal recording as an archaeological site. Small-scale test excavations in 1990 and 2003 established the presence of a buried lithic scatter recorded as 35-WS-242 on the upper terrace at Crates Point (Minor and Beckham 1991; Minor 2004). Altogether, 2 heavy stone tools, 5 flaked stone tools, and 179 pieces of debitage have been recovered within the site boundaries. No flaked stone tools of obsidian have been found, but obsidian made up 37.4% of the total debitage recovered. The single temporally diagnostic artifact found was a fragmentary small arrow point indicative of occupation within the last 2,000 years. Elsewhere on the upper terrace at Crates Point, however, two large atlatl-size points of chert have been found, suggesting some activity on the upper terrace sometime before circa 2,000 years ago (Minor 2004:35).

In conjunction with the 1990 project at Crates Point, ten obsidian specimens from the Crates Point Site (35-WS-221) were submitted for XRF sourcing analysis (Hughes 1991). It should be noted that all of these specimens were from the area west of the Union Pacific Railroad tracks, and their relationship to the burials in the late prehistoric cemetery on the east side of the tracks thus remains unknown. From the 2003 investigations, 11 additional obsidian specimens from the west side of the railroad tracks at the Crates Point Site (35-WS-221), and 6 obsidian specimens from prehistoric site 35-WS-242, submitted for XRF sourcing analysis yielded quantifiable data (Hughes 2003). Altogether, then, 27 obsidian specimens from Crates Point have yielded reliable XRF results (Table 1). The obsidian specimens from Crates Point subjected to XRF analysis are from four sources in central Oregon (Fig. 1). Specifically, 17 specimens are from Obsidian Cliffs, 5 are from Newberry Volcano, 1 is from Wise Flat, and 1 is from Quartz Mountain. Three specimens are from unknown sources.

Patterns in Obsidian Use at The Dalles

In a review of prehistoric exchange in the Plateau, Galm observed that “in no site or time period is obsidian represented as more than an extreme minority raw material occurrence (Galm 1994:282). In most reported instances, obsidian debitage and formed implements/objects, if present at all, occur in frequencies representing less than 1% of total chipped stone assemblages.” The low frequency of obsidian recovered in the early cultural deposits at the Roadcut Site on the Oregon shore indicates that, as elsewhere in the Plateau, obsidian was not widely available to early prehistoric peoples at The Dalles. As noted above, Cressman reported finding only “five flake scrapers” in a feature near the top of Stratum 1, the early deposit whose age is based on a composite sample of charcoal collected from throughout the stratum that yielded a radiocarbon date of 9,785 ± 220 RCYBP (Cressman et al. 1960:66). In later excavations at the Roadcut Site, V.L. Butler reported finding only eight small obsidian flakes from cultural deposits with associated radiocarbon dates with calibrated ages “ranging from 9000 to 4000 B.P.” (V.L. Butler 1998:10). Likewise, B.R. Butler reported finding only one obsidian flake among the artifacts recovered from the Indian Well I component on the Washington shore (B.R. Butler 1959:13). Current evidence indicates, then, that obsidian is relatively rarely represented in early assemblages, which, using V.L. Butler’s age estimate, would include sites/components occupied before 4,000 B.P.

Fig. 1. Location of prehistoric areas/sites and obsidian sources referenced in text. Obsidian sources: 1, Obsidian Cliffs; 2, Three Sisters; 3, Newberry Volcano; 4, Glass Buttes; 5, Quartz Mountain; 6, Cougar Mountain; 7, Wise Flat; 8, Juniper Springs; 9, Dog Hill; 10, Whitewater Ridge; 11, Little Bear Creek; 12, Squaw Butte; 13, John Day, 14, Dooley Mountain; 15, Baker; 16, Inman Creek (stream gravels in Willamette River). Sources 1 through 4 above provide most of the obsidian represented in the Plateau; other sources are much more sparsely represented.

Current information seems to indicate that obsidian first occurs in significant frequency at the Congdon site, estimated to date from 3500 to 3000 B.P. (Schulting 1995:82–84). Obsidian occurs there in the form of, and/or in association with, prestige goods collected from mortuary contexts. Most of the prestige goods observed at the Condon site, and in other mortuary contexts in The Dalles area, were looted by relic collectors and consequently have been scattered to the winds. None of the obsidian artifacts from mortuary contexts at The Dalles has been subject to sourcing analysis.

Currently, the best record of obsidian use at The Dalles comes from the Lone Pine and Crates Point sites, which date to the late prehistoric period (2,500 to 200 B.P.). Obsidian artifacts from these sites are from controlled small-scale excavations in non-mortuary contexts where rigorous recovery methods (1/8-in. mesh screens) were employed. The samples recovered thus provide a different perspective on obsidian use from that derived from earlier investigations in mortuary contexts at sites along Fivemile Rapids.

In comparison with the Plateau as a whole, data available from the Lone Pine and Crates Point sites indicate that obsidian is much more frequently represented among the flaked stone tools and debitage found in late prehistoric sites in The Dalles area. The highest proportions of obsidian, 11.5% of the flaked stone tools and 12.5% of the debitage, and the highest number of obsidian sources represented (n = 10), occur at the Lone Pine Site at the downstream end of Fivemile Rapids, the geographic focus of late prehistoric occupation in The Dalles area. The occurrence of obsidian appears to decline at the sites farther downstream from Fivemile Rapids, but obsidian still accounts for 5.1% of the flaked stone tools at the Crates Point Site (35-WS-221) and, somewhat surprisingly, for 37.4% of the debitage at 35-WS-242 on the upper terrace at Crates Point. Comparable data are available from only one other site in The Dalles area. At 35-WS-14, about 13 km downstream from Fivemile Rapids, 2.2% of the flaked stone tools and 1.1% of the debitage were of obsidian (Minor 1994).

Among the flaked stone tools recovered from the Lone Pine and Crates Point sites, obsidian most often occurs in the form of biface fragments, apparently broken while making projectile points, and secondarily as projectile points and used flakes, with one knife fragment also represented. Obsidian debitage uniformly occurs as small finishing/retouch flakes and shatter from the final stages of flaked stone tool manufacture (most of the debitage recovered is too small for XRF sourcing). Many of the obsidian items from these sites are small enough that they probably would not have been recovered during earlier investigations (i.e., during the 1950s, before 1/8-in. mesh screens were used).

Distance-to-source data indicate that most of the obsidian identified to source from the Lone Pine and Crates Point sites was obtained from the closest source, Obsidian Cliffs (n = 27; Table 2). This source lies approximately 166 km to the south of The Dalles in the mountains of the Cascade Range along the western edge of the northwestern Great Basin. Obsidian from the next closest source at Newberry Crater, approximately 209 km to the south, is a distant second in frequency (n = 8). Obsidian from nine other sources was identified, but these account for only a small number of the total sample (n = 14). Eleven specimens are from unknown sources. With the exception of Inman Creek in the Willamette Valley and Obsidian Cliffs in the Cascades, all of the other obsidian sources represented are situated east of the Cascade Range in central Oregon (Fig. 1).

The number of obsidian sources represented declines with distance downstream from Fivemile Rapids. In comparison with the ten different obsidian sources represented at the Lone Pine Site 1 km downstream from Fivemile Rapids, only four sources are represented at the Crates Point Site (35-WS-221), and only two sources are represented at 35-WS-242, both about 9 km downstream from Fivemile Rapids. A similar pattern is suggested by the results of XRF sourcing analysis on obsidian artifacts from the Celilo Treaty Fishing Access Site (35-WS-142), some 16

km upstream on the Columbia near Celilo Falls, where obsidian from eight sources (four of which are among the same sources identified at the Lone Pine and Crates Point sites) was identified (Skinner and Davis 1998).

The decline in the number of sources represented at sites upstream and downstream on the Columbia is consistent with the idea that the obsidian trade flowed primarily through the settlements along Fivemile Rapids, where the greatest number of obsidian sources would be expected to be represented. From the settlements along Fivemile Rapids, obsidian from sources in the northwestern Great Basin was distributed to prehistoric peoples living downstream at secondary exchange centers at the Cascades of the Columbia and Portland Basin (Sobel 2004, 2006, 2012).

The absence of references to obsidian in ethnographic and ethnohistorical accounts of the exchange center at The Dalles is curious, especially in view of the fact that obsidian from Great Basin sources continued to be distributed down the Columbia River to villages at the Cascades (Clahclellah) and in the Portland Basin (the Meier site and Cathlapotle) in the post-contact period (Sobel 2012:14, Table 8). Perhaps the distribution of obsidian in its raw material form was a low-key activity embedded within the larger exchange network, which, judging from ethnohistorical accounts, largely involved perishable items. The eventual disappearance of the obsidian trade was almost certainly related to the decimation of the native population following the introduction of smallpox and other infectious diseases from indirect contact with Euroamericans (Boyd 1999:28–32). Abrupt decline in the native population at The Dalles is graphically illustrated in the construction and use of burial sheds or vaults containing the remains of hundreds of individuals (see Strong 1959:80–83; Seaman 1967:114–115). As the largest and densest native populations typically were most severely affected (Dobyns 1992), The Dalles area was almost certainly among the earliest in the Plateau to suffer catastrophic population decline early in the historic period.

TABLE 2. OBSIDIAN SOURCES REPRESENTED AT THE LONE PINE AND CRATES POINT SITES

	Distance from	Lone Pine 35WS247		Crates Point 35WS221		35WS242	
Obsidian Source	**The Dalles[a]**	**Tools**	**Debitage**	**Tools**	**Debitage**	**Debitage**	**Totals**
Obsidian Cliffs	166 km	10	0	2	10	5	27
Newberry Volcano	209 km	3	0	1	3	1	8
Whitewater Ridge	258 km	4	0	0	0	0	4
Quartz Mountain	219 km	0	1	0	1	0	2
Cougar Mountain	244 km	2	0	0	0	0	2
Wise Flat	246 km	0	0	1	0	0	1
Juniper Spring Area	213 km	1	0	0	0	0	1
Little Bear Creek	260 km	1	0	0	0	0	1
Dog Hill	263 km	1	0	0	0	0	1
Dooley Mountain	270 km	1	0	0	0	0	1
Inman Creek	246 km	1	0	0	0	0	1
Unknown		7	1	0	3	0	11
Site Totals		31	2	4	17	6	60

[a] Estimated straight-line distance; actual travel distance would obviously be greater.

Great Basin Obsidian in British Columbia

The first evidence suggesting that obsidian from Great Basin sources reached the prehistoric inhabitants of British Columbia at an early date was reported from the Milliken site (DjRi-3) in the Fraser River Canyon (Borden 1975:66–67). A single specimen of obsidian "dating to just over 8000 B.P." was traced by XRF analysis to "the poorly known source at Little Bear Creek" in Oregon (Carlson 1994:315). This finding led to the statement that "[f]rom this perspective, obsidian trade started in all regions of the Northwest by 9,000 years ago" (Carlson 1994:318). In a subsequent reference to the sourced specimen from the Milliken site, Mitchell and Pokotylo (1996:70) noted that "X-ray fluorescence analysis indicates the item's element composition is most similar to fingerprints for Oregon sources, but a new source in the Cascade Mountains in Washington is also a likely source (R. Carlson, personal communication 1987)."

A pioneering study using XRF analysis by Nelson, D'Auria, and Bennett traced 20 obsidian artifacts recovered from the Helen Point site (DfRu-8) on Mayne Island in the Gulf of Georgia to sources in Oregon identified as "Three Sisters Mountains; Glass Buttes #2, two unknown types" (Nelson, D'Auria, and Bennett 1975). In a subsequent compendium of XRF analysis results by Carlson, obsidian from sources in the northwestern Great Basin was identified at 18 sites in British Columbia, with 203 specimens from eight obsidian sources represented in all (Carlson 1994) (Table 3). Over half of the specimens (105, or 52%) from Great Basin sources identified in British Columbia were recovered from the Helen Point site.

Temporal information on the occurrence of obsidian at prehistoric sites in British Columbia presented by Carlson was limited to obsidian found at Namu (ElSx-1) and Helen Point (Carlson 1994). The earliest obsidian from Great Basin sources dates to 4,000–5,000 B.P., and includes a single specimen from Newberry Volcano found at Namu (the only obsidian from a Great Basin source found at the site), and five specimens from Newberry Volcano and nine specimens from Three Sisters found at Helen Point (Carlson 1994:322, Table 11). The number of obsidian specimens from Great Basin sources at Helen Point reached a high of 35 (16 from Three Sisters, 19 from Newberry Volcano) from 3,000 to 4,000 B.P. All other occurrences of obsidian from Great Basin sources at sites in British Columbia apparently postdate 3,000 B.P.

Significantly, all of the obsidian found at sites in British Columbia is from sources in the northwestern Great Basin. Obsidian sources in the Cascade Mountains and west of the Cascade Range in western Oregon that are strongly represented in the Portland Basin (e.g., at the Meier site and Cathlapotle) have not been identified at sites in British Columbia. This situation seems to indicate that the obsidian found at sites in British Columbia was distributed northward through the exchange center at The Dalles along interior routes as part of the Plateau Interaction Sphere, rather than from settlements downstream on the Columbia River involving distribution of obsidian along routes west of the Cascades and/or along the Pacific coast (*contra* Carlson 1994:318).

Conclusions

Interpretation of prehistoric obsidian use at The Dalles is complicated by the fact that the evidence occurs in the form of two contrasting data sets. The evidence of use of obsidian in the manufacture of prestige goods is derived from sites, often including burial contexts, along the river banks that were subject to large-scale excavations (often by self-styled "amateur archaeologists") in the 1950s. These sites, occupied between ca. 3,500 B.P. and historic contact, are now inundated under reservoirs. The data reported here on obsidian sources represented at The

TABLE 3. NORTHWESTERN GREAT BASIN OBSIDIAN REPRESENTED AT PREHISTORIC SITES IN BRITISH COLUMBIA

Area / Site	Three Sisters	Newberry Volcano	Glass Buttes	John Day	Squaw Butte	Cougar Mtn.	Baker	Little Bear	Totals
Central Coast									
Grant Anchorage (FcTe-4)				1					1
Namu (ElSx-1)		1							1
Queen Charlotte Strait									
Chatham Channel (EdSn-38)				1					1
North Georgia Strait									
Port Alberni (DhSe-7)		1	1						2
Gulf Islands									
Helen Point (DfRu-8)	45	37	13	7				3	105
Tolan's Beach (DfRu-24)	6	1	2		1	1		1	12
False Narrows (DgRw-4)	1	1	3						5
Pender Canal (DeRt-1)	1	1	4	3					9
Pender Canal (DeRt-2)		1							1
South Vancouver Island									
Willows Beach (DcRt-10)			18	1	2				21
Bowker Creek (DcRt-13)			1	3					4
Lower Fraser									
Marpole (DhRs-1)	3	3	6	1					13
Saint Mungo (DgRr-2)	1					1	1	1	4
Whalen (DfRs-3)	2	1							3
Milliken (DjRi-3)	1			1				3	5
Maurer (DhRk-8)		1		4				4	9
Crescent Beach (DgRr-1)		2	1	1					4
Southeast British Columbia									
McCall (DhQv48)		1					2		3
Totals (18 Sites)	60	51	49	23	3	2	3	12	203

Dalles, on the other hand, are from utilitarian tools and debitage recovered from non-burial contexts at sites subjected to small-scale test excavations in the last few decades. These sites, situated above the former river banks, were occupied within the last 1,000 years. The information contained in both data sets needs to be considered in arriving at a comprehensive understanding of obsidian use by prehistoric peoples at The Dalles.

Contrary to earlier suggestions that the obsidian trade has great antiquity in the Plateau (e.g., Carlson 1994:318; Quinn 2006:212; Sobel 2006:165), obsidian from sources to the south in the northwestern Great Basin is only sparsely represented in early prehistoric components at sites around The Dalles and farther north in the Plateau and adjacent Northwest Coast. Current evidence seems to indicate that movement of obsidian from northwestern Great Basin sources northward into the Plateau and beyond was light and sporadic before ca. 4,000 B.P.

Obsidian first appears prominently in the archaeological record at The Dalles in association with, and/or in the form of, prestige goods placed with burials excavated in the 1950s from the Congdon II and III components. Although an estimated date from 3,500 to 3,000 B.P. has become attached to these components (Schulting 1995:82–84), the projectile point types on which this

estimate is based have such broad time ranges that the burial components in the Congdon II and III components easily could date l,000 years or more earlier, which would bring the chronology more closely into line with the appearance of obsidian from Great Basin sources in substantial frequencies at prehistoric sites in British Columbia. These estimated dates indicate that some kind of exchange system between native groups at The Dalles and peoples in British Columbia was in operation a thousand years or more prior to 2,400 B.P., the beginning date listed in the discussion of the Plateau Interaction Sphere (Hayden and Schulting 1997:52).

Aside from six sourced specimens from deposits at the Roadcut site dating to between about 9,000 and 4,900 B.P. recovered in 1993 (V.L. Butler 1998), XRF sourcing analysis has so far been conducted only on materials from sites at The Dalles occupied during the period from approximately 2,500 to 200 B.P., with ten sources identified at Lone Pine and four sources identified at the Crates Point sites. This is roughly the same time span when the late prehistoric Plateau Interaction Sphere is posited to have been in existence and when most obsidian from sources in the northwestern Great Basin found its way northward into British Columbia.

Hayden and Schulting's concept of a Plateau Interaction Sphere draws much needed attention to the existence of elites at The Dalles on the Columbia River. Because most of the archaeological investigations occurred more than a half-century ago, and the major sites along Fivemile Rapids were inundated beneath Lake Celilo in 1957, few archaeologists today are familiar with the evidence of substantial cultural complexity in the archaeological record at The Dalles. Considering the great number of obsidian sources known to exist in the northwestern Great Basin, the ten obsidian sources so far identified at sites in The Dalles area almost certainly under-represent the extent of interregional procurement and exchange of obsidian in the late prehistoric period. Further XRF sourcing studies of obsidian artifacts recovered during excavations at sites along Fivemile Rapids in the 1950s now in museum collections will no doubt identify additional sources from which obsidian was obtained for trade at The Dalles.

The Plateau Interaction Sphere concept invites comparisons between The Dalles and the Lillooet-Lytton area on the Fraser River in British Columbia, the second area in the Plateau where prestige goods were concentrated. However, the environmental and cultural setting at The Dalles was unique in the Pacific Northwest, and it may be necessary to look farther afield for models of comparable prehistoric cultural development (e.g., Poverty Point in the southeastern United States). The Plateau Interaction Sphere concept provides a starting point for a more in-depth study of elites at The Dalles, certainly one of the most poorly documented and least understood examples of culturally complex hunter-gatherers in North America.

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This article has been brewing since 1995, when I last directed archaeological investigations (at the Lone Pine Site) at The Dalles. In previous writings, I have tried to highlight aspects of the archaeological record that make The Dalles unique in the Pacific Northwest. I found one way to accomplish this was to further explore the role of The Dalles within the concept of the Plateau Interaction Sphere proposed by Brian Hayden and Rick Schulting. Final drafts of this paper were improved by comments from *JONA* editor Darby Stapp and two anonymous reviewers. Needless to say, I am solely responsible for any errors of fact or interpretation.

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