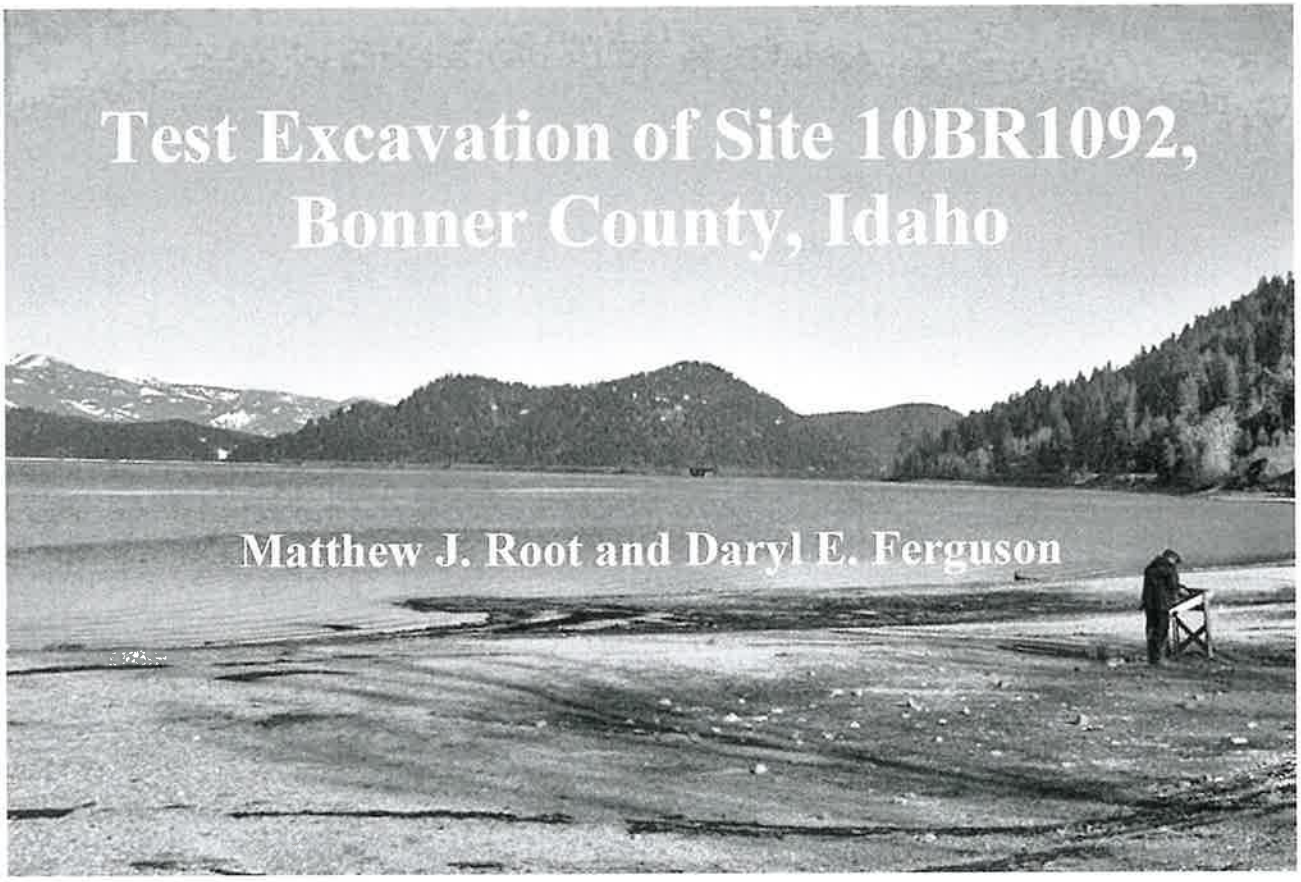


Test Excavation of Site 10BR1092, Bonner County, Idaho

Matthew J. Root and Daryl E. Ferguson

Rain Shadow Research Inc.
Project Report 182

RAIN SHADOW RESEARCH INC.

CONSULTANTS IN PREHISTORY AND PALEOENVIRONMENTS

This Report Contains Privileged Information: Do Not Release

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

Test Excavation of Site 10BR1092, Bonner County, Idaho

NW¼ SW¼SW¼, Section 16 T. 57 N., R. 1 E., Boise Meridian, USGS Trout Peak Quadrangle, 7.5 minute, Bonner County, Idaho.

Matthew J. Root, *Ph.D.*, *RPA*
Principal Investigator
and
Daryl E. Ferguson, *M.A.*, *RPA*
Senior Research Archaeologist

Rain Shadow Research Inc.
Project Report 182

119 North Grand Avenue
Pullman, Washington 99163-2605

April 2008

Submitted to: **Pend Oreille Bonner Development, LLC**
151 Clubhouse Way
Sandpoint, ID 83864

This Report Contains Privileged Information: Do Not Release

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

Key Information

Permitting Agency Name: U.S. Army Corps of Engineers

Authority: Section 106 of the NHPA

County: Bonner, Idaho

Legal Descriptions: NW¼ SW¼SW¼, Section 16 T. 57 N., R. 1 E., Boise Meridian, USGS Trout Peak Quadrangle, 7.5 minute, Bonner County, Idaho.

Client: Pend Oreille Bonner Development, LLC, Sandpoint, ID 83864

Disposition of Excavation Records: Rain Shadow Research, Pullman, Washington

Certification of Results
I certify that this investigation was conducted and documented according to the Secretary of Interior's standards and guidelines and that the report is complete and accurate to the best of my knowledge.

Matthew J. Root, Ph.D., RPA April 2008

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

Management Summary

Rain Shadow Research conducted test excavations at site 10BR1092 on the east shore of Lake Pend Oreille on the south part of the Trestle Creek alluvial fan to evaluate the site for National Register eligibility. We conducted field work for four days, from 23–26 March 2008. We excavated four 1-x-1 m units and five 0.5-x-0.5-m units and a total of 2.55 cubic meters of sediment. All sediments were screened through 8-per-inch mesh. Two, 1-x-1-m excavation units below the Ordinary High Water Mark (OHWM) on the beach recovered a total of two flakes, both in reworked and redeposited beach sand and gravel. Two 1-x-1-m excavation units above the OHWM recovered a total of two small flakes in reworked sand and gravel. The units exposed profiles of reworked sand and gravel over poorly sorted, extremely gravelly deposits that are either reworked channel gravels or reworked gravels from the Trestle Creek alluvial fan. Clayey and pebbly glacial till deposits underlie the reworked gravels at the east edge of the site. We excavated five, 0.5-x-0.5-m units (with 8-per-inch screened recovery) above the OHWM along the edge of an artificial boat channel. We found no artifacts in any of these test units. We inspected the exposed sides of the artificial boat channels that were dug through extremely gravelly and cobbly alluvial fan deposits, but found no artifacts. These tests all exposed very to extremely gravelly and cobbly sandy loam alluvial fan deposits at depths of about 10 cm.

We inspected the beach at 2 m survey intervals, recording 12 pieces of FCR and two metaquartzite flakes. Twelve of these 14 artifacts are within 20 m of the lake (which was at an elevation of 2,055.25 ft. on March 26), well below the OHWM. This suggests that most of the site is also located well below the OHWM.

This development project, which is proposed by Pend Oreille Bonner Development, LLC, Sandpoint, Idaho is subject to the permitting of the U.S. Army Corps of Engineers, and therefore must be reviewed in accordance of Section 106 of the U.S. National Historic Preservation Act. Pend Oreille Bonner Development is proposing to remove a small "island" just above the OHWM that was created by excavation of the existing boat channel. They are also proposing to dredge the existing shoreline above the OHWM, removing the existing shoreline at the OHWM. Rain Shadow Research recorded site 10BR1092 during surface survey and shovel testing in 2005 (Root and Ferguson 2005). Because the currently proposed project would destroy any cultural deposits that might be present above the OHWM in this locality, the Idaho SHPO and the Kalispel Tribe of Indians recommended test excavations to determine the extent of cultural deposits, especially above the OHWM.

Excavations and intensive surface survey indicate that a very low density deposit of redeposited artifacts is present below the OHWM on the surface and shallowly buried in reworked beach sands and gravel. Just above the OHWM, we found two small flakes in wave reworked deposits that overlie glacial till. Test excavations along with and intensive surface survey of existing artificially dredged channels found no artifacts or evidence that any intact cultural deposits are present in this area.

We found no trace of intact archaeological deposits anywhere within or adjacent to the site. The historic shoreline of the area was 50–300 m from the present OHWM in the late nineteenth century at the time of the Government Land Office survey. Surface artifacts were primarily just above the elevation of the lake at the time of our field work. This suggests that artifacts probably extend to the westward into areas that were under water in March of 2008, and beyond the present project APE.

There is no evidence that intact cultural deposits are present at this site. Therefore, it lacks archaeological integrity. There is no empirical evidence that indicates the site has any potential to

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

be dated by radiocarbon, thermoluminescence, or other absolute dating techniques. The scatter of a few pieces of burned rocks and flakes has little potential to be associated with time-diagnostic artifacts, though projectile points were reportedly found by collectors during low water at the mouth of Trestle Creek. No artifacts of American Indian affiliation—other than those reported here—have ever been reported during professional archaeological investigations along the shoreline of the north part of the Trestle Creek Fan. Lacking integrity and chronological context, the site holds no reasonable potential to answer important research questions about the precontact or postcontact history of the Lake Pend Oreille locality. The site holds little potential data beyond those already recorded during these investigations and reported here.

Therefore, we recommend that site 10BR1092 is **Not Eligible** for listing on the National Register of Historic Places. We recommend that the proposed Pend Oreille Bonner Development project will have **No Effect** to properties on the National Register or eligible for nomination to the National Register of Historic Places.

Contents

MANAGEMENT SUMMARY III

CONTENTS V

LIST OF FIGURES VI

LIST OF TABLES VI

SCOPE OF WORK AND PROJECT AREA 1

ENVIRONMENTAL SETTING 2

GEOLOGY 3

PALEOCLIMATES AND PALEOVEGETATION 4

SOUTHERN BRITISH COLUMBIA 4
NORTH IDAHO AND NORTHEAST WASHINGTON 4

PROTOHISTORIC AND PRECONTACT CONTEXT 5

ETHNOGRAPHIC CONTEXT 6

PREVIOUS WORK ON THE TRESTLE CREEK ALLUVIAL FAN 6

SITE DESCRIPTION 7

FIELD PROCEDURES 7

EXCAVATION RECORDS 9
EXCAVATION PROCEDURES 11
LABORATORY ANALYSES 12

EXCAVATION RESULTS 12

NATURAL STRATIGRAPHY 12
CULTURAL STRATIGRAPHY 21
ARTIFACT ANALYSES 21
Chipped Stone *21*
Fire-Cracked Rock *23*

SUMMARY AND CONCLUSIONS 23

MANAGEMENT RECOMMENDATIONS 24

UNANTICIPATED DISCOVERIES 24

REFERENCES CITED 25

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

List of Figures

FIGURE 1. LOCATION OF SITE 10BR1092 AT TRESTLE CREEK ON LAKE PEND OREILLE, BONNER COUNTY, IDAHO (USGS SANDPOINT QUADRANGLE, 1:100,000, 1984, CONTOUR INTERVAL 40 METERS). 2
FIGURE 2. SITE MAP OF 10BR1092 SHOWING THE SITE BOUNDARIES, LOCATION OF POINT PLOTTED SURFACE ARTIFACTS, AND THE LOCATION OF EXCAVATION UNITS (CONTOUR INTERVAL IS 0.3 M) 8
FIGURE 3. MAP OF THE LOCATION OF SITE 10BR1092 (USGS TROUT PEAK QUADRANGLE, 1:24,000, 1996, CONTOUR INTERVAL 40 FEET). 9
FIGURE 4. SITE 10BR1092: (A) OVERVIEW DUE NORTH (XU2 FOREGROUND, XU1 BACKGROUND); (B) THE SPOIL PILE BETWEEN THE SITE AND AN ARTIFICIAL CHANNEL, VIEW DUE NORTH. 10
FIGURE 5. WORK AT EXCAVATION UNIT 6 ABOVE THE EAST SIDE OF THE ARTIFICIAL CHANNEL THAT EXPOSED GRAVELLY AND COBBLY ALLUVIAL FAN SEDIMENTS AT THE SURFACE, VIEW TO AZIMUTH 30°. CAREFUL INSPECTION OF THE EXPOSED CHANNEL SIDES REVEALED NO CULTURAL MATERIALS, STRONGLY SUGGESTING THAT SITE 10BR1092 DOES NOT CONTINUE EASTWARD ON TO THE ALLUVIAL FAN. 11
FIGURE 6. SITE 10BR1092: (A) XU1 IN PROGRESS, VIEW TO AZIMUTH 320°; (B) XU2 IN PROGRESS, VIEW TO AZIMUTH 240° (PIN FLAGS MARK SURFACE ARTIFACTS). 13
FIGURE 7. EXCAVATION UNIT 3 ABOVE THE OHWM AND AT THE EDGE OF THE SPOIL PILE FROM DREDGING THE ADJACENT ARTIFICIAL CHANNELS, VIEW DUE NORTH. 14
FIGURE 8. EXCAVATION UNIT PROFILE PHOTOGRAPHS: (A) XU1 NORTH WALL; (B) XU2 NORTH WALL. 15
FIGURE 9. PROFILE DRAWINGS OF THE NORTH AND EAST WALL OF XU1 AND XU2. 16
FIGURE 10. PROFILE DRAWING OF THE NORTH AND EAST WALLS OF XU3 19
FIGURE 11. EXCAVATION UNIT PROFILE PHOTOGRAPHS: (A) XU3 NORTH WALL; (B) XU4 NORTH WALL. 20
FIGURE 12. PROFILE DRAWING OF THE NORTH AND EAST WALLS OF XU4 21
FIGURE 13. FLAKES FROM 10BR1092: (A) METAQUARTZITE SURFACE FLAKE 2; (B) METAQUARTZITE SURFACE FLAKE 2; (C) METAQUARTZITE FLAKE FROM XU2; (D) QUARTZ FLAKE FROM XU1. 22

List of Tables

TABLE 1. EXCAVATION UNIT UTM COORDINATES (NAD1983) 14
TABLE 2. SEDIMENT DESCRIPTIONS FOR EXCAVATION UNIT 1. 16
TABLE 3. SEDIMENT DESCRIPTIONS FOR EXCAVATION UNIT 2. 17
TABLE 4. SEDIMENT DESCRIPTIONS FOR EXCAVATION UNIT 3. 18
TABLE 5. SEDIMENT DESCRIPTIONS FOR EXCAVATION UNIT 4. 19
TABLE 6. MEASUREMENTS OF ARTIFACTS FROM 10BR1092, 2008 EXCAVATIONS. 22

IDAHO DEPARTMENT OF LANDS

MAY 13 2024

PEND OREILLE LAKE AREA

Scope of Work and Project Area

Rain Shadow Research conducted test excavations at site 10BR1092 Oreille to evaluate the site for National Register eligibility. The site is on the beach below the north part of the Trestle Creek alluvial fan on the east shore of Lake Pend. We excavated four, 1-x-1 m units and five, 0.5-x-0.5-m units for a total of 2.55 cubic meters of excavated sediment. The four, 1-x-1 m units were on the beach and just above the Ordinary High Water Mark (OHWM). They exposed profiles of reworked sand and gravel over clayey glacial till and over extremely gravelly reworked sediments. These units contained a total of four flakes, all from reworked sediments. Five, 0.5-x-0.5-m units above the OHWM on the surface of the alluvial fan exposed very to extremely gravelly and cobbly sandy loam alluvial fan deposits at depths of 10 cm. These units did not contain any artifacts, indicating that the site does not continue above the beach on to the alluvial fan. We surveyed the beach at 2 m intervals, recording 12 pieces of FCR and two metaquartzite flakes. Twelve of these 14 artifacts are within 20 m of the lake (which was at an elevation of 2,055.25 ft. on March 26).

This development project, which is proposed by Pend Oreille Bonner Development, LLC, Sandpoint, Idaho, is subject to the permitting by the U.S. Army Corps of Engineers, and therefore must be reviewed in accordance of Section 106 of the U.S. National Historic Preservation Act, as amended. Pend Oreille Bonner Development is proposing to remove a small "island" just above the OHWM that was created by excavation of the existing boat channel They are also proposing to dredge the existing shoreline above the OHWM. Because this would destroy any cultural deposits that might be present just above the OHWM, the Idaho SHPO and the Kalispel Tribe of Indians recommended that test excavations be conducted to determine the extent of cultural deposits.

Excavations and intensive survey indicate that a low-density deposit of redeposited artifacts is present below the OHWM on the surface and in shallowly buried, reworked beach deposits. Just above the OHWM, we found two small flakes in wave-reworked deposits that overlie glacial till. These excavations and intensive surface survey of the existing, artificially dredged channels found no artifacts or evidence that any cultural deposits are present on the alluvial fan above the beach.

We found no trace of intact archaeological deposits anywhere in the site. The shoreline below the Trestle Creek alluvial fan was 50–300 m from the present OHWM in the late nineteenth century at the time of the Government Land Office survey (Root and Ferguson 2005). In March 2008, surface artifacts were primarily just above the elevation of the lake. This suggests that artifacts may extend westward into areas that were under water in March 2008, and beyond the present project APE. There is no evidence that intact cultural deposits are present at this site. Therefore, it lacks archaeological integrity. There is no empirical evidence that indicates the site has any potential to be dated by radiocarbon, luminescence (TL or OSL), or other absolute dating techniques.

Though it is possible to date burned rocks by luminescence techniques, the fire-cracked rock at 10BR1092 is on the surface. Luminescence dating has potential to accurately date buried specimens in undisturbed sediments where background radiation levels can be measured to assess the potential for accurate dating. Exposure to sunlight or heat releases the electrons that become trapped over time in crystal lattice defects in mineral grains, resetting the luminescence "clock." (Bradley 1985:78–83; Feathers 1997). Therefore, surface artifacts, deposits subject to natural fires, and reworked sediments, as at 10BR1092, are poor candidates for luminescence dating.

Thus, 10BR1092 lacks archaeological integrity and has little or no potential for dating by absolute techniques. We recommend that site 10BR1092 is **Not Eligible** for listing on the National Register of Historic Places. We recommend that the proposed Pend Oreille Bonner Development project will have **No Effect** on properties on the National Register or eligible for listing on the National Register of Historic Places.

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

Environmental Setting

Site 10BR1092 is along the shore of Lake Pend Oreille just north of the mouth of North Branch Trestle Creek within the Middle Kootenai region of the Northern Rocky Mountains. This area differs from most of rest of the Plateau cultural area because anadromous fish are absent and root crops are relatively scarce compared with the lower Pend Oreille River valley. Large ungulates, including mule deer, white-tailed deer, elk, mountain sheep, mountain goat, moose and caribou are relatively abundant, however. Winter snows can be heavy at higher elevations (above 900 m), and while ungulates are dispersed over large areas in the summer, their winter ranges are restricted to the valley bottoms (Moratto et al. 1991:2.23–2.24). Native fish in Lake Pend Oreille include bull trout (*Salvelinus confluentus*), westslope cutthroat trout (*Oncorhynchus clarki lewisi*), mountain whitefish (*Prosopium williamsoni*), and pygmy whitefish (*Prosopium coulteri*), largescale sucker (*Catostomus catastomus*), and longnose sucker (*Catostomus macrocheilus*) (Stovall 2001).

The Pend Oreille River once flowed westward though several narrow channels between rock outcrops at Albeni Falls. Every spring the lake level would rise, fed by melting mountain snows. The lake would slowly lower during the dry season, reaching its minimum elevation in late summer. The Albeni Falls Dam was finished in 1955, and now controls lake levels, with minimum lake elevation created in the late winter and maximum operating pool maintained throughout the summer.

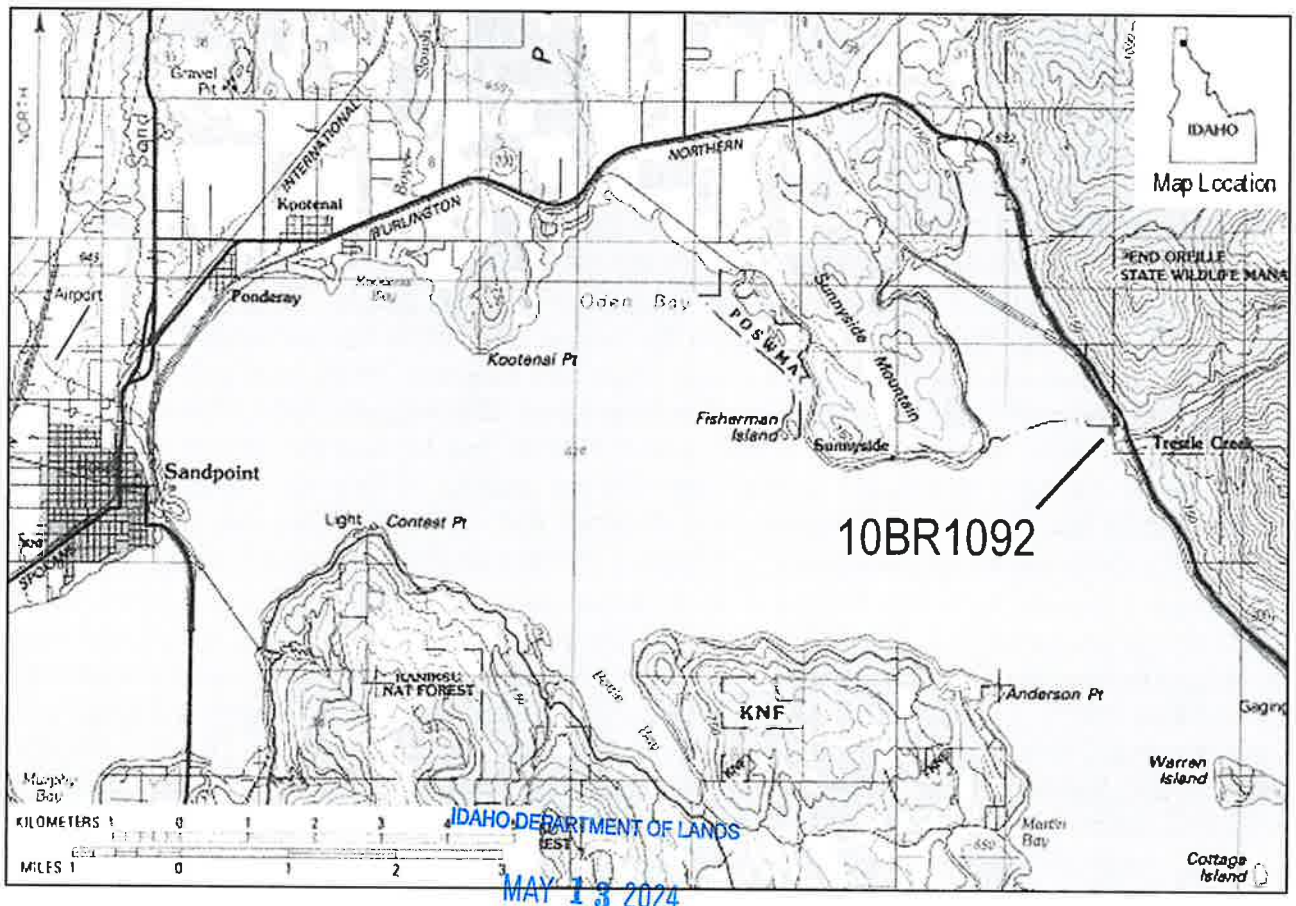


Figure 1. Location of Site 10BR1092 at Trestle Creek on Lake Pend Oreille, Bonner County, Idaho (USGS Sandpoint Quadrangle, 1:100,000, 1984, contour interval 40 meters).

The project is in the Lake Pend Oreille subbasin, which is bordered to the west by the Selkirk Mountains, to the north by the Cabinet Mountains, and by the Bitterroot Mountains to the east. The basin was substantially modified by Pleistocene glaciation, and was the site of the ice dam that created the largest catastrophic floods known in earth's geologic history. Glacial advances resulted in highly dissected watersheds with high stream density, shallow soils, and subsoil compaction of glacial tills. Lake Pend Oreille is the largest and deepest natural lake in Idaho, and covered 33,696 ha before the construction of Albeni Falls Dam. At full pool, the lake covers 38,362 ha (Hoelscher 1993). The lake has more than 282 km of shoreline and a maximum depth of 351 m (Stovall 2001).

Most of the vegetation in present-day North Idaho has been disturbed by lightening fires and by human development, and today the area is principally second-growth lodge pole and ponderosa pine. Other prominent vegetation includes aspen, Douglas fir, Oregon grape, and a variety of understory shrubs. The potential natural forest vegetation is a mosaic determined by macro- and microclimate, soils, and drainage. Native vegetation in valley bottoms included western red cedar, (*Thuja plicates*) (Daubenmire and Daubenmire 1984).

North Idaho is characterized by warm summers in the valleys and cooler temperatures in the mountains. Winters in the mountains are cold, but the valleys are typically colder because of cold-air drainage. In the mountains, precipitation falls year-round, with a heavy accumulation of winter snow. There is snow cover throughout most of the winter, but Chinook winds can cause mid-winter thaws (Weisel 1981). At Sandpoint, the average annual precipitation is 850 mm (33.5 inches). Monthly mean temperatures vary from –3° C (27° F) in Jan to 18° C (65° F) in July. Lake Pend Oreille seldom freezes in winter, but the shallows in the northern end of the lake do freeze in cold years (Abramovich et al. 1998:149).

Geology

The site lies on the beach on the east shore of Lake Pend Oreille below the Trestle Creek alluvial fan, just north of the mouth of North Branch Trestle Creek (Figure 1). The site is below the fan of sediments mapped as the distal end of the Pack River delta. These are latest Pleistocene and Holocene deposits (Lewis et al 2006). The beach consists of sandy and gravelly deposits, with the larger clasts certainly eroded from the alluvial fan, which contains debris from glacial till and angular and subangular clasts from the Prichard Fm (Lewis et al 2006). The region is one of forested mountains and narrow valleys, such as that carved by Trestle Creek. The mountains consist of metamorphic and metasedimentary rocks. The mountains that rise above the Trestle Creek fan include those of the Prichard Formation, which includes argillite, quartzite, and siltite. Granitic rocks, and Precambian dikes and sills of diorite, horneblende, and related rocks also crop out above Trestle Creek (Lewis et al 2006; Savage 1967:Figure 2B).

Lake Pend Oreille lies in the Purcell Trench, which is a north-south trending glaciated valley. About 70–80 million years ago large amounts of granitic magma rose to the upper part of the earth's crust in what is now north Idaho. This weakened the crust to the point that the upper crust sheared along the Purcell fault and moved eastward, forming the Cabinet and Purcell Mountains. The Purcell Trench thus separates the granite of the Selkirk Mountains to the west from the younger rocks to the east (Alt and Hyndman 1989:57–59).

During the maximum advance of glaciers during the last Ice Age, the Purcell lobe of the continental Cordilleran ice sheet moved through the Purcell Trench, across the Rathdrum Prairie, and into the Spokane Valley. This glacier scoured the basin that now holds Lake Pend Oreille. This ice mass dammed the Clark Fork River near the spot where it now empties into Lake Pend Oreille. The water behind the dam filled the valleys of western Montana, covering 7,770 km^2 (3,000 square miles) and holding 2,000 km^3 of water (500 cubic miles), about one-half of the volume of present-

RECEIVED DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

day Lake Michigan. Several dozen gigantic floods occurred between 15,000 and 13,000 years ago when the water reached a volume such that the tremendous hydrostatic pressure on the ice dam caused its catastrophic failure (Alt 2001; U.S. Dept. of the Interior 1983).

Paleoclimates and Paleovegetation

A series of climatic changes over the past 12,000 years altered both plant and animal ecosystems and these changes affected the people who lived in north Idaho during that span. These changes are not unusual, but are similar to those that occurred worldwide as vegetation adjusted to the end of glacial climates and continued to adjust to smaller changes throughout the Holocene (Mehringer 1996).

Southern British Columbia

In southern British Columbia adjoining the project area to the north, Holocene paleoclimatic evidence shows the same tripartite division seen across the western United States (Hebda 1995). Prior to 10,000 years ago, glaciers receded and there was a brief period with few trees. By 10,000 years ago, mean annual temperatures rose to possibly as much as 2–4° C greater than today. This interval was also drier than modern climates, and lasted to about 7,000 B.P. At the beginning of the interval, sagebrush and grass communities formed in the southern British Columbia interior, though by the end of this interval, precipitation increased. Warm and moist conditions prevailed from 7,000 to 4,000 B.P. Temperatures varied from modern values to about 1–2° C warmer than today. Precipitation increased from early Holocene values, especially from 7,000–6000 B.P. Tree lines lowered, Douglas fir invaded areas that were previously sagebrush steppe, western Hemlock and western redcedar expanded, and lake levels rose. Cooler and moister conditions begin at 5400 B.P. and were widespread by 4000 B.P. These changes were marked by descending treelines and fossil remains of plants that grow in cool moist environments. The onset of modern vegetation began between 4000 and 2000 B.P., including short climatic shifts throughout the late Holocene (Mehringer 1996:14–15).

North Idaho and Northeast Washington

About 12,000 years ago at Goose Lake in the Okanogan valley (Dalan 1985) and at several pollen sites in the Colville, Sanpoil and Priest River valleys (Mack et al. 1978a, 1978b, 1978c, 1978d, 1979, 1983), the first vegetation to be established following deglaciation was a treeless steppe dominated by grass and sage. Following this initial treeless time and before the eruption of Glacier Peak at 11,250 B.P., spruce, fir, and lodgepole pine were present in an open woodland with grass and sage. To the south in the Columbia Basin, grass and sage were prominent with lesser amounts of arboreal pollen, suggesting less woodland with open areas of grass and sage (Nickmann 1979). By 11,000 years ago, glacial ice had melted from all but the highest mountains and mixed conifers with some birch dominated.

After 10,000 years ago the climate became relatively warm and dry. Timberlines may have been as much as 1,000 ft. (305 m) higher than at present, and may have remained at these elevations until 6,500 years ago. Grass and sagebrush began to dominate in the lower, drier elevations. Pollen studies indicate that by 8,300 years ago, a lodegpole or ponderosa pine forest with a grass understory was established to the east in the Priest Lake vicinity. Small percentages of grass and sage pollen indicate that there was widespread steppe and dry, interior forests. By 7,000 years ago, warmer and drier climates compared with those of today are suggested by the establishment of sagebrush in the Colville Valley, and by the growth of drought-adapted Douglas fir in the Priest Lake area. In the Pend Oreille River watershed at an elevation of 7,000 ft., Douglas fir and

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

lodgepole pine replaced whitebark pine by 7,000 B.P. At Goose Lake in Okanogan County, Washington at 9,500 years ago there was a rapid increase in grass pollen and relatively large amounts of sage pollen, indicating that the area was a grass-sage steppe. Warm and dry conditions persisted for the next several thousand years.

Between 4,000 and 5,000 years ago, the regional climate became wetter and cooler than during the previous several thousand years and forests advanced to the south and west into areas that were previously sagebrush and grass steppe. In northeast Washington and north Idaho, pine, fir, and hemlock all increased in abundance after 4000 B.P. and they became prominent by 3000 B.P. Modern conditions were perhaps established by 4,000 to 3,000 years ago, and certainly by 2500 B.P. At Goose Lake, sediment layers dated to 4000 B.P. contain large percentages of pine, spruce, and fir pollen along with smaller percentages of sage and grass pollen. This suggests that transitional steppe-forest vegetation was established, similar to the modern vegetation. This vegetation change indicates that cooler and moister conditions compared to earlier millennia prevailed. By 2,400–1,500 years ago, species such as hemlock, grand fir and cedar were established in northeast Washington (Mack et al. 1978a, 1978b, 1978c; Mehringer 1996:15–18; Stradling et al. 2000:4.9–4.10). Climates have fluctuated within modern parameters for the past several thousand years. The pollen record of the late 1800s at Goose Lake is marked by a dramatic rise in Chenopodiaceae (goosefoot family), reflecting the introduction of livestock, overgrazing, the proliferation of weedy species, and destruction of much of the natural vegetation (Dalan 1985:125).

Protohistoric and Precontact Context

The project area is within the Kootenai-Pend Oreille region of the Eastern Plateau culture area (Roll and Hackenberger 1998). This has also been called the Northern Rocky Mountain Archaeological Region. We begin this section with a general overview of regional culture history, followed by a short summary of the studies conducted along the shores of Lake Pend Oreille.

Artifacts from the Paleoindian period (12,000–8,000 B.P.) have been recorded in the Pend Oreille River Valley, along the Columbia River, and at Sullivan Lake, Washington, just northwest of Priest Lake (Thoms 1987b). This indicates that people occupied North Idaho during the latest Pleistocene or early Holocene, at least on an intermittent basis. Miss and Hudson (1987) report stemmed points from sites on Lake Pend Oreille, including 10BR32 at the mouth of Trestle Creek, and elsewhere in the Pend Oreille basin that may date to this period. Furthermore, large stemmed and leaf-shaped points that could date from 10,000–8,000 years ago are reported in a private collection from the outlet of Lake Pend Oreille and from several other sites to the north of the survey area in Boundary County. These lanceolate and stemmed points are included in the Goatfell Complex by Choquette (1987:96–98). Other sites that date this period in the Eastern Plateau lie well to the east in Montana (Roll and Hackenberger 1998).

From 7,500 to 4,500 years ago (Early Middle Prehistoric period), people used side-notched atlatl dart points. Small groups still used the area for hunting, though fishing and plant collecting are also indicated. Occupation of the area was still seasonal, and residential sites were located on the higher river terraces.

From 4,500 to 1,250 years ago (Late Middle Prehistoric period), there is evidence for increased population and multiseasonal occupations. Though hunting remained the predominant subsistence activity, fishing and plant gathering became increasingly important. Residential sites were located along rivers as well as on high terraces. Time-diagnostic artifacts include stemmed and corner-notched atlatl dart points.

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

From 1,250 years ago until the arrival of Euroamericans (Late Prehistoric period), there is evidence of more intensive, multiseasonal occupations and further increases in regional population. Fishing and plant collecting continued to increase in importance, with a concomitant decline in the contribution of big game hunting. Most residential sites were in river valleys. Diagnostic stone artifacts include corner-notched and side-notched arrow points (Roll and Hackenberger 1998; Thoms 1987a).

Ethnographic Context

Lake Pend Oreille is in the heart of traditional Kalispel territory, which extended westward along the Pend Oreille River Valley and eastward through the Clark Fork Valley. In 1792, the Kootenai occupied the Kootenai River Valley just north of Trestle Creek, extending from north Idaho into British Columbia. Coeur d'Alene territory extended southward, beginning at the south edge of Lake Pend Oreille (Lahren 1998; Teit 1930).

The Kalispel speak an interior Salish language and were divided into two geographic and political groups. These divisions indicate different geographic foci and political structures, but they are not considered distinct tribes. The Lower Kalispel occupied the Pend Oreille River drainage below Lake Pend Oreille in Idaho, through eastern Washington, to the confluence with the Salmo River in British Columbia. They also occupied the area around Priest Lake. The Upper Kalispel occupied the territory around Lake Pend Oreille and up the Clark Fork drainage almost to its confluence with the Flathead River in Montana. After the introduction of the horse, their territory expanded eastward to include Flathead Lake and the Bitterroot Valley. Lake Pend Oreille and the Pend Oreille River formed an important trade and travel route that led from the mountains westward to the Columbia Basin. This was the easiest east-west route through the region. The Kalispel shared their camas fields in the Pend Oreille River valley with neighboring Indian groups, and they went to Kettle Falls in Colville territory and to Spokane territory to fish and trade (Chalfant 1974; Lahren 1998; Teit 1930).

Most ethnographically documented villages were located along the Pend Oreille River, and the largest villages were between present-day Usk and Cusick in eastern Washington. A fishing grounds and base for winter hunting was at Albeni Fall (called "portage around the falls") (Chalfant 1974:44; Ray 1936:128–129). A fall, bear hunting camp was located near the mouth of Trestle Creek (Smith 1950).

Previous Work on the Trestle Creek Alluvial Fan

Just beyond the mouth of Trestle Creek lies site 10BR32. This includes the remains of the original Northern Pacific Railroad trestle constructed in the early 1880s (though a local resident stated that the wooden pilings may be the remains of old docks). The site also includes projectile points that were reportedly collected by local residents at the mouth of Trestle Creek during low water. Professional surveys have not recorded any artifacts in that location, however. Kevin Lyons (letter to M. Root 5 February 2008) reports that "amateur collections associated with the Trestle Creek landform include two ground stone celts attributed to the USACE campground…" This campground is south of the present project APE, and there is no record of any such finds on file at the Idaho SHPO, Boise. No archaeological site is recorded at that location, and those reported finds have not been recorded or professionally verified. In 2005, Rain Shadow Research did record a small concentration of FCR on the beach south of the mouth of Trestle Creek (site 10BR1091). In spite of the unverified report of two artifacts in the nearby campground, there is no empirical evidence that indicates that site 10BR1091 continues above the OHWM on to the surface of the fan (Root and Ferguson 2005).

DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

Site Description

Rain Shadow Research recorded site 10BR1092 in 2005 as a low-density scatter of fire-cracked rock (FCR) on the beach north of Trestle Creek (Figure 3, Figure 4a). We estimated that 70 pieces of FCR were scattered over the surface (Root and Ferguson 2005). Previous shoreline surveys had not found any American Indian artifacts on the Trestle Creek fan or in the location of 10BR1092 (though amateur collectors reported they had found artifacts at the mouth of Trestle Creek). In 2008, we noted that many of the broken, angular, reddened rocks were natural siltite and argillite. These are derived from outcrops of the Prichard Fm up the Trestle Creek valley, and they weather naturally to a "rusty" color (Lewis et al. 2006). Thus, these reddened rocks are naturally oxidized and are not fire cracked. In 2008, we found only 12 burned rocks that we thought were burned in cultural fires, such as American Indian roasting or steaming pits. These are all rounded stream or glacial cobbles made of metaquartzite, metasediment, sandstone, and diorite. Modern fire rings and burned debris are present just above the OHWM, and it is possible that modern burned rock is present.

In 2005, we measured this scatter of FCR as extending for 100 m north-south by 30 m east west. In 2008, we measured a similar north-south dimension, but we found two flakes in an excavation unit just above the OHWM, expanding the east-west dimension to about 50 m. We also found two metaquartzite flakes on the surface. The extremely sparse scatter of artifacts covers 3,075 m^2. There are no features or concentrations of artifacts on the site (Figure 2).

The area immediately east of the site was extensively modified by dredging of artificial channels (Figure 4b). An east-west channel was dredged at the mouth of North Branch Trestle Creek just south of the site. Two channels were dredged to the north of North Branch Trestle Creek, just east of the site. The spoil from these channels was piled between the north-south channels and the OHWM of Lake Pend Oreille, raising the land surface that is immediately east of site 10BR1092 by about 2 m. These channels created extensive exposures of subsurface sediments that are several meters deep. We inspected these channels in 2005 and again in 2008. We found no artifacts in the channel cuts or in the spoils. These channel cuts expose very gravelly and cobbly alluvial fan sediments at the surface.

Field Procedures

Three excavators (Matthew Root, Daryl Ferguson, and Sarah Moore) worked at the site and completed four, 1-x-1-m excavation units (XUs) and five, 0.5-x-0.5-m units. We dug XU1 on the beach just below the OHWM to 37 cm below surface, where we encountered water table and ceased excavation. We dug XU2 on the beach to 42 cm below surface, where we reached extremely gravelly coarse sand, high-energy deposits, as well as the water table. These are either channel deposits from the nearby North Branch of the Trestle Creek or reworked beach gravels, indicating that there was no potential for cultural deposits to be at greater depths. We placed XU3 and XU4 above the OHWM. XU3 reached pebbly and clayey glacial till at depths ranging from 46 to 64 cm below surface; we stopped excavation at the top of the clay. We dug XU4 to 100 cm below surface, and exposed extremely gravelly coarse sand in the lower 22 cm of the unit. We dug a 30-x-30-cm sondage in the northeast corner of the unit to 140 cm, and these gravels extended to that depth. As with XU2, these are either channel deposits or reworked beach gravels.

We excavated five, 0.5-x-0.5-m units on the alluvial fan above the eastern edge of the artificial boat channel that is east of the site. We dug these units to test for the presence of cultural deposits and to ensure that the site did not continue east of the beach on to the alluvial fan. We dug these from 20 to 30 cm below surface; all exposed gravelly and cobbly alluvial fan deposits at the surface (Figure 5). We found no artifacts in any of these test units.

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

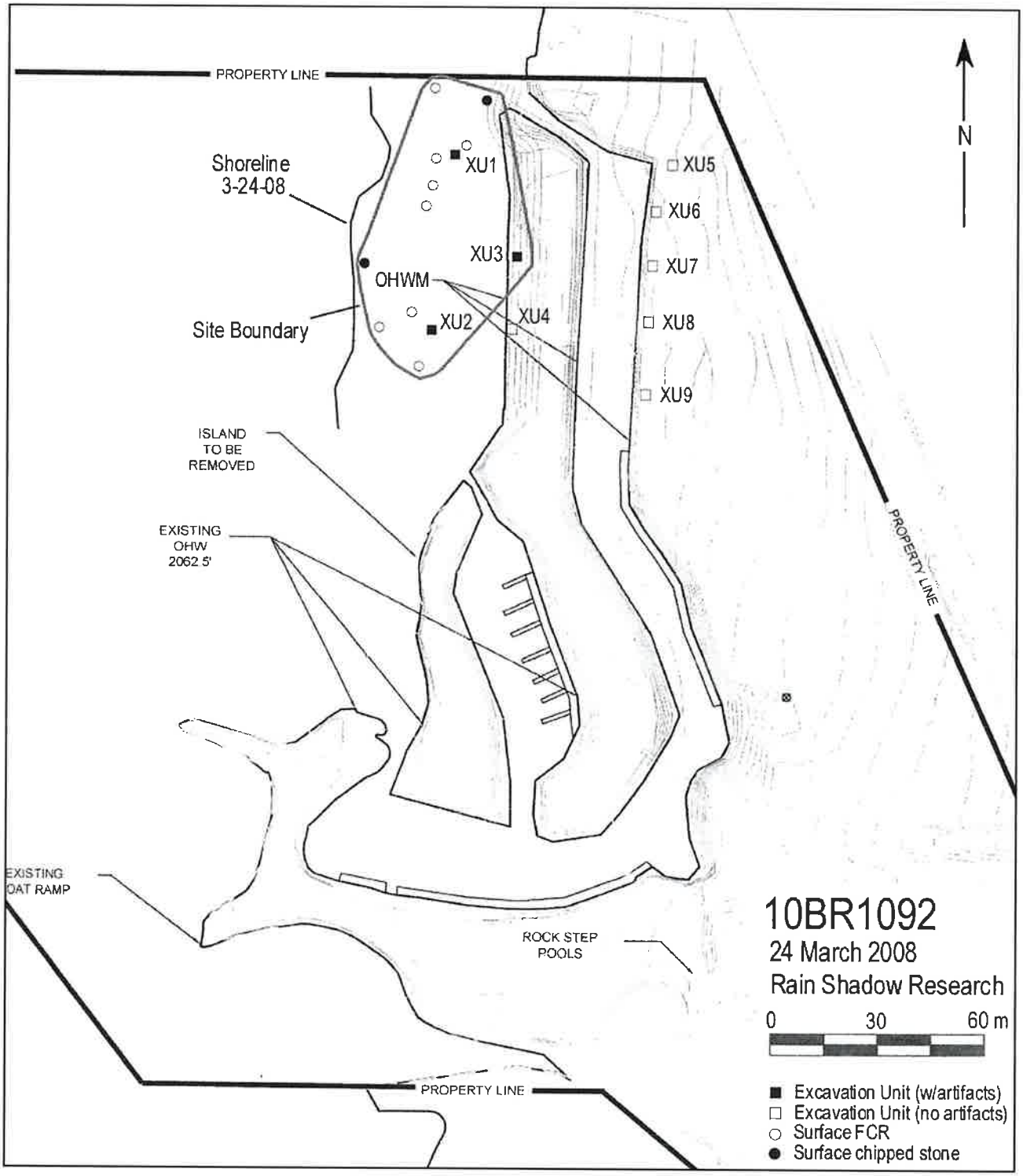


Figure 2. Site map of 10BR1092 showing the site boundaries, location of point plotted surface artifacts, and the location of excavation units (contour interval is 0.3 m)

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

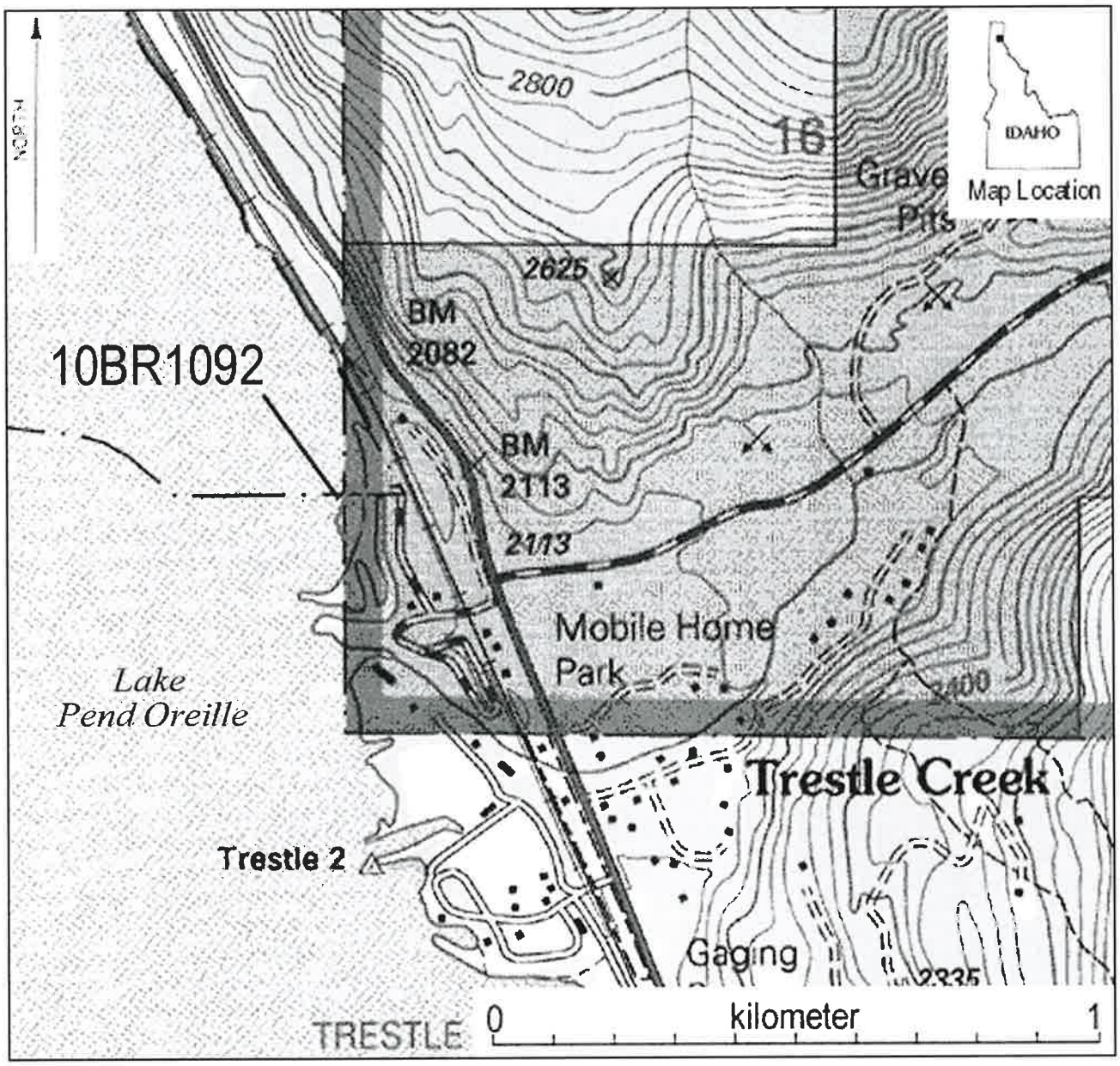
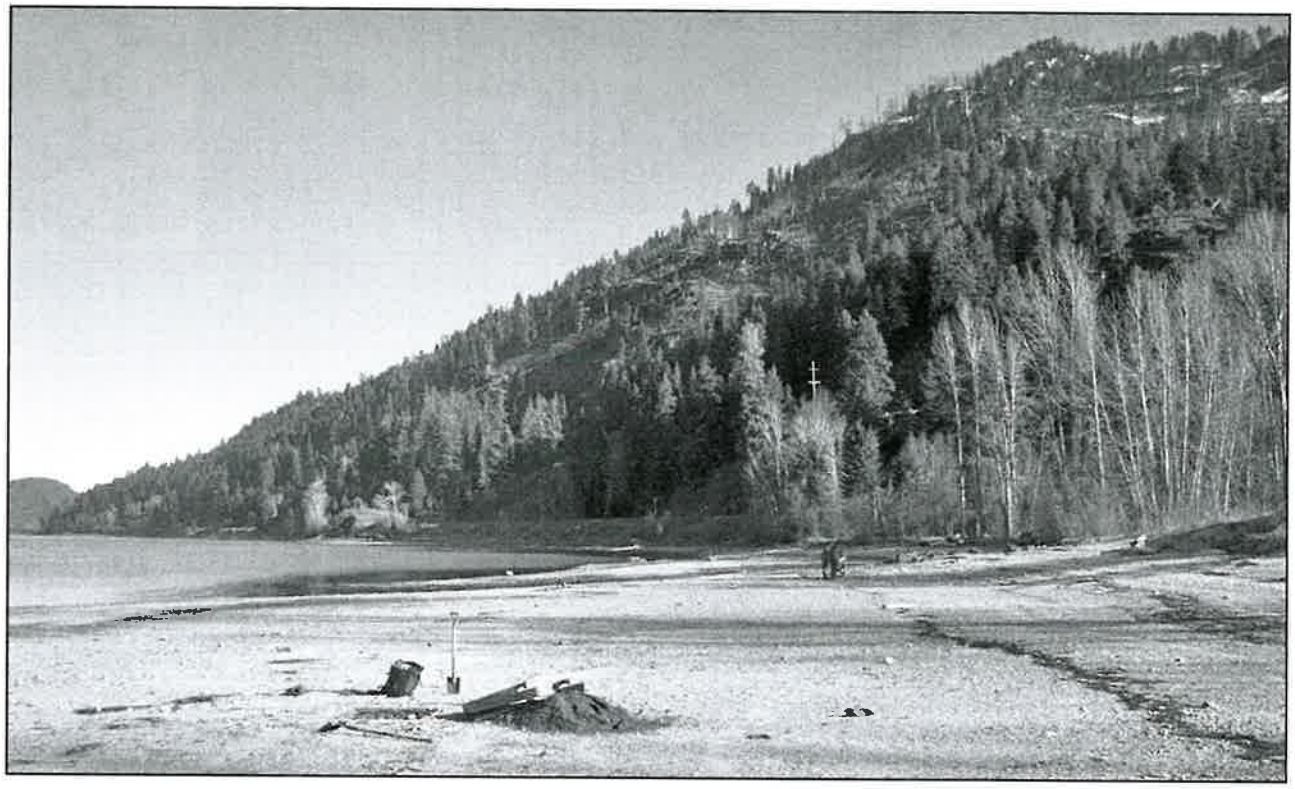


Figure 3. Map of the location of site 10BR1092 (USGS Trout Peak Quadrangle, 1:24,000, 1996, contour interval 40 feet).

Excavation Records

We completed a separate excavation form for each level, which contains places to describe recovered artifacts, measurements, sediment descriptions, and a plan drawing of each excavation level. Plan drawings include sediment or soil unit boundaries, animal burrows, roots, drying cracks, and plotted artifacts. We photographed the site area, excavations in progress, and two walls of the 1-x-1-m excavation units in black-and-white film and color digital formats. All black-and-white photographs were printed on archival quality photographic paper. All photographic prints were labeled on the back with an archival pencil and placed in archival polyethylene sleeves. All film negatives were placed in archival polyethylene sleeves. Photographs were submitted to the Idaho SHPO as part of the revised site form.

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA



a

b

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

Figure 4. Site 10BR1092: (a) overview due north (XU2 foreground, XU1 background); (b) the spoil pile between the site and an artificial channel, view due north.

Figure 5. Work at Excavation Unit 6 above the east side of the artificial channel that exposed gravelly and cobbly alluvial fan sediments at the surface, view to azimuth 30°. Careful inspection of the exposed channel sides revealed no cultural materials, strongly suggesting that site 10BR1092 does not continue eastward on to the alluvial fan.

Excavation Procedures

Before we began excavations, we walked transects spaced at 2 m intervals across the beach and adjoining terrace fan. We flagged all surface artifacts and measured their locations with a *Trimble GeoExplorer 3* Global Positioning System (GPS) receiver. We obtained UTM coordinates based on the 1983 North American datum for all artifacts. UTM coordinates are based on an average of at least 20 data points taken at one second intervals from a minimum of four satellites. The receiver's position dilution of precision (PDOP) mask was set at 8.0 while the signal-to-noise ratio (SNR) mask was set at 4.0. We used the surface distribution of artifacts to help determine the locations of excavation units (Figure 2). We use the 1983 NAD as the site grid system.

We judgmentally located excavation units to test for the presence of intact cultural deposits on the beach below the OHWM, just above the OHWM at the edge of the alluvial fan, and on the surface of the alluvial fan where dredging is proposed (Figure 2). We excavated units in arbitrary 10 cm levels. We hand-excavated all site matrix by shovel skimming and troweling. We screened all excavated sediments through 8-per-inch mesh. Most site sediments were very gravelly and cobbly. Therefore, we carefully sorted artifacts from natural clasts on the field screens; we discarded all natural clasts. The upper levels of XU1 contained some silt and clay particles that adhered to clasts.

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

Therefore, we washed screen loads of gravel with buckets of water to clean the gravels and allow for accurate sorting of artifacts (only one flake was present).

We drew stratigraphic profiles of the north and east walls of the four 1-x-1-m excavation units and photographed them in black-and-white film and digital color. We described sediments and soil horizons according to the standard definitions established by the National Resources Conservation Service. All profile documentation was conducted by the Principal Investigator (M. J. Root, who has extensive formal training in soil science, geomorphology, and geoarchaeology). We found no features, volcanic tephras, or paleosols. We described the profiles of the 0.5-x-0.5-m units on the alluvial fan according to the above standards, but did not draw the profiles because these contained no artifacts, and therefore, are outside of the site.

Laboratory Analyses

We conducted morphological, technological, and functional analyses of the few recovered stone artifacts. We technologically analyzed all flakes and examined all flake edges under a binocular microscope for use-wear.

We used the use-wear procedures and variables outlined by Odell (1996:35-50) and by Ahler (1979) (see also Odell [1981] Odell and Odell-Vereeken [1981] and Ahler [1971]). We used a Leica GZ7 stereozoom binocular microscope with magnifications ranging from 10–70X, and with reflected light from a Leica CLS100 high intensity fiber-optic illuminator. We first inspected all artifacts under low magnification (10-20X) for traces of wear that is potentially from use, prehension (wear from holding in the hand), manufacture, or postdepositional alteration. We then scanned the artifacts at higher magnifications. We inspected all artifact edges, flake arrises, and corners for wear. Low-power analysis is effective when broad classes of use-motion and worked material categories are sufficient to meet research goals (Odell 1996:34). For a collection of limited cultural context such as 10BR1092, such low-power analyses are adequate. We followed the previously published protocols for analysis of stone artifacts detailed elsewhere by Root and others (e.g., Reid and Root 1999; Root 2000, 2004; Root et al. 2005). All artifacts exhibited postdepositional mechanical abrasion from wave tumbling.

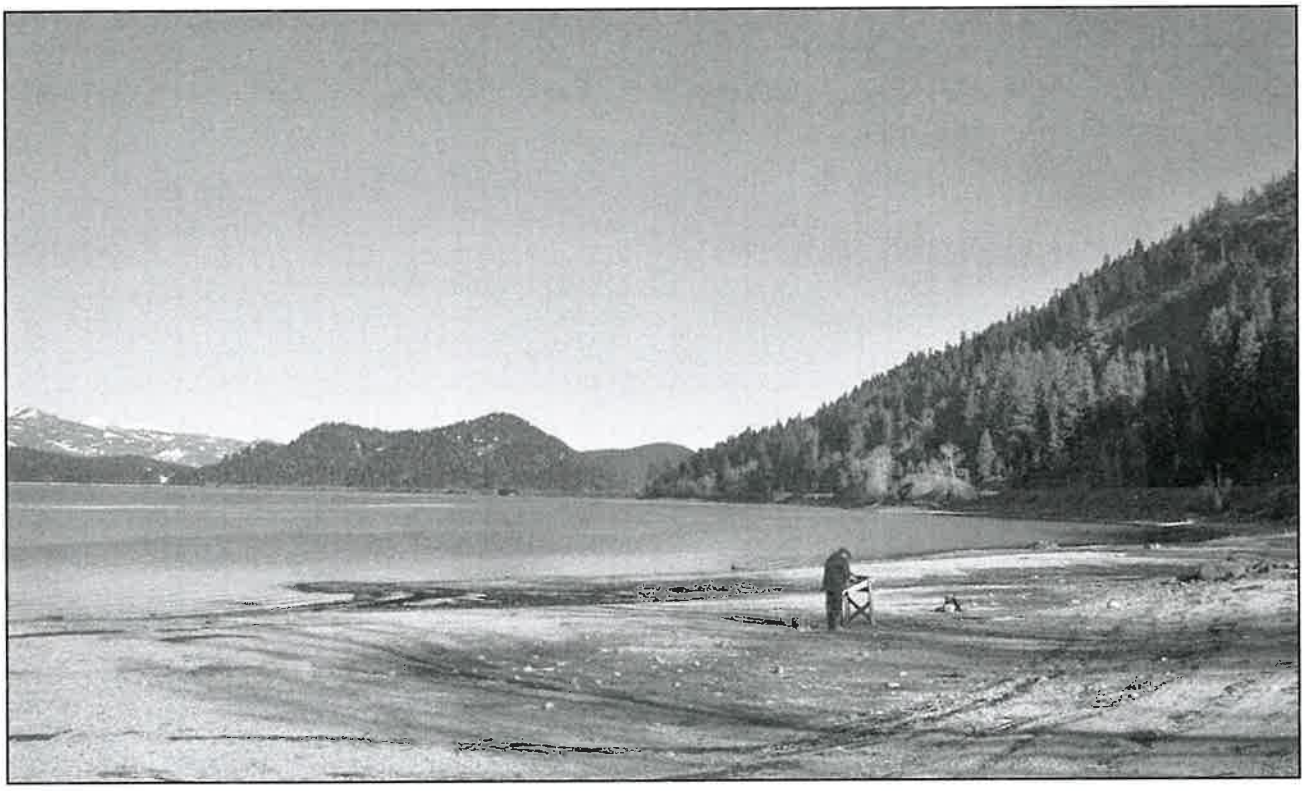
Excavation Results

We placed two excavation units (XU1 and XU2) below the OHWM in the artifact scatter to test for the presence of in situ cultural deposits on the beach (Figure 4, Figure 6). We placed two 1-x-1-m excavation units (XU3 and XU4) above the OHWM at the edge of the alluvial fan (Figure 7). This part of the fan is covered by spoils from dredging the adjacent boat channels, and we placed the units just west of the spoil pile. We placed five, 0.5-x-0.5-m units (XUs 5, 6, 7, 8, and 9) along the east edge of the boat channel to determine if the site extended above the beach and on to the alluvial fan (Figure 2, Figure 5). The fan is not covered by spoils in the locations of these tests. Unit coordinates are listed in Table 1.

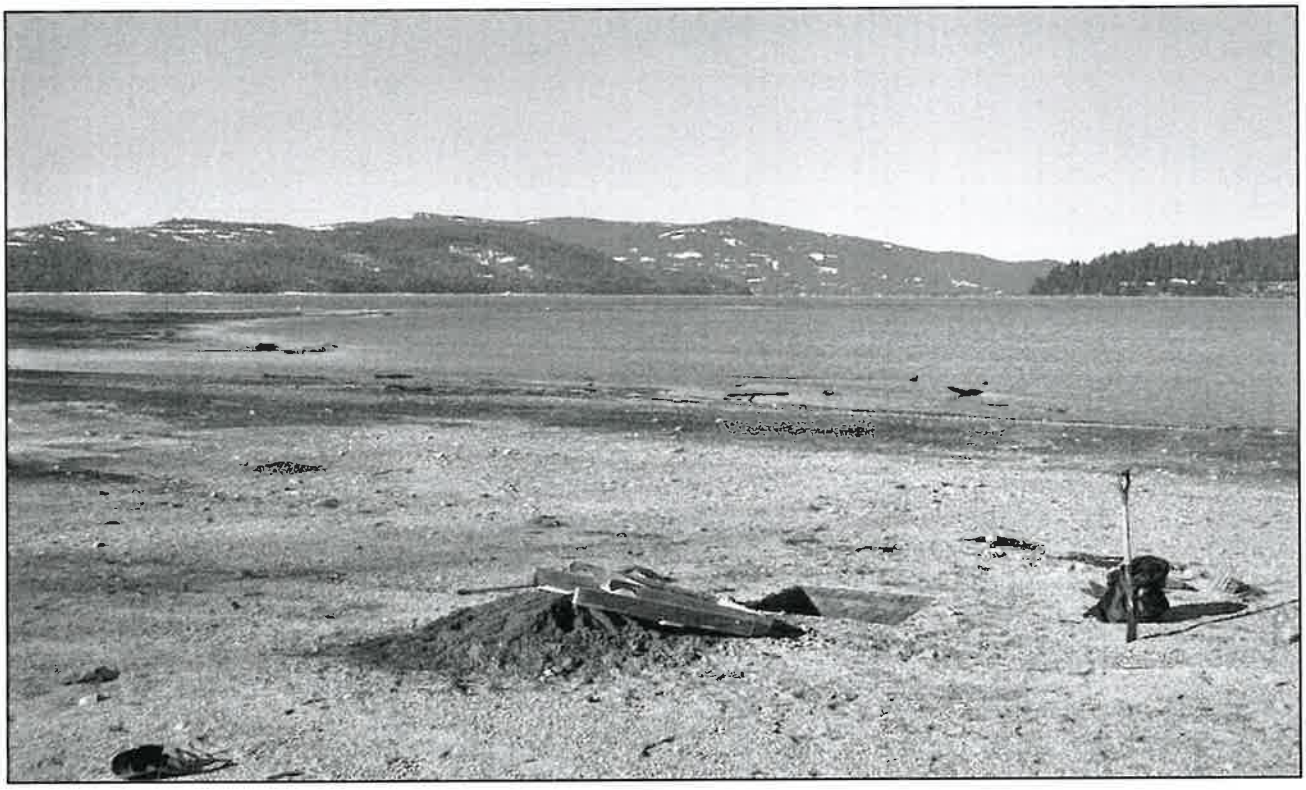
IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

Natural Stratigraphy

We dug Excavation Unit 1 to 37 cm below surface (measured in the southeast corner), and exposed layers of reworked beach deposits over gravelly deposits that are poorly sorted beach gravels or channel deposits. Sediment descriptions from XU1 are listed in Table 2 and profiles are shown in Figure 8a and Figure 9. An erosional lag of cobbles and pebbles is clearly visible on the surface of the beach around XU1, strongly suggesting that the surface artifacts are no longer in primary context, but have been eroded and are part of the geologic lag on the beach. This is expected on a beach subject to fluctuating water levels, and well within the wave breaker zone.



a



b

Figure 6. Site 10BR1092: (a) XU1 in progress, view to azimuth 320°; (b) XU2 in progress, view to azimuth 240° (pin flags mark surface artifacts).

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

Figure 7. Excavation Unit 3 above the OHWM and at the edge of the spoil pile from dredging the adjacent artificial channels, view due north.

Table 1. Excavation Unit UTM Coordinates (NAD1983).

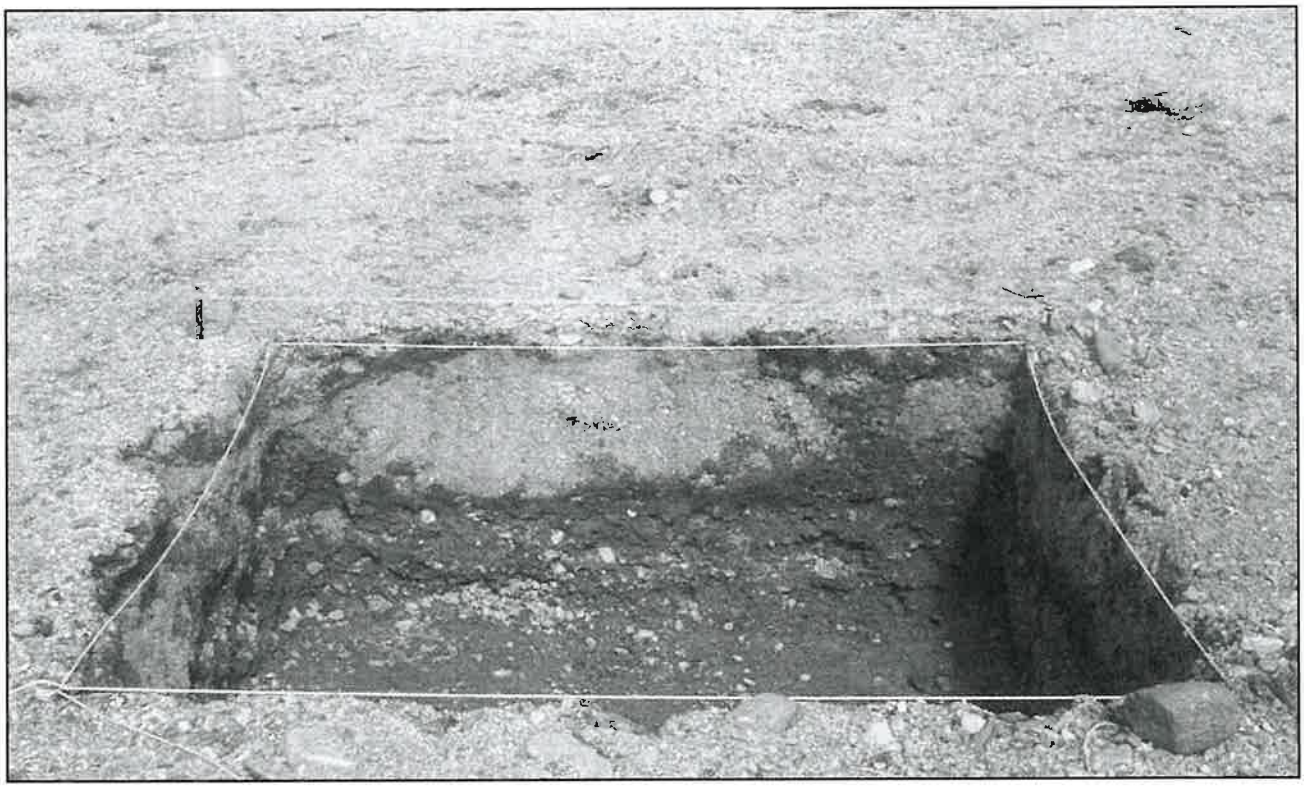
Location of Reading	Zone	Easting	Northing
Excavation Unit 1	11	5 47 982	53 48 179
Site datum is the SW corner of unit)			
Excavation Unit 2 (SW corner of unit)	11	5 47 975	53 48 127
Excavation Unit 3 (SW corner of unit)	11	5 48 000	53 48 148
Excavation Unit 4 (SW corner of unit)	11	5 47 997	53 48 127
Excavation Unit 5 (SW corner of unit)	11	5 48 046	53 48 175
Excavation Unit 6 (SW corner of unit)	11	5 48 039	53 48 166
Excavation Unit 7 (SW corner of unit)	11	5 48 040	53 48 144
Excavation Unit 8 (SW corner of unit)	11	5 48 039	53 48 129
Excavation Unit 9 (SW corner of unit)	11	5 47 036	53 48 108

IDAHO DEPARTMENT OF LANDS

MAY 13 2024

PEND OREILLE LAKE AREA

a



b

Figure 8. Excavation unit profile photographs: (a) XU1 north wall; (b) XU2 north wall.

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

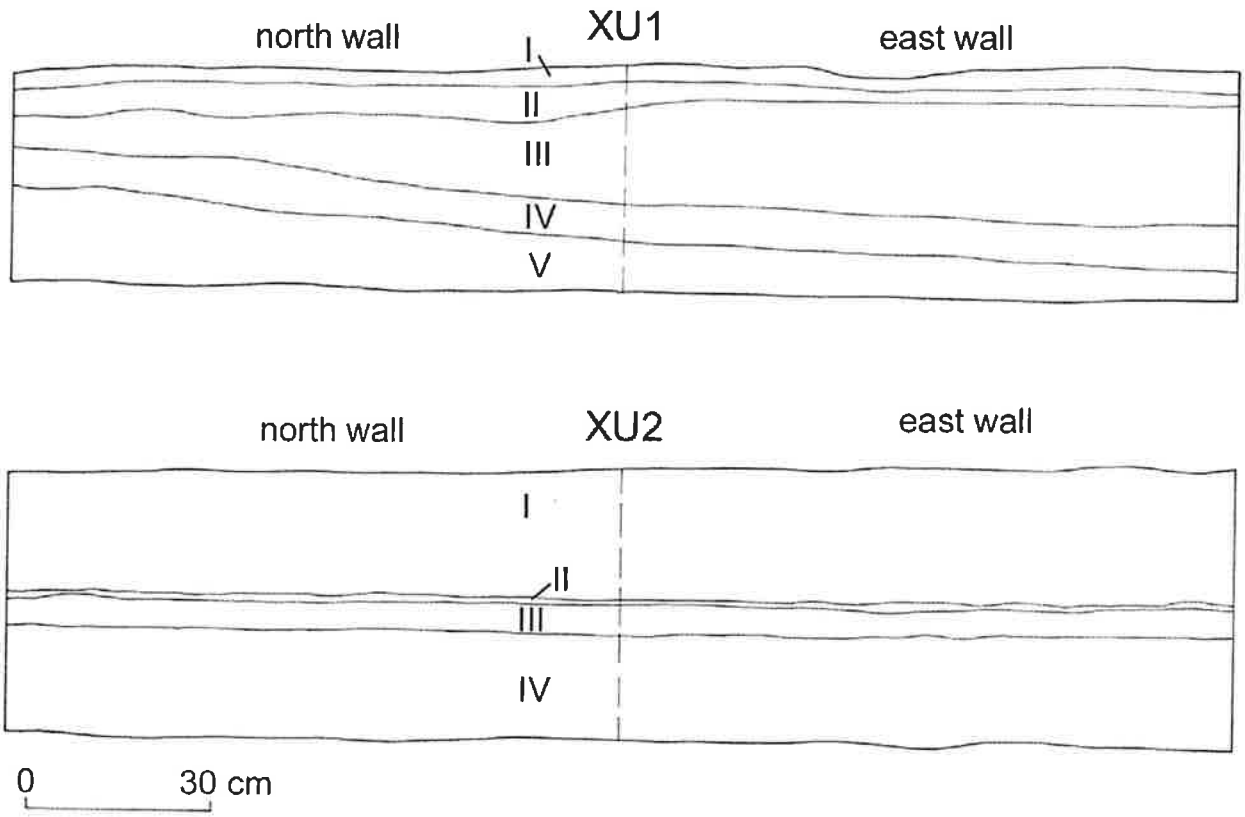


Figure 9. Profile drawings of the north and east wall of XU1 and XU2.

Table 2. Sediment Descriptions for Excavation Unit 1.

Layer	Depth (cm) SE corner	Description (Following Soil Survey Division Staff [1993]), sediment colors are moist.
I	0–4	Dark yellowish brown (10YR 4/4) massive to single grain coarse sand; reworked beach sand; smooth abrupt boundary; swash zone sand with an erosional lag of cobbles and pebbles on the surface.
II	4–6	Gray (10YR 5/1) gravelly clay; strong fine subangular blocky structure; very firm, very sticky, very plastic; no roots; no pores; common, distinct, iron oxide cutans on ped faces; smooth abrupt boundary (15% rounded pebbles and gravel).
III	6–25	Yellowish brown (10YR 5/6) massive to single grain very gravelly coarse sand; smooth abrupt boundary; high-energy alluvial fan deposits or channel gravels (50% rounded gravel).
IV	25–32	Yellowish brown (10YR 5/6) clay; strong fine subangular blocky structure; very firm, very sticky, very plastic; no roots; no pores; smooth abrupt boundary.
V	32–57	Dark yellowish brown (10YR 4/6) massive to single grain extremely gravelly coarse sand; Reworked beach gravels (70% rounded gravel).

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

The site is on the beach, which is geologically defined by the zone where sediment are moved by waves and currents. The fluctuating water level, both naturally in the past and now controlled by Albeni Falls Dam, causes the breaker zone and swash zone to move up and down across the site. These are zones of substantial movement of sediments, with sand and smaller particles moved in suspension by each breaking wave and by waves running up the beach and colliding with backwash (Bloom 1978:456–457). The surface layer (I) in XU1 consists of reworked beach sand with a clear erosional lag of pebbles and cobbles on the surface. There is a layer of gravelly clay just below the surface (layer II). This is likely a deposit of fine-grained sediments that were moved in suspension and deposited in a low area on the beach in a pool of water with a gravelly bottom. (Such pools are common on the beaches on the east side of Lake Pend Oreille.) That is, such layers of clay are local depositional units. Layers of very gravelly coarse sand (II), clay (IV), and extremely gravelly coarse sand (V) follow to the bottom of the unit, where we encountered the water table. The gravelly deposits are poorly sorted, and are likely beach gravels derived from the fan or reworked high-energy channel deposits from Trestle Creek. We recovered one artifact from the entire unit. This is a quartz primary decortication flake from level 2 (10–20 cm) which was from the layer III gravelly sand.

We dug Excavation Unit 2 within the scatter of artifacts on the beach to a depth of 42 cm, where we reached the water table (Figure 2, Figure 8b, Figure 9). The unit was similar is most respects to XU1, but there is a thin layer of organic sediment from 19–20 cm below surface (Table 3). From 0–19 cm is a layer of reworked beach sand with an erosional lag of pebbles and cobbles on the surface. A layer of very gravelly black clay loam is from 19–20 cm and this overlies a layer of dark grayish brown very gravelly clay loam from 20–24 cm. These layers probably represent a localized deposit clay on a stabilized beach surface that accumulated some organic matter. There are small fragments of wood charcoal in the organic layer, suggesting that a fire burned across the surface or that charcoal washed in from the forest above. Poorly sorted, extremely gravelly coarse sand is at the bottom on the unit, as in XU1.

Table 3. Sediment Descriptions for Excavation Unit 2.

Layer	Depth (cm) SE corner	Description (Following Soil Survey Division Staff [1993]), sediment colors are moist.
I	0–19	Dark grayish brown (10YR 4/2) massive to single grain very gravelly coarse loamy sand; reworked beach deposits; smooth abrupt boundary; breaker and swash zone sand and gravel with an erosional lag of cobbles and pebbles on the surface (40% rounded pebbles and gravel).
II	19–20	Black (10YR 2/1) very gravelly clay loam; strong fine subangular blocky structure; very firm, very sticky, very plastic; no roots; no pores; few fine wood charcoal inclusions; smooth abrupt boundary (40% rounded gravel).
III	20–24	Dark grayish brown (10YR 4/2) very gravelly clay loam; strong fine subangular blocky structure; very firm, very sticky, very plastic; no roots; no pores; smooth abrupt boundary (40% rounded gravel).
IV	24–42	Dark yellowish brown (10YR 5/4) massive to single grain extremely gravelly coarse sand. Reworked beach gravels (60–70% rounded gravel and pebbles). Water table at 42 cm

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

We recovered one artifact from XU2, and this is a large metaquartzite flake. We excavated the flake from the 24–30 cm below surface in the lower, gravelly deposits. These gravels are high-energy deposits, likely redeposited by waves. They most likely derive from high-energy alluvial fan deposits or Trestle Creek channel gravels. The flake displays pronounced to moderate intensity (visible without magnification to 20x) edge and flake arris rounding, probably from wave tumbling. The artifact's presence in high-energy gravels and the presence of postdepositional rounding suggest that it is in secondary context (that is, it is redeposited).

Excavation Unit 3 exposed three main layers of massive to single grain coarse sand, with gravel content increasing from 15 percent in the upper layer to 75 percent in the lowest layer. The lowest layer contain thin bands of very dark brown massive coarse sand (Table 4, Figure 11a, Figure 10). We ended excavation when we encountered a deposit of extremely gravelly clay loam. The surface of this unit dips dramatically to the west towards the lake (a dip of 36 cm in elevation across the north wall of XU3). This likely marks wave cut erosion during high lake levels. This unit is descriptively similar to the Qgt (Quaternary glacial till) unit mapped along Trestle Creek on the Geologic Map of the Trout Creek Quad, which is described as "dense clayey pebble and cobble till" (Lewis et al 2006). As with the other excavation units, the gravelly deposits over the gravelly clay (till?) are high-energy, reworked beach deposits.

We recovered two, small chert flakes from 10–20 cm below surface from the gravelly coarse sand deposits. One is a bifacial pressure flake and one is a small nondiagnostic fragment; both are small enough to pass through a four-per-inch screen. The flakes exhibit water rounding and were recovered from wave reworked deposits; they are not in situ.

Table 4. Sediment Descriptions for Excavation Unit 3.

Layer	Depth (cm) SE corner	Description (Following Soil Survey Division Staff [1993]), sediment colors are moist.
I	0–11	Yellowish brown (10YR 5/4) massive to single grain gravelly coarse sand; reworked beach deposits; smooth abrupt boundary (15% rounded pebbles and gravel).
II	11–21	Brown (10YR 4/3) massive to single grain very gravelly coarse sand; smooth abrupt boundary (40% rounded gravel).
III	21–46	Yellowish brown (10YR 5/4) with thin bands of very dark brown (10YR2/2) massive to single grain extremely gravelly coarse sand; smooth abrupt boundary (60% rounded gravel).
IV	46–50	Very dark grayish brown (10YR 3/2) and yellowish brown (10YR 5/8) extremely gravelly clay loam (75% rounded gravel and pebbles, glacial till, probably geologic unit Qgt {Lewis et al 2006]).

IDAHO DEPARTMENT OF LANDS

MAY 13 2024

PEND OREILLE LAKE AREA

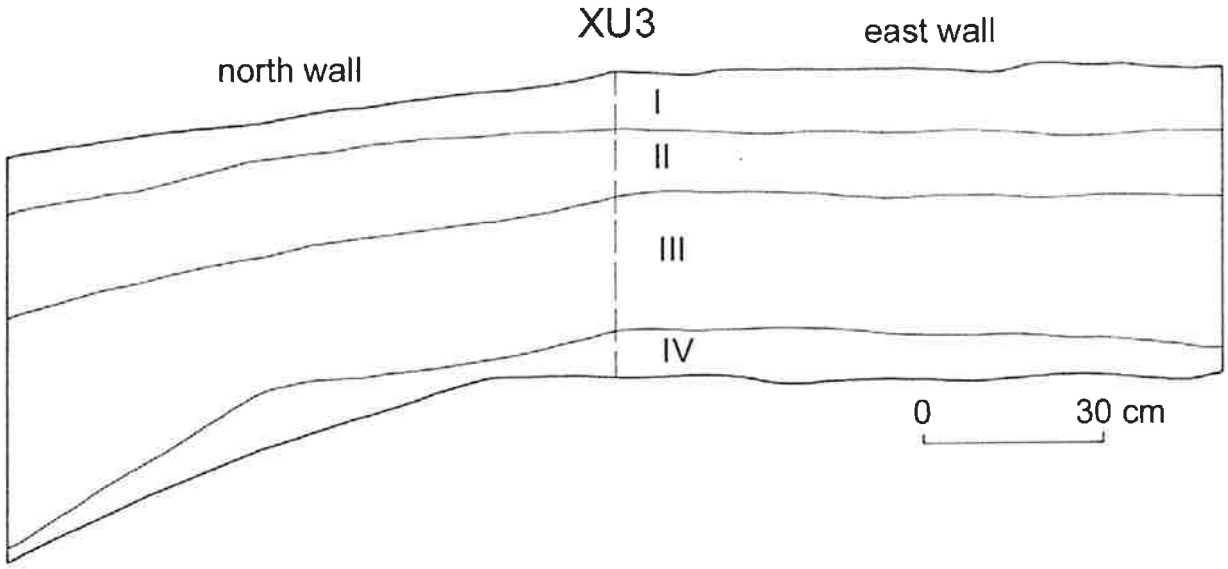


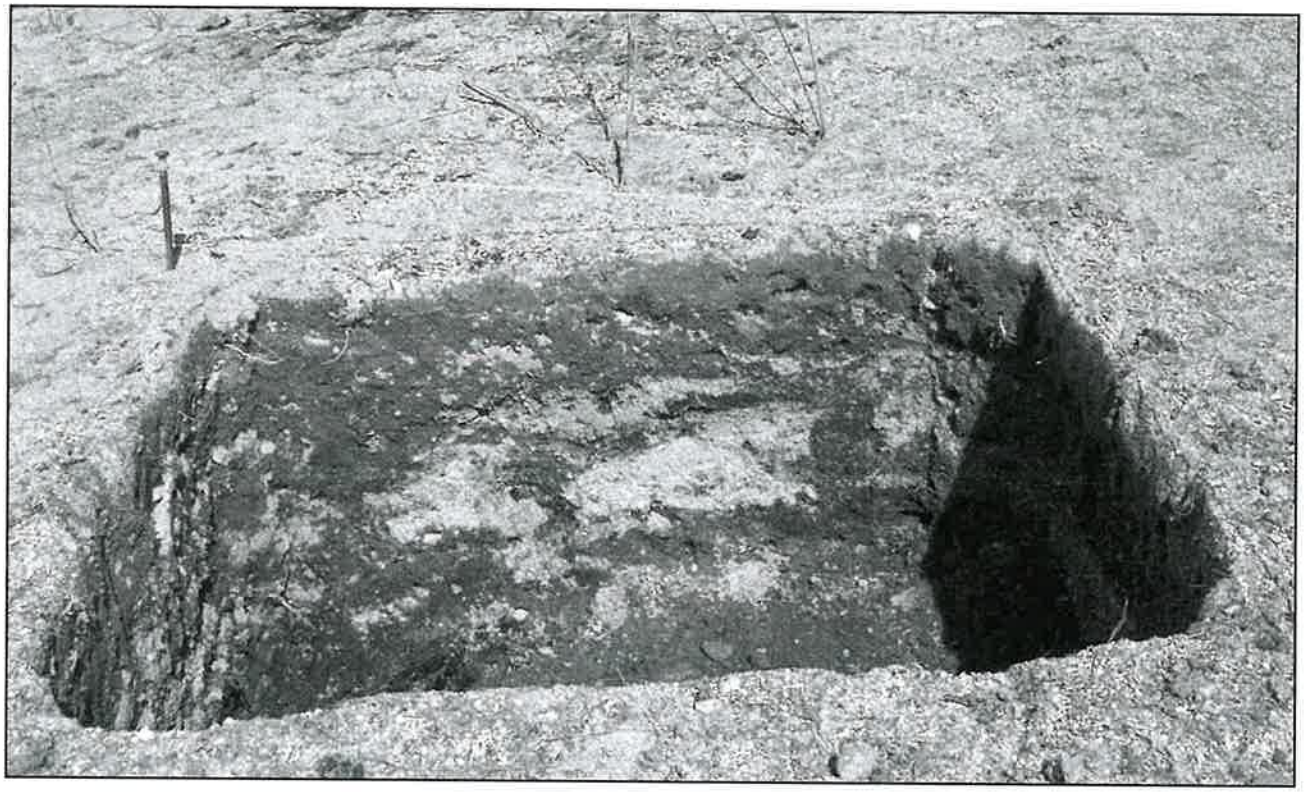
Figure 10. Profile drawing of the north and east walls of XU3.

Excavation Unit 4 exposed 140 cm of gravelly to extremely gravelly coarse sand. No artifacts were present in the unit. We dug the unit to 100 cm, then dug a 30-x-30-cm sondage in the northeast corner to 140 cm; we did not screen the extremely gravelly sediments in the sondage. The upper three layers are massive to single grain, poorly sorted, gravelly coarse sand differentiated by color; each is a layer of reworked beach deposits. Below this is a 48 cm thick mixed layer of very gravelly coarse sand of different colors with clay inclusions. The bottom of the unit and the sondage exposed a deposit of poorly sorted, extremely gravelly coarse sand (Figure 11b, Figure 12, Table 5). These are reworked beach gravels derived from the alluvial fan or channel deposits of the North Branch Trestle Creek.

Table 5. Sediment Descriptions for Excavation Unit 4.

Layer	Depth (cm) SE corner	Description (Following Soil Survey Division Staff [1993]), sediment colors are moist.
I	0–19	Dark yellowish brown (10YR 5/6) massive to single grain gravelly coarse sand; reworked beach deposits; smooth abrupt boundary (15% rounded pebbles and gravel).
II	19–26	Very dark brown (10YR 2/2) massive to single grain very gravelly coarse sand; smooth abrupt boundary (15% rounded gravel).
III	26–30	Yellowish brown (10YR 4/4) massive gravelly coarse sand; reworked beach deposits; smooth abrupt boundary; (15% rounded gravel).
IV	30–78	Mixed very dark brown (10YR 2/2), dark grayish brown (10YR 4/2), and yellowish brown (10YR 4/4) massive very gravelly coarse sand; inclusions of light grayish brown (10YR 6/2) clay; reworked beach deposits; smooth abrupt boundary; partially burned logs present (40% rounded pebbles and gravel).
V	78–140	Brown (10YR 5/3) massive to single grain extremely gravelly coarse sand; reworked beach deposits (60% rounded pebbles and gravel).

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA



a

b

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

Figure 11. Excavation unit profile photographs: (a) XU3 north wall; (b) XU4 north wall.

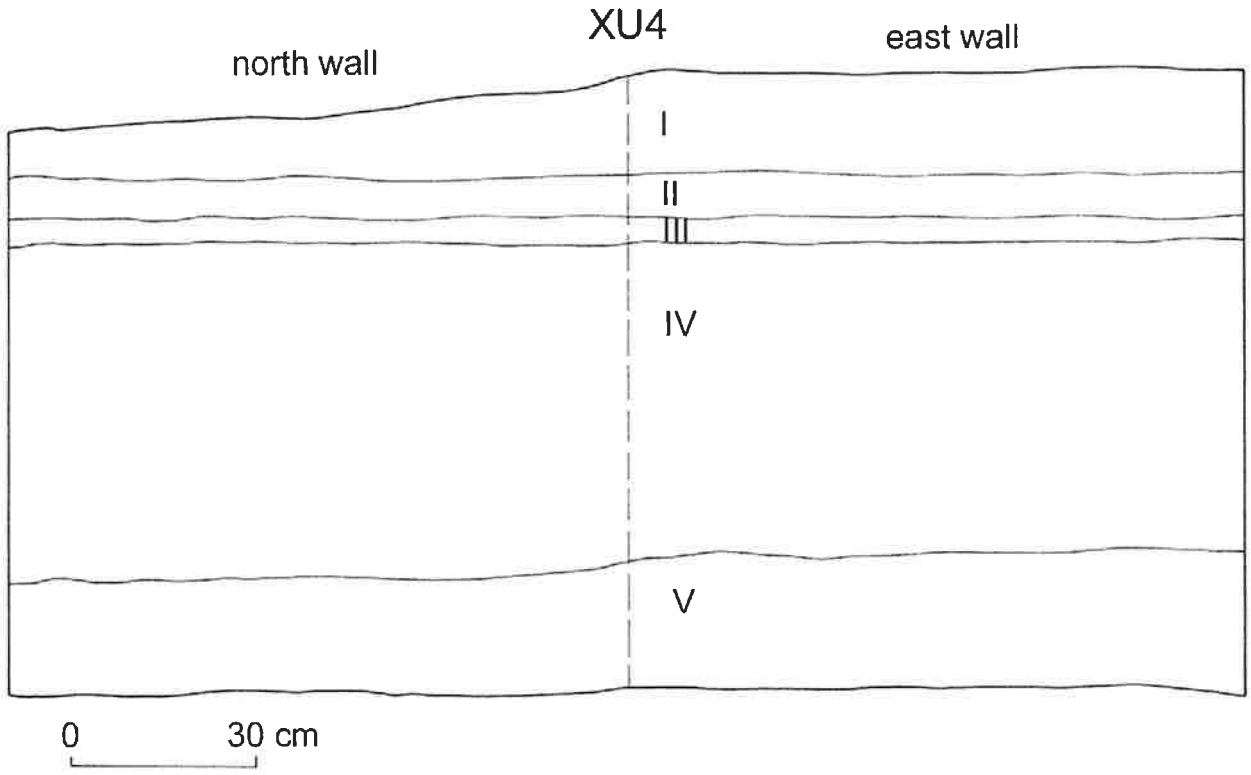


Figure 12. Profile drawing of the north and east walls of XU4.

The five 0.5-x-0.5-m test units (XUs 5–9) dug on the surface of the alluvial fan contained no artifacts (Figure 2, Figure 5). We dug XU5 to 30 cm, XU6 to 20 cm, XU7 to 20 cm, XU8 to 27 cm, and XU9 to 22 cm. All units ended after we had dug through 15–20 cm of very cobbly sediments. These units each displayed similar profiles. There is a thin A horizon (5–9 cm thick) that is a very dark brown (10YR 2/2) or dark brown (10YR 3/3) loam with a weak fine granular structure. The soil is friable, slightly plastic, and slightly sticky with many fine to very fine and few medium and coarse roots. A Bw horizon continues to the bottom of all probes. This is a dark yellowish brown (10YR 4/3) to brown (10YR 5/3) very cobbly sandy loam with a weak fine subangular blocky ped structure. The soil is very friable, nonsticky and nonplastic with common fine, and few medium and coarse roots.

Cultural Stratigraphy

There are four flakes from just over 2.55 cubic meters of controlled excavations. We recovered artifacts from reworked, gravelly beach deposits. There are two large flakes and FCR scattered on the surface of the beach. There are no in situ artifacts, and there is no cultural stratigraphy preserved at the site. Two episodes of intensive surface survey and test excavations have produced no evidence that there are any intact cultural deposits. There is no evidence that any cultural deposits are present on the alluvial fan.

Artifact Analyses

Chipped Stone

We excavated four flakes and found two flakes on the surface. Measurements of the artifacts are listed in Table 6 and the flakes are shown in Figure 13. One metaquartzite core reduction flake was

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

near the waterline and exhibits macroscopic edge and flake arris rounding, certainly from wave tumbling (Figure 13b, flake 1). The flake has cortex from a water-rounded cobble, suggesting procurement from local gravels. The flake has a faceted platform from preparation of the core striking platform. Such large flakes are commonly used as tools, and the prepared platform suggests that the knapper designed the core to detach a flake large enough for use as a tool. There is no retouch, and the extreme water rounding precludes use-wear analysis.

Surface flake 2 is a large metaquartzite flake struck from a prepared core (Figure 13a). The knapper prepared the core platform by faceting to create the proper platform angle by which to detach this large flake (there are five platform facets). The knapper also shaped the core face and aligned the point of percussion so that he or she detached a large flake with a pointed distal end. That is, the size and shape of the detached flake blank was carefully designed by platform and core face preparation. This indicates a considerable degree of stone working skill, especially considering the coarse-grained tool stone. This flake has macroscopic edge and flake arris rounding from wave tumbling, precluding use-wear analysis, and there is no retouch. The careful design of the flake morphology, however, strongly suggests that this was a tool.

Table 6. Measurements of Artifacts from 10BR1092, 2008 Excavations.

Provenience	Description	Length (mm)	Width (mm)	Thickness (mm)	Weight (g)
Surface flake 1	metaquartzite flake	52.0	58.1	13.8	49.2
Surface flake 2	metaquartzite flake	79.7	73.2	16.5	88.9
XU1, Level 2	quartz primary decortication flake	30.0	38.7	9.6	10.5
XU2, Level 3	metaquartzite flake	65.6	54.9	24.3	96.4
XU3, Level 2	chert flake fragment	6.6	3.8	0.7	0.1
XU3, Level 2	chert pressure flake	10.1	8.9	1.2	

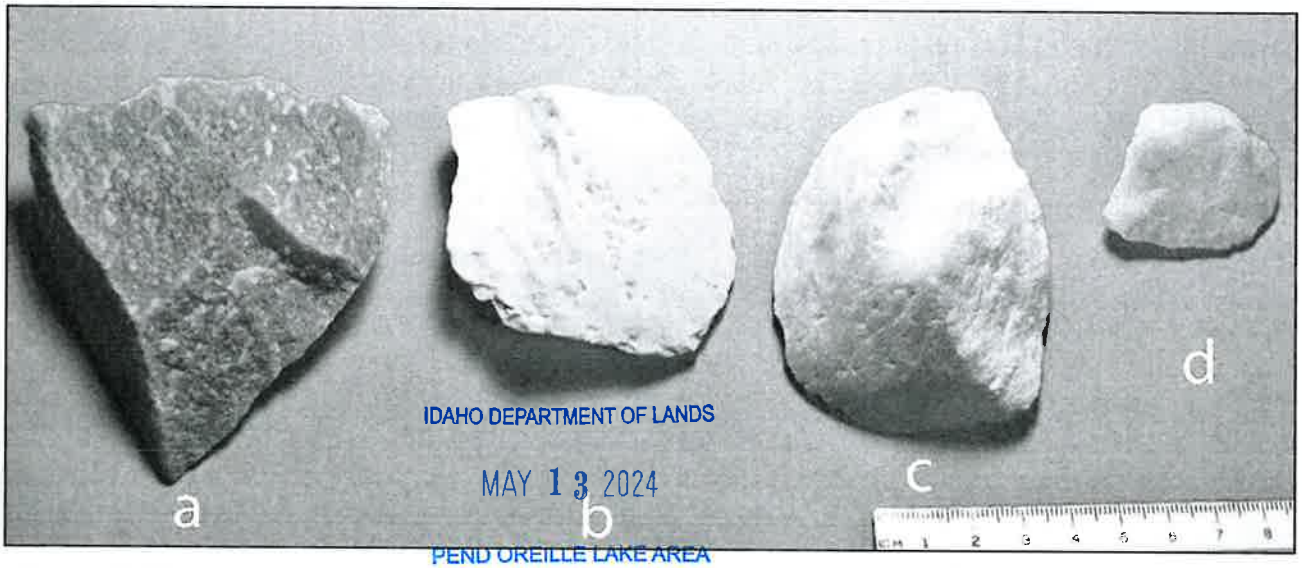


Figure 13. Flakes from 10BR1092: (a) metaquartzite surface flake 2; (b) metaquartzite surface flake 1; (c) metaquartzite flake from XU2; (d) quartz flake from XU1.

A quartz primary decortication flake is from level 2 of XU1 (primary decortication flakes have dorsal surfaces completely composed of cortex [Root 2004:73]). The flake has an unprepared cortical platform and was struck from a natural platform with an angle of about 90° (Figure 13d). All flake edges are crumbled and broken along the incipient Hertzian cones that cover the dorsal surface of the flake, and that are common on the exteriors of water-tumbled cobbles. The crumbled flake edges exhibit uniform grinding and rounding, indicating natural water tumbling and abrasion. Such flakes make poor tools because the edges are squared and broken by the incipient Hertzian cones. A knapper probably detached this flake early in percussion core reduction to create an acute-angled edge as part of core striking platform preparation.

We recovered a cortical, metaquartzite retouched flake from level 3 of XU2. This is a thick percussion spall struck from a cobble core with water-rounded cortex (Figure 13c). It has a noncortical, unprepared platform with a 90° angle. The distal edge has steep, unifacial retouch; retouch scars are 3–4 mm long. Flake arrises and edges are uniformly rounded and ground, indicating postdepositional wave tumbling, and erasing any use-wear that may have been present. The distal retouch indicates that this was a tool; the steep cortical working edge suggests that it would have been suitable as a scraping implement used on soft, yielding materials such as plants or hides.

We recovered two flakes from level 2 of XU3 from deposits of reworked beach sand and gravel. These are the only artifacts recovered from above the OHWM. One is a small, nondiagnostic pale brown (10YR 7/3) chert flake fragment. The other is a complete bifacial pressure flake of translucent dark reddish brown chert (5YR 3/2). The edges of these flakes display moderate to light intensity (visible at 30–40x) snap flaking, rounding, and grinding. This indicates water tumbling, and supports the inference that these were redeposited in wave reworked sediments.

Fire-Cracked Rock

We recorded 12 pieces of fire-cracked rock that are widely scattered over the surface of the beach. All are broken, water-rounded cobbles that exhibit crazing, potlids, or other thermoclastic fractures. These include one sandstone, one diorite, five metaquartzite, and five metasediment pieces. The beach also contains a scatter of broken, angular cobbles of Prichard Fm siltite and argillite that are derived from the Trestle Creek alluvial fan. These rocks weather to a "rusty" dark gray, and superficially resemble granodiorite (Lewis 2006). In 2005, we did not attempt to sort these red rocks, which we thought could be either natural or cultural, from the smaller number of rounded cobbles that were certainly fire cracked. Thus, our previous estimate of 70 fire-cracked rocks, included siltite or argillite that we misidentified as burned (Root and Ferguson 2005). The number of cultural burned rocks should be revised downward closer to the dozen burned rocks recorded in 2008.

Summary and Conclusions

In March 2008, Rain Shadow Research excavated 2.55 m^3 at site 10BR1092. The site is on a beach on the east side of Lake Pend Oreille, just north of the mouth of North Branch Trestle Creek. Excavations above and below the Ordinary High Water Mark recovered only four artifacts, all of which were in wave-reworked deposits of sand and gravel. Excavated artifacts all exhibit postdepositional rounding from water abrasion. We found two large flakes (probably tools) and 12 pieces of FCR on the surface of the beach. The flakes exhibit postdepositional water rounding.

All artifacts are in secondary context. The reworked artifacts have little potential for absolute dating. No time-diagnostic artifacts have been recorded at the site. Even if diagnostic artifacts were discovered, the disturbed geologic context of the site indicates that they could not be definitively

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

associated with other artifacts. Techniques such as TL dating, which can be used to date burned rocks, requires recovery from undisturbed sediments. Exposure to sunlight or heat releases the electrons that become trapped over time in the crystal lattice defects in mineral grains, and thus resets the luminescence "clock." Furthermore, dose rates must be measured in the surrounding sediment matrix to obtain accurate dates (Bradley 1985:78–83; Feathers 1997). Therefore artifacts from the surface and from redeposited contexts are poor candidates for TL or OSL dating.

Management Recommendations

After 2.55 cubic meters of controlled test excavations and two episodes of intensive surface survey, we found no evidence that any intact cultural deposits are present at 10BR1092. The site is eroded and a few artifacts are on the surface or in redeposited beach sediments. These lack all geologic, archaeological, and temporal context. Therefore, the site lacks all archaeological integrity. It does not have potential to hold important archaeological data and can not address significant research questions. Therefore, following the guidelines of the National Register of Historic Places and the Idaho State Historic Preservation Office, we recommend that site 10BR1092 is Not Eligible for listing on the National Register. We recommend that the proposed Pend Oreille Bonner Development will have No Effect on properties either on the National Register or eligible for listing on the National Register.

Unanticipated Discoveries

We judge that there is a low probability of encountering any buried, intact cultural resources in the Project APE. The Kalispel Tribe of Indians and the Idaho State Historic Preservation Office have recommended archaeological monitoring during construction because of the extensive amount of dredging and land alteration proposed by Pend Oreille Bonner Development.

In the unlikely event that cultural materials are unearthed during construction, Pend Oreille Bonner Development will halt ground disturbing activities in the area of the discovery, have a professional archaeologist evaluate the find, and consult with the SHPO and the U.S. Army Corps of Engineers.

In the unlikely discovery of human remains, the remains will not be disturbed, and Pend Oreille Bonner Development will immediately notify the Idaho SHPO and the U.S. Army Corps of Engineers (or local law enforcement authorities as necessary) regarding the treatment of the remains. In either case, construction activities in the area of the discovery will not resume until authorized by the SHPO and U.S. Army Corps of Engineers.

The following specific procedures will be employed:

1. Halt ground disturbing activities in the area of discovery and erect a physical marker, e.g. exclusion fencing, to prohibit potentially destructive activities.
2. Notify the U.S. Army Corps of Engineers and SHPO of the discovery.
3. Have a professional archaeologist evaluate the find for National Register eligibility and, if eligible or potentially eligible, develop treatment recommendations.
4. Carry out treatment or resume construction in the area of discovery upon authorization from U.S. Army Corps of Engineers staff.
5. If human remains or other cultural items (as defined by the Native American Graves Protection and Repatriation Act) are encountered, stop work in the area of the discovery and notify the Idaho SHPO and the U.S. Army Corp of Engineers. Local law enforcement authorities will be notified as well. Construction will resume upon authorization from U.S. Army Corps of Engineers staff after consultation with the appropriate Native American Tribes. If human

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

remains or other cultural items are encountered on Federal lands, all provisions of NAGPRA will be followed.

6. If a grave or cairn (as defined in section 27-501 of the Idaho Protection of Graves Act) is encountered on non-Federal lands, all provisions of the Idaho Protection of Graves Act will be followed. The director of the Idaho State Historical Society will be notified, and if the cairn or grave contains the remains of a Native American, the appropriate Native American tribe as designated by the director of the Idaho State Historical Society will be notified.

References Cited

Abramovich, R., M. Molnau, and K. Craine
1998 *Climates of Idaho*. University of Idaho, Cooperative Extension System, College of Agriculture, Moscow.

Ahler, Stanley A.
1971 *Projectile Point Form and Function at Rodgers Shelter, Missouri*. Missouri Archeological Society, Research Series 8.
1979 Functional Analysis of Nonobsidian Chipped Stone Artifacts: Terms, Variables, Quantification. In *Lithic Use-Wear Analysis*, edited by B. Hayden, pp. 301-328. Academic Press, New York.

Alt, David
2001 *Glacial Lake Missoula and Its Humongous Floods*. Mountain Press Publishing Company, Missoula.

Alt, David, and Donald W. Hyndman
1989 *Roadside Geology of Idaho*. Mountain Press Publishing Company, Missoula.

Bloom Arthur L.
1978 *Geomorphology: A Systematic Analysis of Lake Cenozoic Landforms*. Prentice-Hall, Englewood Cliffs, New Jersey.

Bradley, R. S.
1985 *Quaternary Paleoclimatology: Methods of Paleoclimatic Reconstruction*. Alen and Unwin, Boston.

Chalfant, Stuart
1974 Aboriginal Territory of the Kalispel Indians. In *Interior Salish and Eastern Washington Indians III*, pp. 169–232. Garland Publishing, New York.

Choquette, Wayne
1987 Archaeological Investigations in the Middle Kootenai Region and Vicinity. In: *Prehistoric Land Use in the Northern Rocky Mountains: A Perspective from the Middle River Valley*, edited by A. V. Thoms and G. C. Burtchard, pp. 57-120. Center for Northwest Anthropology Project Report Number 4. Department of Anthropology, Washington State University. Pullman.

Dalan, R.
1985 Pollen Analysis of a Core from Goose Lake, Okanogan County, Washington. In *Summary of Results, Chief Joseph Dam Cultural Resources Project, Washington*, edited by S. K. Campbell, pp. 112–129. Submitted to the US Army Corps of Engineers, Seattle District, Contract No. DACW67-78-C-0106. Office of Public Archaeology, Institute of Environmental Studies. University of Washington, Seattle.

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

Daubenmire, R., and J. B. Daubenmire
1984 *Forest Vegetation of Eastern Washington and Northern Idaho*. Agricultural Research Center, College of Agriculture and Home Economics, Washington State University. 1984 reprint edition.

Feathers, James K.
1997 The Application of Luminescence Dating in American Archaeology. *Journal of Archaeological Method and Theory* 4:1–66.

Hebda, R. J.
1995 British Columbia Vegetation and Climate History with a Focus on 6 KA B.P. *Geographie Physique et Quaternaire* 49:55–79.

Hoelscher, B.
1993 Pend Oreille Lake Fishery assessment. Bonner and Kootenai Counties, Idaho. 1951-1989. *Water Quality Status Report* No. 102. Idaho Department of Health and Welfare Division of Environmental Quality.

Lahren, S. L., Jr.
1998 Kalispel. In: *Handbook of North American Indians, vol. 12, Plateau*, edited by D. E. Walker, Jr., pp. 283-296. Smithsonian Institution, Washington, D.C.

Lewis, Reed S., Roy M. Breckenridge, Mark D. McFaddan, and Russell F. Burmester
2006 *Geologic Map of the Trout Creek Quadrangle, Bonner County, Idaho*. DWM-58. Idaho Geologic Survey, Moscow.

Mack, R. N., N. W. Rutter, V. M., Bryant, Jr., and S. Valastro
1978a Late Quaternary Pollen Record from Big Meadow, Pend Oreille County, Washington. *Ecology* 59:956-966.
1978b Reexamination of Postglacial Vegetation History in Northern Idaho: Hager Pond, Bonner County. *Quaternary Research* 10:241-255.

Mack, R. N., N. W. Rutter, and S. Valastro
1978c Late Quaternary Pollen record from the Sanpoil River Valley, Washington. *Canadian Journal of Botany* 56(14):1642–1650.

Mack, R. N., S. Valastro, and V. M., Bryant, Jr.
1978d Late Quaternary Vegetation History at Waitts Lake, Colville River Valley, Washington. *Botanical Gazette* 139(4):499–506.

Mack, R. N., N. W. Rutter, and S. Valastro
1979 Holocene Vegetation History of the Okanogan Valley, Washington. *Quaternary Research* 12:212–225.
1983 Holocene Vegetation History of the Kootenai River Valley, Montana. *Quaternary Research* 20:177–193.

Mehringer, Peter J., Jr.,
1996 *Columbia River Basin Ecosystems: Late Quaternary Environments*. Interior Columbia Basin Ecosystem Management Project, USDA Forest Service, Forest Service Research.

Miss, Christian J., and Lorelea Hudson
1987 *Cultural Resources Collection Analysis, Albeni Falls Project, Northern Idaho*. Cultural Resources Consultants, Inc. Sandpoint. Submitted to U.S. Army Corps of Engineers, Seattle District.

IDAHO DEPARTMENT OF LANDS

MAY 13 2024

PEND OREILLE LAKE AREA

Moratto, M.J., T. L. Jackson, R. M. Pettigrew, and B. A. Price
1991 Archaeological Testing and Evaluation Report, PGT-PG&E Pipeline Expansion Project, Idaho, Washington, Oregon, and California, Volume 1: Synopsis of Testing and Evaluation and Historic Properties Treatment Plan. Submitted to Pacific Gas Transmission Company, San Francisco, CA. Prepared by INFOTEC Research, Inc., and Biosystems Analysis, Inc., Fresno, California.

Nickmann, Rudy
1979 *The Palynology of Williams Lake Fen, Spokane County, Washington.* Unpublished M.A. thesis, Eastern Washington University, Cheney.

Odell, George H.
1981 The Morphological Express at Function Junction: Searching for Meaning in Lithic Tool Types. *Journal of Anthropological Research* 37:319–342.
1996 *Stone Tools and Mobility in the Illinois Valley*. International Monographs in Prehistory, Archaeological Series 10. Ann Arbor, Michigan.

Odell, George H., and Frieda Odell-Vereecken
1981 Verifying the Reliability of Lithic Use-Wear Assessments by 'Blind Tests': The Low-Power Approach. *Journal of Field Archaeology* 7:87–120.

Ray, Verne F.
1936 Native Villages and Groupings of the Columbia Basin. *Pacific Northwest Quarterly* 27:99–152.

Reid, Kenneth C., and Matthew J. Root
1999 *The Pataha Canyon Site: A Basaltic Andesite Workshop in the Blue Mountains of Southeastern Washington*. Submitted to U.S. National Forest Service, Contract No. 53-04R3-7–52. Rain Shadow Research, Project Report 39.

Roll, Tom E., and Steve Hackenberger
1998 Prehistory of the Eastern Plateau. In: *Handbook of North American Indians, vol. 12, Plateau*, edited by D. E. Walker, Jr., pp. 120–137. Smithsonian Institution, Washington, D.C.

Root, Matthew J.
2000 *The Archaeology of the Bobtail Wolf Site* (editor). Washington State University Press, Pullman.
2004 Technological Analysis of Flake Debris and the Limitations of Size-Grade Techniques. In *Aggregate Analyses in Chipped Stone Studies*, edited by Christopher T. Hall and Mary Lou Larson, pp.65–94. University of Utah Press, Salt Lake City.

Root, Matthew J., and Daryl E. Ferguson.
2005 *Archaeological Survey of the Proposed Trestle Creek Development, Bonner County, Idaho.* Submitted to MDG of Nevada, Inc., Carmel California. MS on file at the Idaho State Historic Preservation Office, Boise. Rain Shadow Research Inc., Project Report 95, Pullman, Washington.

Root, Matthew J., and Richard E. Hughes and Christopher T. Hall.
2005 Flaked and Pecked Stone Artifacts. In *Buzz-Cut Dune and Fremont Foraging at the Margin of Horticulture*, by David Madsen and Dave Schmitt, pp. 72–104. University of Utah, Anthropological Papers 124.

Savage, C. N.
1967 *Geology and Mineral Resources of Bonner County*. Idaho Bureau of Mines and Geology, County Report 6, Moscow.

IDAHO DEPARTMENT OF LANDS
MAY 13 2024
PEND OREILLE LAKE AREA

Smith Allan H.
1950 Kalispel Ethnography. Unpublished Manuscript, exhibit 65, Docket 94, Indian Claims Commission, Washington.

Soil Survey Division Staff
1993 Soil Survey Manual. U.S. Dept. Agriculture, Handbook No. 18. Washington D.C.

Stovall, Stacey H
2001 *Pend Oreille Subbasin Summary* - Draft. Submitted to the Northwest Power Planning Council. Kalispel Tribe of Indians.

Stradling, D. F, E. P. Kiver, and R. Mierendorf
2000 Geomorphology, Environment, and Land Use of the Calispell Valley. In: *The Calispell Valley Archaeological Project Final Report*, compiled by W. Andrefsky, Jr. and K. M. Presler, pp. 4.1-4.49. Center for Northwest Anthropology, Department of Anthropology, Washington State University, Project Report 16, Pullman.

Teit, James A.
1930 The Salishan Tribes of the Western Plateaus. *Forty-fifth Annual Report of the Bureau of American Ethnology, 1927–1928*. Washington D.C.

Thoms, Alston V.
1987a An Introduction to the Middle Kootenai Archaeological Project. In: *Prehistoric Land Use in the Northern Rocky Mountains: A Perspective from the Middle River Valley*, edited by A. V. Thoms and G. C. Burtchard, pp. 5-16. Center for Northwest Anthropology Project Report Number 4. Department of Anthropology, Washington State University. Pullman.
1987b *Upland Land Use and the Initial Assessment of 45PO148: The Sullivan Lake Archaeological Project, Northeast Washington*. Center for Northwest Anthropology, Contributions in Cultural Resource Management 19, Washington State University, Pullman, Washington.

U.S. Department of the Interior, Geologic Survey
1982 *The Channeled Scablands of Eastern Washington: The Geologic Story of the Spokane Flood*. U.S. Government Printing Office, Washington DC.

Weisel, C. J.
1981 *Soil Survey of Kootenai County Area, Idaho*. US Department of Agriculture, Soil Conservation Service. Washington, D.C.

IDAHO DEPARTMENT OF LANDS

MAY 13 2024

PEND OREILLE LAKE AREA