Chignik Lake School Sewer and Generator Building Expansion Projects

Cultural Heritage Studies
Environment and Natural Resources Institute
University of Alaska Anchorage
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The Project

The following describes the results of a Section 106 archaeological compliance survey conducted at Chignik Lake School, Chignik Lake village, for the Lake and Peninsula School District in May 2003 (Figures 1 and 2). Cultural deposits were discovered during a recent excavation of a sewer line trench for a new teacher's housing duplex (Figure 3). The 130 foot sewer line trench is located northeast of the school, 200 feet southwest of Chignik Lake (Figure 3). A proposed expansion of the school's generator building not included in the original scope of work for the survey was also surveyed in May. This project is located southwest of the sewer pipeline trench (Figure 3). Both projects are located on Lake and Peninsula School District property in Chignik Lake village.

The sewer line trench was excavated prior to the survey to a depth of ~1 meter below ground surface. The trench begins north of the new housing duplex, and curves around the existing teacher's housing for approximately 50 feet, before turning to the west where it connects to the existing line 80 feet away (Figures 4 & 5). The proposed generator building expansion will extend the northwest side of the existing building approximately 5 meters to the northwest. This construction consists of adding fill from the local gravel pit to the existing surface as padding prior to extending the building. No subsurface disturbance will occur as a result of this construction, and all new utilities lines will be positioned above ground.

Previous sites recorded in the village include the existing Russian-Orthodox Church (CHK-01) and the Chignik Lake Village site (CHK-031), which was discovered during an earlier waterline survey. CHK-031 includes the area of the new sewer line and generator building expansion.

Background

Geographical Location and Geological Background:

Chignik Lake village lies on the banks of freshwater Chignik Lake, nestled between the peaks of the Aleutian Range. The village was established in the 1950s, with the construction of the school, and presently has a population of approximately 140 people.

The environment of the Chignik area consists of a volatile land shaped predominately by fire and ice. During the late Wisconsin glaciation (20,000-24,000 BP), glaciers covered the Alaska Peninsula, receding around 10,000 BP (Detterman 1986; Stilwell and Kaufman 1996; Kaufman and Stilwell 1997). Of the extant glaciers in the Chignik Lake area, most are restricted to the upper elevations of Mt. Veniaminof volcano, located twenty miles southwest of the village. Mt. Veniaminof volcano is representative of the Alaska Peninsula, which is one of the most tectonically active regions of the world. As part of the Pacific "Ring of Fire", many peninsula volcanoes have been active through our Holocene times. In the Chignik Lake area, Holocene eruptions have occurred around Mt. Venianminof twenty miles southwest of the village and at Aniakchak, located forty miles northeast of Chignik Lake village. Activity related to Mt. Venianminof was historically documented in 1830, with the last eruption occurring in 1944. The less volatile Aniakchak volcano erupted only once in recent times, spewing steam and ash in 1931.

Soils in the region reflect its glacial and volcanic history. Well-drained, loamy volcanic ashes are overlaid by sandy and cindery ash found on the steeper slopes, with sand and silts found on surfaces of lake benches. Poorly drained muskegs consisting of fibrous organic soils are also found on the foot slopes of the hills, with a thin layer of volcanic ash commonly found within the first five feet of the mantle.

Environmental Setting:

The modern terrain around Chignik Lake is covered by tundra vegetation featuring low herbaceous plants, heaths, and grasses, with sedge meadows near intertidal zones. Stands of dwarf alder, willow, and birch are found in higher, well-drained locations, with seasonal thickets of salmon berries, crowberries, and blueberries in the valleys below. Terrestrial mammalian fauna of the area include brown bears (*Ursus arctos*), wolves (*Canis lupus*), caribou (*Rangifer tarrandus*), wolverine (*Gulo gulo*), fox (*Vulpes vulpes*), snowshoe hare (*Lepus americanus*), ground squirrels (*Spermophilus parryi*), and red-backed vole (*Clethrionomys gapperi*). Sea mammals consist of killer whale (*Orcinus orca*), Steller sea lion (*Eumetopias jubatus*), harbor porpoise (*Phocoena phocoena*), harbor seal (*Phoca vitulina*), and sea otter (*Enhydra lutris*).

The largest sockeye (red) salmon runs located on the Alaska Peninsula occur bi-annually in the Chignik River drainage. Runs of king, pink, coho, and chum salmon also occur. Arctic char, Dolly Varden, rainbow and steelhead trout are found in the waters of the area. Waterfowl nesting areas are located along the banks of Chignik Lake.

Survey Methodology:

Archaeologist Teresa L. Brown performed the archaeological survey of the Chignik Lake School's sewerline and generator extension on May 17-18, 2003. For the sewer line trench, survey consisted of cleaning the trench walls and documenting any observed anomalies or cultural features. Stratigraphic profile drawings and photographs were made for each feature identified, and included soil color, texture, inclusions, and depth. Depths and location were also recorded for artifacts found in the trench walls, and the artifacts were collected for analysis. The small artifact collection also included a number of objects gathered by the construction crew. Additionally, a shovel test was excavated to 70 cm below the base of the trench to ascertain the depth of the cultural deposits.

The survey for the generator building expansion consisted of excavating one shovel test in the area of the proposed padding and surface collecting the exposed drive way northeast of the expansion area. Soil texture and color, inclusions, and depth were recorded for the shovel test pit, and photographs were taken of the proposed construction area.

Survey Results

Sewer Line Trench

Three buried cultural features were identified in the trench walls. All three features were located near the northwest corner of the existing teacher's house, where the sewer line curves from the northwest to the southwest (Figure 3).

The first segment of the trench contained the removed stone lamp, ~63 cm below ground surface (Figure 3, Location No. 1). The lamp was located in a lens of brown (10YR 4/3) coarse sand, directly above a layer of very dark grayish brown (2.5Y 3/2) compact coarse sand. This lens was not continuous throughout the trench, and seemed to be confined to the area surrounding the lamp. The matrix surrounding the lens consisted of very dark gray (10YR 3/1) coarse sand with inclusions of charcoal flecking and minor root bioturbation. This matrix extended to a depth of ~75 cm below ground surface, where it changed into a very dark gray (2.5Y 3/1) coarse pumice sand reported by Dumond (1992:93).

The second location contained two potential cultural features southeast of profile 1 (Figure 3, Location No. 2). The first was located ~12 cm below ground surface, and consisted of an inclusion comprised of a layer of dark brown (7.5YR 3/2) silt above a layer of very dark gray (10YR 3/1) sandy silt. No artifacts were noted in this lens, nor in the stratum above, which consisted of very dark gray (2.5Y 3/1) coarse sand. Beneath this lens, the soil was a very dark gray (10YR 3/1) coarse sand, with charcoal flecking and mild root bioturbation. This soil extended to the base of the excavation, where the second cultural feature was observed.

The lower feature consisted of an inclusion of black (7.5YR 2.5/1) silt and charcoal within which was located several large fragments of sandstone and a spherical object of tephra with a crusted outer surface (Figure 3, Location No 2; Figure 6). A radiocarbon sample was acquired from beneath the tephra sphere, ~101 cm below ground surface, however, the sample has not been assayed. No artifacts were recovered in direct association with this sandstone, although a net sinker and grinding stone were collected from the trench floor in front of the profile.

The final trench segment contained an oxidized stratum located ~101 cm below ground surface (Figure 3, Location No. 3). It also contained one of the few remaining in situ artifacts recovered from the trench walls. This artifact, a notched net sinker, was located ~84 cm below ground surface in a stratum of very dark grayish brown (2.5Y 3/2) coarse sand. The oxidized stratum was located directly beneath this layer, and consisted of brown (7.5YR 4/4) coarse sand. Although the segment lay between locations 1 and 2, where it was not observed, the oxidized stratum was noted sporadically throughout the entire east section of the trench. Beneath this oxidization were at least two layers of coarse and very coarse sand (2.5Y 4/2 and 2.5Y 3/1) similar to those observed at the base of trench segment 1.

One shovel test was also placed in the trench floor in front of segments 2 and 3, in order to document the soil stratigraphy and to check for additional cultural horizons. No artifacts were recovered from this test, which consisted of very dark grayish brown (10YR 3/2) coarse sand with inclusions and bands of black (Gley 1 2.5/N) sandy silt and dark grayish brown (2.5Y 4/2) silt, followed by very dark gray (2.5Y 3/1) coarse sand, to a depth of 170 cm below ground surface.

Artifacts

Artifacts were classified using Dumond (1992). Most of the artifacts were collected prior to Brown's arrival and therefore lack context. However, based on the technological attributes observed within the collection sample most of the artifacts can be ascribed to Dumond's (1992) middle period, and date between 2200 and 1200 BP (200 BC-750 AD). These artifacts include several examples of bi-notched net sinkers; unstemmed, triangular projectile points/blades; edge-flaked knives, which, in several examples, are very similar in shape to ground slate ulus; an ovoid scraper; and a ground stone lamp (Figures 7 through 11). A few of the artifacts, such as a grooved net sinker and three stemmed projectile points/blades, are also similar to early period artifacts from Port Moller (Figures 7 & 8). However, these artifacts still correlate with the middle period dates for the Chignik Lake region. Most of the chipped stone tools were produced using fine-grained, dark gray basalt.

<u>Generator Building Extension</u>

One shovel test was excavated in the location of the proposed building pad to a depth of ~65 cm below ground surface (Figure 12). Three strata were observed in the test: a very dark gray (10YR 3/1) silty sand mixed with a brownish yellow (10YR 6/6) coarse sand to ~24 cm, followed by a brown (10YR 4/3) silty sand to ~40 cm below ground surface, and a very dark grayish brown (10YR 3/2) coarse sand to the base of the excavation.

Artifacts

One artifact, a silicified silt flake, was recovered from the test; however, additional surface collections northwest of the pad noted no additional cultural remains.

Conclusions and Recommendations

Sewer Pipeline Trench

Artifactual and cultural remains from the sewer line trench suggest a prehistoric occupation of the Chignik Lake Village site between 2200 to1200 BP. No house remains were noted in the trench walls, therefore the area most likely represents an outdoor activity area, or perhaps a temporary camp site. The abundant number of net sinkers recovered, provide substantial evidence that fishing was a major activity during the occupation of the site.

Cultural deposits were observed from 70-100 cm below ground surface, however, a lens in the first 25 cm of segment 2 indicates that a more recent use of the area also occurred. The presence of tephra and the oxidized layer at 101 cm below ground surface represents at least one local volcanic eruption and if analyzed, the ash would provide a basis for a more precise age ascription for the site, especially if combined with an assay of the presently undated radiocarbon sample.

It is recommended that the remaining installation of the sewer line, which included laying the pipe and backfilling the trench by hand be completed since no further damage to the site was anticipated as a result of this project. In the event that additional cultural material is found as a result of the construction projects, work should be stopped and the State Historic Preservation Officer (SHPO) should be contacted. In addition, future construction in the area should be preceded by an archaeological review to evaluate and mitigate any additional damage to the heavily disturbed site.

Further documentation for the Mitchell Lind collection currently on display at the school, should be considered. The school may also wish to consider exhibiting some of the artifacts recovered from the sewer pipeline trench, as part of an educational display on the prehistory of the area.

Generator Building Extension

The shovel test excavated in the generator building project area revealed no intact cultural deposits, but a single flake was found. Additional surface collections of the surrounding area resulted in the recovery of no additional materials. Subsurface excavation will not occur with the proposed project, and the fill for the project will be obtained from the local gravel pit. Based on these factors, no adverse effect is expected with this construction, however, if construction plans should change, this decision should be re-evaluated.

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Attachment I

Chignik Lake Report Illustrations
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Figure 1: Location of Chignik Lake on the Lower Alaska Peninsula

Figure 2: Location of Chignik Lake Village near the lake outlet**.**

Figure 3: The Project Area

Figure 4: View of southeast portion of trench facing northwest.

Figure 5: View of northwest portion of trench facing southwest. Note disturbance from existing leach field.

Figure 6: Close-up of feature in trench segment 2. Arrow denotes the location of the tephra ball.

Figure 7: Notched and grooved netsinkers.

Figure 8: Projectile points: A) Stemmed; B) Unstemmed; C) Flared Base. D) Drill/perforator. Based on types illustrated in Dumond (1992).

Figure 9: Edge-flaked knives.

Figure 10: Ovoid scraper.

Figure 11: Whetstone and hammerstone. Dorsal view showing one ground face.

Figure 12: Whetstone and hammerstone. Lateral view showing one ground face and hammerstone utilization.

Figure 13: Location of generator building extension. Building will be extended to location of existing utility pole. Arrow denotes location of shovel test.

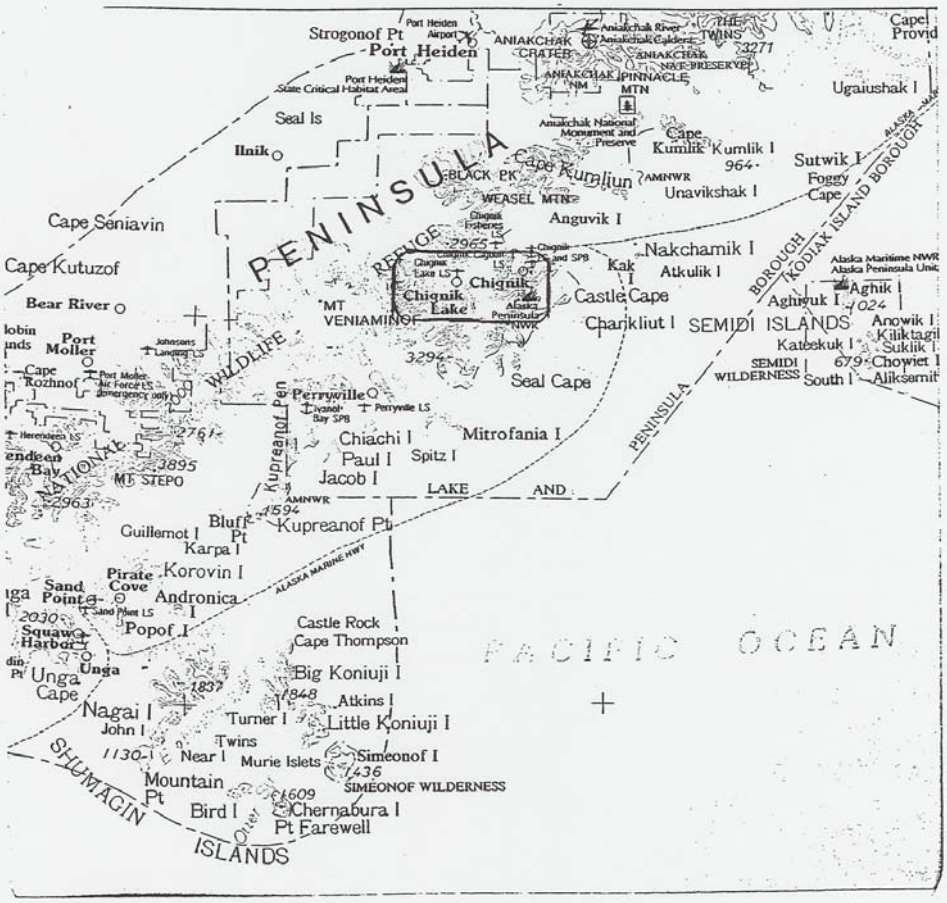

Figure 1: Location of Chignik Lake on the lower Alaska Peninsula (Alaska Atlas and Gazaetteer 1992:139).

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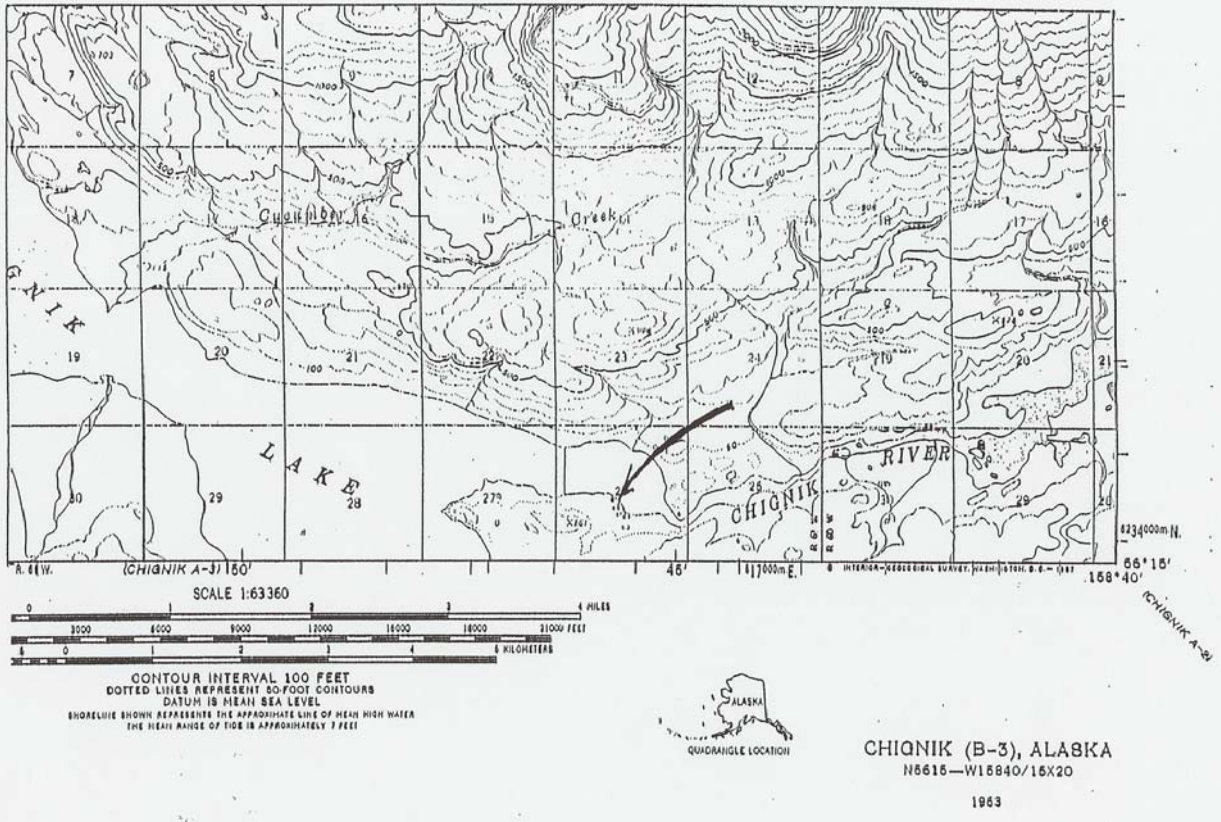

Figure 2: Location of Chignik Lake Village near the lake outlet.

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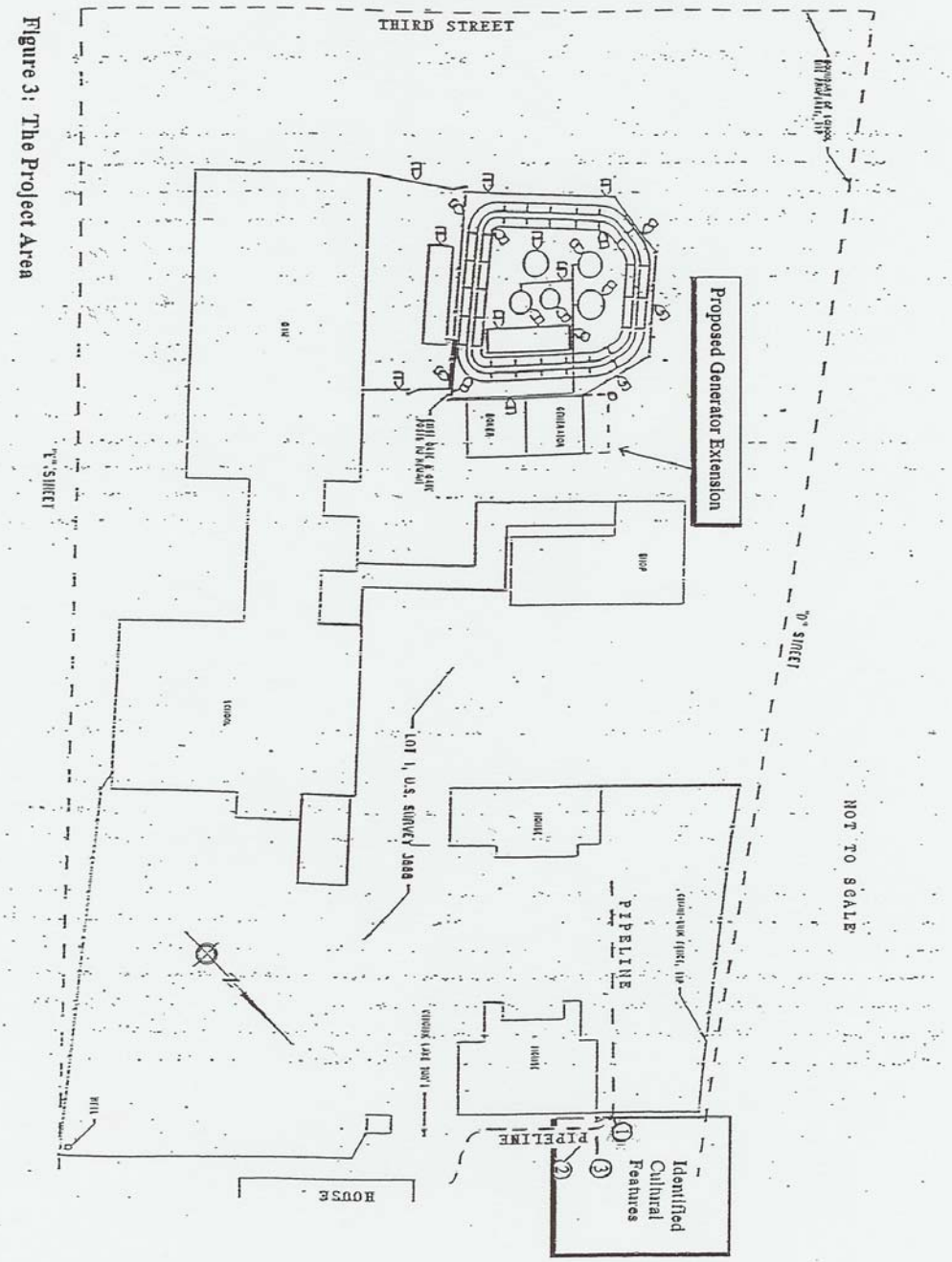

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Figure 4. View of southeast portion of the sewer line trench, view northwest.

Figure 5. View of northwest portion of trench facing southwest. Note disturbance from an existing leach field.

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