

ANNUAL REPORT:  
ARCHAEOLOGICAL SURVEY & EVALUATION  
FORT RICHARDSON & FORT WAINWRIGHT, 2003



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**ANNUAL REPORT:  
ARCHAEOLOGICAL SURVEY & EVALUATION  
FORT RICHARDSON & FORT WAINWRIGHT, 2003**

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## 1.0 INTRODUCTION

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In 2003, U.S. Army Alaska undertook the development of several proposed projects which triggered an archaeological and cultural resources analysis of proposed areas of potential effect. This report details the archaeological review and analysis which was conducted for each undertaking, at each post under U.S. Army Alaska's management: Fort Richardson and Fort Wainwright, including Donnelly Training Area, within the boundaries of the former Fort Greely.

Additionally, further survey investigations were undertaken in Donnelly Training Area East as a Section 110 inventory, pursuant to the National Historic Preservation Act.

Survey and sub-surface testing was conducted, following procedures defined in U.S. Army Garrison Alaska's archaeological research design (Hedman 2002) and Integrated Cultural Resources Management Plan (ICRMP; CEMML 2001). Where archaeological sites are identified within a project's area of potential effect, evaluative testing and investigation was conducted to determine eligibility for listing in the National Register of Historic Places, based on National Register criteria detailed in 36 CFR 79, and pursuant to Section 106 of the National Historic Preservation Act (NHPA; 36 CFR 800). No Historic Properties were affected by proposed project, as all eligible sites were avoided through coordination with project planning. On-site monitoring also occurred as necessary to ensure avoidance measures were appropriate and satisfied.

Archaeological field crews, comprised of employees of the Center for Environmental Management of Military Lands (CEMML), Colorado State University, conducted surveys of all areas potentially impacted (both directly and indirectly) by proposed undertakings, and in high probability areas identified for Section 110 inventory studies. One crew, comprised of four archaeologists, conducted surveys at Fort Richardson; one crew, comprised of four archaeologists, conducted surveys at Fort Wainwright cantonment area and Yukon Training Area; and four crews, comprised of four archaeologists each, conducted surveys at Donnelly Training Area.

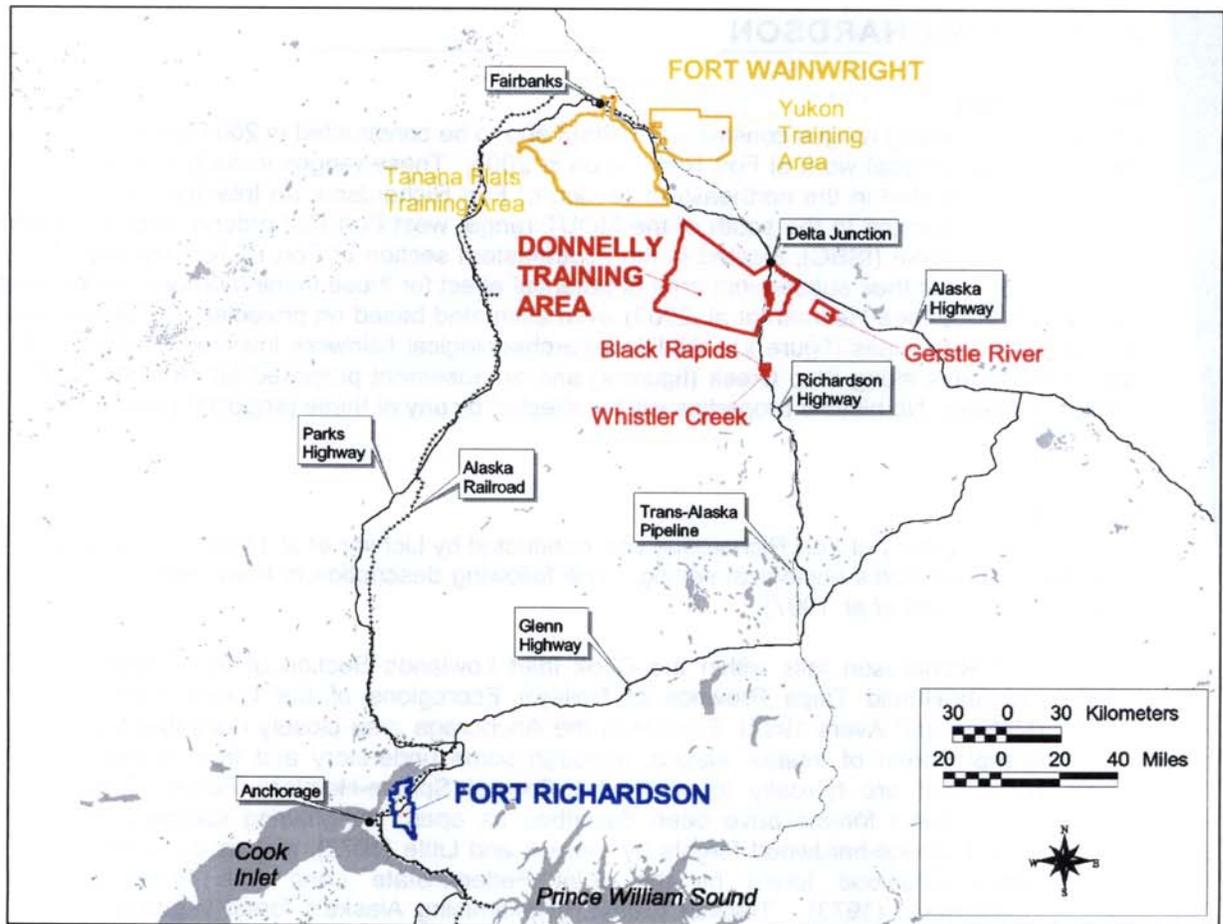


Figure 1. Location of Fort Richardson and Fort Wainwright, including Donnelly Training Area.

## 2.0 FORT RICHARDSON

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### Introduction

Firing fans for training ranges constructed in 2003 and to be constructed in 2004 were the primary focus of archaeological work at Fort Richardson in 2003. These ranges include a multi-purpose training range located in the northeastern section of Fort Richardson; an Infantry Platoon Battle Course (IPBC), located to the south of the MOUT range, west Fort Richardson; and an Infantry Squad Battle Course (ISBC), located in the southeastern section of Fort Richardson (see figure 2). Firing fans and their subsequent area of potential effect for these training ranges (which were surveyed in 2002; see Hedman et al. 2003) were estimated based on projected non-duded and duded munitions ranges (figure x). Additional archaeological fieldwork involved survey of bank stabilization areas along Ship Creek (figure x) and an easement proposed for Municipal Light & Power utilization. No historic properties will be affected by any of these proposed projects.

### Setting

A recent floristic study of Fort Richardson was conducted by Lichvar *et al.* (1997), with a thorough description of the Fort's ecological setting. The following description is from *Vegetation of Fort Richardson* (Lichvar *et al.* 1997):

'Fort Richardson falls within the Cook Inlet Lowlands Section of the Coastal Trough Humid Taiga Province of Bailey's Ecoregions of the United States (McNab and Avers 1994). Forests in the Anchorage area closely resemble the Boreal Forest of Interior Alaska, although some understory and tree species occur that are typically found in the Coastal Spruce-Hemlock Forest. Fort Richardson's forests have been described as open, low-growing spruce and closed spruce-hardwood forests by Viereck and Little (1972), and as a lowland spruce-hardwood forest by the Joint Federal-State Land Use Planning Commission (1973). 'Packee (1994), in examining Alaska's forest vegetation zones, characterizes the region as an area where white spruce (*Picea glauca*) and Sitka spruce (*Picea sitchensis*) naturally hybridize; balsam poplar (*Populus balsamifera*) and black cottonwood (*Populus trichocarpa*) intergraded; and mountain hemlock (*Tsuga mertensiana*) may form the subalpine forest. Vegetation reflects the transitional nature of the climate between maritime and continental. This maritime climatic influence has resulted in a lower incidence of natural fire than is found in the spruce-hardwood forests of interior Alaska (Gabriel and Tande 1983). 'Upland sites on Fort Richardson are dominated by paper birch (*Betula papyrifera*), white spruce, and, on drier sites, quaking aspen (*Populus tremuloides*). Cottonwood and poplar are common in areas bordering principal streams. Black spruce (*Picea mariana*) is the dominant tree in wetter areas and on some well-drained sites. Most bogs are treeless or support stands of stunted black spruce. Grasses, herbs, willows (*Salix* spp.), and alders (*Alnus* spp.) dominate the vegetation in a narrow band along the Inlet and at elevations above 1,500 feet on the Chugach Mountain slopes' (Lichvar *et al.* 1997: Appendix I.).

Specifically, the project areas surveyed are largely comprised of upland vegetation, including paper birch (*Betula papyrifera*), white spruce (*Picea glauca*), aspen (*Populus tremuloides*) and alders (*Alnus* spp.). Understory vegetation is moderate to dense, with various grasses and herbs, including fireweed (*Epilobium* spp.), lupine (*Lupinus* spp.) and high-bush cranberry (*Viburnum* spp.). Vegetation in the ISBC project area is considerably denser, dominated by alders (*Alnus* spp.), devil's club (*Oplonax horridus*) and cow parsnip (*Heracleum maximum*). Visibility in the ISBC project area, specifically, was greatly reduced due to this dense vegetative cover.

## **Background**

Fort Richardson withdrawn lands fall within the traditional lands of the Dena'ina, northern Athabascan Tribes of the Cook Inlet. In general, the Dena'ina traditionally pursued a semi-permanent lifeway, spending winters in permanent settlements and dispersing in the summer months with the onset of summer fish runs. Seasonal camps at favorable fishing locations were established along river banks, coastal edges and lake shores, and were returned to each year. Once salmon runs had ended, groups would often focus on travel into the mountains to hunt caribou and mountain sheep; such trips to the interior would also be a time for trading with other groups encountered during these seasonal hunts. Moose, bear, mountain goats and Dall sheep were often hunted year-round in areas outlying winter village settlements (Townsend 1981: 626-627). Specifically, settlements at Knik Arm have been well-summarized by Fall (1987):

In the nineteenth century this group included those Tanaina living along the shores of Knik Arm and the Matanuska and Knik rivers. They used the present day Anchorage area for salmon fishing and the Chugach and Talkeetna Mountains for hunting. In 1978-9, the only Tanaina village in this area was Eklutna, but in the past this was a highly populated area (Osgood 1937: 18) and many former village sites have been recorded (Kari 1978; Kari & Kari 1982).

The Anchorage area held several village sites prior to the arrival of Russian and Euro-American settlers; Anchorage itself was called *Qatuk'e'usht* (also *Xa'tikiuet*) by the people of Kenai, and once supported a Dena'ina village (Carberry & Lane 1986: 177; Yaw Davis 1965: 3). The mouth of Ship Creek historically supported a significant fish run, and was the focus of fish camps and seasonal subsistence fishing, prior to the advent of canneries and commercial fishing.

The introduction of Russian and Euro-American settlers into the region began with the famous voyages of Bering and Cook; in 1786, St. George became the first permanent Russian settlement established at Cook Inlet, at the mouth of the Kasilof River, Kenai Peninsula.

## **Archaeology**

Although glacial studies indicate that Cook Inlet may have been habitable by about 11,000 BP (Reger and Pinney 1996), few archaeological sites dating earlier than the late prehistoric period have been identified within the Cook Inlet region. The earliest and arguably the most significant site in the Cook Inlet area is Beluga Point, located approximately 10 miles to the southeast of Fort Richardson, near the entrance to Turnagain Arm. Though largely lacking datable material beyond 4000 BP, artifact assemblages at Beluga Point indicate consistent use of the location throughout the Holocene.

The earliest component at Beluga Point is the undated BPN-I core and blade component, estimated at 8000 to 10,000 BP, based on similarities with dated material found elsewhere in Alaska (Reger 1977, 1981). The presence of this assemblage, which could be designated as a regional variant of the American Paleoarctic Tradition (e.g. Anderson 1970a, 1970b; Dumond 1977), makes Beluga Point the lone early Holocene site in the Cook Inlet region identified to date. The only other site in the region that exhibits a similar assemblage is the early middle Holocene Long Lake site, dating to approximately 6600 BP in the Matanuska Valley (Reger and Bacon 1996). Despite the coastal location, these early microblade assemblages have been interpreted as reflecting the activities of terrestrial hunter-gatherers (Workman 1996).

The middle Holocene (6000 to 4000 BP) in Cook Inlet is represented by components BPN-II and BPS-II at Beluga Point. Though also undated, the presence of microblades and ground slate indicate an association with the maritime-adapted Ocean Bay I and II assemblages in the Kodiak archipelago, the Takli Alder and Birch assemblages of Shelikof Strait (Reger 1981:185-186), and

assemblages from the Alaska Peninsula that appear to be associated with the Arctic Small Tool tradition (Dumond 1977; Henn 1978).

Sites dating between 3000 and 1000 BP in the Cook Inlet region suggest the development and/or spread of Pacific Eskimo culture, seen in Norton affinities of a Beluga Point component dating prior to 1500 BP. It has been suggested that this period saw the spread of Norton peoples and technology from the Bristol Bay area (Reger 1981). Norton influence in Cook Inlet is overshadowed in this period by a number of sites exhibiting strong similarities to Kachemak tradition sites to the south. Upper Cook Inlet Kachemak components differ from those of the Kenai Peninsula and Kodiak in that they exhibit a toolkit that is apparently more adapted to terrestrial hunting and riverine exploitation than maritime subsistence. Components at the Knik Arm sites of Cottonwood Creek (Decagonal 1975:25-26, 35-41), Fish Creek (Dumond & Mace 1968) and Moose River (Dixon 1980:32-34; Reger & Boraas 1991) are representative of this adaptation, later defined as Riverine Kachemak by Reger and Boraas (1996), dating to between 2000 and 1000 BP on the Kenai Peninsula.

By far the most visible prehistoric site type in the Cook Inlet region is that of the late prehistoric Athabascan Tradition. These sites, often characterized by rectangular house depressions, cache pits, few diagnostic artifacts, and an abundance of fire-cracked rock, are presumably associated with the Dena'ina Athabascans that are thought to have replaced local Eskimo groups in the archaeological record by perhaps 750 or 1000 BP (McMahan et al. 1991). Linguistic evidence and Dena'ina oral history suggest that Athabascan groups from the Copper River drainage and the upper Stony and Mulchatna Rivers began moving into upper Cook Inlet between 1,500 and 2,000 years ago (Kari 1988). Of special significance is the existence of the modern Athabascan village of Eklutna, located to the north of Fort Richardson on Knik Arm; important aspects of the history of this village are found in the work of Chandonnet (1979, 1985), Yaw Davis (1965, 1994) and Yarborough (1996). General information on the Dena'ina Athabascans gathered from studies in the Lake Iliamna – Lake Clark region is found in the work of Townsend (1965, 1970, 1975, and 1981) as well as that of Ellanna and Balluta (1992).

Previous archaeological work at Fort Richardson includes at least eight projects since the late 1970s (Bacon 1979; Hedman et al. 2003; Holmes 1979; Reynolds 1996; Shaw 2000; Steele 1978, 1980; Veltre 1978). Of these surveys, only Steele, Reynolds, and Shaw reported the discovery of archaeological sites. Steele's 1980 work identified 4 sites, (ANC-263, 264, 265, and ANC-268), all of which were historic 20<sup>th</sup> century cabin ruins. Reynolds (1996) recorded the multi-component (historic) site ANC-822 near Ship Creek in the vicinity of the Moose Run Driving Range. Shaw (2000) recorded approximately 20 sites, the majority of which were Army related mounds, foxholes, and bunkers. Shaw's work also revealed a single prehistoric site, ANC-1175, composed of a single lithic flake and a small lithic spall. This observation is associated with a cleared area located along the edge of the Elmendorf Moraine (Shaw 2000: 97). The work of Shaw, Steele (1978), and Dilley (1996) indicate that moraine features scattered across Fort Richardson and oriented roughly northeast by southwest, represent a relatively high probability location for discovering prehistoric archaeological sites on Fort Richardson.

### ***Historic Resources***

In addition to the known archaeological sites on Fort Richardson, there are numerous locations of historical and cultural significance, though the exact locations of many of these features have not been recorded to date. Portions of the Iditarod Historic Trail (ANC-270 and 280) are recorded and known to potentially exist on Fort Richardson. The Girdwood-Ship Creek Connecting Trail (ANC-280), descended the Ship Creek valley to the vicinity of Fort Richardson, where it presumably joined the Eagle River-Knik Trail (ANC-270). Though it is likely that ANC-270 lies outside of Fort Richardson lands, a connecting trail from Anchorage to ANC-270 is known to have existed. This connecting trail is recorded as following the Eagle River drainage (presumably from

Knik Arm) to Lake Clunie, and on to Birchwood (CEMML 2001:26). This route is likely to have followed Clunie Creek north from Eagle River to Lake Clunie, a route that crosses the northern portion of Fort Richardson.

### Ethno-Historic resources and Properties of Traditional Religious and Cultural Significance

In the 2002 field season (Hedman et al. 2003), an historic fish camp site was re-located. In 1994, Yaw Davis conducted a collaborative study with the Dena'ina team from the Native Village of Eklutna to identify traditional cultural sites and document ethno-historic land use on Elmendorf Air force Base. This study was not confined only to Elmendorf, but also extended onto Fort Richardson near its southern boundary with Elmendorf, and north of Eagle River Impact Area, to Whitney Point. A fish camp site was identified at that time near Whitney Point, which was used by the Eklutna Industrial (Vocational) School from 1924 – 1946. The site was identified during the 1994 study, however no location details were recorded, or clear photographic record documented.



Figure 2 View of School Fish Camp site heading southwest.

In 1924, the Department of the Interior Bureau of Education built and maintained the Eklutna Industrial (Vocational) School. The school was established to house 26 orphans, whose parents had died in the flu epidemic of 1918 (Carberry & Lane 1986: 174). The industrial school was a multi-faceted institution that included a collection of buildings (including a six room hospital, isolation ward, director's cottage, girls' and boys' dormitories, shop, gymnasium, cannery car; meat house, paint house, barn, brooder shed, laying house, waiting station and hog house (Chandonnet 1979: 21)). Within two years the school's population doubled, and there was a waiting list for new students. The fish camp site was constructed and used by the school to provide training in traditional fishing methods, while also providing fish for the school's subsistence (Yaw Davis 1994: 53). By 1946 the buildings had been condemned and the school was permanently closed (Chandonnet 1979: 22).

### Military Survival Tactics

A number of historic properties are located on or near Army lands in Alaska; many of these properties are historic structures and buildings pre-dating or associated with World War II and Cold War era Army activities (see e.g., Hollinger 2001; Shaw 2000). As found during previous surveys

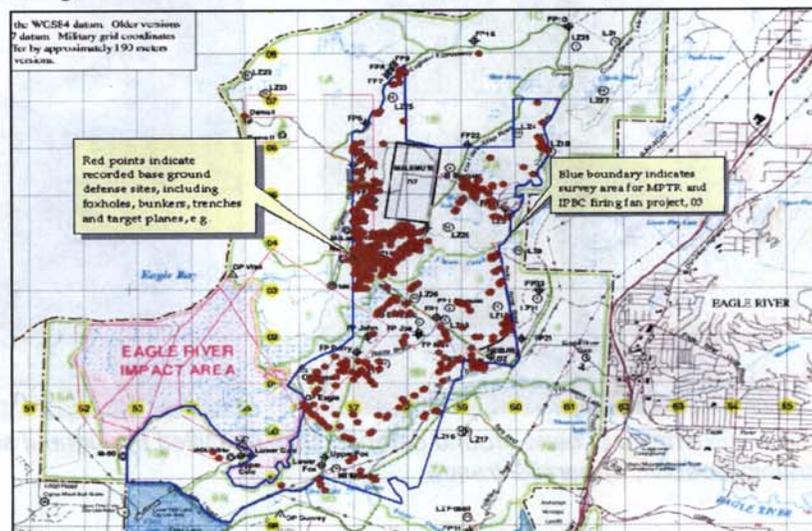


Figure 3. Distribution of Military Survival Tactic Sites identified during 2003 survey of proposed firing fan

on Fort Richardson (e.g., Shaw 2000), evidence of previous military training activity was prolific throughout the proposed training project areas. Heavy disturbance from trench building, foxholes and UXO (unexploded ammunitions) were observed frequently during survey. Although there is a possibility that some of these features may date to trainings undertaken during World War II and the immediate post-war period, none of these features can be clearly assigned to a specific date. Features such as these were referred to as 'Base Ground Defense Sites' in Shaw (2000), and were uniformly determined to be ineligible to the National Register of Historic Places (Shaw 2000: 16-22, 121). As Shaw explained:

[such sites are] temporary, theater-of-operations type structures, which are in a deteriorated condition with the construction date being uncertain within about 10 years. Most [military training] sites...have lost physical integrity through neglect after abandonment. The sites have also lost other aspects of integrity regarding design, setting, materials, workmanship, feeling and association over the years by neglect and/or direct actions resulting from operating a military base with changing physical requirements associated with execution of the primary mission. Such actions range among planned demolition of buildings judged to be excess property, inadvertent destruction of structures during new uses of the land such as for gravel pits, construction of new facilities which intrude into and radically change the site setting that existed during WWII, and direct efforts to "clean up" the sites when use stopped' (Shaw 2000: 16).

Specific examples of military survival tactic sites identified throughout the field survey include trenches, foxholes, log-lined foxholes; and bunkers/wood-framed structures and blinds (e.g., figures 3-4).

Features associated with past military training operations, found throughout training ranges at Fort Richardson currently have shown no clear pattern or relationship as identified in the field (see figure 3). Similarly to Shaw's findings, the continued use of these areas for subsequent base activities have heavily impacted the original structural integrity of the features; all structures encountered lack integrity due to structural deterioration. Evidence of continued use and re-use of military survival tactics structural materials during training exercises (e.g., to construct blinds or targets) was prolific. In agreement with Shaw, archaeological evaluations of these features would not contribute significantly to our understanding of military training history in WW II, and do not qualify under National Register of Historic Places criteria D (36 CFR § 60.4). As a result, these features have been determined ineligible for listing in the National Register of Historic Places.



Figure 4. Examples of base ground defense sites identified throughout survey area. A) Mechanical debris; b) parallel trench

## 2.1 Multi-Purpose Training Range (MPTR) and Infantry Platoon Battle Course (IPBC) Training Range Firing Fan Surveys

In 2002, the United States Army Garrison, Alaska (USAG-AK) proposed range development projects within U.S. Army Alaska (USARAK) lands at Ft. Richardson, involving the construction of new training ranges to begin use in 2004 and 2005. Surveys for the Multi-Purpose training range upgrade/expansion project (MPTR) and the Infantry Platoon Battle Course (IPBC) were conducted in the 2002 field season (Hedman et al. 2003). Additional surveys were undertaken in the 2003 field season to address areas potentially impacted by firing munitions (the 'firing fan') associated with the utilization of the MPTR and IPBC training ranges.

The new training range complex and supporting facilities will be used to train USARAK and other Alaska soldiers in infantry squad/platoon tactics and basic urban/suburban operations using automated targetry, enabling trainers to vary scenarios presented to trainees. The Infantry Platoon Battle Course (IPBC), located on North Post between Malemute Drop Zone and Eagle River Flats, is a larger-scale course designed for more combat realism and larger unit (platoon) training. The Multi-

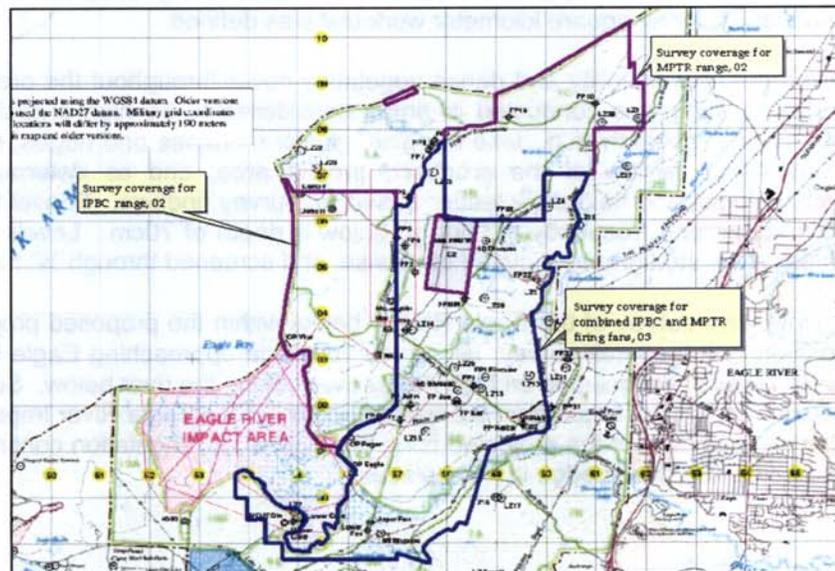


Figure 5. Location of survey coverage for IPBC and MPTR training ranges (2002) and combined firing fan (2003).

Purpose Training Range (MPTR) will provide qualification and training scenarios for vehicle-mounted, crew-served weapon crews. Munitions fired from this range will be non-dudged (e.g., inert, high explosive anti-tank, inert high explosive plastic), similar to munitions currently fired at Fort Richardson. As a part of training exercises, other weapons (e.g., mortars, artillery) could be indirectly fired over the IPBC and MPTR ranges to provide combat realism. These indirect rounds would impact in Eagle River Flats, a current impact area, and would be fired within restrictions established for such firing within U.S. Army Alaska Regulations 350-2, *Training*.

No historic properties or cultural resources have previously been identified within the proposed area of potential effect for the proposed IPBC and MPTR range firing fans.

### Survey and Field Methods

In July and August 2003, an archaeological survey crew of four archaeologists employed by the Center for Environmental Management of Military Lands (CEMML), conducted a pedestrian survey of the proposed IPBC and MPTR range firing fans, under the supervision of Ft. Richardson archaeologist, Kirsten Anderson. Pedestrian surveys were carried out in accordance to the guidelines established in the "Research Design: U.S. Army Alaska 2003 Range Developments, Section 106 Archaeological Inventory and Evaluation, Ft. Richardson and Ft. Wainwright." This research design was submitted to SHPO for review and comment, as required by 36 CFR 800, in March 2003.

The firing fans for the two training ranges cover a single, large area extending to the edge of Eagle River Flats Impact Area on the southwest, and to Clunie Lake on the east (see figure 1). The project Area of Potential Effect (APE) encompassed an area larger than the proposed range firing fan footprint, in order to ensure coverage of areas that may incur secondary impacts during training use. Terrain that exceeded slopes of 40° were eliminated from survey, as no impacts will occur on slopes greater than 30°. Additionally, every effort was made to survey low-lying wet areas, but some wetlands were eliminated from survey coverage, due to inaccessibility, lack of visibility, and low probability of containing intact cultural deposits.

Parallel pedestrian transects spaced at approximate 20m intervals were walked either north-south or east-west, depending on terrain and access. Transect survey units were partitioned according to existing roads and trails where possible. When existing roads did not provide for practical unit boundaries, a one square kilometer work unit was defined.

Given the poor visibility and dense vegetative cover throughout the proposed project area, sub-surface testing was conducted in areas considered to be high probability, based on previous survey and research (e.g., lake margins, glacial moraines and ridges, river/stream confluences) during initial review of the proposed project area, and as determined by the supervising archaeologist and field crew leader based on survey findings. Shovel tests were approximately 40 x 40cm, and frequently did not go below a depth of 70cm. Levels were dug at 7cm levels, unless clear stratigraphy dictated otherwise, and screened through ¼" hardware cloth.

An intensive survey of the Eagle River's banks within the proposed project area was included in addition to the overall survey, as survey coverage approaching Eagle River from the north and south generally concluded on high ridges overlooking the river below. Survey of the river banks began heading upstream from the east boundary of the Eagle River Impact Area, extending to the eastern boundary of the projected firing fan (figure 1). Vegetation continued to be dense, ending abruptly at the river's edge in most places.

## Findings

### Structures: Quonset Hut (ANC-01331)

The ruins of one 'Quonset' hut were identified to the south of Artillery Road, approximately 2.5 kilometers east of Eagle Bay. It is a corrugated, steel framed and roofed structure in a dilapidated state, with the roof caved in and structural integrity of the adjacent walls failing.

Quonset huts were first utilized by the military during World War II, when prefabricated, temporary shelters became necessary in remote defense situations:

***'In March 1941 Admiral Ben Moreell, chief of Navy Yards and Docks, got together with the George A. Fuller Co. to make a prefabricated, knockdown shelter to be built in the United States and shipped to distant bases to be easily and quickly assembled by troops in the field...The first Fuller design, created at their Quonset Point, Rhode Island facility, was a half-cylinder, corrugated steel structure with arch ribs. It had insulation, pressed-wood interior, could be erected on concrete, on***

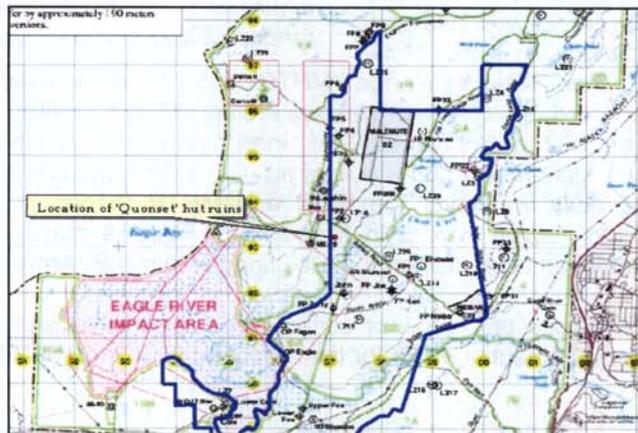


Figure 6 Location of 'Quonset' hut ruins identified during survey

***pilings, or on the ground with a wood floor. The wood ends had a door and two windows. The first units were 16 x 36 feet but soon they made them in 20 x 40 foot and 20 x 56 foot models. The 56 foot one provided for an overhang past the end walls. They also made a 40 x 100 foot warehouse and other sizes. The army ordered 16,000 of them after the attack on Pearl Harbor. Eventually 170,000 were produced' (Kodiak Military History Museum website).***

'Quonset' huts used by the military went through a series of adaptations and modifications. Originally based on the 'Nissen' hut designed in Britain for use in WWI, the Quonset hut design was modified to improve upon speed of construction and durability, with the 'Quonset Type II':

'The hut the Navy poetically termed the 'Quonset redesigned hut' had 'short straight nailable members arranged to form a multi-angled barrel vault' (Architectural Forum, February 1945). The composite I-beam framing members described above were cut, bent, and welded to form a 4-foot vertical sidewall with a segmented 'curve' above. The number of segments (all four feet long) is determined by the width of the hut; the 16'x36' size, which was still the basic type, had seven counting the walls and an inside height of about 8 feet. Each rib was still shipped in two pieces that bolted together at the top. The exterior covering was vertically-oriented, with curved corrugated metal over the roof and short straight corrugated metal on the 4-foot walls. The metal was fastened to the ribs and purlins with double headed nails driven through a steel and fiber washer to keep out rain. The nails were placed through the high point on a corrugation to avoid holes where water would accumulate. The joints of the sheets were buttered with mastic (National Steel 1944; personal observations 2000-2). Endwall frames were metal (wood may also have been used)...' (Williamson 2003: 16).

Both the 'Quonset Type II' and the Armco Hut/Elephant Shelters developed later for 'iron bunkers and ammunition magazines' (Williamson 2003; 38) share characteristics similar to those observed on the 'Quonset' hut ruins identified during survey. The vertically-oriented side panels with corrugated metal panels curving to form the roof, along with limited evidence of rib beams and wooden end panels

suggest a higher correlation with the 'Quonset Type II.' It is not unlikely that the hut was once used for military training ammunition storage, but this cannot be confirmed.



Figure 7. View of 'Quonset' hut ruins.

Given the advanced state of deterioration and subsequent lack of integrity, the Quonset hut identified during survey is not eligible for listing in the National Register of Historic Places. Additionally, archaeological evaluations of the Quonset hut ruins would not contribute significantly to our understanding of military training history, falling under similar conditions of use, re-use and decay as that identified under Shaw's (2000) 'Base Ground Defense Sites.' Subsequently, the Quonset hut ruins are not eligible under National Register of Historic Places criterion D.

Bark Stripped Trees Over 26 bark stripped birch trees were identified during survey of the proposed IPBC and MPTR training range firing fans. Many of these trees were interspersed among base ground defense sites, while others were located along ridges and in other isolated groupings. In areas where bark stripped trees were identified, test pits were excavated to determine if any cultural, sub-surface features were associated with the area. However, all test pits excavated were negative, recovering no cultural material. Cultural resources studies undertaken previously have affirmed that groupings of peeled birch trees near Otter Lake are the work of boy scout troops who attended an annual summer camp at Ft. Richardson (Shaw 200: 94). However, this explanation cannot be confirmed for all peeled birch trees, and it is likely that some of those identified during survey may be culturally modified trees.

Culturally modified trees (CMT) have come under increasing research in the past decade, recognizing the significance of such trees in understanding Native and non-Native forest use (Moblely & Eldridge 1992: 91-110; Eldridge 1997). However, previous research has largely focused on the Pacific Northwest, British Columbia and Southeast Alaska, where culturally modified trees are predominantly spruce, cedar and hemlock (e.g., Eldridge 1997; Stryd 1998; Mobley & Eldridge 1992). CMT studies have thus been directed on a much different history of use and ecological environment than that of the paper birch trees that predominate in the Alaskan interior. Additionally, paper birch (*Betula papyrifera*) trees—such as those found throughout the survey area—have a life span that rarely exceeds 80-

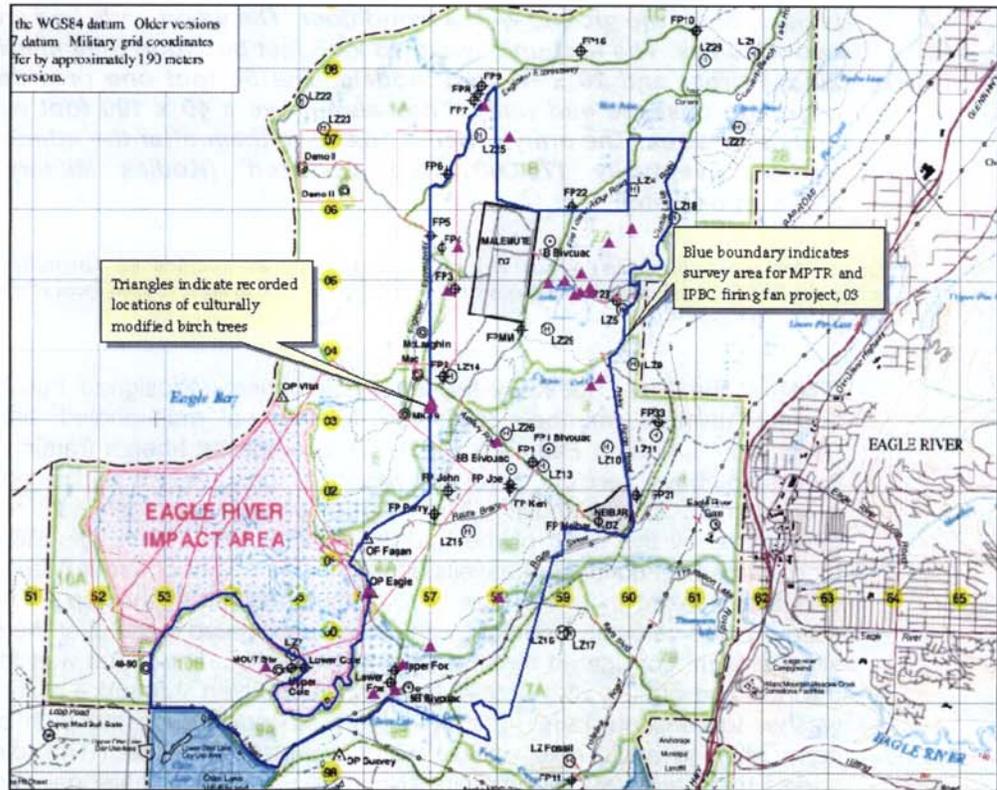


Figure 8. Distribution of stripped birch trees during 2003 survey of proposed firing fan.



Figure 9. Example of bark stripped birch tree identified during survey.



Figure 10. Location of river cobble-lined fire-ring, south bank of Eagle River.

100 years of age ([www.forestworld.com/public/silvics/](http://www.forestworld.com/public/silvics/)), rendering the age and potential cultural significance of bark stripped trees difficult to determine without further traditional use studies (to be undertaken in 2004).

Effects to bark stripped trees as a result of the proposed firing fan will be minimal and indirect. However, live fire use in the MPTR range may cause some birch trees within the firing fan to become damaged or destroyed by

inadvertent fires.

#### Sites: Eagle River fire-ring

A small, circular grouping of river cobbles was identified on the southern bank of Eagle River, immediately upstream from the bridge east of the Eagle River Impact Area. The grouping is located approximately 15m south of the riverbank proper, along a game trail within a grove of alders. The grouping is circular in pattern, consisting of 10-12 river cobbles, one with evidence of fire cracked fractures. The circle has been broken, presumably due to animal activity directly related to the game trail that crosses the grouping, as well as frequent scouring during times of high water. Since river cobbles are numerous near the river's banks, a section of the interior soil within the grouping was investigated to determine possible stratigraphy and any hearth-type residues. A railroad spike was located immediately beneath the organic mat surface, beneath which were clear layers of alluvium, with a thin lens of charcoal, overlying river rock. Two additional probes were placed outside the group of cobbles, however no further evidence of charcoal was evident, and no cultural material was recovered. Soils are very shallow (approximately <6cm on average), comprised of alluvial silts



Figure 11. View of fire ring, lined with river cobbles, adjacent to southern bank of Eagle River, immediately upstream from Eagle River Impact Area eastern boundary.

overlying river cobbles. No ground depressions were identified in the vicinity of the fire ring, despite intensive examination.

Directly northeast of the fire ring by approximately 1.5m, is an overturned tree/root wad, where two Meal Ready to Eat (MRE) plastic packages are located on the ground surface (figure 12). It is unclear if these MRE packets are directly relatable to the fire ring; however, given the limited distance between the two findings, it appears likely that they are related. Based on the proximity of the MRE packages indicating a date of less than 50 years old, and the lack of cultural deposits or material identified in the surrounding area, the fire ring appears to be a temporary, modern feature. Subsequently, the site is not eligible for listing in the National Register of Historic Places. Additionally, the location of the fire ring will not be impacted by proposed firing fan activity, as no munitions are expected to be fired across Eagle River.



Figure 12. View of MRE packages in upturned soil from deadfall, and view of fire ring to the southwest.

No prehistoric cultural materials were identified or recovered during the field inventory.

### Summary

Survey and sub-surface testing failed to identify any historic properties within the boundaries of the proposed project area of potential effect. The project area has been heavily disturbed by previous military activities, evident in interspersed foxholes, bunkers, UXO, and military training debris found throughout the surveyed area. Additionally, a fire-ring identified on the southern banks of Eagle River was identified, but determined to be a temporary, modern structure. None of these features were determined eligible for listing in the National Register of Historic Places, based on criteria listed under 36 CFR 800.

## 2.2 Infantry Squad Battle Course (ISBC) Training Range Firing Fan Survey

Similar to the MPTR and IPBC training ranges, USAG-AK developed an Infantry Squad Battle Course (ISBC) training range on south post, east of the Glenn Highway (figure 13), which began construction in 2003. Surveys for the proposed ISBC training range were conducted in 2002 (Hedman et al. 2003). Additional surveys were undertaken in 2003 to address the area potentially impacted by firing munitions (the 'firing fan') resulting from use of the ISBC.

The proposed project will utilize the new ISBC training range in order to meet requirements for implementation of the military mission at Fort Richardson. The training range firing fan will support proposed implementation of the Stryker Brigade

Combat Team (SBCT) Transformation. The firing fan associated with proposed training plans for the current review is a mission-essential project for the existing force, the 172<sup>nd</sup> Infantry Brigade (Separate), as certified by U.S. Army Pacific.

USAG-AK is constructing the training range complex and supporting facilities to train USARAK and other Alaska soldiers in infantry squad/platoon tactics and basic urban/suburban operations using automated targetry, enabling trainers to vary scenarios presented to trainees. The Infantry Squad Battle Course (ISBC), located on South Post on what is now Davis Range (built on top of a former tank table range), will include a Breach Facility, an Urban Assault Course, and a Shoot House. These ancillary ranges would be arranged near the ISBC and share common support facilities. The ISBC will include new targetry that, based on current projections, expands to the east/southeast of the training area proper, to the south of Ship Creek (figure x).

No historic properties or archaeological sites have previously been identified within the proposed area of potential effect for the currently proposed ISBC range firing fan.

### Survey and Field Methods

In June and July 2003, an archaeological survey crew of four archaeologists employed by the Center for Environmental Management of Military Lands (CEMML), conducted a pedestrian survey of the proposed ISBC range firing fan. The project Area of Potential Effect (APE) encompassed an area larger than the proposed range firing fan footprint, in order to ensure

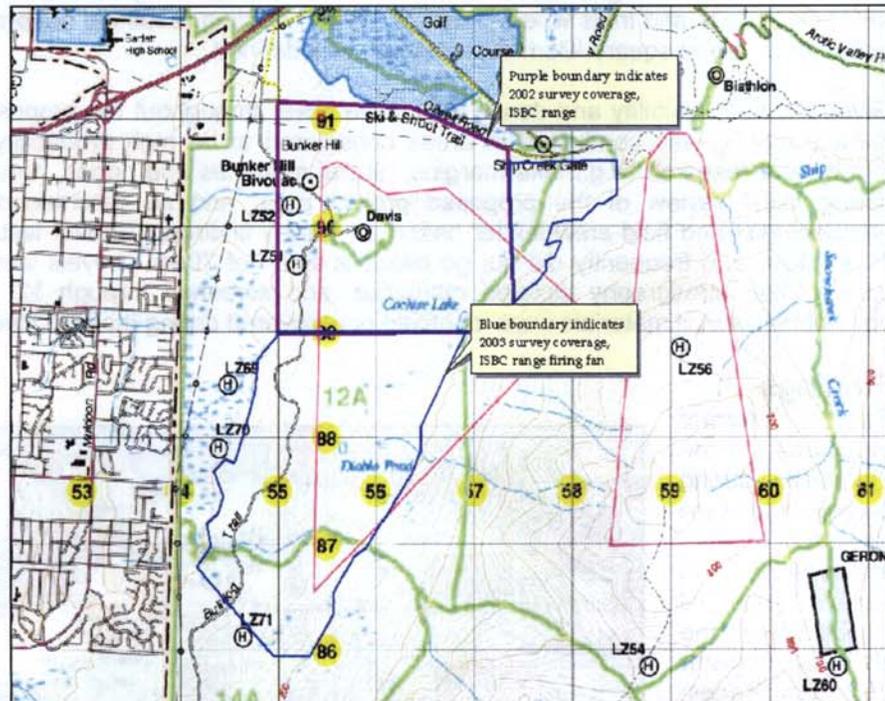


Figure 13. Location of ISBC training range (2002) and firing fan (2003) survey areas, south Fort Richardson.



The structure is notched log construction, with evidence of both machine and hand axes used in its construction. Large, round-headed nails secure the notched corners. The remains of the structure are now 2 - 3 logs in height, with evidence of roofing logs/material fallen to the floor of the structure. The logs are in a state of decomposition, with the presumed entrance to the structure slumped and unstable. Seven test pits were explored: four were excavated within the confines of the existing remains; three were excavated outside the structure on a roughly north-south, east-west axis. Three nails, identical



*Figure 15. View of first cabin structure, east of Bulldog Trail. View heading northeast.*

to those exhibited in the remaining corners of the structure, were recovered from the first test pit, while two fragments of modern bottle glass and a second nail was recovered from the second test pit. The bottle glass is modern, with very little patina visible on the surface. Additionally, a pull-tab "Dr. Pepper" can was recovered in the corner of the structure, as were clear and red plastic fragments (investigations on the date of the "Dr. Pepper" can indicated a date no earlier than 1962, and most likely dates to the late 1960's). No material was recovered from test pits excavated outside the structure's foundations.

The immediate ground surface of the cabin/structure exhibit numerous undulations, appearing similar to various foxholes identified during pedestrian survey of training ranges, and in Shaw's survey of proposed railroad corridor re-alignments (Shaw 2000). It is likely that some of these depressions were originally associated with the log structure, and were not constructed explicitly for military training, but were utilized in subsequent training missions. A trail heading northwest from the cabin/structure is visible, leading to a clearing in the trees, however no evidence of deliberate clearing was evident. A peeled birch tree is located at this cleared area. Various deep depressions are extant to the west of this clearing, heading down the slope of the hill, and are most likely associated with military training, appearing similar to foxholes and make-shift bunkers seen throughout the proposed project area. Recent research on the history of homesteads on Fort Richardson indicates that the site and original structure were not associated with any recorded homestead parcels (Hollinger 2001).

Based on survey and investigations at the cabin/structure site, it was determined that the site is not eligible for listing on the National Register. The presence of plastic fragments, modern bottle glass and a pull-tab can (dating only as early as 1962) indicate that the log feature is most likely not over 50 years old in age. Additionally, subsurface investigations revealed very little to no material; subsequent excavation of the structure remains would not contribute significantly to our understanding of cabin/storage use on Fort Richardson, and thus the feature does not qualify under National Register Criteria D. Previous research on the early homesteads of Fort Richardson indicates that this location is not a recorded homestead property, and is not

associated with the early homestead history of Fort Richardson/Elmendorf Field (Hollinger 2001). Similarly, as Shaw (2000) described in his assessment of military base ground defense sites, the continued use of the area for military training and activities have heavily impacted the original structural integrity of the structure remains and immediate surroundings. As a result, the site is not eligible for listing in the National Register.

#### Second log-framed feature

A second log-framed foundation, approximately 4m x 4m, was identified to the south of an

unnamed creek, immediately west of Bulldog Trail. The feature is comprised of a square, log frame or foundation, standing three logs in height. The location is generally flat, surrounded by birches, intermittent spruce, and low shrub vegetation. The location is a naturally clear area, in generally intermittent birch/spruce habitat encroaching on wetlands.

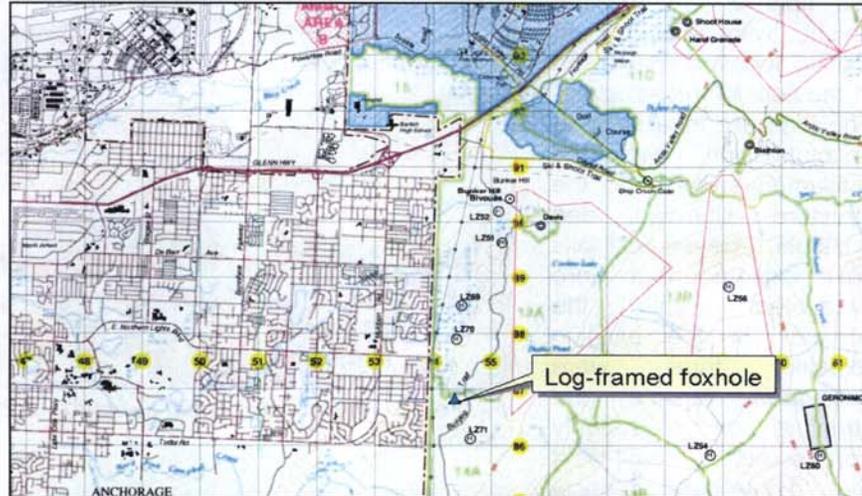


Figure 16. Location of second log-framed feature, Davis range.

Like the feature described above, the frame is also notched log construction, with very shallow notching made by an axe. No nails are evident as a securing measure, and the structure gives every appearance of being superficial and temporary, or abandoned while under construction. A large (approximately 1m x 2m) piece of plywood, with superficial machine-planned grooves on one side, lies on the ground in the northwestern section of the structure. An investigation of the surrounding area exhibited various small depressions that appear to be foxholes.



Figure 17. View of log-framed structure, heading west-northwest.

Four subsurface test pits were excavated: three within the structure and one outside the structure to the east, where a small depression was located. No material was recovered from any of

these investigations. Decaying logs that would be likely evidence of a roof or standing structure are absent. The ground enclosed within the frame is very flat, covered by vegetation and the large sheet of plywood.

Shaw (2000) identified a similar feature during survey for proposed railroad re-alignments on Fort Richardson (2000: 116-120; ANC-1177), and identified the feature as a 'crib-framed foxhole.' Although the structure identified by Shaw had a clear foxhole like depression enclosed by a frame of small logs, the superficial/temporary nature of the feature identified here appears to share similarities with that described by Shaw (2000: 116-120), and subsequently most likely falls under Shaw's assessment of 'Base-Ground Defense Sites' (2000; discussed above). Previous research indicates that this area was not a homestead property prior to the withdrawal of the land for use as Elmendorf Field and later Fort Richardson (Hollinger 2001). Given the lack of material recovered in investigations of the log feature, and the evidence of foxholes and disturbance from military training in the general locality, the frame was determined not eligible for listing in the National Register.

### Summary

Survey and sub-surface testing failed to identify any historic properties within the boundary of the proposed ISBC firing fan project area of potential effect. The project area has been heavily disturbed by previous military activities, evident in interspersed foxholes, bunkers, UXO, and military training debris found throughout the surveyed area. None of these features were determined eligible for the National Register criteria listed under 36 CFR 800. Additionally, two log-constructed features were identified and investigated, but were determined not eligible for listing on the National Register, based on the investigations and assessment detailed above.

## 2.3 Ship Creek Stream-bank Stabilization Project

The United States Army Garrison Alaska (USAG-AK) proposed a stream bank stabilization project to correct eroding north banks of Ship Creek west of the Glenn Highway on Fort Richardson, and improve habitat and stabilize the existing banks in six identified areas (see figures 18). Six proposed stream bank rehabilitation areas located along Ship creek, between the

Glenn Highway and the Fort Richardson fish hatchery, were identified for stabilization. As of June 2, 2003 only one restoration plan has been developed for Area 2; restoration plans for Areas 1 and 3-6 will be developed in the future as funding

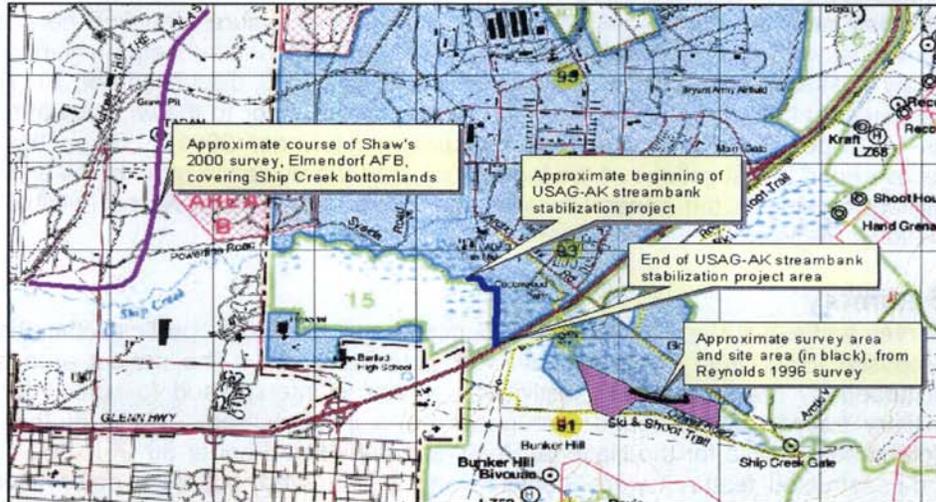


Figure 18. Location of project area, with previous survey work conducted identified (from Ft. Richardson installation special).

becomes available The proposal for Area 2 involves the construction of 5 stone Bendway weirs which will redirect the flow of water away from the eroding access road and water wells that are utilized by the fish hatchery. Overlapping rootwads will be placed between the Bendway weirs, in order to further secure the toe of slope. Coir logs, willow live staking and vegetative matting techniques will also be utilized to reestablish the vegetation growth up to the adjacent road.

### Background

Shaw's study (2000) of proposed railroad realignment sections included southern portions of the Ship Creek bottomlands, immediately adjacent to the Ft. Richardson boundary, on Elmendorf Air Force Base. A survey of the proposed right-of-way through the bottomland adjacent to Ship Creek's banks revealed no cultural material; Shaw did comment on a number of mature stands of cottonwood/birch/spruce, but observed no bark-stripped birches (2000: 30). Shaw also

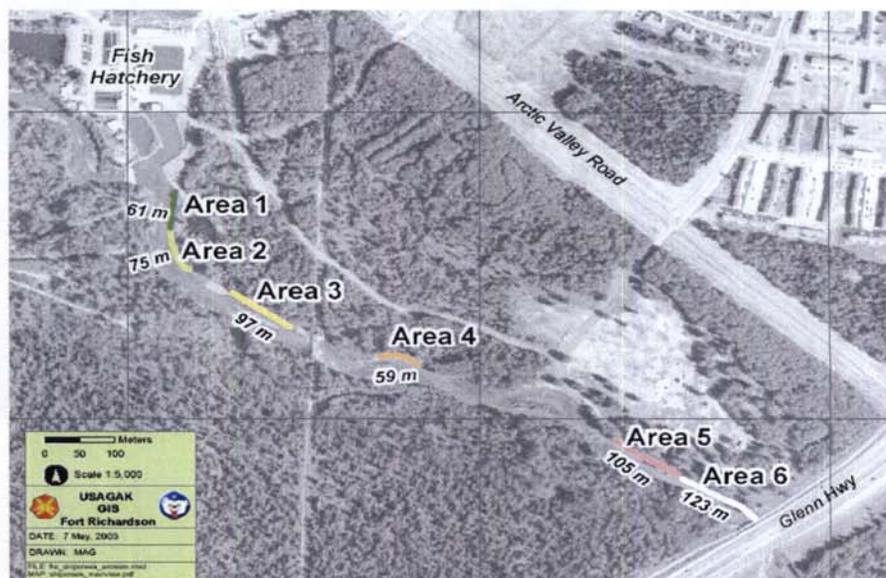


Figure 19. Aerial view of proposed project areas along Ship Creek.

commented on observed burn scars on mature cottonwood trees that could potentially be of cultural origin; however, he did not feel that these potential modifications are indicative of a particular or unusual activity, and thus did not consider the scarring significant. No further investigation was considered warranted (2000: 30).

Reynolds (1996) conducted a survey along Ship Creek to the east of the presently proposed project area, for construction of the Moose Run Golf Course. One site was identified, consisting of several features: a cut log, a system of trails (none of which could be identified specifically as fragments of the Iditarod trail), the remains of a cabin and root cellar, and a cache pit and two rectangular depressions. However, the site's integrity was considered severely eroded, and was not determined eligible for listing in the National Register of Historic Places (Reynolds 1996).

No historic properties or archaeological sites have previously been recorded within the proposed area of potential effect of the current Ship Creek stream bank stabilization project.

### Survey and Field Methods

A pedestrian survey of the six proposed stabilization areas was conducted on 20<sup>th</sup> and 21<sup>st</sup> of May, and again on the 09 June 2003. Transects were walked parallel to the stream banks on both the north and south sides of Ship Creek, west of the Glenn Highway crossing, and were walked in a meandering pattern to maximize coverage of potentially impacted areas. Due to reduced visibility from vegetative cover, opportunistic survey tactics were then employed, focusing on areas of good visibility, and where direct impacts are anticipated, i.e., immediately adjacent stream banks and along existing road/pathways where heavy equipment may impact outlying areas.



Figure 20. Area 2 example of proposed stabilization measures along Ship Creek banks.



Figure 21 Grooved stone observed out of context on construction/berm pile, southwest Ship Creek project area.

The project area shows evidence of heavy disturbance, evident in imported and re-deposited gravels/fill from construction of the adjacent road base on the north, and in the construction of park facilities on the northeast corner of the project area, near the Glenn Highway crossing. Additionally, heavy construction resulting from previous stabilization and placement of riprap in the southwest project area has disturbed existing ground contexts. Extensive erosion has also occurred, scouring and undercutting adjacent stream banks. Exposed stream banks were inspected for evidence of stratigraphy and cultural material; however, exposed banks exhibited heavy glacial deposits, with no evidence of cultural material observed. Soils are generally friable on the creek/wetland margins, with gravel inclusions.

During initial survey, one potential cultural item was observed in the southwest corner of the project area: a rounded river cobble exhibited a groove, circumscribing the upper half, not unlike a net sinker (figures 6 & 7). However, the cobble was observed resting on top of a berm constructed when riprap was placed along the stream bank, and lies in the midst of construction debris and redeposited rock/soil. The surrounding area was examined thoroughly for any evidence of intact soil contexts or cultural material, but none was observed.

Due to the importance of Ship Creek as a major fishing corridor and history of use as a focus of fish camps, several areas were investigated through shovel probing, to ensure full coverage of the proposed project areas. Shovel probes were placed in several areas where mature cottonwoods stand, where visibility is most restrictive, and where direct project impacts are anticipated. Beneath a duff layer of approximately 4-5 cm, soils are loamy, with dense gravel/cobble inclusions. All excavated soil was screened through ¼ inch hardware cloth. No cultural material was identified.

### **Summary**

No cultural material was observed during pedestrian survey and shovel probing. Disturbance in the area is extensive, resulting from road bed and park facility construction on the north bank of Ship Creek, and from previous placement of riprap and construction of a berm in the southwest project area, resulting in major disturbance to original soil deposition. Impacts from the proposed project should be minimal, consisting of heavy equipment use and ground disturbance from the installation of rootwads. As the proposed erosion control areas are within previously disturbed contexts (i.e., alongside the north bank of Ship Creek, where a road and park facilities have been previously constructed), any impacts to undisturbed ground will be minimal, and the project should have no effect on archaeological resources.

Additionally, some secondary impacts may occur to the southwest banks of Ship Creek near an existing dam and across from the Fort Richardson Fish Hatchery, where boulders may be replaced or removed. However, this area has undergone extensive previous disturbance, and a thorough surface examination of the area identified no intact deposits in the proposed project area. One object of potentially cultural origin was identified in this southwest area; however, the potential artifact was observed out of context atop a constructed berm, and an intensive examination of the surrounding area yielded no additional cultural material, or evidence of undisturbed ground contexts. Thus, the project will have no effect on archaeological resources. No historic properties were identified during the course of survey.

## 2.4 Municipal Light & Power Line Easement Project

In 2003, USAG-AK proposed to upgrade its infrastructure utility and reduce its operation and maintenance cost at Fort Richardson; as a result, new options have been explored to supply power to the post, involving the decentralization of heating by the installation of individual boilers at various buildings in place of the steam heat that is currently provided by the Fort Richardson Central Heat & Power Plant (CH&PP). Such an undertaking involves the purchase of commercial power from a local provider, ML&P.

Under the proposal, a redundant power line would be constructed along Steamline Road, with an easement established for ML&P's construction of the power line.

Additionally, ML&P will need to install three to four power poles to connect the existing line to the Fort Richardson Hatchery and the Fort Richardson substation. It has been proposed to construct the redundant power line (1.65 miles) along Steamline Road in the winter, when the ground is frozen, to minimize ground disturbance. The proposed project is illustrated in figures x.

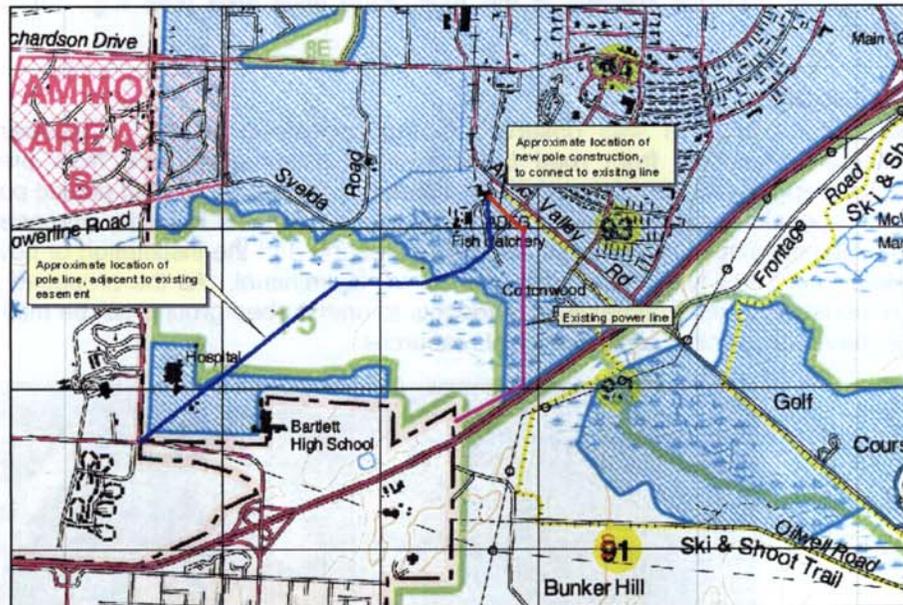


Figure 22. Location of project area (from Ft. Richardson installation

Similar to the Ship Creek stabilization project, previous surveys conducted near the project area have not identified any archaeological resources. Shaw's study (2000) of proposed railroad realignment sections included southern portions of the Ship Creek bottomlands, immediately adjacent (west) to the Ft. Richardson boundary, on Elmendorf Air Force Base. A survey of the proposed right-of-way through the bottomland adjacent to Ship Creek's banks revealed no cultural material; Shaw did comment on a number of mature stands of cottonwood/birch/spruce, but observed no bark-stripped birches (2000: 30). Shaw also commented on observed burn scars on mature cottonwood trees that could potentially be of cultural origin; however, he did not feel that these potential modifications are indicative of a particular or unusual activity, and thus did not consider the scarring significant. No further investigation was considered warranted (2000: 30)

No historic properties or archaeological sites have previously been recorded within the proposed area of potential effect of the current ML&P intertie project.

### Survey and Field Methods

A pedestrian survey of the project area was conducted on 30 June 2003. Transects were walked on the edge of the existing easement, to investigate areas where any secondary impacts may occur. Due to reduced visibility from vegetative cover, opportunistic survey tactics were then employed, focusing on areas of good visibility, and where direct impacts are anticipated, i.e.,

immediately adjacent to the existing road/pathways, and where heavy equipment may impact outlying areas.

The project area showed evidence of heavy disturbance, with an existing road that covers much of the area. Additionally, heavy construction resulting from previous development at the fish hatchery, along the banks of Ship Creek where road construction has occurred, and surrounding the existing substation and power line, is extensive. Additionally, the proposed easement crosses wetlands and flat areas, where the probability of site localities is extremely low, based on the findings of previous surveys in the Anchorage bowl area (see e.g., Shaw 2000; Steel 1978, 1980).

### Summary

No cultural material was observed during pedestrian survey. Disturbance in the area is extensive, resulting from road bed/easement construction, and from previous development surrounding the fish hatchery, existing substation, and existing road placed parallel to Ship Creek. Soil deposition has thus been heavily disturbed. Impacts from the proposed project should be minimal, consisting of hand-cut vegetative clearing and the installation of power poles during the winter months, when ground disturbance will be minimal. As the proposed project is located in previously disturbed contexts, any impacts to undisturbed ground will be minimal, and the project will have no effect on archaeological resources.

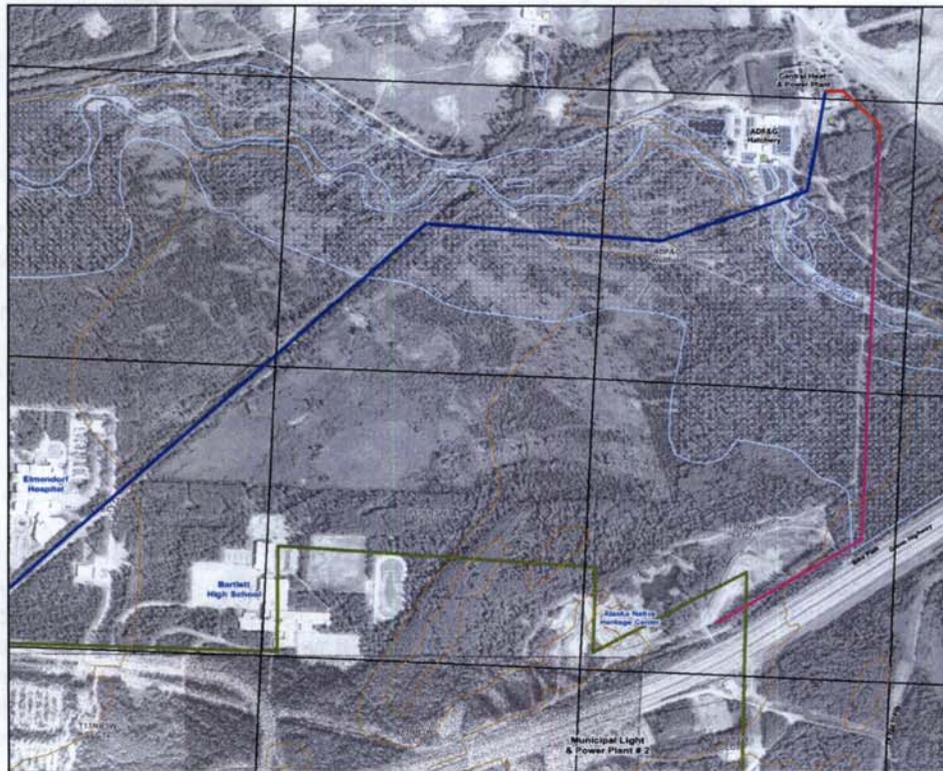


Figure 23. Aerial view of proposed project area.

### 3.0 Fort Wainwright (Including Donnelly Training Area)

#### Introduction

Similar to the archaeological research undertaken at Fort Richardson, the surface danger zone (firing fan) of the three range construction projects were the primary focus of archaeological work at Fort Wainwright's Yukon Training Area in 2003. These ranges included: an Infantry Platoon Battle Course (IPBC), located in the western portion of Fort Wainwright's Yukon Training Area, and an Infantry Squad Battle Course (ISBC), to the east of the IPBC, and a Multi-Purpose Training Range (MOUT), located in the southwestern portion of Yukon Training Area. Evaluations of historic properties within the surface danger zone have not been completed. Additional archaeological fieldwork included surveys for: Johnson Road Maneuver Corridor, ISBC MAC Training Site, Firebird Assault Strip Firing Point Site, Quarry Expansion, and a demolition range at Bravo Battery. No historic properties will be affected by any of these proposed projects.

At Donnelly Training Area, U.S. Army Alaska (USAG-AK) proposed four major range development projects which were the primary focus of survey during the 2003 field season. Additional survey and analysis was conducted at the Gravel Source, Access Roads, Stream Stabilizations and Bridges replacement.

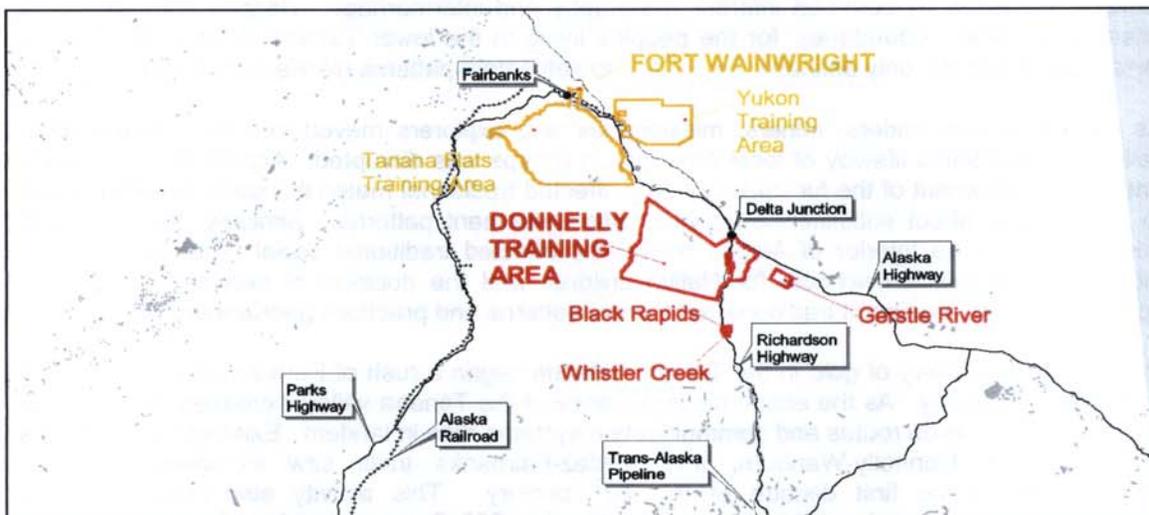


Figure 24. Location of Fort Wainwright, including Donnelly Training Area.

#### Setting

Fort Wainwright is located in central Alaska, north of the Alaska Range in the Tanana River Valley. The Post lies 120 miles south of the Arctic Circle near the cities of Fairbanks and North Pole in the Fairbanks North Star Borough. The installation consists of the Main Post, Tanana Flats Training Area, Yukon Training Area, Dyke Range, and Donnelly Training Area, which lies near Delta Junction, within the boundaries of former Fort Greely. The projects listed under Fort Wainwright are all located within the Yukon Training Area, approximately 20 miles southeast of Fairbanks (see figure 24).

Fort Wainwright has the northern continental climate of the Alaskan interior, characterized by short, moderate summers, long, cold winters, and little precipitation or humidity. Average monthly temperatures in Fairbanks range from  $-11.5^{\circ}\text{F}$  in January to  $61.5^{\circ}\text{F}$  in July, with an average annual temperature of  $26.3^{\circ}\text{F}$ . The record low temperature is  $-66^{\circ}\text{F}$ , and the record high is  $98^{\circ}\text{F}$ . Average annual precipitation is 10.4 inches, most of which falls as rain during summer

and early fall. Average annual snowfall is 67 inches, with a record high of 168 inches during the winter of 1970-71 (Natural Resources Branch 2002).

The weather of Donnelly Training Area is influenced by mountain ranges on three sides that form an effective barrier to the flow of warm, moist maritime air during most of the year. Surrounding upland areas tend to aid drainage and the settling of cold Arctic air into Tanana Valley lowlands (Natural Resources Branch 2001). Average monthly temperatures range from -6.4°F in January to 60.0°F in July, with an average annual temperature of 27.4°F. The record low temperature is -63°F, and the record high is 92°F. Average annual precipitation is 11.12 inches, which falls over 90.4 days, mostly during summer and early fall. Average annual snowfall is 40.5 inches, with a record 99.7 inches in 1945 (27 years of AMT data) (Natural Resources Branch 2001).

## **Background**

Fort Wainwright training lands fall within an area occupied at the time of Euro-American contact by Lower-Middle Tanana Athapaskans, including 'bands' described generally as the Salcha, Big Delta-Goodpaster, Wood River and Chena Bands (McKenna 1981:564; Andrews 1975; 177; Mishler 1986). Traditional settlement patterns were focused on a widely mobile seasonal round, with the fall caribou hunt playing a pivotal role in subsistence preparations for the winter, while summer activities were focused at fish camps, and in berry/root collecting and sheep hunting (McKenna 1981: 565). These activities were frequently a communal focus, with several local 'bands' connected by common interest, geography and intermarriage. Despite anthropological attempts to define 'boundaries' for the peoples living in the lower Tanana River valley, natural terrain served as the only definable 'boundary' to settlement patterns (McKenna 1981).

As Euro-American traders, miners, missionaries and explorers moved into the Tanana River valley, the traditional lifeway of local Athapaskan groups was disrupted. Access to trade goods and the development of the fur trade not only affected traditional material culture, but also began to dramatically affect subsistence activities and settlement patterns. Similarly, the advent of missionaries in the Interior of Alaska profoundly affected traditional social organization. The introduction of mission schools for Native children and the doctrine of new religious beliefs contributed to an erosion of traditional settlement patterns and practices (McKenna 1981).

In 1898, the discovery of gold in the Tanana uplands began a rush of Euro-American settlement to the Tanana valley. As the economic importance of the Tanana valley increased, the need for reliable transportation routes and communication systems rose in tandem. Existing trails, such as the Bonnifield, Donnelly-Wahburn, and Valdez-Fairbanks trails saw increased use and development in the first decade of the 20<sup>th</sup> century. This activity also resulted in the establishment of several roadhouses and posts. In 1906 Congressional appropriations led to improvement of the Valdez-Fairbanks trail, crossing the Alaska Range south of Delta Junction, following the Tanana River to Fairbanks. Completion of the Alaska Railroad in 1923 was followed 20 years later by construction of the Alaska Highway in 1942, firmly tying the Alaskan interior to the outside.

As Fairbanks grew in the first decade of the 20<sup>th</sup> century, several agricultural homesteads were developed on lands now encompassed by sections of the Fort Wainwright cantonment. These homesteads provided Fairbanks with a variety of agricultural products and wood for fuel, but were subsumed when lands were withdrawn for the creation of Ladd Field, which later became Fort Wainwright (Price 2002).

Development in the Alaskan interior increased dramatically with the advent of World War II and subsequent military build-up in Alaska. Of particular significance was the development of airfields near Delta Junction (Fort Greely), Fairbanks (Ladd Field, later Fort Wainwright), and 26 miles southeast of Fairbanks (Eielson Air Force Base). These locations began as lend-lease bases and cold weather testing centers, but soon expanded with the increased need for military support during World War II and later Cold War.

## **Archaeology**

Archaeological research on Fort Wainwright's training areas has resulted in numerous technical reports (Bacon 1978; Bacon and Holmes 1979; Dixon et al. 1980; Frizzera 1973; Higgs et al. 1999; Holmes 1979; Potter et al. 2000; Rabich & Reger 1978; Staley 1993), scientific papers (Holmes and Anderson 1986; West 1967; 1975), and the identification of at least 155 archaeological sites. Work on Fort Wainwright has been largely stratified sampling in nature, resulting at times in as little as 1% of the survey universe being inventoried. This work has largely focused on known recorded sites and areas thought to be of very highest potential for containing archaeological sites. Areas of less than ideal site potential have often been neglected, and sites that may be eligible for nomination to the NRHP have been incompletely documented or left unevaluated. Thus, while a large number of important sites have been identified on Fort Wainwright, a number of important gaps exist in the cultural resource inventory.

Despite its incomplete nature, the current archaeological record represents all of the recognized prehistoric cultures of the Alaskan interior. Of particular significance is the role played by archaeological resources located on Army lands in the definition of the Denali Complex of the American Paleoarctic Tradition (Anderson 1970; West 1967; 1981). Though not located on Army lands, two of the oldest well-dated sites in North America—Swan Point and Broken Mammoth, dated to between 11,500 and 12,000 BP—are located just to the north of Donnelly Training Area East (formerly known as Fort Greely, near Delta Junction), in the vicinity of Shaw Creek (Holmes 1996, 1998; Holmes et al. 1996; Yesner et al. 1999). Sites reflecting the influence of what has been termed Northern Archaic (e.g. Anderson 1968; Workman 1978), dating to perhaps 6000 to 2000 BP, are also present on Fort Wainwright training lands, as are late prehistoric Athapaskan (e.g. Andrews 1975; 1987; Cook 1989, Mishler 1986; Sheppard et al. 1991; Shinkwin 1979; Yarborough 1978) and Euro-American historic archaeological sites (Gamza 1995; Phillips 1984). The significance of these known sites on Army Withdrawal Lands is attested to by the fact that despite nearly 50 of these sites remain to be evaluated, 27 individual sites and 2 archaeological districts have been determined eligible for listing in the National Register of Historic Places (NRHP), while a third archaeological district remains to be evaluated.

Specific to Fort Wainwright's Yukon Training Area (YTA), previous work has identified archaeological deposits in the small rises of Tanana Flats and those bordering the Tanana and Chena Floodplain. In contrast, small lithic scatters have been sparsely documented throughout the Yukon Training Area's 250,000 acres (Holmes 1980). A possible explanation for this discrepancy is that sites have been destroyed by military activity in high probability locations (i.e. along ridgelines and on hilltops). It is also possible that this lack of sites may reflect the low-intensity use of this rugged terrain. It is probable that human activity focused in areas near the Tanana, Salcha, Chena, and Wood rivers, relying on access to high country further upstream, rather than traveling overland through the hills of YTA.

## **Historic Resources**

Historic research dealing with Fort Wainwright includes recent historic context studies that deal with homesteading (Price 2002), early mining (Neely 2001), and early transportation on Fort Wainwright (Burr Neely 2003). Although mining was perhaps the most important economic endeavor of the late 19<sup>th</sup> century and early 20<sup>th</sup> century in the Fort Wainwright area, only three archaeological sites associated with mining have been recorded on Army managed lands in Alaska (Burr Neely 2001:37). Several early transportation routes, roadhouses, and other structures associated with travel are known to exist in the vicinity of Fort Wainwright and Donnelly Training area, including the Donnelly-Washburn Bonfield trails, for example (Burr Neely 2003). Military construction and training activities have also resulted in several potential site types, including downed aircraft, fighting positions, and training and target debris. The majority of these military survival tactics are difficult to assign

to a specific context, and have often been consistently used for military training exercises; such sites have thus been determined ineligible for listing in the National Register of Historic Places (see above; Shaw 2000).

### 3.1 Surface Danger Zone for the Multi-Purpose Training Range (MPTR), the Infantry Platoon Battle Course (IPBC), and the Infantry Squad Battle Course (ISBC) Training Ranges

The U.S. Army Garrison Alaska is constructing three ranges within Fort Wainwright's Yukon Training Area; a multi-purpose training range (MPTR) an Infantry Platoon Battle Course (IPBC) and an Infantry Squad Battle Course (ISBC). These training ranges will have a combined Surface Danger Zone (SDZ) of approximately 3137 acres. A surface danger zone is defined as "that segment of the range area which is endangered by a particular type of weapon firing" (tecom). The SDZ which encompasses the training ranges is located east of Eielson Air Force Base in Fort Wainwright's Yukon Training Area (figure).

The information provided in this paragraph is a review of the three training ranges that are currently being constructed. The first range, the multi-purpose training range (MPTR), would entail construction of a control tower, an after-action-review building, warm-up facility, ammunition break-down facility, vehicle maintenance facility, vehicle holding area, gravel training roads, targets, arctic latrines, and utilities. The second range the Infantry Squad Battle Course (ISBC) would include a breach facility, an urban assault course, and a shoot house. Weapons fired on this course would use small arms, non-duded ammunition, with small explosive charges used at the breach facility. The third the Infantry Platoon Battle Course (IPBC) is a larger-scale course

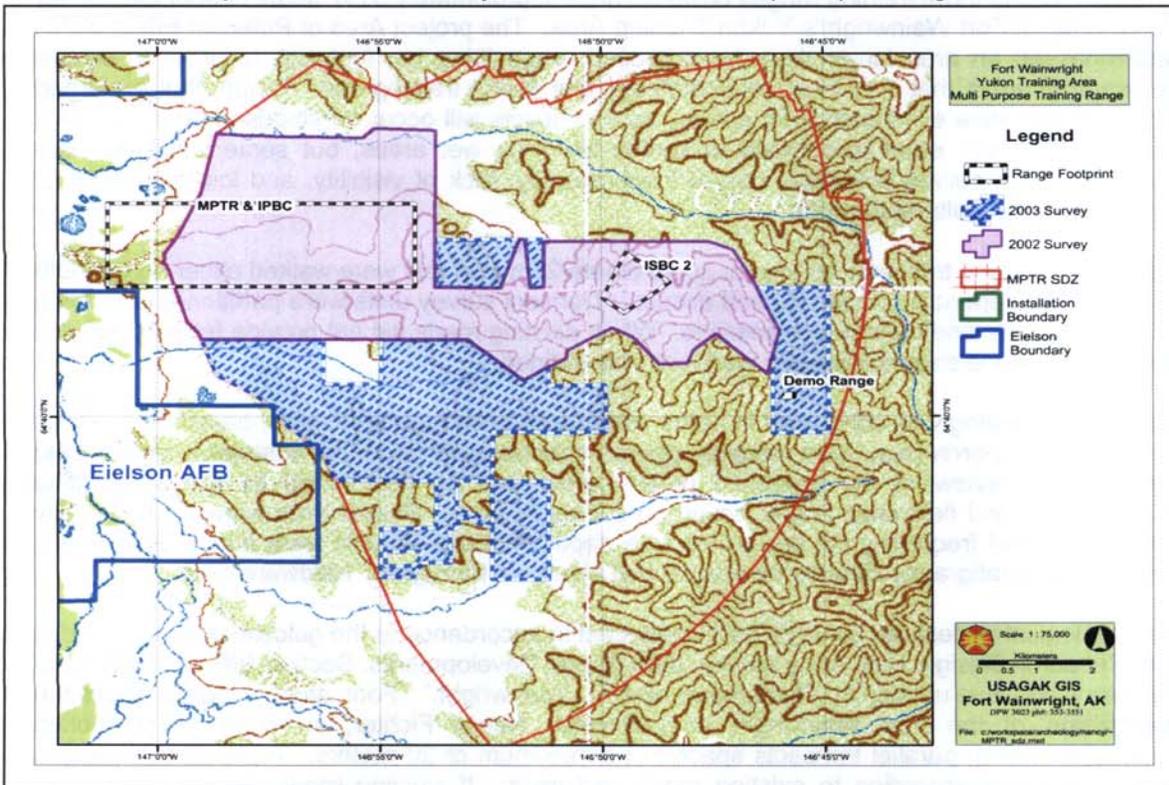


Figure 27 Completed archaeology surveys of the surface danger zone, purple represents 2002 surveys and blue represents 2003 surveys.

designed for combat realism and larger unit (platoon) training. Weapons fired on this course would be the same as those on the Infantry Squad Battle Course. The ISBC and the IPBC would include an after-action review facility to allow the control, monitoring, and reviewing of simulations and training operations. Supporting facilities for both courses would also include communications, electric service, an ammunition breakdown facility, control tower, warm-up facility, crushed aggregate access roads and parking areas, and self-contained dry-flush, arctic latrines.

Several known prehistoric archeological sites are located within the proposed Surface Danger Zone: FAI-157, XBD-095, and XBD-104. Site XBD-105 is located approximately one kilometer north of the SDZ. In 2002, sites XBD-157 and XBD-104 were re located but no additional cultural material was identified. In 2003, reconnaissance efforts to relocate site XBD-095 were unsuccessful.

## **Survey and Field Methods**

The immediate footprints of the ranges were surveyed in 2002. SHPO concurred with the findings of No Historic Properties Affected<sup>1</sup>. A partial section 106 (NHPA) review of the surface danger zone was conducted in 2003 and is expected to be completed in 2004. An archaeological survey crew of four archaeologists employed by the Center for Environmental Management of Military Lands (CEMML) conducted a pedestrian survey of the proposed Surface Danger Zone, under the supervision of Fort Wainwright archaeologist, Nancy Fichter. Pedestrian surveys were carried out in accordance to the guidelines established in the "Research Design: U.S. Army Alaska 2003 Range Developments, Section 106 Archaeological Inventory and Evaluation, Ft. Richardson and Ft. Wainwright." This research design was submitted to SHPO for review and comment, as required by 36 CFR 800, in March 2003.

The SDZ for the three training ranges cover an area approximately 3137 acres east of Eielson Air Force Base in Fort Wainwright's Yukon Training Area. The project Area of Potential Effect (APE) encompassed an area larger than the proposed range firing fan footprint, in order to ensure coverage of areas that may incur secondary impacts during training use. Terrain that exceeded slopes of 40° were eliminated from survey, as no impacts will occur on slopes greater than 30°. Additionally, every effort was made to survey low-lying wet areas, but some wetlands were eliminated from survey coverage, due to inaccessibility, lack of visibility, and low probability of containing intact cultural deposits.

Parallel pedestrian transects spaced at approximate 20m intervals were walked either north-south or east-west, depending on terrain and access. Transect survey units were partitioned according to existing roads and trails where possible. When existing roads did not provide for practical unit boundaries, a one square kilometer work unit was defined.

Sub-surface testing was conducted in areas considered to be high probability, based on previous survey and research (e.g., lake margins, glacial moraines and ridges, river/stream confluences) during initial review of the proposed project area, and as determined by the supervising archaeologist and field crew leader based on survey findings. Shovel tests were approximately 40 x 40cm, and frequently did not go below a depth of 70cm. Levels were dug at 7cm levels, unless clear stratigraphy dictated otherwise, and screened through ¼" hardware cloth.

Archaeological pedestrian surveys were conducted in accordance to the guidelines established in the "Research Design: U.S. Army Alaska 2003 Range Developments, Section 106 Archaeological Inventory and Evaluation, Ft. Richardson and Ft. Wainwright." Four archaeologists under the supervision of the Fort Wainwright archaeologist, Nancy Fichter, surveyed the proposed undertaking using parallel transects spaced at a maximum of 20 meters. Transect survey units were partitioned according to existing roads and trails. If existing roads did not provide for practical unit boundaries, a one square kilometer work unit was defined. During initial review of the proposed project area, high probability areas (e.g., lake margins, ridges, benches adjacent to steeper slopes) were identified for systematic sub-surface testing. Shovel tests were approximately 50 x 50cm, and screened through ¼" hardware cloth.

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<sup>1</sup> MPTR finding of No Historic Properties Effected submitted to SHPO July 10, 2002 with SHPO concurrence received July 30, 2002. ISBC and IPBC finding of No Historic Properties Effected submitted to SHPO December 10, 2002 with SHPO concurrence received January 14, 2003.

## Findings

### Unidentified Iron Cylinder

This iron cylindrical object was identified ½ kilometer from Bravo Battery, 100 feet from Quarry Road, and at an elevation of 1750 feet. It is approximately 10 feet in length and two feet wide. The object is hollow, completely sealed at both ends except for identical threaded fittings with a 3.14in circumference located at each end. Alders surrounding the object dates to 23-30 years old. Attempts to identify this cylinder have been unsuccessful to date.



Figure 26a Unidentified iron cylinder



Figure 26 b threaded fitting of unidentified iron cylinder

### Stout House

The vestige of a WWII stout house was identified north of Quarry road about ¾ kilometers off an established ATV trail. This stout house is a 2x4 wooden construction with diagonal sheathing and remnants of 1.5 lb felt tar paper covering on the NE, SW, and SE exterior walls. The NW wall is 90% covered with tar paper. The floor is 1x 3 ½" tongue-in-groove hardwood. The ceiling finish is 1x 5 ¼" – 5 ½" tongue-in-groove. The interior walls have fiberboard covering. The building is insulated with 'aluminum foil insulation blanket type II double layer' (manufacturer's tag). The northeast interior wall is lined with plywood cubby holes with names penciled on the framing. There are six square window openings that measure 40" X 40", two on the NE and SW walls, and one on the SE and NW walls. The windows were single sash with some glazing still present. The building originally had a gabled roof that is now collapse. It is partially covered with hardware cloth. Two breaker boxes; 140 amp fuses and 125 amp fuses were still attached to the SE wall. The electrical lines leading to the two fuse boxes are cloth covered wire cord. The structure rests on skids and was probably transported to the site. The surrounding area in which the stout house is located was evidently cleared at one time, but has since overgrown with alders, raspberry bushes, and various grasses. Two gallon drums labeled 'dry cleaning solvent', located on the outside of the northeast wall have been modified for use as a oil fuel tank possibly for a stove that is now gone.

The United States army had an enormous task of adequately housing over 6 million troops by November 1944. 95 percent of the troops were housed in temporary buildings. Temporary structures were meant to last 5 to 20 years and were designed to be both economic and efficient. They used building technologies and materials, such as plywood, hardboard, and sheetrock that were not widely used until after WWII. Temporary buildings were designed with five basic principles; speed, simplicity, conservation of materials, flexibility, and safety (U of Utah).

Stout houses were considered temporary structures, built during the early mobilization of WWII (Goodwin 1997). "[A stout house is] a simple 12' by 16' hut, built of prefabricated wood composition panels. It was box-like in design and required little construction effort; had the additional advantage in that it could be transported by air" (Blue collection)



Figure 27 a Stout house



Figure 27 b Collapsed roof of Stout house



Figure 28 a oil fuel tank near Stout house



Figure 28 b Cubbyholes inside Stout house

### **Military Survival Tactics**

A number of historic structures and buildings that pre-date or are related to World War II and Cold War era Army activities are located on or near Army lands (see e.g., Hollinger 2001; Shaw 2000). On Fort Wainwright, evidence of previous military survival tactics were identified throughout the proposed training project areas. Moderate disturbance from bunkers, foxholes and UXO (unexploded ammunitions) were observed during survey. Although there is a possibility that some of these features may date to training undertaken during World War II and the immediate post-war period, none of these features can be clearly assigned to a specific date. These sites

'have ... lost ... aspects of integrity regarding design, setting, materials, workmanship, feeling and association over the years by neglect and/or direct actions resulting from operating a military base with changing physical requirements associated with execution of the primary mission. Such actions range among planned demolition of buildings judged to be excess property, inadvertent destruction of structures during new uses of the land such as for gravel pits, construction of new facilities which intrude into and radically change the site setting that existed during WWII, and direct efforts to "clean up" the sites when use stopped' (Shaw 2000: 16).

Survivability tactics are crucial to all branches of the armed forces. Their purpose includes protecting personnel, weapons, and supplies while deceiving the enemy. Survival doctrine considers the when, where, and how fighting and protective situations are prepared.

"Available survivability tactics include building a good defense; employing frequent movement; using concealment, deception, and camouflage; and constructing fighting and protective positions for both individuals and equipment. The worth of survivability positions has been proven throughout history. Protective construction in the form of fighting and protective positions by itself cannot eliminate vulnerability on the modern battlefield. It can, however, limit personnel and equipment losses by reducing exposure to threat..." (Department of Army, 1985)

Examples of these military survival tactics (figures 29-31 ) that were identified during survey are a perimeter bunker and deliberate positions, such as one man fighting positions (fox holes):

### **Perimeter Bunker**

The structure stands at 9 feet tall and 7feet wide and is constructed of milled lumber with modern nails. There is a ladder resting on one side that would have allowed access to a once existing platform. The construction of cross-supported beams, fortifies the structure, which would allow for continual or heavy usage (Berta personal communication). It is located a 100m from Quarry Road on an old over grown road that is approximately 5m wide and 3m deep.



Figure 29a Perimeter bunker



Figure 29 b Ladder of Perimeter bunker

Bunkers are characteristically "larger fighting positions built for squad-size units who are required to remain in defensive positions for a longer period of time" (Survivability 1985: 29). Typically perimeter bunkers are made from plywood and are used for above ground protective security positions. The construction would have included a semi-enclosed bunker that rested atop the support beams. The structure identified in the field is only the support beams; the bunker portion of the structure is missing.

No cultural materials were identified or recovered during field inventory.

### **Deliberate Fighting Positions**

"Deliberate fighting positions are modified hasty positions<sup>2</sup> prepared during periods of relaxed enemy pressure." (Survivability, 1985: 5) One man fighting positions, also known as foxholes, were the most common deliberate position identified during field survey. Most measured 5' to 6' in length, 2' in width, and 1'-2' feet in depth and were associated with areas impacted by military training.

<sup>2</sup> "When time and materials are limited, troops in contact with the enemy use a hasty fighting position located behind whatever cover are available. It should provide frontal protection from direct fire while allowing fire to the front and oblique". (Survivability, 1985:3)



*Figure 30 one man fighting position with a low parapet made of stones*



*Figure 31 one man fighting position with a low parapet made of soil*

### **Summary**

Survey and sub-surface testing failed to identify any cultural resources within the boundaries of the proposed project's area of potential effect. The area of potential affect received 100% survey coverage. The project area has been heavily disturbed by previous military activities, evident in interspersed foxholes, bunkers, UXO, and military training debris found throughout the surveyed area.

### 3.2 Demolition Range Project

United States Army Garrison Alaska (USG-AK) proposed a Demolition Range to be sited on the south side of Quarry Road neighboring Bravo Battery in the Yukon Training Area. This range measures approximately 153 meters by 214 meters and will be used primarily for C4 munitions (one pound plastic blocks) and a variety of explosives used with in the military system.

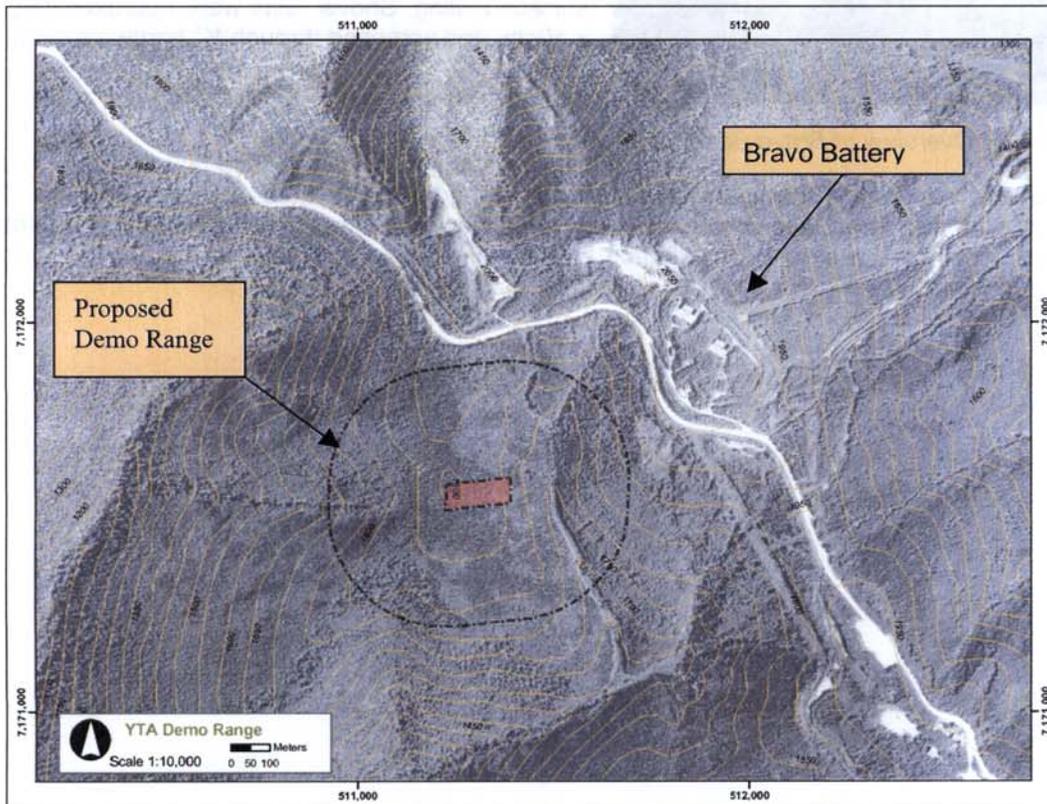


Figure 32 Photo Image of Bravo Battery and Demo Range Construction Proposal

#### Survey and Field methods

There is one known prehistoric archeological site (XBD-095) located within the general vicinity of this project's APE. Reconnaissance efforts from the 2002 and 2003 archaeological crews failed to relocate the site.

Archaeological pedestrian surveys were conducted in accordance to the guidelines established in the "Research Design: U.S. Army Alaska 2003 Range Developments, Section 106 Archaeological Inventory and Evaluation, Ft. Richardson and Ft. Wainwright." In July 2003, four archaeologists surveyed the proposed undertaking using parallel transects spaced at a maximum of 20 meters.



Figure 33 View of Bravo Battery looking North – Showing Preexisting Disturbance



*Figure 34 Overview of Bravo Battery.*

Transect survey units were partitioned according to existing roads and trails. If existing roads did not provide for practical unit boundaries, a one square kilometer work unit was defined. During initial review of the proposed project area, high probability areas (e.g., lake margins, ridges, benches adjacent to steeper slopes) were identified for systematic sub-surface testing. Shovel tests were approximately 50 x 50cm, and screened through ¼" hardware cloth.

### **Summary**

Survey and sub-surface testing failed to identify any cultural resources within the boundaries of the proposed project's area of potential effect. The area of potential affect received 100% survey coverage. The probability of locating intact archaeological sites was low. Disturbance in the project area was substantial due to previous military training and vehicular access.

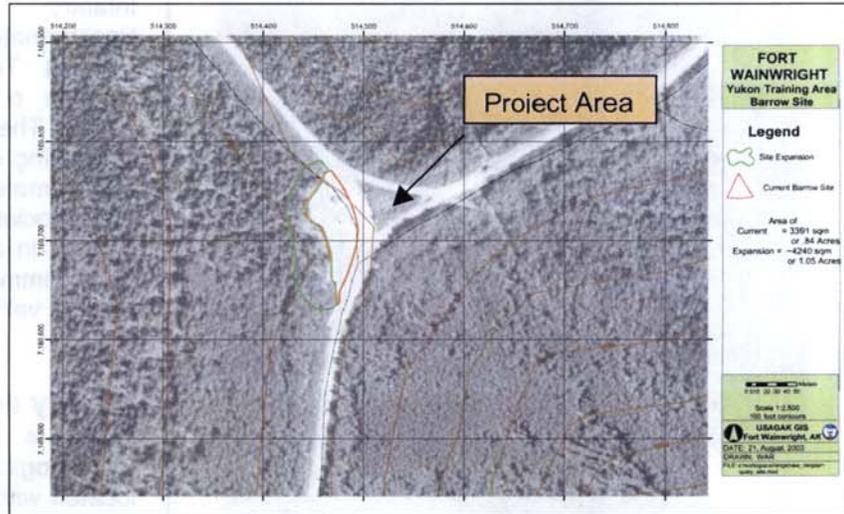
### 3.3 Barrow Pit Expansion Project

The United States Army Garrison Alaska proposed to enlarge an existing barrow pit located at the junction of Skyline and Quarry Road in the Yukon Training Area (YTA) at Fort Wainwright. The footprint of the barrow pit will be expanded to support the upgrade of Johnson Road and the development of firing points in the YTA. An estimated 100,000 cubic yards of material will be needed to support these projects.

#### Survey and Field methods

Archaeological pedestrian surveys were conducted in accordance to the guidelines established in the "Research Design: U.S. Army Alaska 2003 Range Developments, Section 106 Archaeological Inventory and Evaluation, Ft. Richardson and Ft. Wainwright." In August 2003, two

archaeologists surveyed the proposed undertaking using parallel transects spaced at a maximum of 20 meters. Transect survey units were partitioned according to existing roads and trails. If existing roads did not provide for practical unit boundaries, a one square kilometer work unit was defined. During initial review of the proposed project area, high probability areas (e.g., lake margins, ridges, benches adjacent to steeper slopes) were identified for systematic sub-surface testing. Shovel tests were approximately 50 x 50cm, and screened through ¼" hardware cloth.



#### Summary

Survey and sub-surface testing failed to identify any cultural resources within the boundaries of the proposed project's area of potential effect. The area of potential affect received 100% survey coverage.



Figure 36 Barrow Pit: Aerial photograph of project area



Figure 37 barrow pit: view of project area

### 3.4 Firebird Assault Strip, Firing Point Project

The United States Army Garrison Alaska proposed to construct a firing point in an area previously used as an artillery firing point and bivouac area, sited on the east side of Johnson Road adjacent to the Firebird Assault Strip/Drop Zone in the Yukon Training Area at Fort Wainwright



Figure 38 Firebird Firing Point Site: Area of Potential Effect

Richardson and Ft. Wainwright." In August 2003, four archaeologists surveyed the proposed undertaking using parallel transects spaced at a maximum of 20 meters. Transect survey units were partitioned according to existing roads and trails. If existing roads did not provide for practical unit boundaries, a one square kilometer work unit was defined. During initial review of the proposed project area, high probability areas (e.g., lake margins, ridges, benches adjacent to steeper slopes) were identified for systematic sub-surface testing. Shovel tests were approximately 50 x 50cm, and screened through ¼" hardware cloth.

#### Summary

Survey and sub-surface testing failed to identify any cultural resources within the boundaries of the proposed project's area of potential effect. The area of potential affect received 100% survey coverage.

The construction of the firing point is to support the 172<sup>nd</sup> Separate Infantry Brigade (SIB) transformation to a Stryker Brigade Combat Team (SBCT) and the addition of the 155 mm artillery pieces. The undertaking will consist of leveling off and hardening a pad approximately 300 x 100 meters. An associated bivouac area will be created in conjunction with the pad to accommodate up to 10 battery support vehicles.

#### Survey and Field Methods

There is one known prehistoric archeological site (XBD-095) located within the general vicinity of this project's APE. Reconnaissance efforts from the 2002 and 2003 archaeological crews failed to relocate the site.

Archaeological pedestrian surveys were conducted in accordance to the guidelines established in the "Research Design: U.S. Army Alaska 2003 Range Developments, Section 106 Archaeological Inventory and Evaluation, Ft.



Figure 39 Firebird Firing Point: Aerial photograph of project area.

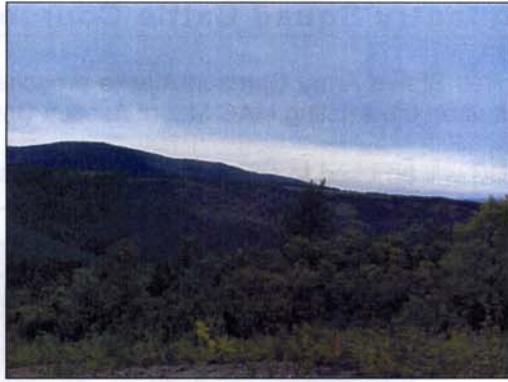


Figure 40 Firebird Firing Point: view from Quarry Road



### 3.5 Infantry Squad Battle Course (ISBC)

The United States Army Garrison Alaska proposes to construct an Infantry Squad Battle Course to be sited on the existing MAC Mount Assault Course, located south of Brigadier Road.

The ISBC will be used to conduct basis offense and defense mission oriented training exercises.

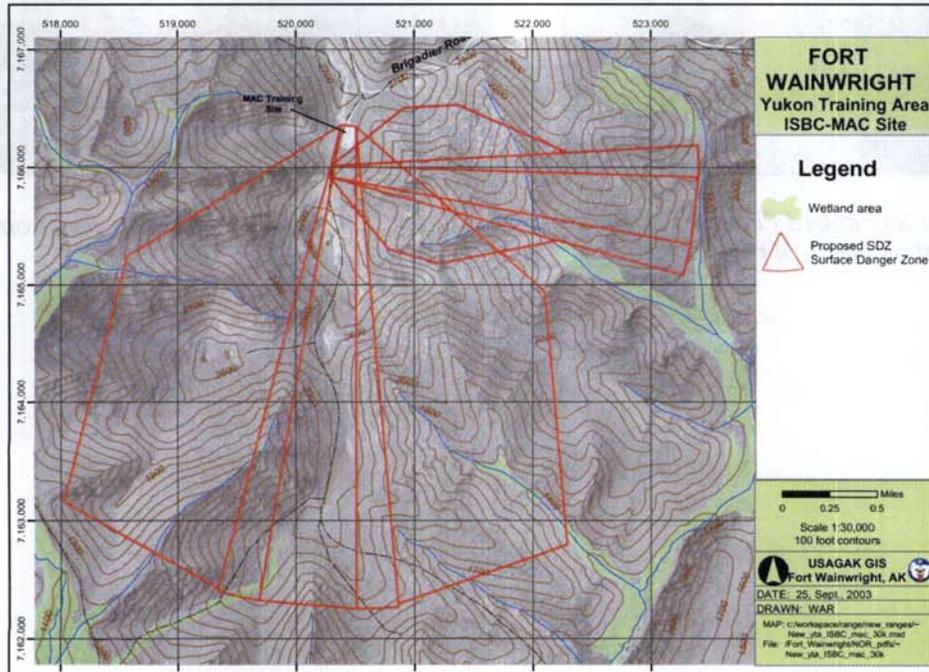


Figure 41 ISBC MAC Training Site: Area of Potential Effect

Weapons fired on this course will be small arms ammunition (e.g. 9mm tracer (AT4 sub-caliber), 5.56mm (M-16), 7.62mm (M-60 machine gun), 40mm training practice round – orange smoke (M-203)) using non-duded ammunition.

#### Survey and Field Methods

Archaeological pedestrian surveys were conducted in accordance with the guidelines established in the "Research Design: U.S. Army Alaska 2003 Range Developments, Section 106 Archaeological Inventory and Evaluation, Ft. Richardson and Ft. Wainwright." In July and September 2003, four archaeologists surveyed the proposed undertaking using parallel transects spaced at a maximum of 20 meters. Transect survey units were partitioned according to existing roads and trails. If existing roads did not provide for practical unit boundaries, a one square kilometer work unit was



Figure 42 ISBC MAC Training Site from Johnson Road

defined. During initial review of the proposed project area, high probability areas (e.g., lake margins, ridges, benches adjacent to steeper slopes) were identified for systematic sub-surface testing. Shovel tests were approximately 50 x 50cm, and screened through ¼" hardware cloth.



Figure 43 ISBC MAC Training Site: Shovel Test Area

### Summary

Survey and sub-surface testing failed to identify any cultural resources within the boundaries of the proposed project's area of potential effect. The area of potential affect received 100% survey coverage.

### 3.6 Maneuver Corridor Test Site

United States Army Garrison Alaska proposes to establish a Maneuver Corridor test site to examine the effects of different landscape treatments near Charlie Battery in Fort Wainwright's Yukon Training Area. The information obtained from these tests will be used to create military training areas where vehicles may operate off established road systems. The primary vehicle considered in these tests is the Stryker, which is a light armored, wheeled vehicle approximately nine feet wide. Removal of trees via a combination of hand thinning and hydro-axing of the area will be employed to create the test site.

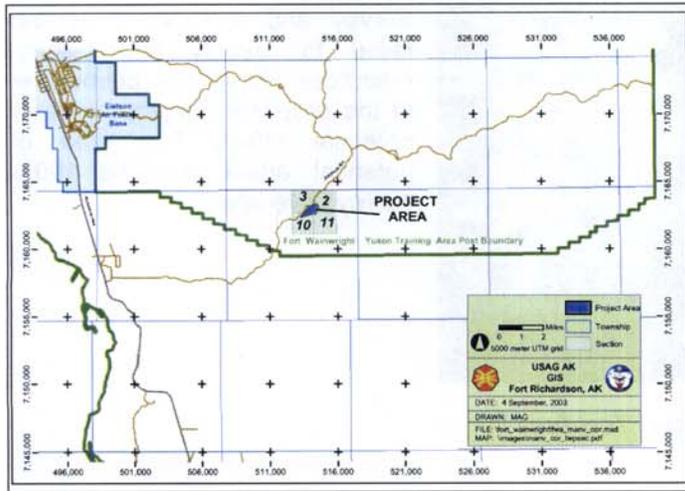


Figure 44 Maneuver Corridor Project Area

#### Survey and Field Methods

Archaeological pedestrian surveys were conducted in accordance to the guidelines established in the "Research Design: U.S. Army Alaska 2003 Range Developments, Section 106 Archaeological Inventory and Evaluation, Ft. Richardson and Ft. Wainwright." In June 2003, four archaeologists surveyed the proposed undertaking using parallel transects spaced at a maximum of 20 meters. Transect survey units were partitioned according to existing roads and

trails. If existing roads did not provide for practical unit boundaries, a one square kilometer work unit was defined. During initial review of the proposed project area, high probability areas (e.g., lake margins, ridges, benches adjacent to steeper slopes) were identified for systematic sub-surface testing. Shovel tests were approximately 50 x 50cm, and screened through ¼" hardware cloth.



Figure 45 Maneuver Corridor Project: Close up View of Surveyed Area



Figure 46 Southwest view (230°) Maneuver Corridor Project Area

**Summary**

Survey and sub-surface testing failed to identify any cultural resources within the boundaries of the proposed project's area of potential effect. The area of potential affect received 100% survey coverage.

## 4.0 Donnelly Training Area

### Introduction

U.S. Army Alaska (USAG-AK) has proposed four major range development projects, as well as several smaller projects on lands at Ft. Wainwright's Donnelly Training Area. The major range development projects include, a Landscape-scale Fire Mitigation Project (firebreak), Unmanned Aerial Vehicle launch and recovery site (UAV landing strip), Cold Weather/ Automotive Test Complex (CRTC racetrack), and the Battle Area Complex (BAX footprints and firing fans). Smaller projects include Gravel Source, Access Roads, Stream Stabilizations and Bridges replacement. An archaeological survey of the proposed projects was conducted in May, June, July, August and September of 2003. A total of 105 archaeological sites were identified and recorded in the areas surveyed during the 2003 summer field season. Only one of these sites fell within the proposed construction footprint, and was subsequently evaluated for eligibility to the National Register of Historic Places, pursuant to 36 CFR 800.

**Table 1. Acreage of proposed range development projects**

PROJECTS	TO BE SURVEYED	SURVEYED	COMPLETED	SITES FOUND
UAV Landing Strip	988.4	988.4	100%	6
CRTC Test Track	5930.4	5930.4	100%	16
BAX Footprint Eddy DZ	3459.4	3459.4	100%	0
BAX Firing Fan Eddy DZ	22239	17914.5	81%	70
Fire Break Phase 1	494.2	481.18	98%	1
Fire Break Phase 3 (2005)	2223.9	679.52	28%	8
Other Small Projects	988.4	988.4	100%	0
Additional area surveyed	2841.6	2841.6	100%	4
<b>TOTAL</b>	<b>39165.3</b>	<b>33283.4</b>		<b>105</b>

Landscape-scale Fire Mitigation Project is located on the east of Buffalo drop Zone and in north of Eddy Drop Zone. Nine new archaeological sites were located in the area of the Fire Break during the course of survey in 2003. One site was located within the proposed for the Phase 1 of the Fire Brake. No ground disturbance occurred at the archeological site, only hand thinning of vegetation next to the site. A staff archaeologist monitored the hand thinning which occurred around the site.

Aerial Vehicle launch and recovery site is located between the Old Richardson Highway and the Delta River, and north of Windy Ridge Road. Six new archaeological sites were located in BAX Area B during the course of survey in 2003. In addition to the six new archaeological sites recorded, two previously recorded sites (XMH-267 and XMH-268) were relocated during the course of survey in 2003. However, no sites are in the APE for the UAV Landing Strip.

Cold Weather/ Automotive Test Complex is located in Donnelly Training Area East, between the Richardson Highway and Jarvis Creek. Sixteen new archaeological sites were located in the area of the CRTC test track during the course of survey in 2003. One site was located directly within the proposed CRTC test track construction footprint, and was subsequently evaluated for eligibility for listing in the National Register of Historic Places, based on criteria outlined in 36 CFR 60.4.

The proposed construction of the Battle Area Complex (BAX) encompassed three different locations, referenced here as Texas Range, Eddy Drop Zone, and Donnelly Drop Zone. After the course of design planning, Eddy Drop Zone became the preferred alternative for locating the BAX project. The majority of Eddy Drop Zone BAX footprint alternative was surveyed in 2002 (Hedman

et al. 2003). However, a small portion of the footprint was not. The remainder was surveyed in 2003, no new site found.

Seventy new archaeological sites were located in Eddy Drop Zone BAX firing fan alternative, during the course of survey in 2003. These sites lie inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore were not evaluated determine eligibility for inclusion in the NRHP. However, if these sites fall into the APE of the chosen firing fan alternative, sites will be evaluated to determine eligibility for inclusion in the NRHP.

A description of each survey and evaluations, as appropriate, follow:

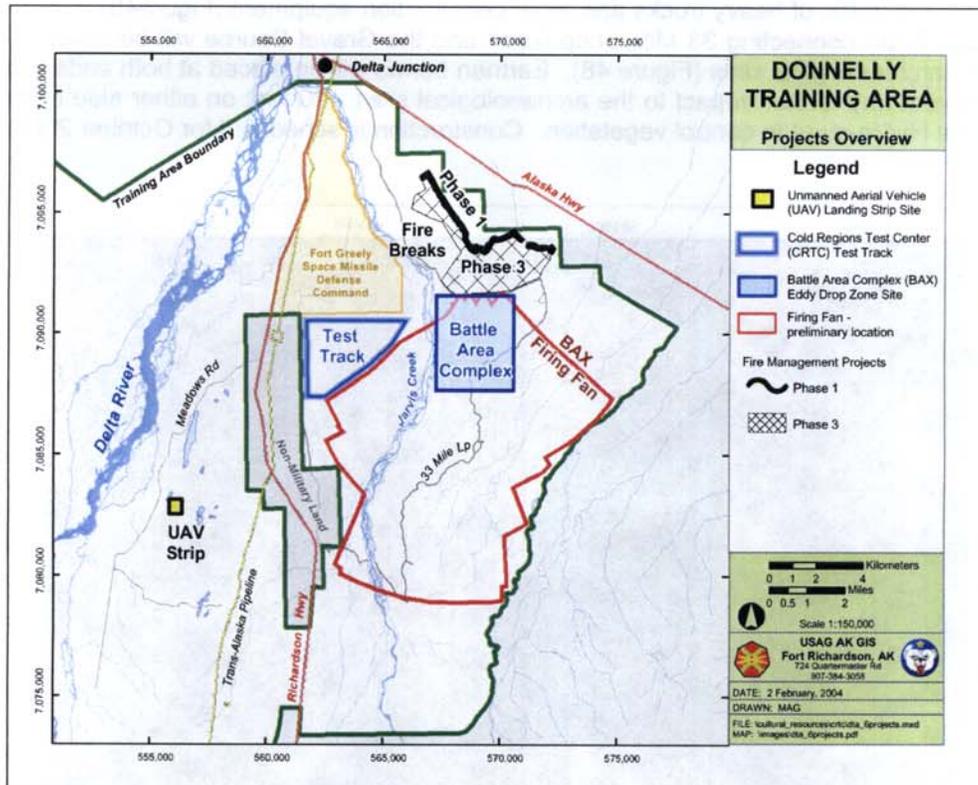


Figure 47: Location of proposed range development projects

## 4.1 Gravel Source and Access Road

The United States Army has proposed construction of a Gravel Source and Access Road located within U.S. Army Garrison Alaska (USAG-AK) lands, on Ft. Wainwright, Alaska. The project involves the construction of a three-acre Gravel Source and a 500-meter long Access Road at Ft. Wainwright's Donnelly Training Area.

The project involves the construction of a three-acre Gravel Source which will be used for the road upgrades project currently under way on 33 Mile Loop Road. The Gravel Source has road access; however three archaeological sites (XMH-922, XMH-923, and XMH-924) would be impacted by the traffic of heavy trucks and other construction equipment (Figure 48). A 500-meter long Access Road connecting 33 Mile Loop Road and the Gravel Source will be made to avoid these three archaeological sites (Figure 48). Earthen berms will be placed at both ends of the old road to prevent any further impact to the archaeological sites. 20 feet on either side of the new road may be Hydro-axed to control vegetation. Construction is scheduled for October 2003.

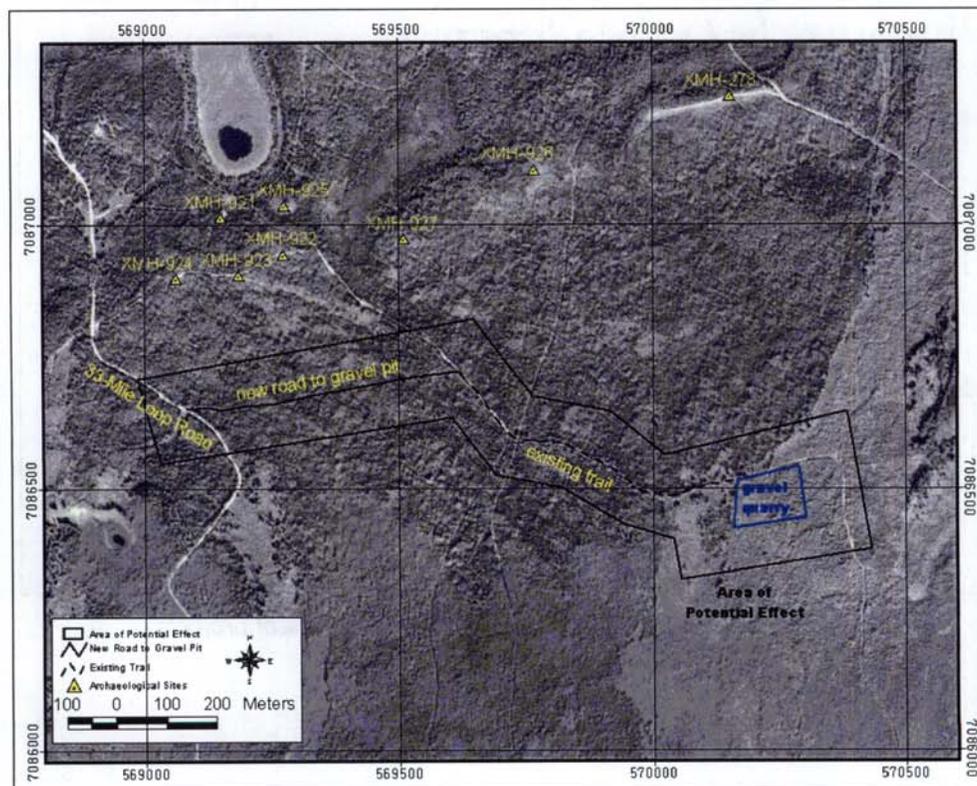


Figure 48. The APE for the gravel source and access road

### Survey and Field Methods

In the summers of 2002 and 2003, two archaeological survey crews (each comprised of four archaeologists) employed by the Center for Environmental Management of Military Lands (CEMML, Colorado State University), conducted a pedestrian survey of the proposed Gravel Source and Access Road at Ft. Wainwright's Donnelly Training Area.

The project's Area of Potential Effect (APE) encompassed an area larger than the anticipated construction footprint, in order to ensure coverage of areas that may incur secondary impacts during construction or use. All of the area shown in Figure 48 was surveyed in the summer of

2002 and all the area inside the APE was resurveyed in 2003

Parallel pedestrian transects spaced at 20m were walked systematically across the APE and surrounding area. Transect survey units were partitioned according to existing roads and trails where possible. When existing roads did not provide for practical unit boundaries, a one square kilometer work unit was defined. Systematic sub-surface shovel testing was undertaken in areas considered to have high probability for containing archaeological sites. Areas that were shovel tested included but were not limited to: landforms affording a view of surrounding terrain; lake margins; ridgelines; terrace edges; hilltops; benches adjacent to steeper slopes; and bluffs. Shovel tests were typically 30cm in diameter and excavated into glacial till or consolidated outwash. All soil removed was screened through ¼" hardware cloth.

### **Results/Summary**

Pedestrian survey of the proposed project area failed to identify any cultural resources within the boundaries of the proposed project's area of potential effect. All previously recorded archaeological sites or historic properties fall outside the proposed project area. Subsequently, the proposed project will have no effect on historic properties.

### **Cultural Resources**

Eight prehistoric sites have been recorded in 2002 within one kilometer of the proposed project area (Figures 48). To the Northwest of the proposed project area, seven sites were recorded during surveys conducted by the Center for Environmental Management of Military Lands, Colorado State University in 2002 (Hedman et al. 2003). These Sites (XMH-921, XMH-922, XMH-923, XMH-924, XMH-925, XMH-926 and XMH-927) are located to the south of Fiddle Lake. To the north of the proposed project area, one site (XMH-278) was recorded near an unnamed lake (Bacon and Holmes 1979).

Following is a description of each recorded site near the currently proposed project area:

#### **XMH-278**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-278 consists of numerous flakes found on the surface of a northeast/ southwest trending ridge, about 200m south of a small lake. Nine gray chert flakes, a biface knife or projectile fragment, a biface perform or blank, and a unifacially retouched flake were collected. UTM coordinates for the site are: [REDACTED]

#### **Recommendations**

XMH-278 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of the proposed Gravel Source project, and therefore was not evaluated determine to eligibility for inclusion in the National Register of Historic Places (NRHP). However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

### XMH-921

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-921 is located at the terminal end of a well-defined glacial moraine ridge extending north/south. Fiddle Lake is visible to the northeast at approximately 300 meters. The site was identified during pedestrian survey. Five late-stage reduction flakes of gray chert were observed on the surface. Subsurface examinations have yet to be conducted. UTM coordinates for the site are: [REDACTED]

#### **Recommendations**

XMH-921 has initially been classified as a small lithic scatter where late stage lithic reduction occurred. This site could potentially contain more cultural material. This site lies inside the boundaries of the proposed Gravel Source project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

### XMH-922

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-922 is situated on the crest of a relatively narrow east/west trending glacial moraine ridge. The site is approximately 300 meters south of Fiddle Lake. Site XMH-923 is approximately 100m west and may be associated. The site was identified during pedestrian survey. Ten tertiary chert flakes were observed on the surface of a small two-track. Subsurface examinations have yet to be conducted. UTM coordinates for the site are: [REDACTED]

#### **Recommendations**

XMH-922 has initially been classified as a small lithic scatter where late stage lithic reduction occurred. Site could potentially contain more cultural material where late stage lithic reduction occurred. This site lies inside the boundaries of the proposed Gravel Source project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

### XMH-923

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-923 is located on the crest of a narrow east/west trending glacial moraine ridge approximately 300 meters south of Fiddle Lake. Site XMH-922 located approximately 100m east may be associated. The site was identified during pedestrian survey in 2002. Two tertiary chert flakes were observed on the surface of a small two-track running along the ridge crest. In 2003 two uniface fragments were found at the site, in the center small two-track. These two fragments were collected. Subsurface examinations have yet to be conducted. UTM coordinates for the site are: [REDACTED]

### **Recommendations**

XMH-923 has initially been classified as a small lithic scatter where late stage lithic reduction occurred. Site could potentially contain more cultural material. This site lies inside the boundaries of the proposed Gravel Source project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

### **XMH-924**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-924 is located on the crest of a narrow east/west trending glacial moraine ridge approximately 300 meters south of Fiddle Lake. Site XMH-923 located along the same ridge may be associated. The site was identified during pedestrian survey. One tertiary gray chert flake and a possible notched tool of chert were observed on the surface of a small two-track running along the ridge crest. Subsurface examinations have yet to be conducted. UTM coordinates for the site are: [REDACTED]

### **Recommendations**

XMH-924 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of the proposed Gravel Source project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

### **XMH-925**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-925 is located on a wind-eroded southeast facing hilltop, 100 meters southeast of Fiddle Lake. The site was identified during pedestrian survey. One dark gray chert flake and one fine-grained black basalt flake were observed on the surface. Subsurface examinations have yet to be conducted. UTM coordinates for the site are: [REDACTED]

### **Recommendations**

XMH-925 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of the proposed Gravel Source project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

### **XMH-926**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-926 is located on the southeast-facing slope of a small hilltop approximately 500 meters east of Fiddle Lake. The surrounding terrain is comprised of kettle lakes and low ridges throughout flat plains. The site was identified during pedestrian survey. Basalt and chert debitage, including one retouched chert flake was, observed on the surface. Subsurface

examinations have yet to be conducted. UTM coordinates for the site are: [REDACTED]

**Recommendations**

XMH-926 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of the proposed Gravel Source project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

XMH-927

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-927 is located on the southeast-facing slope of a small knoll on a long ridge approximately 400 meters southeast of Fiddle Lake. Site XMH-927 was identified during pedestrian survey. Two gray chert flakes were observed on the surface. Subsurface examinations have yet to be conducted. UTM coordinates for the site are: [REDACTED]

**Recommendations**

XMH-927 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of the proposed Gravel Source project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

## 4.2 Landscape-scale Fire Mitigation Project

The United States Army, in coordination with the Alaska Fire Service, has proposed a landscape-scale fire mitigation project located within U.S. Army Garrison Alaska's (USAG-AK) lands at Ft. Wainwright's Donnelly Training Area East. This project was developed explicitly to mitigate potential fire risks from range expansion in the Eddy Drop Zone Study Area.

A three phase mitigation project to prevent potential fires directly related to the expansion of the Eddy Drop Zone Study Area. Phase 1 and Phase 3 of the project are directly located on USA-GAK property, but lands involved in Phase II are located on private property in Delta Junction.

Phase 1 (FY 2003-2004) will begin during the 2003 summer field season. The forestry crew from Colorado State University and hot shot crews from the Alaska Fire Service will begin tree thinning operations in the areas defined on the inserted map. Stand conversion by hydro-ax and shear-blading would begin in late fall 2003. All coniferous over story vegetation would be mechanically removed and piled into windrows within the treatment area and burned in the next winter. Hand thinning (removing the vegetation by chainsaw and other hand implements) will occur in areas of cultural and environmental sensitivity.

During Phase 2 (FY 2003-2004) the risks associated with nearby housing sub-divisions will be identified. All large volatile vegetation would need to be removed 100 feet from structures, and

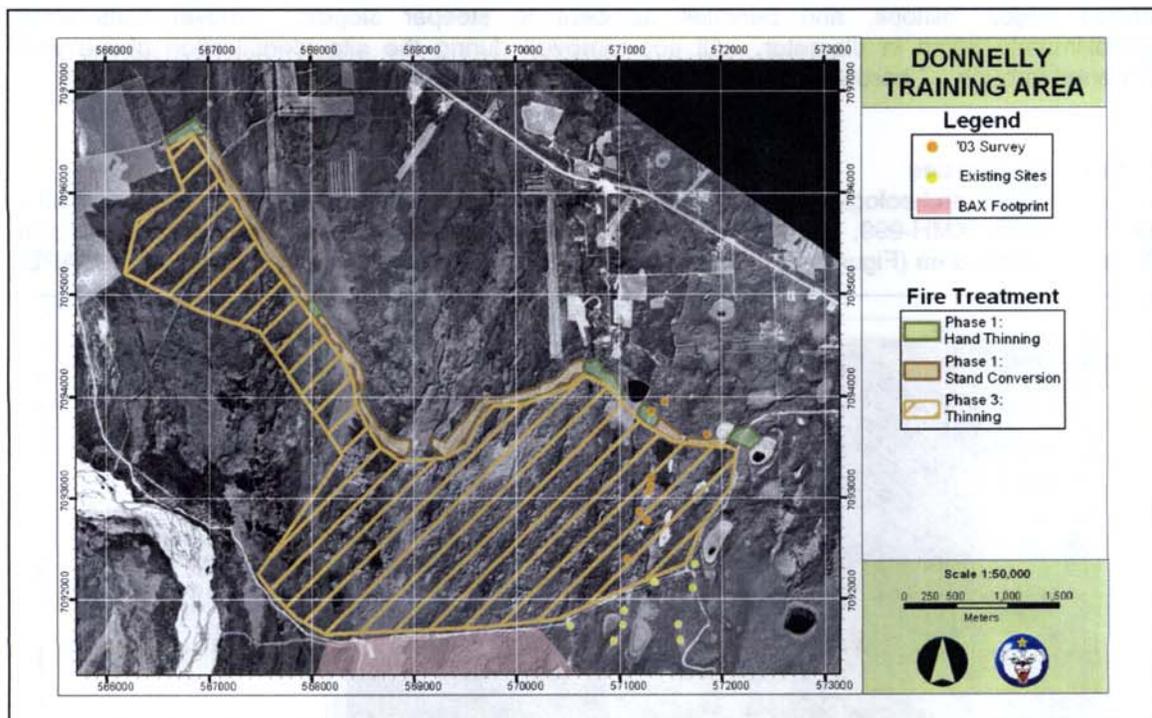


Figure 49. Location of the Landscape-scale Fire Mitigation Project

smaller, less volatile vegetation would need to be cleared 30 feet from structures and limbed to remove ladder fuels. The Bureau of Land Management will work with Alaska state agencies and private homeowners to identify the work that will be accomplished, and timelines required to accomplish the project.

Phase 3 (FY 2005, continuous) would expand the fuel break with selected removal of vegetation within the area of interest. The treatment would entail clearance of the forest in a series of polygons in a multi-year project. Similar stand conversion techniques would be used in this phase as were used in Phase 1.

### Survey and Field Methods

In May 2003 two archaeological survey crews (each comprised of four archaeologists) employed by the Center for Environmental Management of Military Lands, Colorado State University, conducted pedestrian archaeological surveys of the APE encompassing an area of approximately 1160 acres; 98% of Phase 1 and 28% of Phase 3 was completed. Additional surveys will be conducted in 2004, before the work start on Phase 3. The 2003 survey area is larger than the proposed Phase 1 fire break footprint, in order to ensure coverage of areas that may sustain secondary impacts during thinning operations.

Survey methods undertaken in this project included the walking of parallel pedestrian transects spaced at a maximum of 20m in all areas that were not deemed too wet to contain cultural material. Transect survey units were partitioned according to existing roads and trails where possible. When existing roads did not provide for practical unit boundaries, a one square kilometer work unit was defined. Systematic sub-surface testing was undertaken in areas determined to be high probability for containing archeological sites. Areas that were shovel tested included but were not limited to any landform that afforded a view, lake margins, ridgelines, terrace edges, hilltops, and benches adjacent to steeper slopes. Shovel tests were approximately 30cm in diameter. All soil removed during the site identification phase was screened through ¼" hardware cloth.

### Cultural Resources

Nine prehistoric archeological sites (XMH-992, XMH-993, XMH-994, XMH-995, XMH-996, XMH-997, XMH-998, XMH-999, and XMH-1051) were recorded within 1.5 kilometers of the proposed Phase 1 project area (Figures 50). Only one site (XMH-995) was located in Phase 1 project APE.

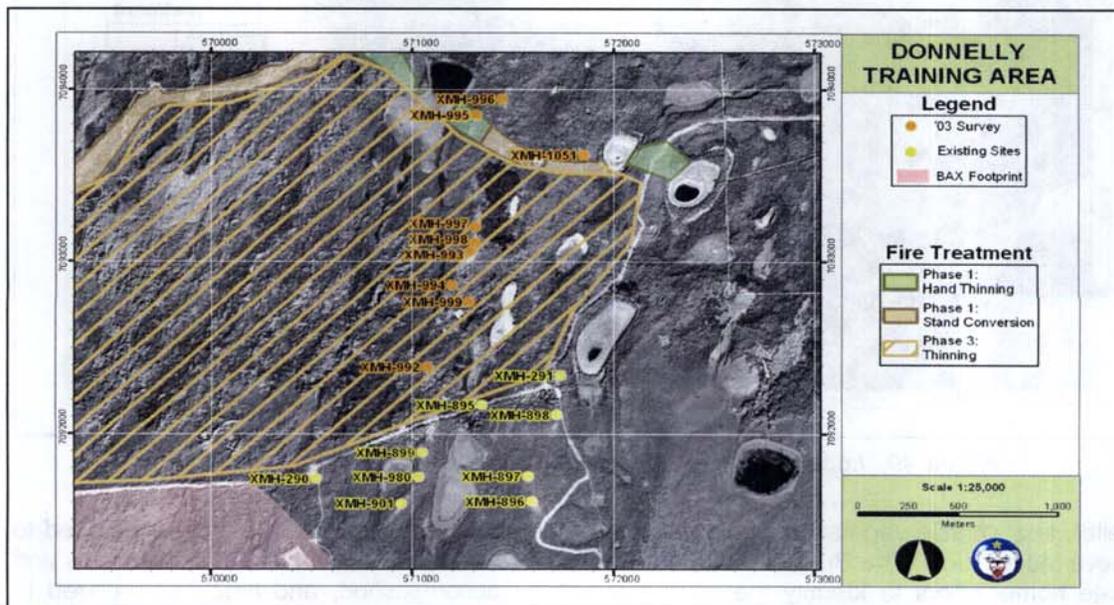


Figure 50. Location of the archeological sites in the Landscape-scale Fire Mitigation Project

A staff archaeologist monitored the hand thinning which occur around the site. No hand thinning or ground disturbance occurred at any of the nine archeological sites.

Following is a description of each recorded site near the currently proposed project area:

**XMH-992**

**Latitude:** [REDACTED]  
**Longitude:** [REDACTED]  
**Determination:** Not evaluated

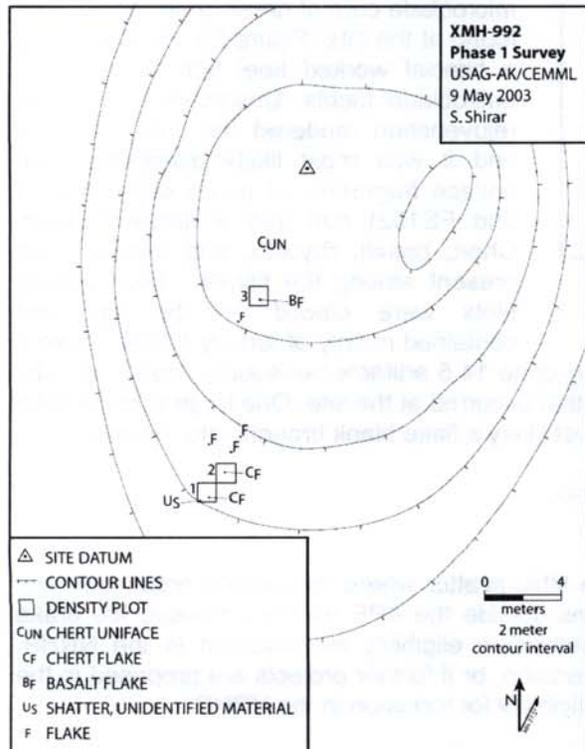
Site XMH-992 is located on a relatively small, high knoll with approximately 30% surface visibility. The visibility is contained along a small, two-track road leading to the top of the knoll from the south. The Granite Range is visible to the southeast and the Alaska Range to the southwest. According to the map, there are two small lakes to the east approximately 200 meters away, but these are not visible from the site. UTM coordinates for the site are: [REDACTED]



Figure 51. General view of site, XMH-992 heading

Site XMH-992 consists mainly of lithic debitage. There are seven flakes, two pieces of shatter, and one chert uniface on the surface. The flakes and shatter consist of mix of chert, basalt, and rhyolite. The unifacially retouched flake is made of green chert. Three density plots were placed on the site, each with either one or two flakes present in each of them. DP S17/W5 contained

one dark gray tertiary flake and one unidentified piece of shatter. DP S16/W4 contained one gray chert tertiary flake. DP S7/W3 contained one primary basalt flake. Artifact density is calculated as being up to 1.33 artifacts per-square meter. A flake type analysis indicates both primary and late stage lithic reduction occurred at the site. Two primary, one secondary, and four tertiary flakes were found all together on the site. Subsurface examinations have yet to be conducted.



**Recommendations**

XMH-992 has initially been classified as a small lithic scatter where both primary and late stage lithic reduction occurred. This site lies outside the APE for the proposed fire brake project, and therefore was not evaluated to determine eligibility for inclusion in the National Register of Historic Places (NRHP). However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

Figure 52. Site map of test at XMH-992

**XMH-993**

**Latitude:** [REDACTED]

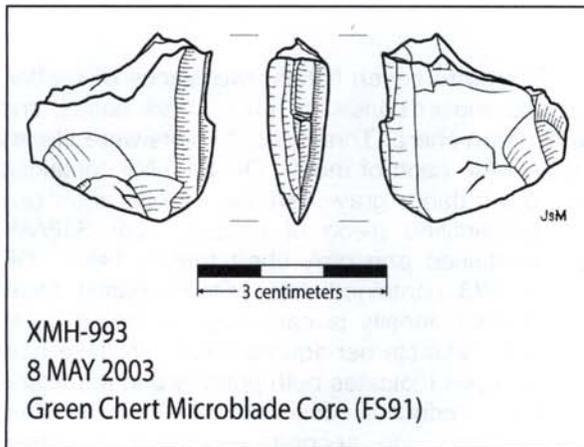
**Longitude:** [REDACTED]

**Determination: Not evaluated**

XMH-993 is located on the highest point of an approximately 450 meter long, narrow north/south trending ridge with about 40% surface visibility. There are spectacular views of the Granite Range to the southeast and of the Alaska Range to the southwest. The Alaskan Highway can be seen to the northeast. According to the map there is a small lake 200 meters to the southeast and another one 400 meters directly to the east, but they are not visible from the site. The western edge of the ridge drops quickly while the eastern edge gradually falls to a small bench and then becomes steep. The northern edge of the site drops quickly, and then flattens to where XMH-998 is located. UTM coordinates for the site are: [REDACTED]



Figure 53: General view of site, XMH-993 heading north



XMH-993  
8 MAY 2003  
Green Chert Microblade Core (FS91)

Figure 54: Illustration of the Microblade Core from XMH-993

XMH-993 consists mainly of lithic debitage (175+ flakes), with fourteen formalized tools and diagnostic debitage found, including microblade, bifacial, and unifacial technology (Table 2). One wedge-shaped microblade core of green chert (FS91) was found at the site (Figure 54). The core has a bifacial worked keel and exhibits five microblade facets. Unsuccessful platform rejuvenation rendered the core unusable and it was most likely discarded. Two uniface fragments of green chert (FS123 and FS152) refit into a single scraper. Chert, basalt, rhyolite, and quartzite are present among the flakes. Four density plots were placed on the site and contained mainly of tertiary flakes (Table 3

Figure 56). Artifact density is calculated as being up to 14.5 artifacts per-square meter. A flake type analysis indicates that late stage lithic reduction occurred at the site. One large primary flake was located at the site; however this artifact is most likely a flake blank brought into the site.

Subsurface examinations have yet to be conducted.

**Recommendations**

XMH-993 has initially been classified as a large lithic scatter where microblade production and late stage lithic reduction occurred. This site lies outside the APE for the proposed fire brake project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

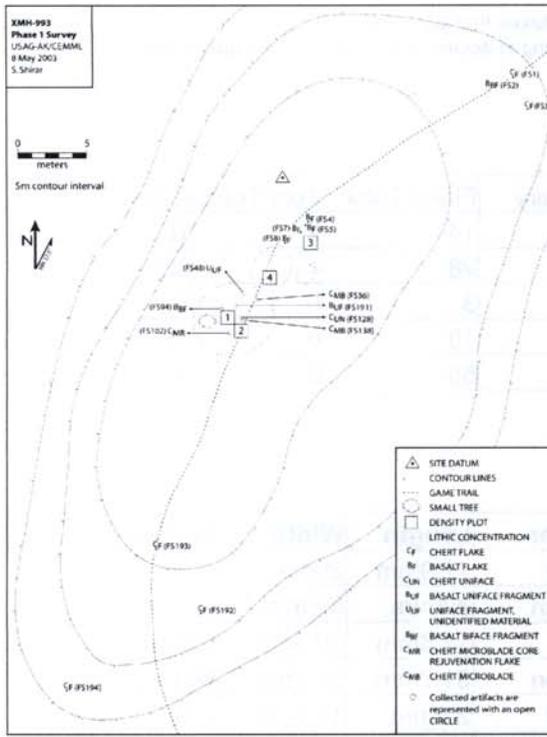


Figure 55: Site map of test at XMH-993

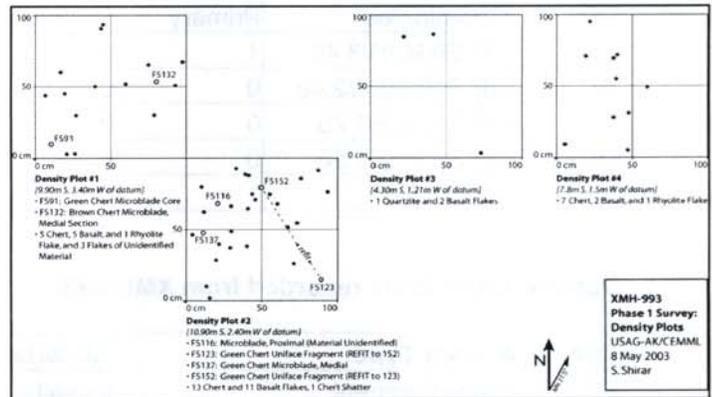


Figure 56: Density Plots from XMH-993

Table 2. Lithic assemblage recorded from XMH-993.

Artifact Class	Frequency	% of Assemblage
<b>Bifaces</b>		
Biface fragments	2	3%
<b>Unifacial</b>		
End scraper fragment	1	1%
Uniface fragments	3	4%
Unifacially retouched flake	1	1%
<b>Microblade Cores and Microblades</b>		
Microblade core	1	1%
Microblade core rejuvenation flakes	1	1%
Microblades	5	6%
<b>Debitage</b>		
Flakes*	63	83%
Shatter	1	1%
<b>Total</b>	<b>78</b>	<b>100%</b>

\* The total of 63 flakes came for the 4 sampling units (DP 1-4) and several flakes that lay outside the main concentrations of debitage. The total number of flake at the site has been estimated as being in excess of 175 flakes. The qualitative total of flake at the site would be closer to 98%.

**Table 3 XMH-993 Density Plots (DP)**

DP#	Coordinates	Primary	Secondary	Tertiary	Flake Total	Tool Total	Artifact Total
DP 1	DP S9.90/W3.40	1	0	13	14	2	16
DP 2	DP S10.90/W2.40	0	0	28	28	4	32
DP 3	DP S4.30/E1.20	0	0	3	3	0	3
DP 4	DP S7.80/E1.50	0	0	10	10	0	10
	TOTALS	1	0	54	55	6	61

**Table 4. Lithic tools recorded from XMH-993.**

FS#	Artifact Type	Material	Color	Length	Width	Weight
FS 2	biface fragment	basalt	gray	47.9mm	29mm	18.6gm
FS 36	microblade, proximal	chert	green	8.1mm	8.8mm	0.1gm
FS 48	end scraper fragment	unidentified *		14.6mm	10.3mm	0.6gm
FS 91	microblade core	chert	green	31.7mm	21.7mm	8gm
FS 94	biface fragment	basalt	gray	2.9mm	19.6mm	4gm
FS 102	microblade core rejuvenation flake	chert	green	16.8mm	9.7mm	0.6gm
FS 116	microblade, proximal	unidentified *		12.7mm	5.7mm	0.2gm
FS 123	uniface fragment	chert	green	28.8mm	14.3mm	2.3gm
FS 128	uniface, retouched flake	chert	dark gray	40.2mm	24mm	4.4gm
FS 132	microblade, medial	chert	brown	11.3mm	5.9mm	1gm
FS 137	microblade, medial	chert	green	7.1mm	3.7mm	0.05gm
FS 138	microblade, proximal	chert	green	14.5mm	4.3mm	0.1gm
FS 152	uniface fragment	chert	green	28.9mm	20.2mm	4.3gm
FS 191	uniface fragment	basalt	gray	22.3mm	13.3mm	0.6gm

**XMH-994**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

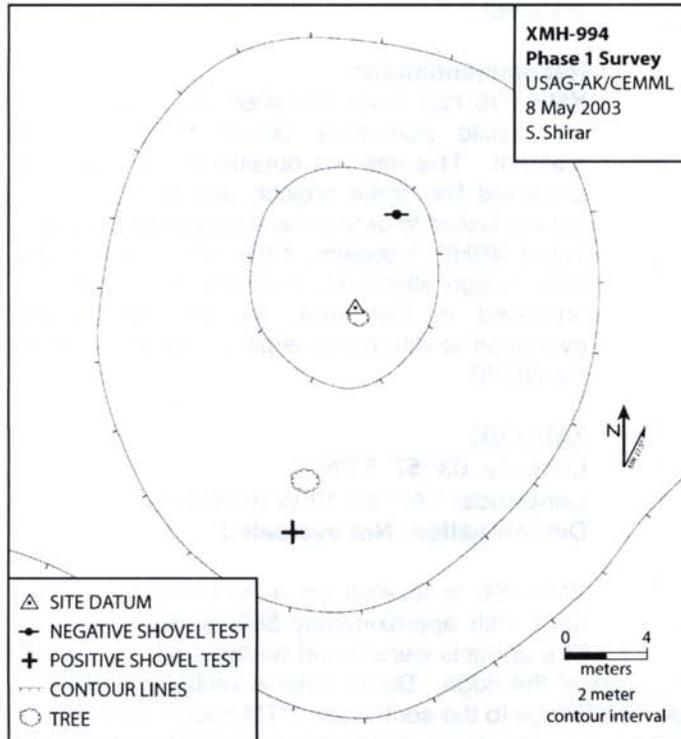
**Determination: Not evaluated**

Site XMH-994 is located along the southern end of a north/south trending ridge. This is the southern termination of the same ridge XMH-993 is located on, but at a lower elevation. The area to the east and west slopes down very gradually. The ground rises gradually to the north for approximately 50 meters before a steep rise up to XMH-993. To the south, it slopes down gradually for about 50 meters before a steep drop off. Overall the site is broad and flat with potential to extend quite far in all directions. Further



*Figure 57: General view of site, XMH-994 heading north*

testing will confirm the exact boundaries of the site. The Granite Range is visible to the southeast and the Alaska Range to the southwest. A small lake is located 200 meters east of the site, but is not visible. There is no surface visibility at all due to vegetation. UTM coordinates for the site are:



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Figure 58: Site map of test at XMH-994

A total of two shovel tests were excavated to glacial till but only one produced cultural material (ST 1). ST 1 contained four chert flakes light gray in color and four chert flakes dark-gray in color found in a 30cm X 30cm shovel test at depths ranging from 0-20cmbs. The shovel test was 25cm deep, with three distinct layers, 0-5cm is the organic layer (2.5/2), 5-20cm is a dark yellowish/brown loess (10yr4/4), and 20-25cm is glacial till. These eight flakes were collected.

#### Recommendations

XMH-994 has been classified as a buried site and could potentially contain more cultural material. This site lies outside the APE for the proposed fire brake project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-995

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

Site XMH-995 is located on a north/south trending ridge overlooking Dalon Lake, which is visible to the northwest. The Granite Range can be seen to the southeast and the Alaska Range is visible to the southwest. The ground drops off quickly from the top of the ridge in all directions. The southern and northern terminations of the ridge are marked by open areas with forest in between. A game trail runs through the forested area. UTM coordinates for the site are: [REDACTED]



Figure 59: General view of site, XMH-995 heading north

A total of three shovel tests were excavated to glacial till. However, only one shovel test (ST1) produced any artifacts. ST1 contained on chert flake dark gray in color found in a 30cm X 30cm shovel test at an approximate depth of 15-20cmts. The shovel test was 50cm deep, with three distinct layers, 0-5cm is the organic layer (2.5/2), 5-40cm is a dark yellowish brown loess (10yr 4/4), and 40-50cm is glacial till. This artifact was collected.

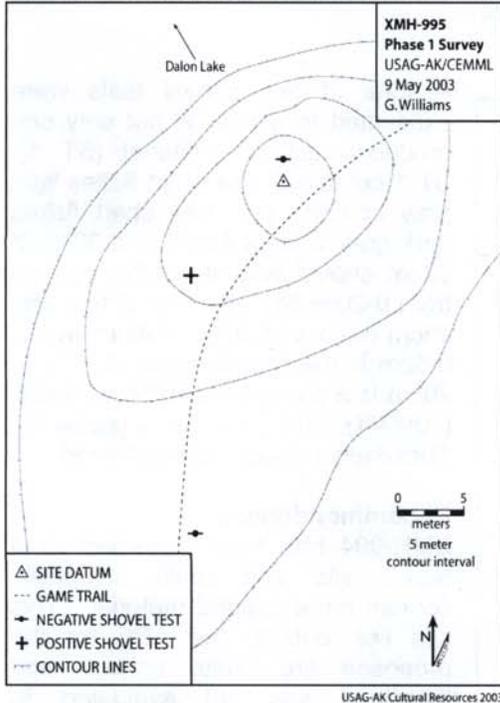


Figure 60: Site map of test at XMH-995

the ridge. There is steep slope off of all edges of the ridge. Dalon Lake is visible to the west, Granite Range to the southeast, and the Alaska Range to the southwest. UTM coordinates for the site are:

XMH-996 consists of one basalt flake, one chert flake tan in color, and one rhyolite flake. There were no tools found at this site. Three density plots were placed on the site, each with one artifact contained in them. DP 3N/2.5E contained one primary basalt flake. DP 3.3N/2.1E contained one tertiary rhyolite flake. DP 1.5N/6.9E contained one tertiary green chert flake. Artifact density is calculated as being up to 1 artifact per-square meter. A flake type analysis indicates both primary and late stage lithic reduction occurred at the site. Subsurface examinations have not yet been conducted.



Figure 61: General view of site, XMH-996 heading north

**Recommendations**

XMH-995 has been classified as a buried site and could potentially contain more cultural material. This site lies outside the APE for the proposed fire brake project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

XMH-996

Latitude: [REDACTED]  
 Longitude: [REDACTED]  
 Determination: Not evaluated

XMH-996 is located on a north/south trending ridge with approximately 50% surface visibility. The artifacts were found on the southern end of

**Recommendations**

XMH-996 has initially been classified as a small lithic scatter where both primary and late stage lithic reduction occurred. This site lies outside the APE for the proposed fire brake project, and therefore was not evaluated to determine eligibility for inclusion in the National Register of

Historic Places (NRHP). However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

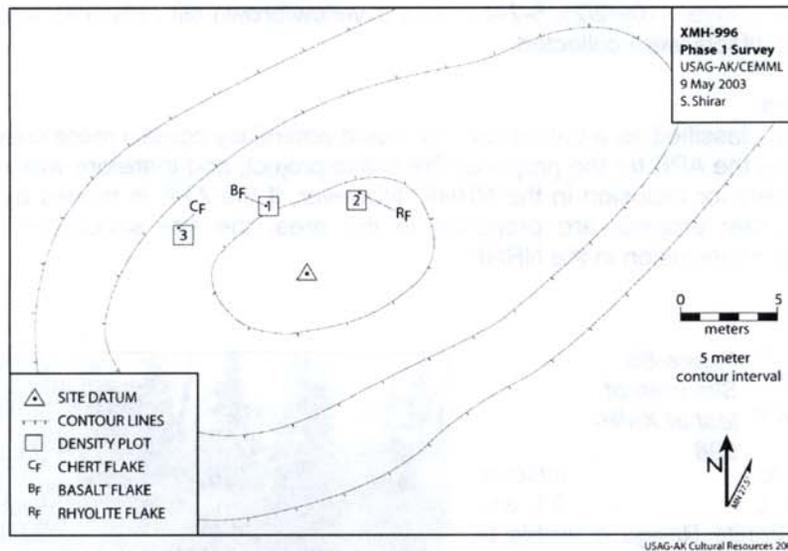


Figure 62: Site map of test at XMH-996

**XMH-997**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination:** Not evaluated

Site XMH-997 is located along the northern end of a north/south trending ridge. This is the same ridge that XMH-993 is on but at a lower elevation. There is steep slope extending off of the ridge in all directions from the top. There are no good views of the mountains or of any water although there is a small lake located approximately 100 meters to the east according to the map. The site has no surface visibility due to vegetation. UTM coordinates for the site are: [REDACTED]



Figure 63: General view of site, XMH-997 heading south

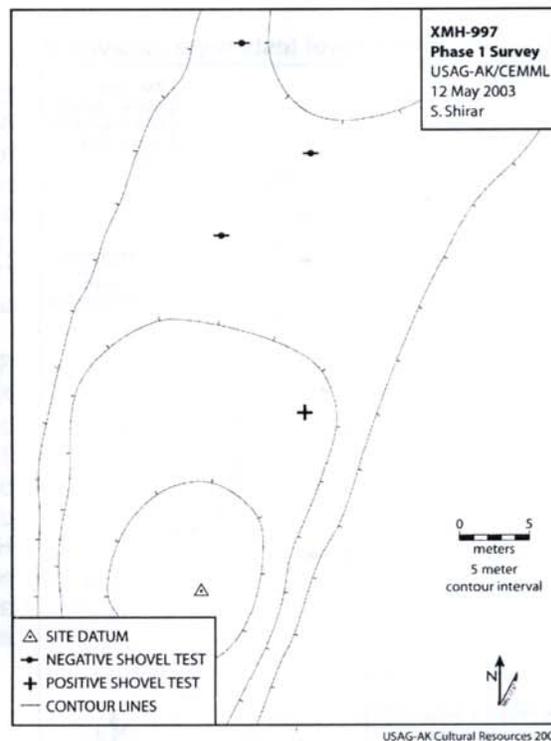


Figure 64: Site map of test at XMH-997

A total of four shovel tests were excavated to glacial till but only one shovel test (ST1) produced artifacts. ST1 contained one basalt flake and one chert flake found in a 30cm X 30cm test pit at an approximate depth of 5-15cmts. The shovel test was 30cm deep, with three distinct layers, 0-5cm was the organic layer (10yr2/2), 5-24cm was a yellow/brown silt (10yr3/4), and 24-30cm is glacial till. These artifacts were collected.

**Recommendations**

XMH-997 has been classified as a buried site and could potentially contain more cultural material. This site lies outside the APE for the proposed fire brake project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-998**

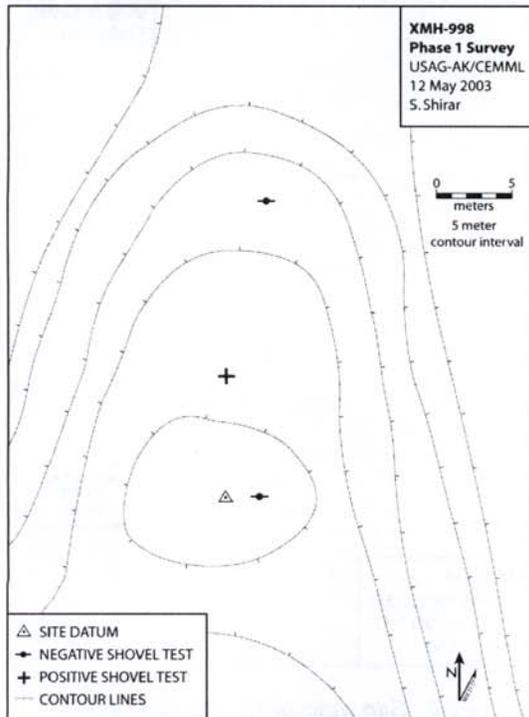
**Latitude:** ██████████ *Figure 66:*  
**Longitude:** ██████████ *Site map of*  
**Determination: Not** *test at XMH-*  
 998

Site XMH-998 is lo ██████████ th/south trending ridge in t ██████████ 93 and XHM-997. The Granite Range is visible to the southeast. There is steep slope on either side of the ridge to the east and west. The site is located at a lower elevation than XMH-993 and at a higher elevation than XMH-997. The only surface visibility is along a game trail running the length of the ridge. UTM coordinates for the site are: ██████████



*Figure 65: General view of site, XMH-998 heading north*

A total of three shovel tests were excavated



*Figure 66: Site map of test at XMH-998*

to glacial till but only one produced cultural material (ST1). ST1 contained two chert flakes found in a 30cm X 30cm shovel test unit at depths ranging from 0-10cmts. The shovel test had three distinct layer, 0-5cmts is the organic layer (10yr2/2), 5-20cmts is yellowish brown loess (10yr4/6), and 20+cmts is glacial till. These artifacts were collected.

**Recommendations**

XMH-998 has been classified as a buried site and could potentially contain more cultural material. This site lies outside the APE for the proposed fire brake project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-999**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-999 is located on a small knoll with sparse tree cover approximately 250 meters south of FB site #2 and approximately 100 meters east and 80 meters south of FB site #3. The mountains cannot be seen due to trees. A small lake bed can be seen to the southwest when there are no leaves on the trees. There is 0% surface visibility on this site due to ground vegetation. UTM coordinates for the site are: [REDACTED]



Figure 67: General view of site, XMH-999 heading south

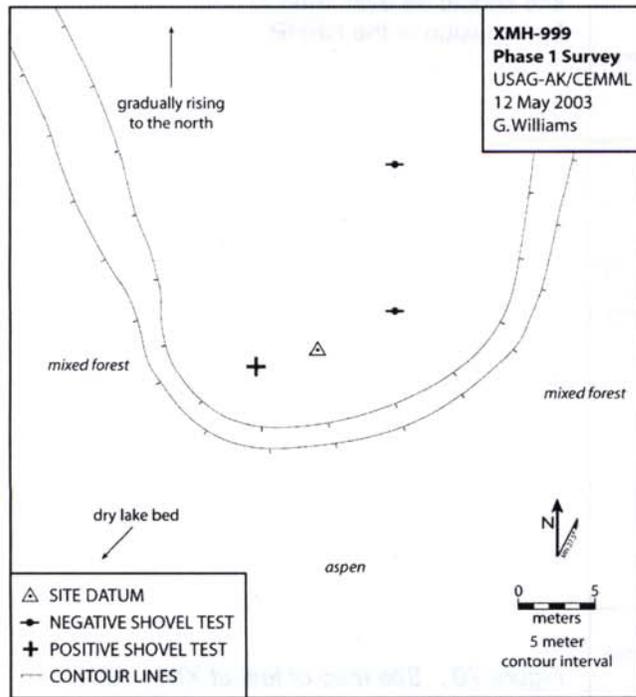


Figure 68: Site map of test at XMH-999

A total of three shovel tests were excavated to glacial till but only one produced cultural materials (ST2). ST2 contained on chert flake dark gray in color found in a 30cm X 30cm shovel test at a depth of 15-20cmts. The shovel test was 30cm deep with three distinct layers, 0-5cm is the organic layer (10yr2/2), 5-20cm is dark yellow brown sandy silt (10yr4/4), and 20-30cm is glacial till. This flake was collected.

**RECOMMENDATIONS**

XMH-999 has been classified as a buried site and could potentially contain more cultural material. This site lies outside the APE for the proposed fire brake project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-1051**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1051 is located on a narrow, short northwest/southeast trending ridge. The is site is approximately 100 meters west of lake, however lake can only be seen when there are no leaves on the trees. The mountains cannot be seen due to trees. There is 10% surface visibility on this site due to ground vegetation. UTM coordinates for the site are: [REDACTED]

XMH-1051 consists of one basalt flake found on the surface. No other artifacts were found on the surface or during shovel testing, site was labeled as an isolated find (IF). A total of eight shovel tests were put in along one transects at ten-meter intervals. The artifact was not collected.

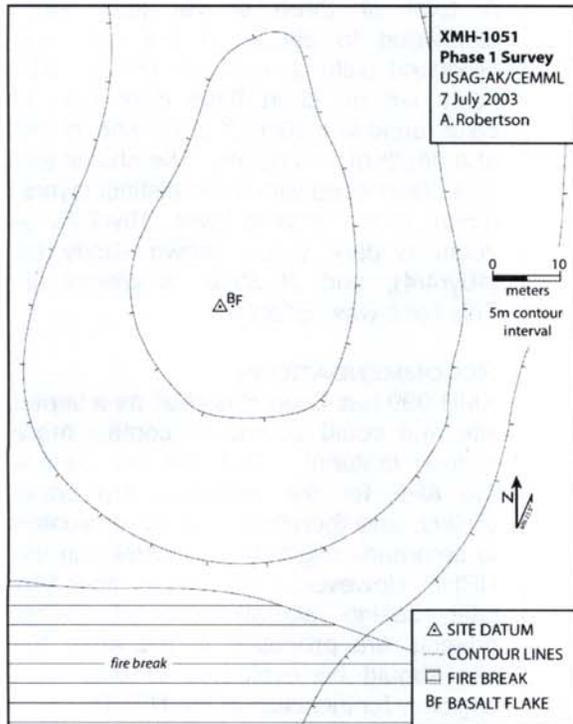
**Recommendations**

XMH-1051 has initially been classified as an isolated find; however the site could potentially contain more cultural material. This site lies outside the APE for the proposed fire brake project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the



Figure 69. General view of site, XMH-1051

site should be evaluated to determine eligibility for inclusion in the NRHP.



USAG-AK Cultural Resources 2003

Figure 70 . Site map of test at XMH-1051

### 4.3 Unmanned Aerial Vehicle Launch and Recovery Site

The United States Army has proposed construction of an Unmanned Aerial Vehicle (UAV) launch and recovery site located within U.S. Army Garrison Alaska (USAG-AK) lands, on Ft. Wainwright, Alaska. The project involves the construction of a 600 ft. long, 50 ft. wide runway to launch and recover UAVs and support facilities, including a 3000 ft<sup>2</sup> one-story building to store and conduct maintenance on the UAV launch site. The building will be located adjacent to the runway with access to Bolio Lake Road. A 100 ft. perimeter will be Hydro-axed around the runway to control vegetation. Construction is scheduled for September 2003.

#### SURVEY AND FIELD METHODS

In the summers of 2002 and 2003, two archaeological survey crews (each comprised of four archaeologists) employed by the Center for Environmental Management of Military Lands (CEMML), Colorado State University, conducted a pedestrian survey of the proposed UAV launch and recovery project at Ft. Wainwright's Donnelly Training Area. The project's Area of Potential Effect (APE) encompassed an area larger than the anticipated construction footprint, in order to ensure coverage of areas that may incur secondary impacts during construction or use.

Parallel pedestrian transects spaced at 20m were walked systematically across the APE and surrounding area. Transect survey units were partitioned according to existing roads and trails where possible. Systematic sub-surface shovel testing was undertaken in areas considered to have high probability for containing archaeological sites. Areas that were shovel tested included but were not limited to: landforms affording a view of surrounding terrain; lake margins; ridgelines; terrace edges; hilltops; benches adjacent to steeper slopes; and bluffs. Shovel tests were typically 30cm in diameter and excavated into glacial till or consolidated outwash. All soil removed was screened through ¼" hardware cloth.

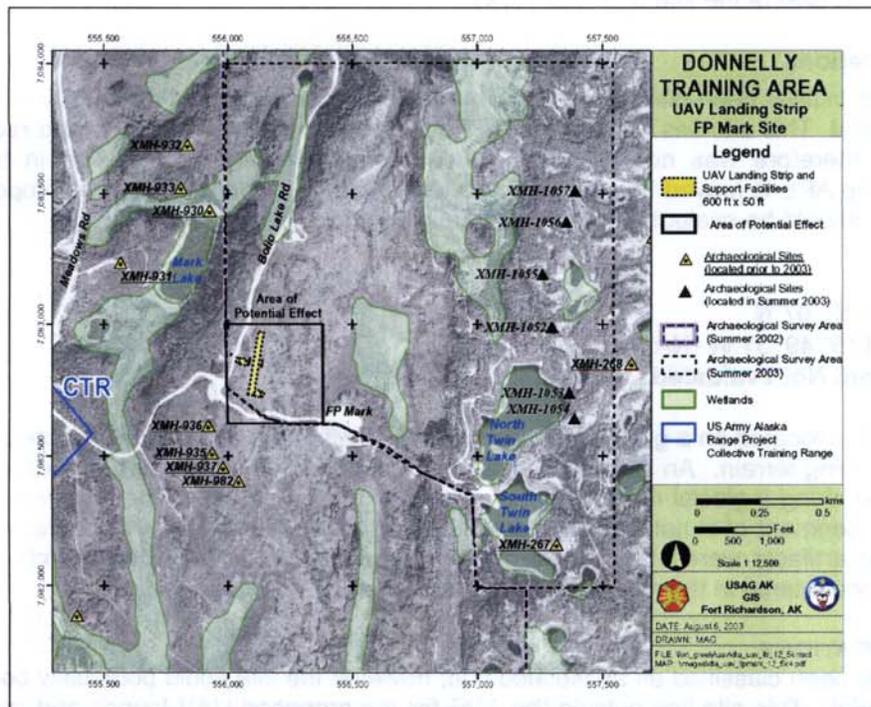


Figure 71. Location of the APE for the Unmanned Aerial Vehicle project

## Results/Summary

Pedestrian survey of the proposed project area failed to identify any cultural resources within the boundaries of the proposed project's Area of Potential Effect (APE). All previously recorded archaeological sites or historic properties fall outside the proposed project area. Subsequently, the proposed project will have no effect on historic properties.

## CULTURAL RESOURCES

Eighteen prehistoric sites have been recorded within 1.5 kilometers of the proposed project area (Figure 71). To the east of the APE area are 8 sites. Two sites (XMH-267 and XMH-268) were recorded during the 1979 survey (Holmes 1979). Six new sites were recorded during the CEMML, 2003 survey for this project. These Sites (XMH-1052, XMH-1053, XMH-1054, XMH-1055, XMH-1056, and XMH-1057) are located around North Twin Lakes.

To the south of the proposed project area, 4 sites were recorded during surveys conducted by the CEMML, in 2002 (Hedman et al. 2003). These Sites (XMH-982, XMH-935, XMH-936, and XMH-937) are located on a low north-south trending ridge between Mark Lake and Big Lake. To the northwest of the proposed project area, 4 sites were recorded near Mark Lake (Hedman et al. 2003). XMH-930 is located on the north shore of Mark Lake; XMH-931, XMH-932, XMH-933 all overlook the lake from the glacial moraine on the western side. Following is a description of each recorded site near the currently proposed project area:

### XMH-267

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-267 is located on a glacial moraine knoll. A number of flakes were observed scattered about the ground on the southwest slope of a sparsely vegetated glacial moraine knoll overlooking South Twin Lake. A total of 21 waste flakes and two retouched flakes were collected. A road runs just east of the site (Holmes 1979).

### **Recommendations**

XMH-267 has initially been classified as a large lithic scatter and could potentially contain more cultural material. This site lies outside the APE for the proposed UAV launch and recovery site project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

### XMH-268

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-268 is located on a glacial moraine knoll. Site affords a 360 degrees unobstructed view of the surrounding terrain. An isolated biface fragment observed in a disturbed area on the west side of a road along a glacial moraine ridge, east of North Twin Lake. The fragment appears to be the basal segment of a notched point or knife (Holmes 1979). The artifact was collected in 1979, and no artifacts were observed on the surface in 2003. Several dwarf birch and spruce trees were encountered in the area, as well as tall scrub.

### **RECOMMENDATIONS**

XMH-268 has been classified as an isolated find; however the site could potentially contain more cultural material. This site lies outside the APE for the proposed UAV launch and recovery site project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP.

However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

### XMH-930

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-930 is located along the north Shore of Mark Lake. The surrounding area is characterized by mixed forest with sparse grass cover along the lake shore. Surface visibility is high due to sparse vegetation. The site may become inundated if lake levels become higher. Three chert flakes, one utilized chert flake, and one unifacially worked flake tool were observed on the surface. The area has been impacted by heavy vehicle traffic and modern use along the lakeshore. Artifacts were collected to prevent loss or further damage. No subsurface examinations will be needed, as artifacts were observed lying on glacial till. UTM coordinates for the site are: [REDACTED]



*Figure 72: General view of site, XMH-930 heading east*

#### **RECOMMENDATIONS**

XMH-930 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies outside the APE for the proposed UAV launch and recovery site project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

### XMH-931

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-931 is located along a large ridge extending to the edge of Mark Lake. The site is approximately 100 meters west of Mark Lake, overlooking an unnamed lake to the south. The site consists of an isolated find identified during pedestrian survey: a single chert flake observed in an exposure from a road cut. SUBSURFACE EXAMINATIONS HAVE YET TO BE CONDUCTED. UTM COORDINATES FOR THE SITE ARE: [REDACTED]



*Figure 73: General view of site, XMH-931 heading east*

**RECOMMENDATIONS**

XMH-931 has been classified as an isolated find; however the site could potentially contain more cultural material. This site lies outside the APE for the proposed UAV launch and recovery site project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-932**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-932 is located on an east-west trending ridge, 250 meters north of Mark Lake. The site location has a commanding view of Mark Lake and the surrounding area. Surface visibility is high due to sparse vegetation. One chert flake and one basalt flake were observed on the exposed surface of a south-facing slope. SUBSURFACE EXAMINATIONS HAVE YET TO BE CONDUCTED. UTM COORDINATES FOR THE SITE ARE: [REDACTED]



*Figure 74: General view of site, XMH-932 heading northeast*

**RECOMMENDATIONS**

XMH-932 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies outside the APE for the proposed UAV launch and recovery site project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-933**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-933 is located on a flat ridge top overlooking Mark Lake approximately 150 meters to the south. Surface visibility is low with a high degree of vegetation. Two chert flakes were observed on the exposed surface of a tree fall. A total of four shovel tests were excavated with negative results. UTM COORDINATES FOR THE SITE ARE: [REDACTED]



*Figure 75: General view of site, XMH-933 heading north*

**RECOMMENDATIONS**

XMH-933 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies outside the APE for the proposed UAV launch and recovery site project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further

projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

### XMH-935

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-935 is located on a low north-south trending ridge, situated between Mark Lake and Big Lake. Site location is approximately .6 kilometer south of Mark Lake and 1.2 kilometers north-northwest of Big Lake. Surface visibility is high due to large naturally eroded areas with sparse vegetation. Site XMH-935 is to the north and site XMH-937 is to the south along the same landform.



Figure 76: General view of site, XMH-935 heading north



Figure 77: Photo of Microblade From XMH-935

XMH-935 CONSISTS OF one light-gray chert microblade observed in an exposed area on the surface. THE MICROBLADE IS 34MM LONG, 7.2MM AT THE PLATFORM 9.9MM WIDE AT ITS WIDEST POINT, AND WEIGHS APPROXIMATELY 1.2GM. THE MICROBLADE HAS REMNANTS OF BIFACIAL REMOVALS FROM THE CORE ON ONE MARGIN AND THE REMNANTS OF A PERVERSE MICROBLADE REMOVAL ON THE OTHER MARGIN. THIS MICROBLADE MAY HAVE BEEN AN EARLY REMOVAL FROM THE

CORE. SUBSURFACE EXAMINATIONS HAVE YET TO BE CONDUCTED. UTM COORDINATES FOR THE SITE ARE:

[REDACTED]

### RECOMMENDATIONS

XMH-935 has been classified as an isolated find; however the site could be a microblade production site and potentially contain more cultural material. This site lies outside the APE for the proposed UAV launch and recovery site project, and therefore was not evaluated to determine eligibility for



Figure 78: General view of site, XMH-936 heading west

inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

### XMH-936

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-936 is located on a low north-south trending ridge between Mark Lake and Big Lake. Site location is approximately .3 kilometers south of Mark Lake, and 1.1 kilometers north-northwest of Big Lake. Surface visibility is high due to large naturally eroded areas with sparse vegetation. Sites XMH-935 and XMH-937 are to the south along the same landform. Three chert flakes were observed on the surface. SUBSURFACE EXAMINATIONS HAVE YET TO BE CONDUCTED. UTM COORDINATES FOR THE SITE ARE: [REDACTED]

#### **RECOMMENDATIONS**

XMH-936 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies outside the APE for the proposed UAV launch and recovery site project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

### XMH-937

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-937 is located on a low north-south trending ridge between Mark Lake and Big Lake. SITE LOCATION is approximately .5 kilometers south of Mark Lake and 1.2 kilometers northwest of Big Lake. Surface visibility is high due to large naturally eroded areas with sparse vegetation. Sites XMH-935 and XMH-936 are to the north along the same landform. A total of five chert tertiary flakes were observed on the ground surface in an eroded spot on the northeast slope of a long finger ridge. SUBSURFACE EXAMINATIONS HAVE YET TO BE CONDUCTED. UTM COORDINATES FOR THE SITE ARE: [REDACTED]

#### **RECOMMENDATIONS**

XMH-937 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies outside the APE for the proposed UAV launch and recovery site project, and therefore was not evaluated to determine eligibility for



*Figure 79: General view of site, XMH-937 heading west*



*Figure 80: General view of site, XMH-942 heading north*

inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-942

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-942 is located along the western edge of a broad ridge, overlooking the north end of Big Lake and the surrounding meadow that makes up the Big Lake basin. The site was located during systematic shovel testing in association with pedestrian survey. A total of 13 shovel tests were excavated. Two shovel tests were positive, yielding one dark gray chert finishing flake and one obsidian biface thinning flake. All artifacts were collected. UTM COORDINATES FOR THE SITE ARE: [REDACTED]

#### **Recommendations**

XMH-942 has been classified as a buried site and could potentially contain more cultural material. This site lies outside the APE for the proposed UAV launch and recovery site project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-982

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-982 is located on a low, narrow north-south trending moraine between Mark Lake and Big Lake. The site location is approximately .5 kilometers south of Mark Lake and 1.2 kilometers North West of Big Lake. The site is paralleled by mixed forest on the west and a broad meadow to the east. Large, naturally-eroded areas with good surface visibility are prevalent atop the ridge. Site XMH-937 is located 70 meters to the northwest. The site consists of a quartz biface located during systematic shovel testing. A total of 4 shovel tests were excavated along the crest and near the southern end of the moraine. One positive shovel test yielded one quartz biface. UTM COORDINATES FOR THE SITE ARE: [REDACTED]



*Figure 81: General view of site, XMH-982 heading east*

#### **Recommendations**

XMH-982 has been classified as a buried site and could potentially contain more cultural material. This site lies outside the APE for the proposed UAV launch and recovery site project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-1052**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1052 is located on a southwest-northwest trending ridge, which is approximately 50 meters long. Site affords approximately a 180 degrees unobstructed view of the surrounding terrain to the south, with Donnelly Dome visible, but partially obstructed by Windy Ridge. There is an unobstructed view of the Alaska Range to the southwest as well. North Twin Lake is approximately 100 meters to the



Figure 82. General view of site, XMH-1052 heading south

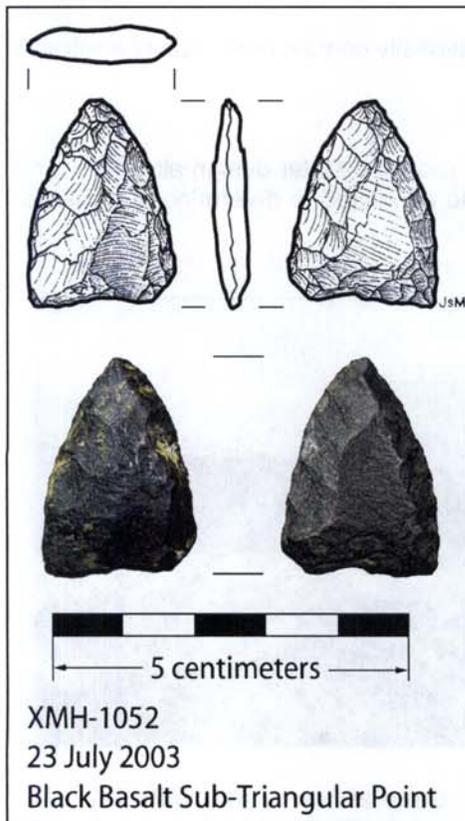


Figure 83. Illustration and photo of the projectile point from XMH-1052

South, but is not visible. A small pond is located 75 meters to the southeast and a second small pond is located 30 meters to the northeast, both of which can be seen from the northwest portion of the ridge. There is approximately 50% surface visibility on either end of the ridge with thick vegetation, consisting of large alder bushes, in the middle. UTM coordinates for the site are: [REDACTED]

XMH-1052 consists of one basalt projectile point (Figure 83) and one opaque, white chert scraper (Figure 84) observed on the surface of the site. The projectile point is triangular in shape, 2.6cm long, 2.1cm wide at its base, and weighs approximately 3.0gm. The scraper is 2.2cm long, 2.0cm wide, and also weighs approximately 3.0gm. The projectile point was collected due to its uniqueness, while the scraper was left on the surface of the site. Full subsurface examinations have yet to be conducted. No density plots were calculated.

South, but is not visible.

A small pond is located 75 meters to the southeast and a second small pond is located 30 meters to the northeast, both of which can be seen from the northwest portion of the ridge. There is approximately 50% surface visibility on either end of the ridge with thick vegetation, consisting of large alder bushes, in the middle. UTM coordinates for the site are: [REDACTED]

XMH-1052 consists of one basalt projectile point (Figure 83) and one opaque, white chert scraper (Figure 84) observed on the surface of the site. The projectile point is triangular in shape, 2.6cm long, 2.1cm wide at its base, and weighs approximately 3.0gm. The scraper is 2.2cm long, 2.0cm wide, and also weighs approximately 3.0gm. The projectile point was collected due to its uniqueness, while the scraper was left on the surface of the site. Full subsurface examinations have yet to be conducted. No density plots were calculated.

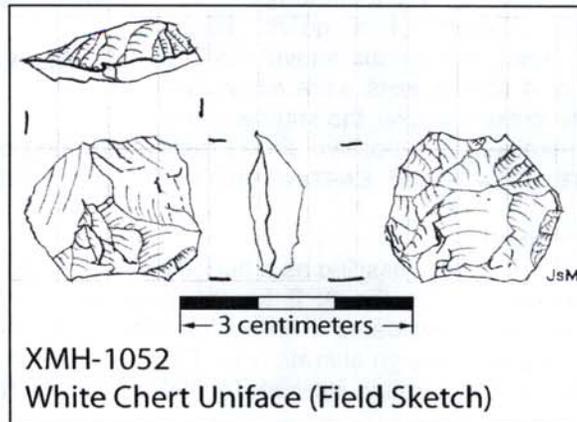


Figure 84. Illustration of the unifacial end scraper from XMH-1052

components of Broken Mammoth (Holmes 1996), Swan Point (Holmes et al. 1996), Healy Lake (Cook 1996) in the Tanana Valley; Dry Creek (Hoffecker et al. 1996), Moose Creek (Pearson 1997) in the Nenana Valley and one refit point from Owl Ridge (Hoffecker et al. 1996) in the Teklanika Valley. These points are small, usually no more than 3.5cm in length and 3cm wide, have a thin profile usually no more than .5cm, and are basally thinned. These are all characteristics, which the projectile point from XMH-1052 processes.

These small triangular points are similar in size and construction to Chindadn points that are teardrop in shape. These two point types co-occur at the Healy Lake and Moose Creek sites (Pearson 1997). Some archaeologists (Holmes 2000) refer to these small triangular projectile points as Chindadn type 2 while others refer to them as "Paleo-Indian" projectile points (Yesner 1996:270).

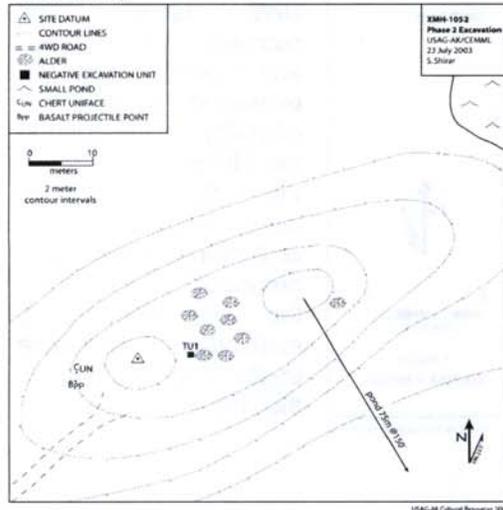


Figure 85: Site map of test at XMH-1052

Small unifacial end scrapers are also common in the Nenana/Chindadn sites (Cook 1996; Goebel et al. 1996; and Hoffecker et al. 1996) and are similar in size and construction to the small end scraper found at XMH-1052 (Figure 84).

#### RECOMMENDATIONS

XMH-1052 has been classified as a tool use site; however the site could potentially contain more cultural material. The presents diagnostic artifacts (small triangular point and end scraper) attributed to the Nenana/Chindadn complex suggest the site could date to Pleistocene-Holocene boundary. Further investigation is needed. This site lays outside the APE for the proposed an Unmanned Aerial Vehicle (UAV) launch and recovery site project, and therefore was not evaluated to determine eligibility for inclusion in the National Register of Historic Places (NRHP). However, if the

APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-1053

**Latitude:** [REDACTED]  
**Longitude:** [REDACTED]  
**Determination:** Not evaluated

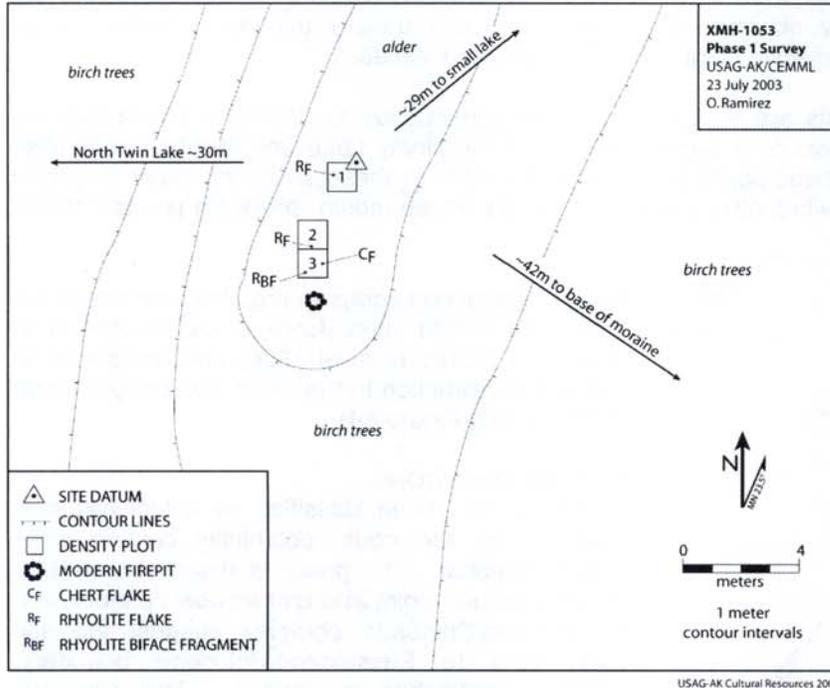
Site XMH-1053 is located on the southern termination of an 80 meters long north-south trending ridge. The view-shed is minimal due to thick tree cover. North Twin Lake is visible through the trees to the southwest and is approximately 30 meters from the site. A small pond is located 75 meters north of the datum and is visible from the northern termination of the ridge. Surface visibility is approximately 75% along the ridge due to erosion. UTM coordinates for the site are: [REDACTED]



Figure 86. General view of site, XMH-1053

The site consists of six tertiary flakes, and one rhyolite biface fragment identified on the surface. Three density plots were calculated at the site. DP S1/W1 consisted of one rhyolite tertiary flake. DP S3/W2 consisted of one rhyolite tertiary flake. DP S4/W2 consisted of one chert tertiary flake

and one rhyolite biface fragment. Artifact density is calculated as being up to 1.33 artifacts per-square meter. A flake type analysis indicates late stage lithic reduction occurred at the site. Subsurface examinations have yet to be conducted. None of the artifacts were collected.



**Recommendations**

XMH-1053 has initially been classified as a small lithic scatter where late stage lithic reduction occurred. This site lies outside the APE for the proposed UAV launch and recovery site project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

Figure 87: Site map of test at XMH-1053

**XMH-1054**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1054 is located on a broad, flat bench, which lies southwest of a prominent knoll. The Alaska Range is visible to the southwest and Donnelly Dome can barely be seen through the trees to the south-southeast. There is an 180 degree view-shed. The nearest water source is North Twin Lake, located approximately 100 meters to the west, which is not visible. Surface visibility is approximately 30%. UTM coordinates for the site are: [REDACTED]



Figure 88: General view of site, XMH-1054 heading south

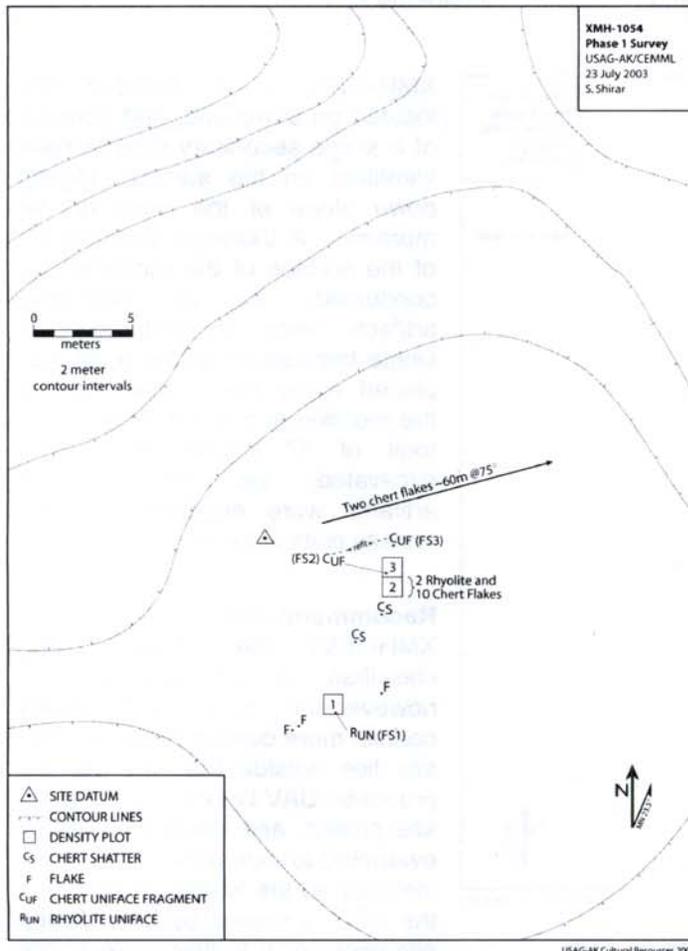


Figure 89: Site map of test at XMH-1054

XMH-1054 consists of lithic debitage and tools located on the exposed surface. Three density plots were calculated at the site. DP S2/E6 contained one chert tertiary flake and one chert uniface (FS2). DP S3/E6 contained 12 flakes (3 secondary and 9 tertiary). DP S9/E3 contained one rhyolite scraper (FS1). Artifact density is calculated as being up to 5 artifacts per-square meter. A flake type analysis indicates late stage lithic reduction occurred at the site. Subsurface examinations have yet to be conducted. None of the artifacts were collected.

### Recommendations

XMH-1054 has initially been classified as a large lithic scatter where late stage lithic reduction occurred. This site lies outside the APE for the proposed UAV launch and recovery site project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for

### XMH-1055

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

Site XMH-1055 is located on a moraine approximately 100 meters west of a small lake, and offers a relatively unobstructed view of the area to the east. The "L" shaped moraine is vegetated primarily with moss, lichen, and sparse dwarf birch. Several small spruce trees are scattered throughout the area. The forest surrounding the moraine is mixed, containing both spruce and birch. Several large areas at the crest of the moraine were completely devoid of vegetation, with underlying soil exposed at the surface. UTM



Figure 90: General view of site, XMH-1055 heading north

coordinates for the site are: [REDACTED]

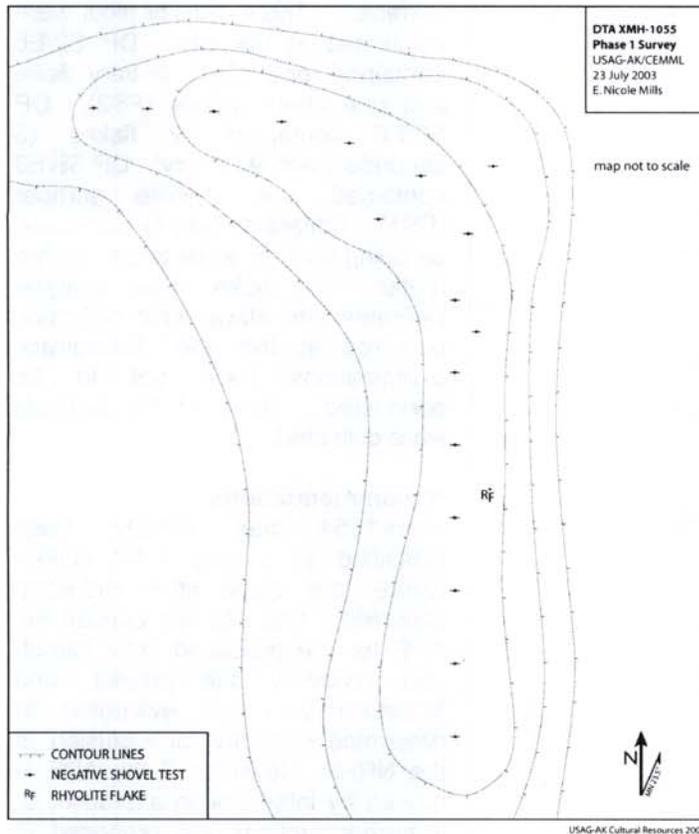


Figure 91: Site map of test at XMH-1055

XMH-1055 is an isolated find located on a moraine, and consists of a single secondary rhyolite flake identified on the surface, slightly down slope of the crest of the moraine. A thorough examination of the surface of the moraine was conducted, yet no additional artifacts were encountered. A single transect of shovel tests was placed along the narrow crest of the moraine at 5 meter intervals. A total of 17 shovel tests were excavated, yet no additional artifacts were encountered. No density plots were calculated.

#### Recommendations

XMH-1055 has initially been classified as an isolated find; however the site could potentially contain more cultural material. This site lies outside the APE for the proposed UAV launch and recovery site project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-1056

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

Site XMH-1056 is located on the crest of a north-south trending moraine. The moraine on which the site was identified is approximately 250 meters long and has a narrow crest. The site was identified near the northern end in an area that rises approximately 20 meters above the main portion of the moraine. Two small lakes are located near the site, but neither is visible from the site. The first lake lies 150 meters to the south, while the second lies 150 meters northeast. The crest of the moraine on which the site was



Figure 92: General view of site, XMH-1056 heading west

identified is devoid of trees and offers an almost unobstructed 360° view of the surrounding landscape. Vegetation at the site is represented primarily by moss, lichen, and forbs. The side slopes of the moraine contain some dwarf spruce as well as dwarf birch. The crest of the moraine contains several large patches of barren soil in which the underlying soil is exposed at the surface. Wind most likely plays a role in erosion at the site. UTM coordinates for the site are:

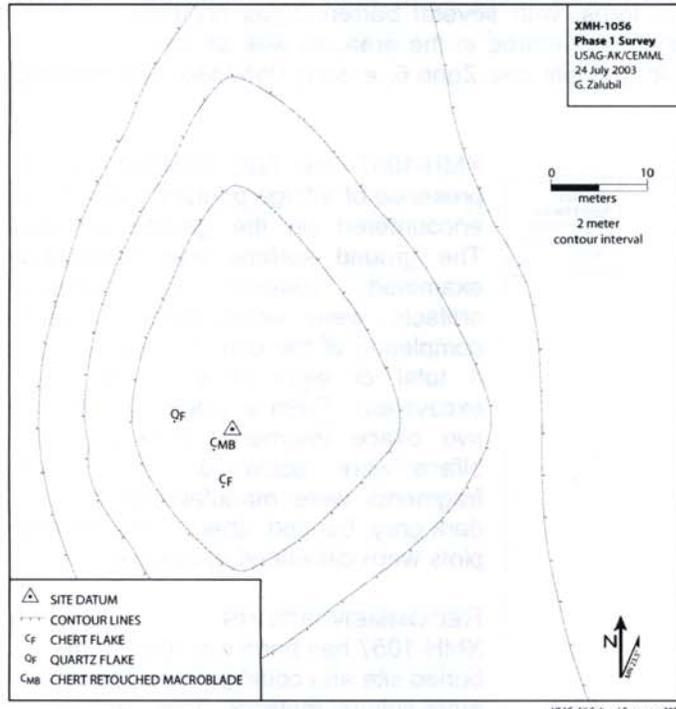


Figure 93: Site map of test at XMH-1056

XMH-1056 consists of three prehistoric artifacts; one white quartz flake, one gray chert flake, and one fragment of a unifacially retouched gray chert blade. All three artifacts were encountered on the surface of the site within ten meters of each other at the crest of the moraine. The chert flake exhibits use-wear/retouch on its margins and the unifacially retouched blade is made from the same material type as the chert flake encountered at the site. The chert blade weights 2.5 grams and measures 3.5 cm long by 1.5 cm wide. Subsurface examinations have yet to be conducted. No density plots

were calculated.

### Recommendations

XMH-1056 has initially been classified as a small lithic scatter where both primary and late stage lithic reduction occurred. This site lies outside the APE for the proposed UAV launch and recovery site project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

### XMH-1057

Latitude: [REDACTED]

Longitude: [REDACTED]

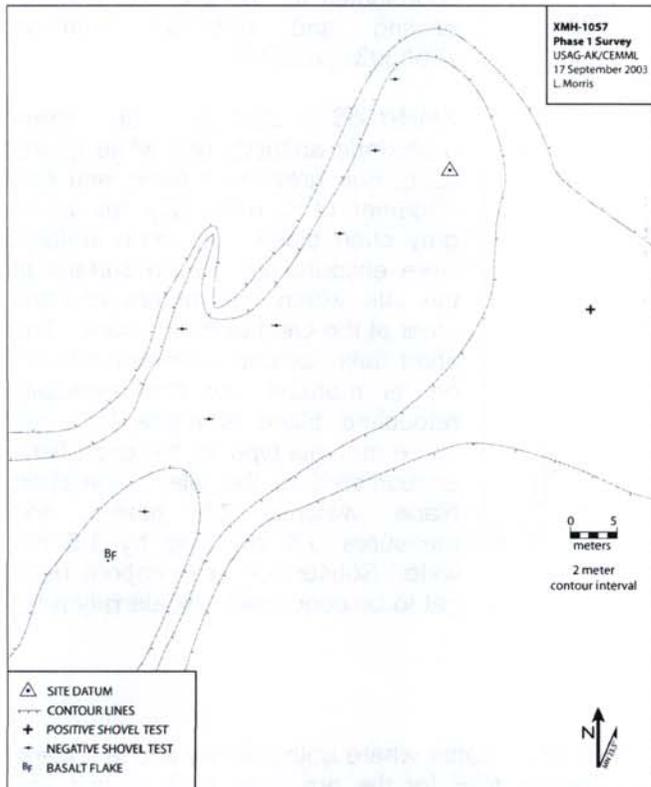
Determination: Not evaluated

XMH-1057 is located on the northern extent of a prominent north-south trending ridge. The site is located approximately 120 meters north of site XMH-1056 along the same landform. The portion of the moraine on which the site was identified rises approximately two meters above the surrounding landscape. The closest water source to the site is a small lake, located approximately 100 meters east of the site.



Figure 94: General view of site, XMH-1057 heading south

A second small lake is located approximately 250 meters to the south of the site. Although the area in which the site was identified lacks substantial vegetation, the surrounding area contains tall trees and obstructs views of the surrounding area. The ground surface of the site is vegetated primarily by moss, lichen, and forbs, with several barren areas scattered around. Several dwarf birch and spruce trees were encountered in the area, as well as several mature spruce and birch trees. UTM coordinates for the site are: [REDACTED]



XMH-1057 was first identified by the presence of a large primary basalt flake encountered on the ground surface. The ground surface was thoroughly examined; however no additional artifacts were encountered. Upon completion of the surface examination, a total of eight shovel tests were excavated. From a single shovel test two biface fragments from a single biface were recovered. The biface fragments were manufactured from a dark-gray banded chert. No density plots were calculated at this site.

**RECOMMENDATIONS**

XMH-1057 has been classified as a buried site and could potentially contain more cultural material. This site lies outside the APE for the proposed UAV launch and recovery site project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility for inclusion in the NRHP.

Figure 95. Site map of test at XMH-1057

## 4.4 Cold Weather/ Automotive Test Complex

In 2003, U.S. Army Cold Regions Test Center (CRTC) proposed to construct a Cold Weather/Automotive Test Complex on lands at Donnelly Training Area, Fort Wainwright. The purpose of this facility is to enhance CRTC's capability to test current and future Army ground vehicles in cold weather conditions and on ice.

There were two alternatives considered for the site of this project. Figure 96 shows the two general areas, Jarvis West and Donnelly Drop Zone. The size of the facility and requirements for the proximity to utilities, relatively flat topography, and noninterference with firing fans and USAG activities eliminated most other options. The preferred alternative for the site is located at Jarvis West Training Area approximately nineteen kilometers southwest of Delta Junction, and five kilometers west of the Richardson Highway. For more details on the Cold Weather/Automotive Test Complex see Chapter (Robertson 2004).

Archaeological field crews, employed by the Center for Environmental Management of Military Lands (CEMML), Colorado State University, were contracted by CRTC to conduct surveys of all areas potentially impacted (both directly and indirectly) by proposed undertaking. Four crews, comprised of four archaeologists each, conducted surveys at Donnelly Training Area.

### SURVEY AND FIELD METHODS

Parallel pedestrian transects spaced at 20m were walked systematically across the APE and surrounding area. Transect survey units were partitioned according to existing roads and trails where possible. When existing roads did not provide for practical unit boundaries, a one square kilometer work unit was defined. Systematic sub-surface shovel testing was undertaken in areas considered to have high probability for containing archaeological sites. Areas that were shovel

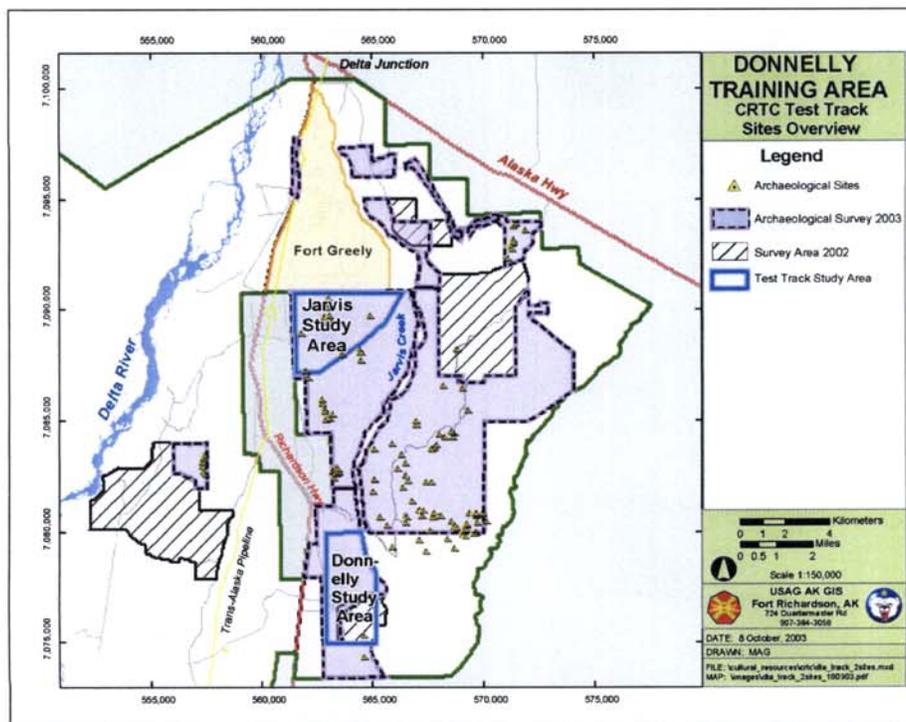


Figure 96: Area Surveyed and Location of the Two Proposed Alternatives

tested included but were not limited to: landforms affording a view of surrounding terrain; lake margins; ridgelines; terrace edges; hilltops; benches adjacent to steeper slopes; and the bluffs

over looking Jarvis Creek. Shovel tests were typically 30cm in diameter and excavated into glacial till or consolidated outwash. All soil removed was screened through ¼" hardware cloth.

### **Results/Summary**

For details on the archaeological review and analysis, which was conducted for this project, refers to (Robertson 2004). A copy can be obtained from the U.S. Army Cold Regions Test Center. All cultural resources identified during the CRTIC study are discussed in the report.

#### 4.4.1 Cultural Resources in the Jarvis West Alternative

Fourteen prehistoric sites are located in the Jarvis West alternative (XMH-1058, XMH-1059, XMH-1060, XMH-1061, XMH-1062, XMH-1063, XMH-1064, XMH-1065, XMH-1066, XMH-1067, XMH-1068, XMH-1069, XMH-1070 and XMH-1071) and five prehistoric sites have been recorded within one kilometer of the proposed project area (XMH-1074, XMH-1075, XMH-1076, XMH-1077 and XMH-1078) (Figure 97). Following is a description of each recorded site in and around the Jarvis west proposed project area:

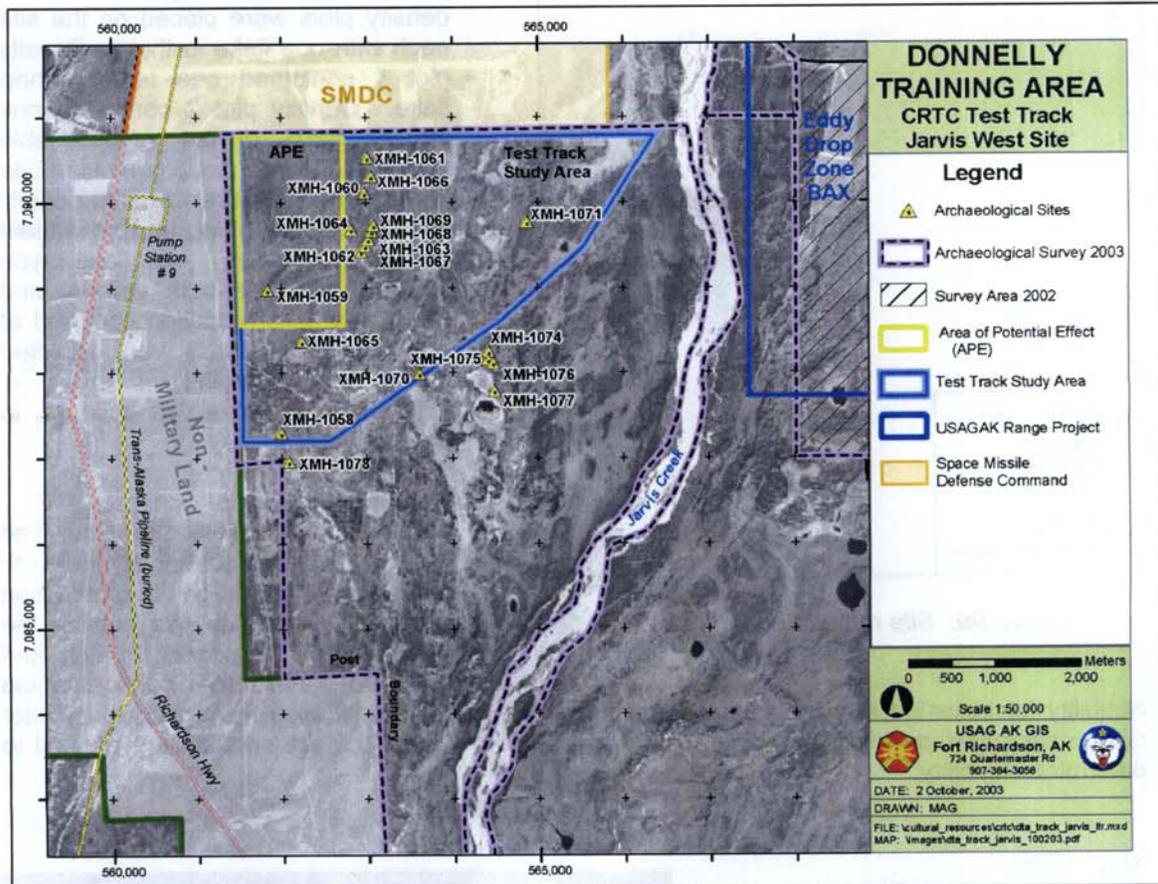


Figure 97: Location of Archaeological Sites in the Jarvis West Alternative

#### XMH-1058

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

Site XMH-1058, is located on the northern end of a narrow north/south running ridge. It is a knoll rising slightly above the rest of the ridge (Figure 98). Donnelly dome is visible to the south, the Granites are visible to the southeast, and the Alaska Range is visible to the southwest.



Figure 98: General view of site XMH-1058, heading south

The closest water source is a small lake that can be seen from the highest point on the knoll looking northwest, 30 meters away. There is 70-80% surface visibility. The entire area was burned by the 1999 forest fire. UTM coordinates for the site are: [REDACTED]

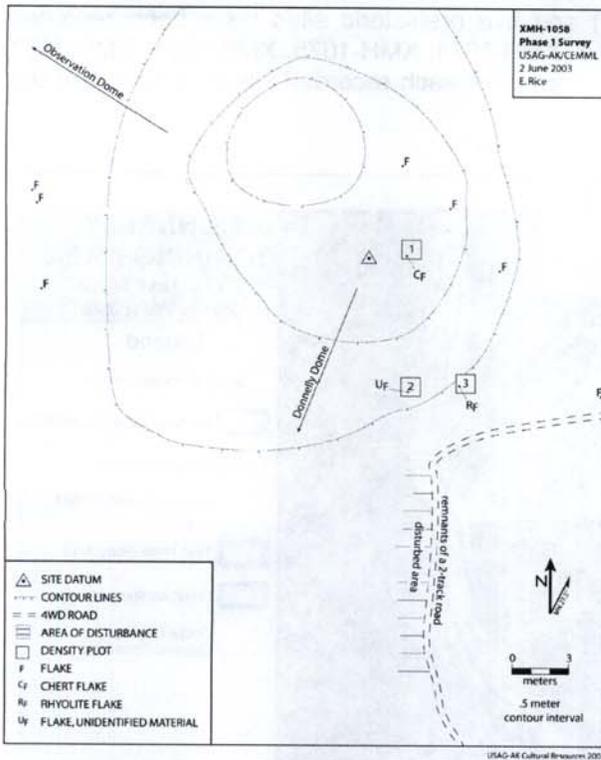


Figure 99: Site map of testing at XMH-1058

Site XMH-1058 consists of 10 pieces of lithic debitage located on the surface, no tools were found (Figure 99). The flakes consist of a mix of chert, basalt and rhyolite. Three density plots were placed on the site each with one flake in them. Density plot 1 contained one tertiary chert flake. Density plot 2 contained one tertiary flake of an unidentifiable material. Density plot 3 contained one primary rhyolite flake. Artifact density is calculated as being up to 1 artifact per-square meter. A flake type analysis indicates both primary and late stage lithic reduction occurred at the site. No artifacts were collected during the recording of this site. Subsurface examinations have yet to be conducted.

#### Recommendations

XMH-1058 has initially been classified as a small lithic scatter where both primary and late stage lithic reduction occurred. This site lies outside the APE for this proposed project, and was not evaluated to determine

eligibility for inclusion in the National Register of Historic Places. If the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility.

#### XMH-1059

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not Eligible

Site XMH-1059 is located on the western margin of a small, flat moraine and encompasses approximately 25m<sup>2</sup> (Figure 100). The moraine rises approximately 5 m above the surrounding landscape and is relatively flat, sloping slightly to the south. Currently, the closest water source to the site is a small dried lakebed located approximately 1.5km to the east of the site. A second small lake is located approximately 3km to



Figure 100: General view of site XMH-1059, heading north

the east, while Jarvis Creek lays approximately 5km to the east.

The forest that once covered the site was burned by a 1999 forest fire, leaving only charred trunks and stumps of spruce and birch trees. The tallest vegetation at the site is represented by dwarf poplar, while the groundcover includes various forbs, grasses, sedges, moss, and lichen. This lack of vegetation offers a virtually unobstructed 360° view of the surrounding area. From the site Donnelly Dome is visible to the south, a large portion of the Alaska Range to the southwest, and the Granite Mountains to the southeast. Several areas, specifically on the

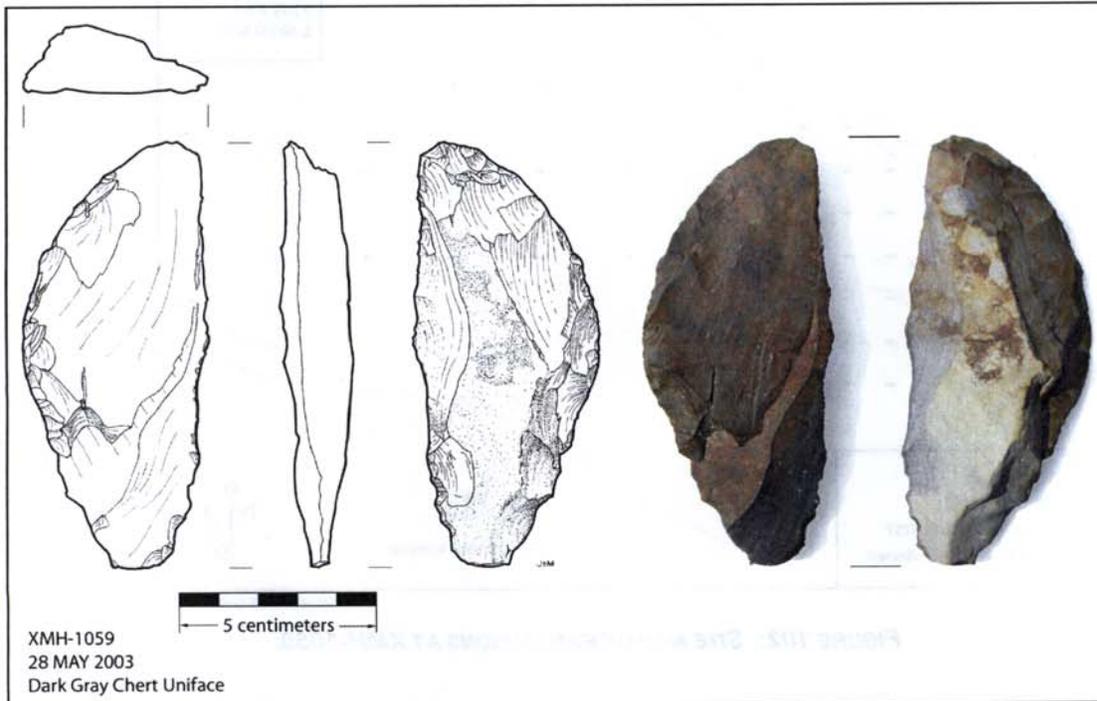


Figure 101: Unifacial tool from XMH-1059

western edge of the landform, contained glacial till exposed at the surface and offer excellent surface visibility. UTM coordinates for the site are: [REDACTED]

The site consists of a single unifacial tool found on the surface. The artifact exhibits both unifacial and bifacial reduction; however its primary form of reduction is unifacial (Figure 101). A portion of one lateral margin is bifacially worked, the rest of that side, along with one end of the artifact is unifacially worked. The other lateral margin exhibits light to medium unifacial retouch. The tool is 104.3mm long, 44.5mm wide, 15.5mm thick and weighs 67.5 gm (see Figure 101). The tool is manufactured from dark gray chert and has cortex on its dorsal surface. This artifact was collected.

An intensive examination of the ground surface was unable to locate any additional artifacts. A shovel test grid was laid out over the landform, and a total of 72 shovel tests were excavated, no additional artifacts were found. A typical soil profile consisted of approximately 2 cm of very dark gray loess (7.5YR3/1) representing soil affected by a forest fire in 1999. The very dark gray loess was underlain by 14cm of brown loess (7.5YR4/6). Directly beneath the brown loess was yellowish brown sandy loess (10YR5/8). Shovel tests were abandoned upon encountering glacial till (10YR5/8). All shovel tests were excavated to at least 10cm into dense glacial till.

## FINDINGS

Pedestrian survey and 72 shovel tests produced a total of only one surface artifact. This finding suggests that XMH-1059 is an isolated find. The paucity of cultural material leads to the conclusion that XMH-1059 does not contain enough information that is important to our understanding of the regions prehistory or history and is not eligible for inclusion in the National Register of Historic Places.

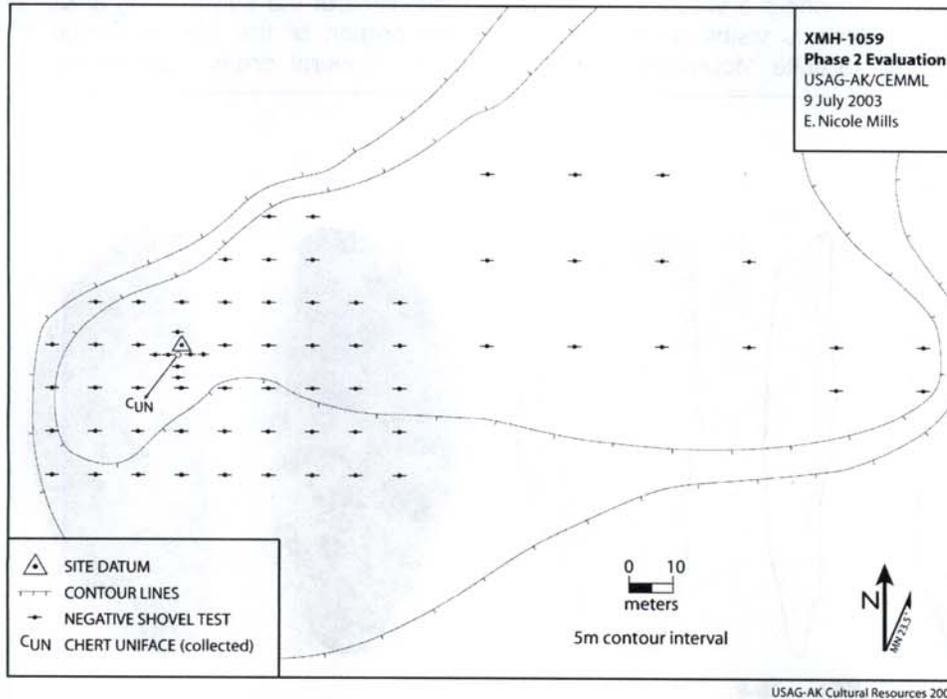


FIGURE 102: SITE MAP OF EVALUATIONS AT XMH-1059.

## XMH-1060

Latitude: [REDACTED]

Longitude: [REDACTED]

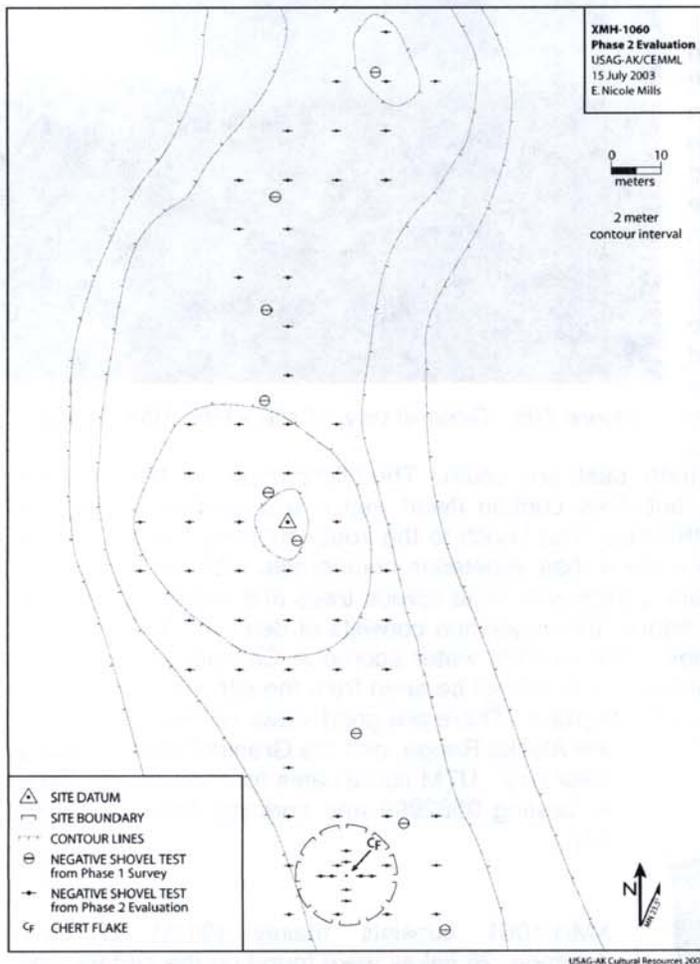
Determination: Not Eligible

Site XMH-1060 is located on a north-south trending ridge approximately 40m south of a small rise along the ridge crest (Figure 102). The site encompasses 25m<sup>2</sup> and includes a single prehistoric artifact. The western face of the ridge rises sharply while the eastern face has a gentler slope. The rise is elevated approximately 5m above the southern extension of the ridge but <1m above the northern portion of the ridge. The nearest water source to the site is a small dried lakebed located approximately 1km south of the site.



Figure 103: General view of site XMH-1059, heading north

A second lake is located approximately 2.5km east-southeast while Jarvis Creek lies 3.5km east of the site. The site and the surrounding area experienced a fire episode in 1999, which at that time removed most of the vegetation.



**FIGURE 104: SITE MAP OF EVALUATIONS AT XMH-1060.**

The charred remains of spruce and birch trees are still standing but do not obstruct one's view. The top of the rise offers a 360° view of the surrounding area. Donnelly Dome and the Granite Mountains can be seen to the south and southeast, respectively. A portion of the Alaska Range can be seen to the southwest. The vegetation in and around the site consists of dwarf birch, moss, lichen, grass, and sedge. Several areas, specifically on the surface of the rise contained exposed glacial till and offered excellent surface visibility. Approximately 50% of the ground surface in the area is void of vegetation and exposed.

XMH-1060, consist of a single flake fragment of light gray chert. An intensive examination of the ground surface was unable to locate any additional artifacts (Figure 10). A shovel test grid was laid out over the landform, and a total of 76 shovel tests were excavated. No artifacts were found. The majority of shovel tests excavated at the site exhibited the same soil profile (STP

S60 E20). A typical soil profile consisted of approximately 1cm of very dark grayish brown loess (10YR3/3) representing soil affected by a forest fire in 1999. The very dark grayish loess was underlain by 12cm of brown sandy loess (7.5YR4/4). Directly beneath the brown sandy loess is dark yellowish brown sandy loess (10YR4/6). Shovel tests were abandoned upon encountering glacial till. Shovel tests were excavated to at least 10cm into dense glacial till.

## FINDINGS

Pedestrian survey and 76 shovel tests produced a total of only one flake found on the surface. This finding suggests that XMH-1060 is an isolated find. The paucity of cultural material leads to the conclusion that XMH-1060 does not contain enough information that is important to our understanding of the regions prehistory or history and is not eligible for inclusion in the National Register of Historic Places.

## XMH-1061

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Eligible

Site XMH-1061 is located on a high point of a north-south trending ridge. It also has a secondary component on a bench 50m south-southwest of the datum. The site is located on and around a hilltop that is 50 x 40m (Figure 105). The area has burned recently in the 1999 forest fire, many dead and burnt spruce trees surround the site. The hilltop rises 25 meters above the surrounding terrain to the east and west, and 10m above the rest of the ridge to the north and south. The descending slope is relatively steep to the west, and gradually sloping to the north, east, and south.

The hilltop crest has been eroded by wind and is devoid of large trees, but does contain dwarf aspen and grasses. There is approximately 40% ground visibility at the site. The bench to the south-southwest of the hilltop, where artifacts were also found on the surface, has vegetation comparable with the hilltop. To the north of the hilltop, the sloping terrain is thick with dead spruce trees and willow shrubs. To the south of the hilltop and east of the bench, the vegetation consists of dead and burnt spruce trees, grasses, fireweed, and cranberries. The nearest water source is Canister Lake located approximately 1500 meters to the northeast, which cannot be seen from the site. The view shed from the top of the site is approximately 200 degrees. There are good views of Donnelly Dome, the Alaska Range, and the Granite Mountains on a clear day.



Figure 105: General view of site XMH-1061, heading north.

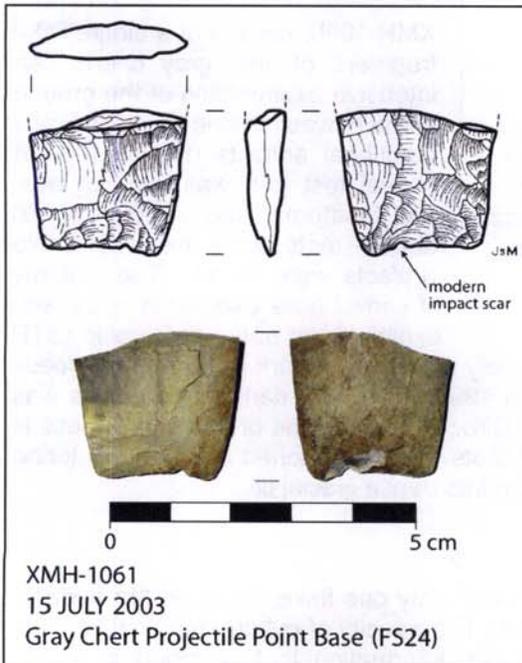


Figure 106: Biface Fragment from XMH-1061

XMH-1061 consists mainly (91%) of lithic debitage. 26 flakes were found on the surface and an additional five flakes, were found subsurface in either shovel tests or test units. Two tools were found at the site, both on the surface. FS24 is a chert biface fragment and is most likely a Basel fragment of a projectile point (Figure 106). It is gray in color, 23.75mm long, 25.70mm wide, and weighs 4.22gm. This artifact was collected. FS9 is a large flake core of unidentified material with several large flakes taken off of it. Chert, basalt, rhyolite, quartz, and obsidian (a non-locally occurring material type) were present among the debitage. A total of eleven density plots were placed on the site. Artifact density is calculated as being up to 1.27 artifacts per-square meter. Both flake type analysis and the presence of the flake core indicates both primary and late stage lithic reduction occurred at the site (Tables 5 and 6).

Shovel tests were systematically placed throughout the site area at intervals of 10m. Four shovel tests were placed at 5m intervals near positive shovel tests in the northwest corner of the site. A total of 58 shovel tests were excavated. The depth of shovel tests varied, but all were excavated to glacial till. A total of four shovel tests were positive with each containing one artifact apiece. Subsurface artifacts were found 10-20cm below the surface in all positive shovel tests. Based on the results of the survey and testing, the site area is estimated at approximately 120 x 60m.

Three 1 x 1m test units were excavated at site XMH-1061. One unit was placed at the base of the hill to the southeast of the site datum, near a positive shovel test. The second and third test units were placed near positive shovel tests and surface artifacts on the slope of the hill north-northwest of the site datum. The units were excavated in 5cm levels until glacial till was reached throughout the entire unit floor. Test units one and two contained no cultural material. Test unit three contained one artifact recovered from level four, 15-20cm below the surface (Figure 107). No subsurface features were identified at the site. Soil thickness varied 10-60cm across the site. The top of the site has sustained considerable wind erosion, and soil deposition only averaged 15cm. Soil in this area consists of loosely compacted, dark brown, organically rich loess to an average depth of 5cm. Below this organic horizon, the soil consists of moderately compacted yellow brown loess with a low density of gravel and cobbles. Glacial till is encountered below this loess deposit and consists of yellow brown sandy loess with a high density of gravels and cobbles. Soil down-slope

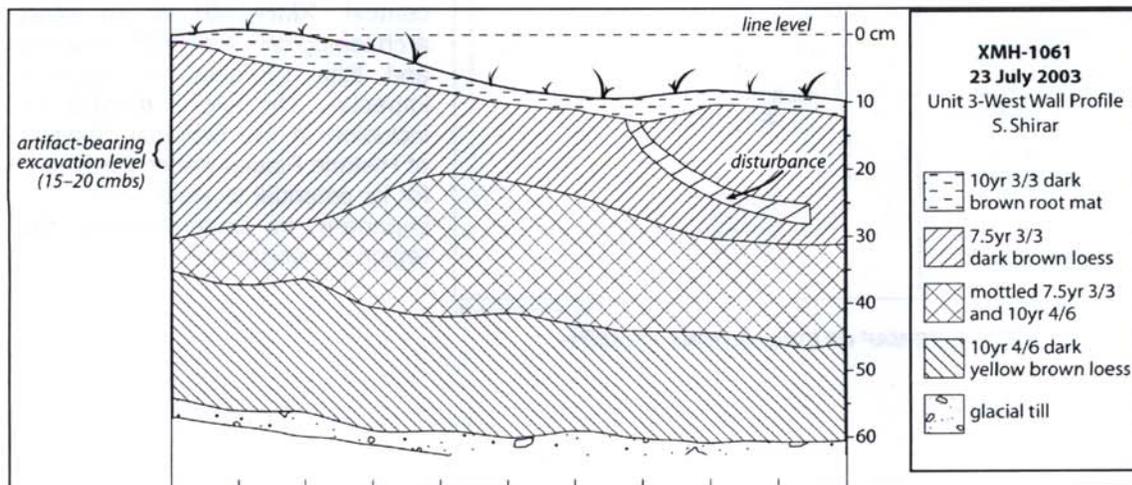


FIGURE 107. SOIL PROFILE OF TEST UNIT 3 XMH-1061

from the top of the site shows more deposition, averaging 45cm. Soil in these areas consists of loosely compacted, dark brown, organically rich loess that is present to an average of 5cm below the surface. Below this organic horizon, the soil consists of moderately compacted brown to dark brown loess with a low density of gravels and cobbles. Below this is a third layer, consisting of moderately compacted yellow brown loess with a moderate density of gravels and cobbles. Glacial till is encountered below these loess deposits, consisting of very loosely compacted yellow brown sandy loess, with a high density of gravels and cobbles.

## FINDINGS

Pedestrian survey, 58 shovel tests and three test units produced a total of 29 artifacts at XMH-1061: 24 found on the surface, and 5 recovered from below the surface. A total of two tools were found including: 1 chert projectile point fragment, and a large flake core. The remaining finds are lithic debitage.

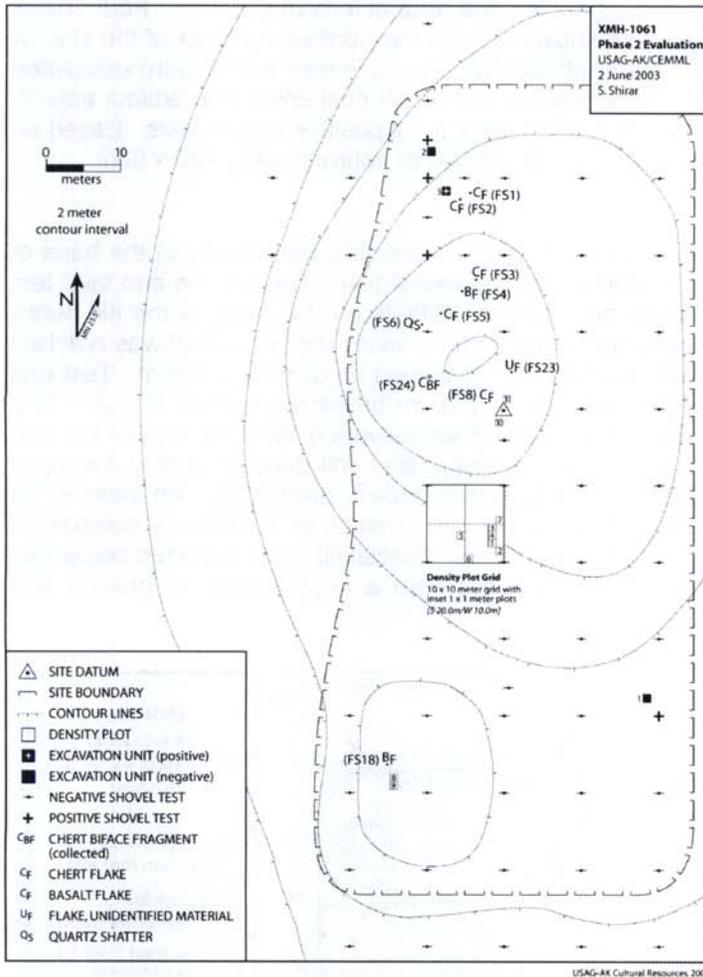


FIGURE 108: SITE MAP OF EVALUATIONS AT XMH-

XMH-1061 is a large lithic scatter with both surface and buried components. Both primary reduction of locally occurring material type and late stage lithic reduction or tool maintenance of non-locally occurring material types occurred at the site. With tool fragments and associated lithic debitage, non-locally occurring material types and buried cultural material XMH-1061 is in an excellent position to contribute to our knowledge of prehistoric land use patterns. *In situ* artifacts and soil stratigraphy indicate that if datable material were collected it may be used to date human use of the site and diagnostic artifacts, potentially contributing to a broader regional context. XMH-1061 is an intact archaeological site with integrity and little evidence of previous impacts. The site is **eligible** for inclusion in the National Register of Historic Places under criterion D for its potential to yield information important in understanding the region's prehistory.

Table 5. Flake types from site XMH-1061.

	Artifact Class	
	Frequency	% of Assemblage
Primary flakes	1	8%
Secondary flakes	1	8%
Tertiary flakes	10	84%
Total*	12	100%

\*This total represents a sample, the number of flake found in eleven 1m x 1m density plots.

**Table 6. Catalog of Artifacts from site XMH-1061.**

<b>FS #</b>	<b>Artifact Description</b>	<b>Artifact Material</b>	<b>Location</b>
1	tertiary flake	gray chert	surface
2	tertiary flake	gray chert	surface
3	tertiary flake	gray chert	surface
4	tertiary flake	basalt	surface
5	secondary flake	gray chert	surface
6	shatter	quartz	surface
7	tertiary flake	quartz	surface DP11
8	tertiary flake	gray chert	surface
9	core	unidentified	surface DP10
10	primary flake	unidentified	surface DP10
11	tertiary flake	gray chert	surface DP7
12	secondary flake	gray chert	surface DP3
13	tertiary flake	obsidian	surface DP4
14	tertiary flake	gray chert	surface DP1
15	tertiary flake	gray chert	surface DP2
16	shatter	quartz	surface DP5
17	tertiary flake	rhyolite	surface DP6
18	tertiary flake	basalt	surface
19	tertiary flake	quartz	surface DP8
20	tertiary flake	quartz	surface DP9
21	tertiary flake	quartz	surface DP9
22	tertiary flake	quartz	surface DP9
23	primary flake	unidentified	surface
24	point base	gray chert	surface
25	tertiary flake	basalt	ST N30/W10
26	tertiary flake	unidentified	ST S40/E20
27	tertiary flake	unidentified	ST N20/W10
28	tertiary flake	unidentified	ST N35/W10
29	tertiary flake	gray chert	TU#3 Lvl.4

XMH-1062

Latitude: [REDACTED]

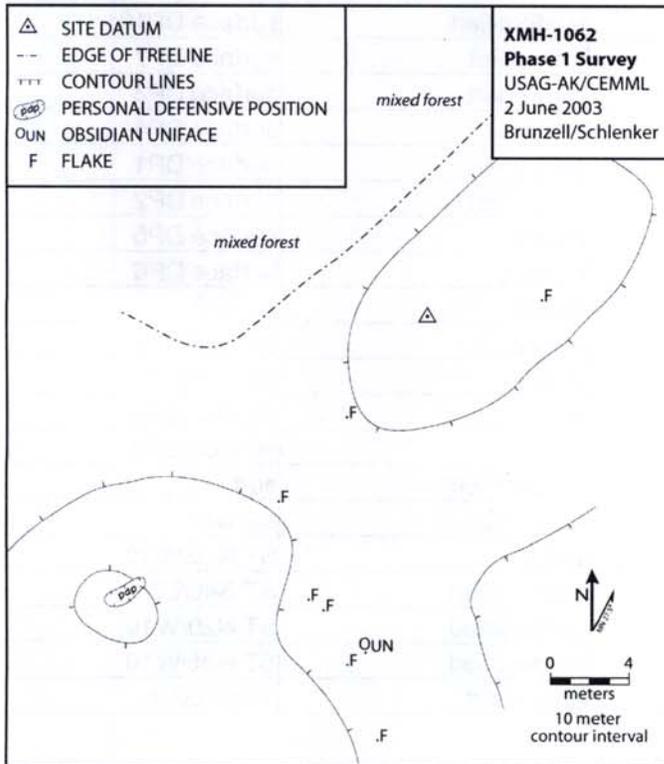
Longitude: [REDACTED]

Determination: Not evaluated

Site XMH-1062 is located on a high glacial moraine overlooking a wide expanse, with a particularly unobstructed view to the south and west (Figure 109). The nearest existing water is a marsh approximately 600 meters to the east/southeast. Surface visibility is high (approximately 80%) because of site disturbances including bulldozer tracks crossing site, as well as Aeolian deflation and sheet washing (heightened by recent 1999 burn). The vegetation in and around the site consists of mixed forest, dwarf birch, and forbs. A 4-wheel drive road is located to the north of the site. UTM coordinates for the site are: [REDACTED]



Figure 109: General view of site XMH-1062, heading northeast



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Figure 110: Site map of testing at XMH-1062.

Site consists of one high quality obsidian unifacially retouched flake fragment and several rough quality tertiary quartzite and chert flakes (Figure 110). The retouched flake is high quality translucent obsidian with black specks. No shovel test pits or density plots were conducted. No artifacts were collected.

#### Recommendations

XMH-1062 has initially been classified as a small lithic scatter containing one tool made of obsidian, a non-locally occurring material type. This site lies outside the APE for this proposed project, and was not evaluated to determine eligibility for inclusion in the National Register of Historic Places. If the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility.

### XMH-1063

**Latitude:** [REDACTED]  
**Longitude:** [REDACTED]  
**Determination:** Not evaluated

Site XMH-1063 is located on a high point of a glacial moraine east/northeast of XMH-1062 and south/southwest of XMH-1067. The nearest known water is a marsh approximately 600 meters to the east/southeast. Site provides a 360° unobstructed view of the surrounding terrain. One significant disturbance includes a road that bisects the site. No shovel test pits were necessary, as a recent 1999 burn had afforded approximately 80% visibility. Vegetation consists of needle leaf forest, moss/lichen, dwarf scrub and grasses. UTM coordinates for the site are: [REDACTED]

XMH-1063 consists of three tertiary gray chert flakes, and one likely quartz flake core (Table 6). A preliminary flake type analysis indicates late stage lithic reduction occurred at the site. However the presence of a flake core indicates that primary lithic reduction may have occurred at the site as well. No density plots were calculated or artifacts collected.

#### **Recommendations**

XMH-1063 has initially been classified as a small lithic scatter where late stage lithic reduction occurred. This site lies outside the APE for this proposed project, and was not evaluated to determine eligibility for inclusion in the National Register of Historic Places. If the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility.

### XMH-1064

**Latitude:** [REDACTED]  
**Longitude:** [REDACTED]  
**Determination:** Not evaluated

Site XMH-1064 is located in the lowlands, not associated with any nearby glacial moraines. The nearest known water is a marsh approximately 1 km to the southeast. No significant view of the surrounding landscape is possible. Surface visibility is relatively high due to a recent 1999 burn. Vegetation consists of dwarf scrub forbs and grasses. UTM coordinates for the site are: [REDACTED]

XMH-1064 consists of a gray/green chert flake core of good quality, and is partially burned. No subsurface testing or density plots were conducted. No artifacts were collected during the recording of this site.

#### **Recommendations**

XMH-1064 has initially been classified as an isolated find. This site lies outside the APE for this proposed project, and was not evaluated to determine eligibility for inclusion in the National Register of Historic Places. If the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility.



*Figure 111: General view of site XMH-1065, heading northeast*

## XMH-1065

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not Eligible

Site XMH-1065 is located on a large moraine approximately 50m wide and 160m in length (Figure 111). Cultural material was encountered in the central portion of the moraine. The majority of the side slopes are steep and the crest of the moraine is relatively flat. The moraine rises approximately 15m above the surrounding landscape. A large, heavily disturbed area is at the northern portion of the moraine. This area is a result of the road construction that exposed glacial till. The nearest water source to the site is North Alyeska Lake, located 1km to the southeast. A forest fire in 1999 removed most vegetation from the surrounding area and the site now offers an excellent view of the surrounding landscape. Donnelly Dome is visible to the south, a portion of the Alaska Range to the south and southwest, and Granite Mountains to the southeast. The vegetation on site is represented primarily by dwarf birch, grass/sedge, and some scattered forbs. Approximately 75% of the ground surface is void of vegetation and offers excellent visibility. [REDACTED]

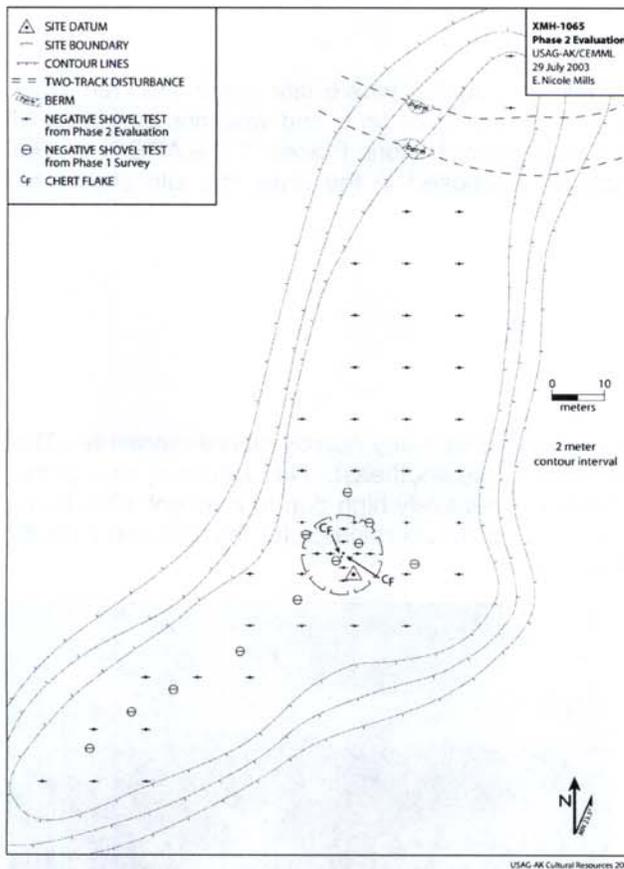


Figure 112: Site map of evaluations at XMH-1065

density plots were calculated at site.

Site XMH-1065 consists of two gray chert flakes found on the surface (Figure 112). The flakes were found in an area exposed by an uprooted spruce tree. The two flakes were less than 30cm apart. A thorough investigation of the surface was conducted, no additional artifacts were found. When the site was first recorded a total of 12 shovel tests were excavated at 10m intervals. 47 more shovel tests were placed at the site in the evaluation phase, bringing the total number of shovel tests to 59. None of the shovel tests excavated yielded cultural material. Shovel tests were excavated to a diameter of 30cm and at least 10cm into glacial till. Glacial till was encountered anywhere from the surface of the shovel probe to 30cm below surface. The majority of shovel tests excavated at the site exhibited the same soil profile (STP N0 E0). A typical soil profile consisted of approximately 2cm of black loess (7.5YR2.5/1) representing soil affected by the 1999 forest fire. The black loess was underlain by 8cm of strong brown sandy loess (7.5YR4/6). Directly beneath the strong brown sandy loess was strong brown loess/sand (7.5YR4/6). Shovel tests were ended upon encountering the glacial till. No

## FINDINGS

Pedestrian survey and 59 shovel tests produced only two flakes found on the surface. This finding suggests that XMH-1065 is a small lithic scatter. The paucity of cultural material leads to the conclusion that XMH-1065 does not contain enough information that is important to our understanding of the regions prehistory or history and is not eligible for inclusion in the National Register of Historic Places.

## XMH-1066

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not Eligible

Site XMH-1066 is located on a hilltop that was burned in the 1999 forest fire (Figure 113). The burn and wind erosion has increased surface visibility. Site provides a 360° unobstructed view of the surrounding terrain. The nearest water source is 900 meters away, but no water sources are visible from site. Vegetation consists of mix forest, low scrub and forbs. UTM coordinates for the site are: [REDACTED]

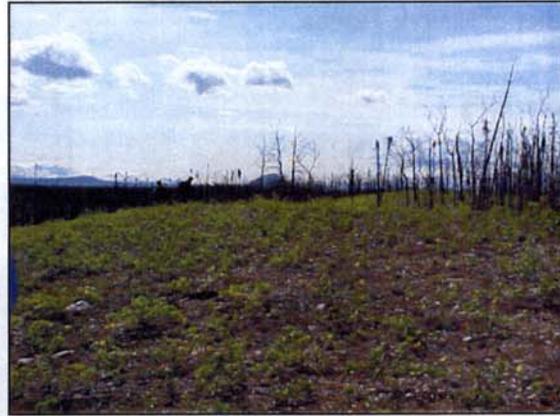


FIGURE 113: GENERAL VIEW OF SITE XMH-1066, HEADING SOUTH.

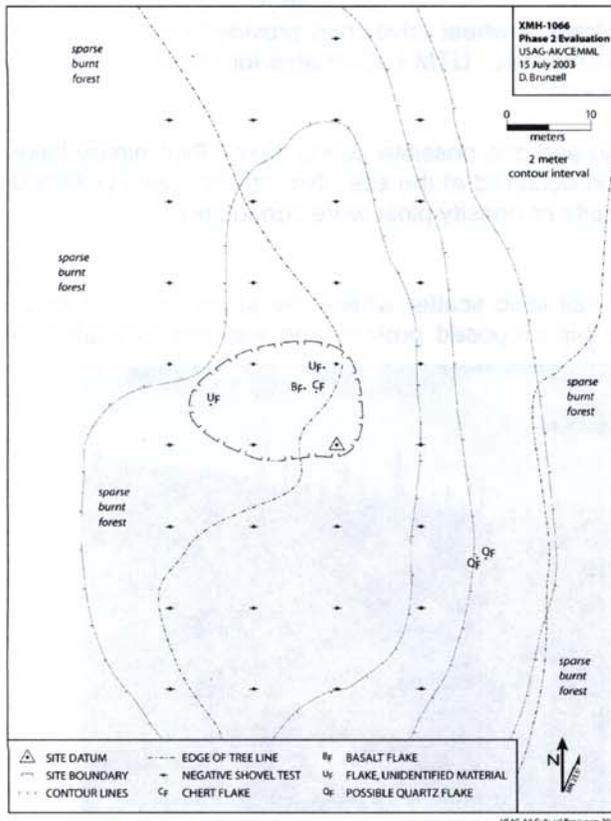


FIGURE 114: SITE MAP OF TESTING AT XMH-1066.

XMH-1066 consists of six flakes found on the surface of the southeast slope of the hill (Figure 114). Artifacts found include; one tertiary black chert flake, one tertiary black basalt flake, and one tertiary gray-brown chert flake. Preliminary flake type analysis indicates late stage lithic reduction occurred at the site. No artifacts were collected during the recording of this site. Preliminary subsurface testing did not produced any artifacts.

Thirty two shovel tests were placed at the site in the evaluation phase. None of the tests yielded cultural material. Shovel tests were excavated to a diameter of 30cm and at least 10cm into glacial till. The majority of shovel tests excavated at the site exhibited the same soil profile (STP N10 W20). A typical soil profile consisted of approximately 2cm of black loess (10YR 2/2) representing soil affected by a forest fire in 1999. The black loess was underlain by 4cm of dark brown loess (10YR3/3). Directly beneath the dark brown sandy loess was tan loess (10 YR 4/4). Shovel tests were abandoned upon

encountering the glacial till. No density plots were calculated at site.

## FINDINGS

Pedestrian survey and 32 shovel tests produced only six flakes found on the surface. This finding suggests that XMH-1066 is a small lithic scatter. The paucity of cultural material leads to the conclusion that XMH-1066 does not contain enough information that is important to our understanding of the regions prehistory or history and is not eligible for inclusion in the National Register of Historic Places.

### **XMH-1067**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1067 is located on a glacial moraine and provides a 360° unobstructed view of the surrounding terrain (Figure 115). The nearest existing water is a marsh approximately 600 meters to the southeast. The recent 1999 burn has cleared much of the native vegetation and afforded approximately 0% visibility. Vegetation consists of mixed forest, moss/ lichen, and forbs. Natural quartz appears to be outcropping at the top of the moraine. A two-track 4-wheel drive road provides easy access to the site, although no modern disturbances are apparent. UTM coordinates for the site are: [REDACTED]



FIGURE 115: GENERAL VIEW OF SITE XMH-1066, HEADING WEST.

XMH-1067 consists of two chert flakes (tertiary) and one possible quartz flake. Preliminary flake type analysis indicates late stage lithic reduction occurred at the site. No artifacts were collected during the recording of this site. No shovel test pits or density plots were conducted.

### **Recommendations**

XMH-1067 has initially been classified as a small lithic scatter where late stage lithic reduction occurred. This site lies outside the APE for this proposed project, and was not evaluated to determine eligibility for inclusion in the National Register of Historic Places. If the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility.

### **XMH-1068**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1068 is located on a glacial moraine and provides an 180° unobstructed view of the surrounding terrain to the south-southwest (Figure 116). The nearest known water source is a marsh approximately 650



Figure 116: General view of site XMH-1068, heading southwest

meters to the southeast. Surface visibility was high (approx. 70%) due to the recent 1999 burn. Vegetation consists of mixed forest, moss/lichen, dwarf scrub and forbs. A nearby two-track 4-wheel drive road makes the site easily accessible, and some evidence of military activity (shells, personal defensive positions, etc.) is apparent. UTM coordinates for the site are: [REDACTED]

XMH-1068 consists of three tertiary chert flakes of fair quality (gray, tan, and red/white respectively) found on the surface. No shovel test pits or density plots were conducted. Preliminary flake type analysis indicates late stage lithic reduction occurred at the site. No artifacts were collected during the recording of this site.

#### **Recommendations**

XMH-1068 has initially been classified as a small lithic scatter where late stage lithic reduction occurred. This site lies outside the APE for this proposed project, and was not evaluated to determine eligibility for inclusion in the National Register of Historic Places. If the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility.

#### **XMH-1069**

**Latitude:** [REDACTED]  
**Longitude:** [REDACTED]  
**Determination:** Not evaluated

Site XMH-1069 is located on a glacial moraine and provides a 360° unobstructed view of the surrounding terrain (Figure 117). The nearest known water source is a marsh approximately 650 meters to the southeast. Surface visibility was high due to the recent 1999 burn. Vegetation consists of mixed forest, moss/lichen, dwarf scrub and grasses. Close proximity to a two-track 4-wheel drive road make the site easily accessible, although no major modern disturbances are apparent. UTM coordinates for the site are: [REDACTED]



*FIGURE 117: GENERAL VIEW OF SITE XMH-1069, HEADING SOUTH*

XMH-1069 consists of three tertiary chert flakes. Of these, the largest is gray, of rough quality, and measures 5.5cm in height, 5cm in width, and .5cm thick. The other chert flakes are tan and gray, respectively. Preliminary flake type analysis indicates late stage lithic reduction occurred at the site. No shovel test pits or density plots were conducted.

#### **Recommendations**

XMH-1069 has initially been classified as a small lithic scatter where late stage lithic reduction occurred. This site lies outside the APE for this proposed project, and was not evaluated to determine eligibility for inclusion in the National Register of Historic Places. If the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility.

### XMH-1070

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

Site XMH-1070 is located on a broad, gradually rising southeast/northwest trending ridge overlooking a large boggy area to the southwest, possibly an older lakebed (Figure 118). There is a clear view of the Granite Mountains to the southeast, the Alaska Range to the southwest, and Donnelly dome almost due south. The nearest water source is South Alyeska Lake approximately 500 meters to the southeast. Surface visibility at the site is estimated at 10-20%. Vegetation consists of needle leaf forest, moss/lichen, and dwarf scrub. UTM coordinates for the site are: [REDACTED]



FIGURE 118: GENERAL VIEW OF SITE XMH-1070, HEADING SOUTH

XMH-1070 consists of two tertiary basalt flakes found during systematic shovel testing along two transects ten meters apart with shovel test units spaced at ten meter intervals. A total of six shovel tests were excavated 30cm in diameter to glacial till. One positive shovel test (ST3) contained two flakes at a depth of 0-5cms. The shovel test was 25cm deep, with three distinct layers, 0-5cm is the organic layer, 5-12cm is reddish brown loess, and 12-25cm is glacial till. Preliminary flake type analysis indicates late stage lithic reduction occurred at the site. The artifacts were collected. No density plots were calculated.

### **Recommendations**

XMH-1070 has been classified as a buried site and could potentially contain more cultural material. This site lies outside the APE for this proposed project, and was not evaluated to determine eligibility for inclusion in the National Register of Historic Places. If the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility.

### XMH-1071

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

Site XMH-1071 is located on the apex of a glacial moraine and provides a 360° unobstructed view of the surrounding terrain (Figure 119). The nearest water source is a marsh approximately 250 meters to the southwest. Additionally a small lake is located approximately 550 meters northwest. Surface visibility is low (approximately 10%). Vegetation consists of needle leaf forest, moss/lichen, and dwarf scrub. UTM coordinates for the site are: [REDACTED]



FIGURE 119: GENERAL VIEW OF SITE XMH-1071, HEADING WEST.

[REDACTED]

XMH-1071 consists of a single tertiary green chert flake yielded from a positive shovel test pit. A total of two shovel tests were excavated 30cm in diameter to glacial till. One positive shovel test (ST1) contained one flake at a depth of 13-26cms. The shovel test was 31cm deep, with four distinct layers, 0-8cm is the organic layer, 8-13cm is brown loess, 13-26 cm is yellow/brown sandy loess and 26cm+ is glacial till. This artifact was collected. No density plots were calculated.

**Recommendations**

XMH-1071 has been classified as a buried site and could potentially contain more cultural material. This site lies outside the APE for this proposed project, and was not evaluated to determine eligibility for inclusion in the National Register of Historic Places. If the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility.

**XMH-1074**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination:** Not evaluated

Site XMH-1074 is located on a high point of a north/south running glacial moraine, and provides a 360° unobstructed view of the surrounding terrain (Figure 120). South Alyeska Lake is approximately 300 meters to the south. Surface visibility was high (approx. 60%) due to the recent 1999 burn. Vegetation consists of mixed forest with a ground cover of low scrub and moss lichen. UTM coordinates for the site are: [REDACTED]



FIGURE 120: GENERAL VIEW OF SITE XMH-1074, HEADING NORTH.

XMH-1074 consists of three rhyolite flakes, two tertiary and one secondary, which were observed on the ground surface. Preliminary flake type analysis indicates later stages lithic reduction occurred at the site. No artifacts were collected or density plots calculated during the recording of this site. Subsurface examinations have yet to be conducted.

**Recommendations**

XMH-1074 has initially been classified as a small lithic scatter where later stages lithic reduction occurred. This site lies outside the APE for this proposed project, and was not evaluated to determine eligibility for inclusion in the National Register of Historic Places. If the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility.

## XMH-1075

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

Site XMH-1075 is located on the south side of a north/south running glacial moraine (Figure 121). Site has a south/southwest view overlooking North and South Alyeska Lakes approximately 150 meters to the south, with a clear view of Donnelly Dome and the Alaska Range. Site has approximately 50% surface visibility, surrounded by a mixed forest with a ground cover of low scrub and moss/lichen. UTM coordinates for the site are: [REDACTED]



FIGURE 121: GENERAL VIEW OF SITE XMH-1075, HEADING SOUTH

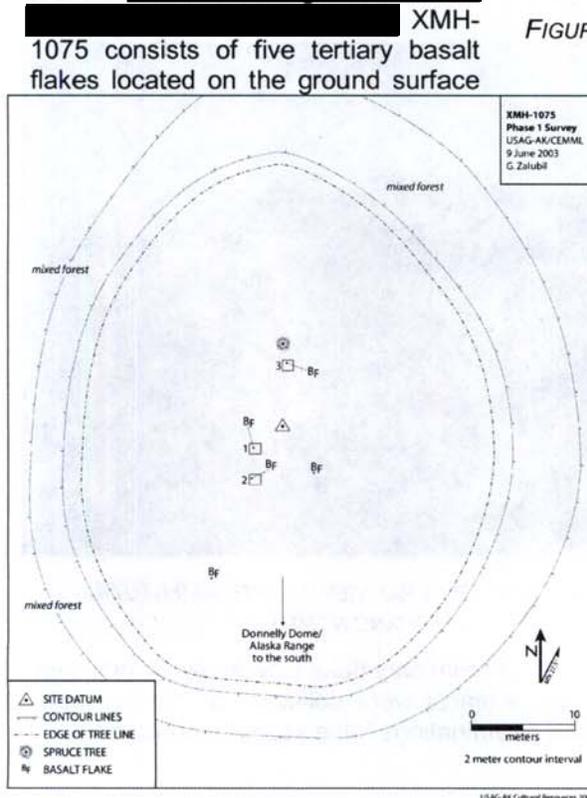


FIGURE 122: SITE MAP OF TESTING AT XMH-1075.

(Figure 122). Three density plots were placed on the site. DP S03.1/W03 contained one tertiary basalt flake. DP S06.1/W03 contained one tertiary basalt flake. DP N05.2/W0.0 contained one tertiary basalt flake. No primary or secondary flakes were located. Artifact density is calculated as being up to 1 artifact per-square meter. A flake type analysis indicates late stage lithic reduction occurred at the site. No shovel tests were excavated or artifacts collected during the recording of this site.

### Recommendations

XMH-1075 has initially been classified as a small lithic scatter where late stage lithic reduction occurred. This site lies outside the APE for this proposed project, and was not evaluated to determine eligibility for inclusion in the National Register of Historic Places. If the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility.

## XMH-1076

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

Site XMH-1076 was located on a southeast/northwest running glacial moraine with an unobstructed view to the South. The site is approximately 200m from a small un-named pond to the Southwest. Surface visibility was high due to sparse ground vegetation. Vegetation consists

of mixed forest, dwarf scrub and grasses. UTM coordinates for the site are: [REDACTED]

XMH-1076 consists of a single primary chert flake located on the surface. A total of 12 shovel tests were excavated along two parallel transects 10m apart. Shovel tests were 30cm in diameter and excavated from 10 to 20 cm deep to glacial till; all shovel tests were negative. No artifacts were collected or density plots calculated during the recording of this site.

### Recommendations

XMH-1076 has initially been classified as an isolated find. This site lies outside the APE for this proposed project and was not evaluated to determine eligibility for inclusion in the National Register of Historic Places. If the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility.

### XMH-1077

Latitude: [REDACTED]

Longitude: [REDACTED]

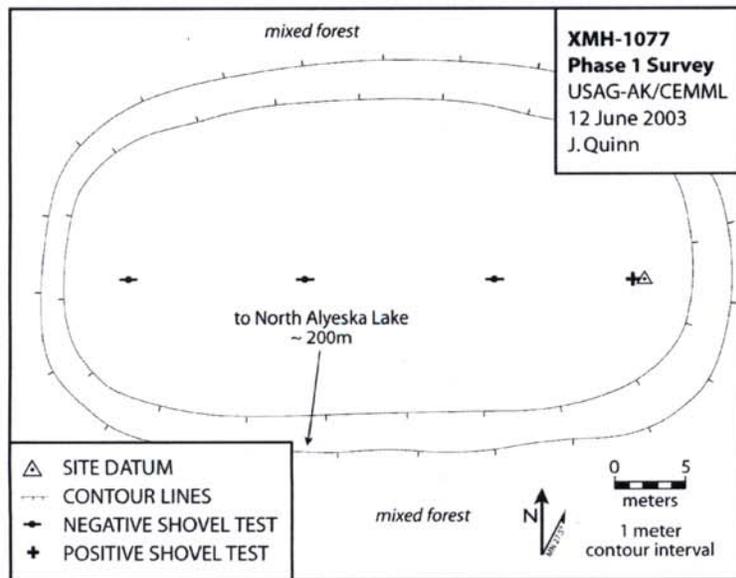
Determination: Not evaluated



Figure 123: General view of site XMH-1077, heading north.

Site XMH-1077 is located on the crest of an east/west running ridge (Figure 123). The nearest water source, South Alyeska Lake is 100 meters to the south. Site has an unobstructed view to the south of the lake and the Alaska Range. Site has low visibility due to moss/lichen ground cover surrounded by a mixed forest with low scrub. UTM coordinates for the site are: [REDACTED]

XMH-1077 consists of two tertiary chert flakes found in a shovel test pit (Figure 124). Site was found during systematic shovel testing along one transect with shovel test units spaced at approximately 10 meter intervals. A total of four shovel tests were excavated to glacial till. However, only one shovel test unit (ST 4) produced cultural material. ST 4 contained two tertiary chert flakes, found in a 30cm x 30cm shovel test at an approximate depth of 15cm. Shovel test was 50cm deep, with four distinct layers, 0-7cm organic, 7-18cm is a 7.5YR 3/3 loess, 18-46cm is a 10YR 4/4 loess, 46-50cm is glacial till. The artifacts were collected. No density plots were calculated.



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Figure 124: Site map of testing at XMH-1077

potentially contain more cultural material. This site lies outside the APE for this proposed project, and was not evaluated to determine eligibility for inclusion in the National Register of Historic

### Recommendations

XMH-1077 has been classified as a buried site and could

Places. If the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility.

### XMH-1078

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1078 is located on an east / west running glacial moraine, and provides a 360° unobstructed view of the surrounding terrain (Figure 125). The nearest known water source is a dry lakebed approximately 650 meters to the south. Surface visibility is about 70%. Vegetation consists of broad leaf forest, dwarf scrub, forbs and grasses. UTM coordinates for the site are: [REDACTED]



*Figure 125: General view of site XMH-1078, heading south*

XMH-1078 consists of three flakes found on the surface, one tertiary black and gray basalt flake, one tertiary chert flake and one primary reduction greenish gray flake. Preliminary flake type analysis indicates both primary and late stage lithic reduction occurred at the site. No map was made; density plots or shovel tests were conducted. No artifacts were collected during the recording of this site.

### **Recommendations**

XMH-1078 has initially been classified as a small lithic scatter where both primary and late stage lithic reduction occurred. This site lies outside the APE for this proposed project, and was not evaluated to determine eligibility for inclusion in the National Register of Historic Places. If the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility.

#### 4.4.2 Cultural Resources in the Donnelly Drop Zone Alternative

Two prehistoric sites are located in the Donnelly Drop Zone alternative for the Cold Weather/Automotive Test Complex (XMH-1072 and XMH-1073) (Figures 126). Both sites are located on a bluff that overlooks the Jarvis Creek floodplain. This alternative will not be impacted by this project. The preferred alternative for the Cold Weather/Automotive Test Complex is in the Jarvis West Study Area (Figure 97), to the east of Jarvis Creek and immediately south of the Strategic Missile Defense Command missile field on Fort Greely.

Following is a description of each recorded site in the Donnelly Drop Zone proposed project area:

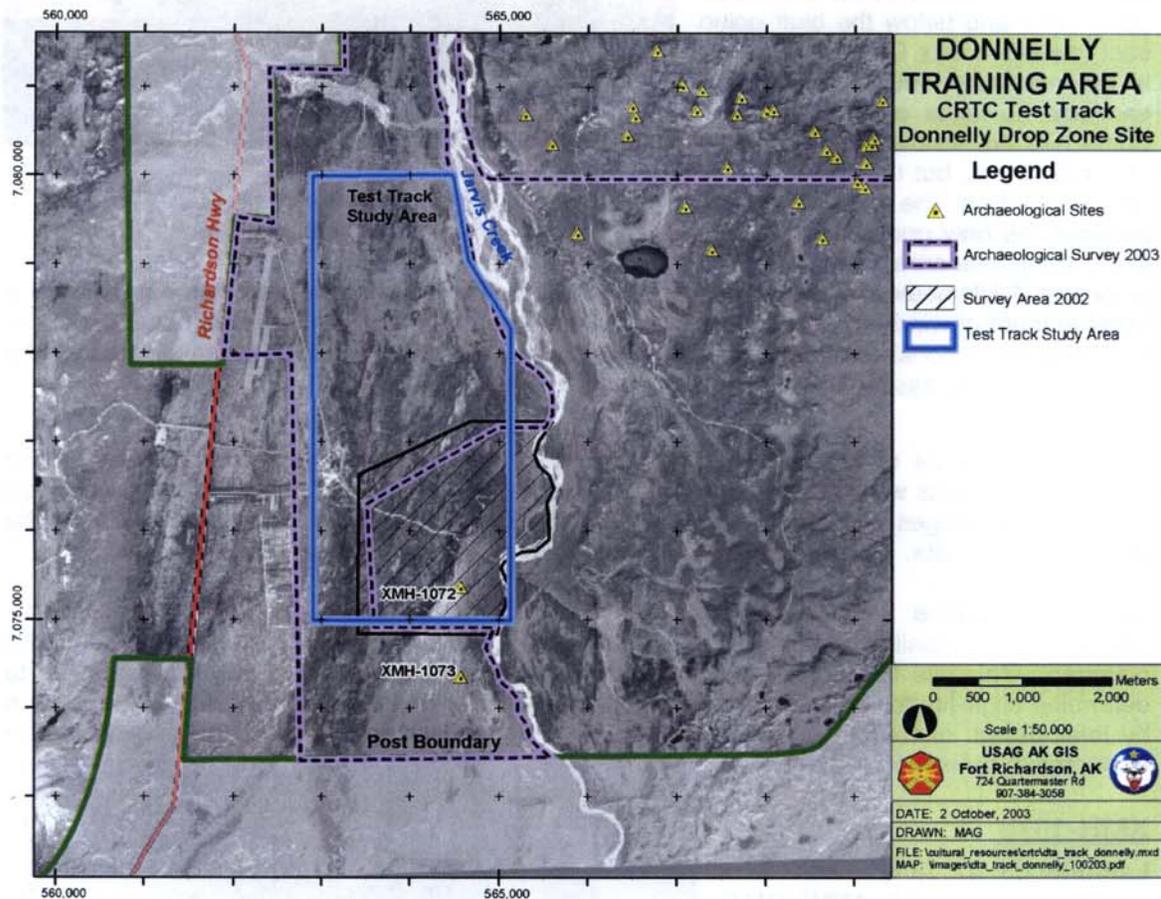


Figure 126. Location of Archaeological Sites in the Donnelly Drop Zone Alternative

### XMH-1072

Latitude: [REDACTED]  
Longitude: [REDACTED]  
Determination: Not evaluated

Site XMH-1072 is located on a bluff overlooking Jarvis Creek; the bluff extends for 2 kilometers north and 3 kilometers south (Figure 127). The bluff is elevated 15 meters above the surrounding terrain. The surrounding area is generally flat on top of the bluff going west and below the bluff going east towards Jarvis Creek. The creek is approximately 400 meters to the east and no lakes exist in the area. Some hills are visible on the far side of Jarvis Creek, but the creek itself is not visible from the bluff. The bluff provides the only good vantage point in the immediate area. Site XMH-1073



*Figure 127: General view of site XMH- 1072, heading north*

is located 1 kilometer to the south on the same bluff. The edge of the bluff has experienced a small amount of wind erosion, and thus a small degree of surface visibility was observed at the site. Vegetation consists of mixed forest, moss/lichen, and dwarf scrub UTM coordinates for the sites are: [REDACTED]

XMH-1072 consists of one tertiary gray chert flake and two secondary quartz flakes on the surface. All artifacts were observed within a 10-meter area on the bluff edge. Flake type analysis indicates later stages lithic reduction occurred at the site. No artifacts were collected during the recording of this site. Subsurface examinations have yet to be conducted at the site.

#### **Recommendations**

XMH-1072 has initially been classified as a small lithic scatter where later stages lithic reduction occurred. This site lies outside the APE for this proposed project, and was not evaluated to determine eligibility for inclusion in the National Register of Historic Places. If the APE is moved by later design alteration, or if further projects are proposed in the area, the site should be evaluated to determine eligibility.

### XMH-1073

Latitude: [REDACTED]  
Longitude: [REDACTED]  
27)  
Determination: Not evaluated

Site XMH-1073 is located on a bluff overlooking Jarvis Creek, that extends for 3 kilometers north and 2 kilometers south (Figure 128). The bluff is elevated 15 meters above the surrounding terrain that drops off suddenly to the east. The surrounding area is generally flat on top of the bluff going west and below the bluff going east towards



*Figure 128: General view of site XMH- 1073, heading north.*

Jarvis Creek. The creek is approximately 400 meters to the east and no lakes exist in the area. Some hills are visible on the far side of Jarvis Creek, but the creek itself is not visible from the bluff. The bluff provides the only good vantage point in the immediate area. Site XMH-1072 is located 1 kilometer to the north on the same bluff. The edge of the bluff has experienced a small amount of wind erosion, and thus a small degree of surface visibility was observed at the site.

Vegetation consists of mixed forest, moss/lichen, and dwarf scrub. UTM coordinates for the site are: [REDACTED]

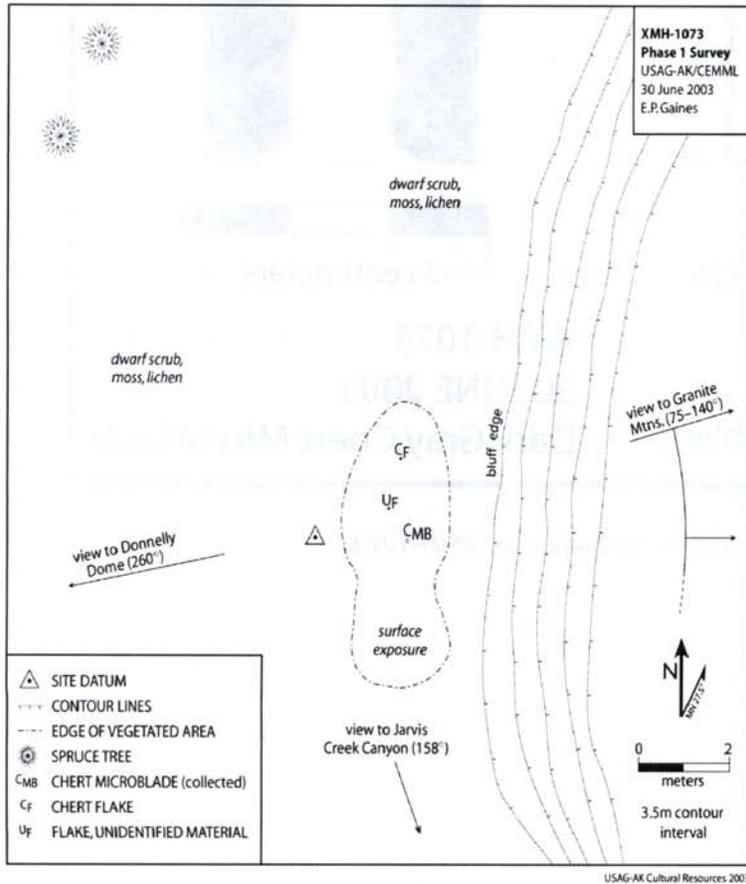


Figure 129: Site map of testing at XMH- 1073.

XMH-1073 consists of one microblade and two flakes identified on the ground surface (Figure 129). The gray chert microblade (collected) weighs .49 grams and measures 24.3 mm in height and 9.6 mm in width (Figure 130). The other two artifacts at the site include a secondary tan chert flake and one tertiary gray-banded chert flake with multiple flake scars. These artifacts were observed within a 2-meter area on the bluff edge. One artifact was collected during the recording of this site. Subsurface examinations have yet to be conducted at the site.

### Recommendations

XMH-1073 has initially been classified as a small lithic scatter containing microblade technology. This site lies

outside the APE for this proposed project, and was not evaluated to determine eligibility for inclusion in the National Register of Historic Places. If the APE is moved by later design alteration, or if further projects are proposed in the area the site should be evaluated to determine eligibility.

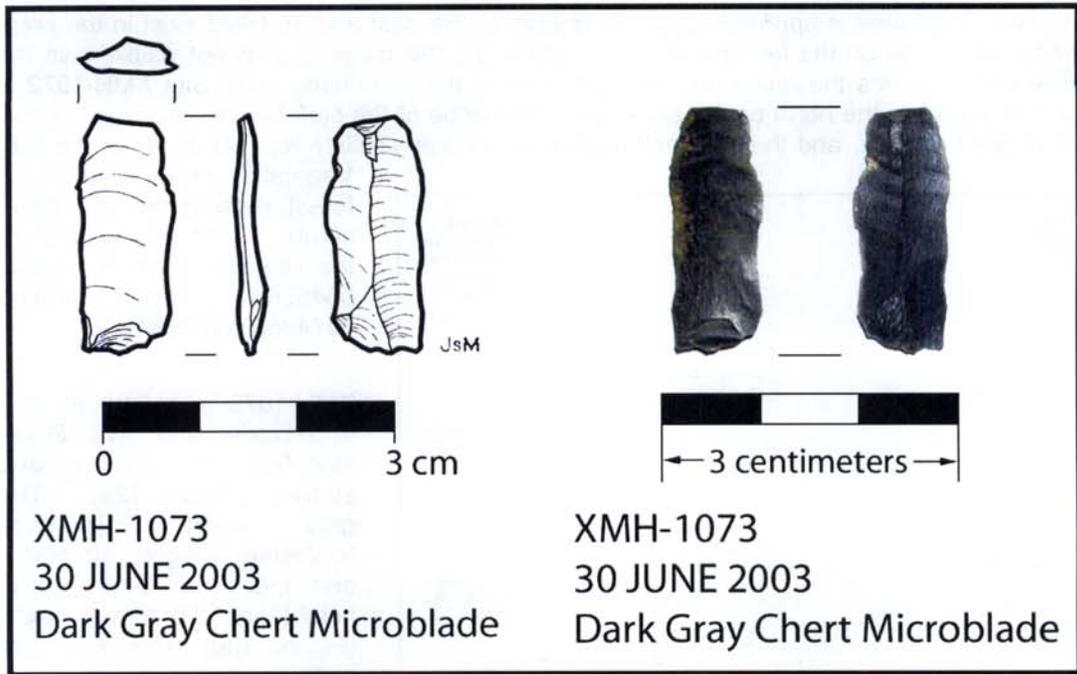


Figure 130: Microblade from XMH-1073.

## 4.5 Battle Area Complex (BAX) Firing Fan

The United States Army has proposed a Battle Area Complex (BAX) a range development project on lands at Ft. Wainwright's Donnelly Training Area. The Battle Area Complex is designed for gunnery training, and would meet qualification requirements of crew-served, vehicle-mounted weapon systems. The BAX range would also support dismounted infantry platoon tactical live-fire operations, either independently of or simultaneous with supporting vehicles. Units would acquire skills needed to detect, identify, engage and defeat stationary and moving targets in a tactical array. Primary features of the BAX include course roads with crossover capability, stationary armor targets, moving armor targets, stationary infantry targets, moving infantry targets, machine gun bunkers, and breaching obstacles. All targets would be fully automated, and the event-specific target scenario would be computer-driven and scored from the control facility. The range operating system would be fully capable of providing instrumented after-action reviews. In addition to the range, the BAX would include an after-action review facility, ammunition breakdown building, ammunition loading dock, operations/ storage building, arctic latrines, bleacher enclosure, bivouac and unit staging area, covered mess area, building information systems, electric service, water and septic system, storm drainage, and general site improvements.

There were three alternatives considered for the siting of this project. Figure 131 shows the three general areas; Texas Range, Eddy Drop Zone, and Donnelly Drop Zone. Survey for the construction footprints of the three BAX alternatives was conducted in 2002 (Hedman et al. 2003). The focus of the 2003 survey was the Firing Fans or Surface Danger Zone for the alternatives. The firing fan of the Texas Range alternative was located in an active impact area and was not surveyed due to safety concerns. The firing fan of the Eddy Drop Zone alternative (Figure 132), being the preferred alternative, received the majority of the resources for this survey. However, the Eddy Drop Zone (firing south) and Donnelly Drop Zone (firing north)

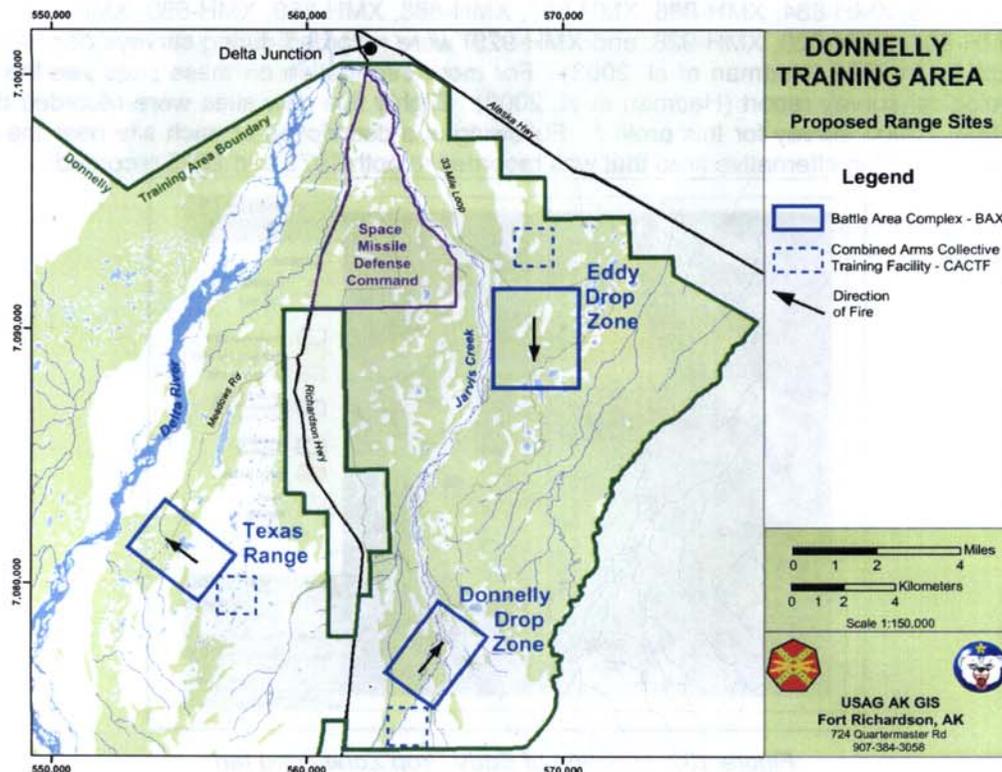


Figure 131. Map of the three BAX alternatives.

firing fan alternatives overlap, and therefore a large portion of the Donnelly Drop Zone alternative was also completed.

## SURVEY AND FIELD METHODS

During the summer of 2003, an archaeological survey crew of sixteen archaeologists employed by the Center for Environmental Management of Military Lands (CEMML), Colorado State University, conducted a survey of the two proposed range construction areas.

Parallel pedestrian transects spaced at 20m were walked systematically across the APE and surrounding area. Transect survey units were partitioned according to existing roads and trails where possible. When existing roads did not provide for practical unit boundaries, a one square kilometer work unit was defined. Systematic sub-surface shovel testing was undertaken in areas considered to have high probability for containing archaeological sites. Areas that were shovel tested included but were not limited to: landforms affording a view of surrounding terrain; lake margins; ridgelines; terrace edges; hilltops; benches adjacent to steeper slopes; and the bluffs overlooking Jarvis Creek. Shovel tests were typically 30cm in diameter and excavated into glacial till or consolidated outwash. All soil removed was screened through ¼" hardware cloth.

## Results/Summary

No sites will be evaluated to determine eligibility for inclusion in the National Register of Historic Places (NRHP) until one of the firing fan alternatives for the BAX is chosen.

## CULTURAL RESOURCES

One hundred and four prehistoric sites have been recorded within of the proposed Eddy Drop Zone firing fan alternative area (Figures 132). Four sites (XMH-277, XMH-278, XMH-284 and XMH-292) were recorded during the 1979 survey (Holmes 1979). Fifteen sites (XMH-880, XMH-881, XMH-883, XMH-884, XMH-886, XMH-887, XMH-888, XMH-889, XMH-890, XMH-891, XMH-892, XMH-894, XMH-920, XMH-928, and XMH-929) were recorded during surveys conducted by the CEMML, in 2002 (Hedman et al. 2003). For more information on these sites see the 2002 archaeological survey report (Hedman et al. 2003). Eighty five new sites were recorded during the CEMML, 2003 survey for this project. Following is a description of each site near the Eddy Drop Zone firing fan alternative area that was recorded in both 1979 and 2003 recorded:

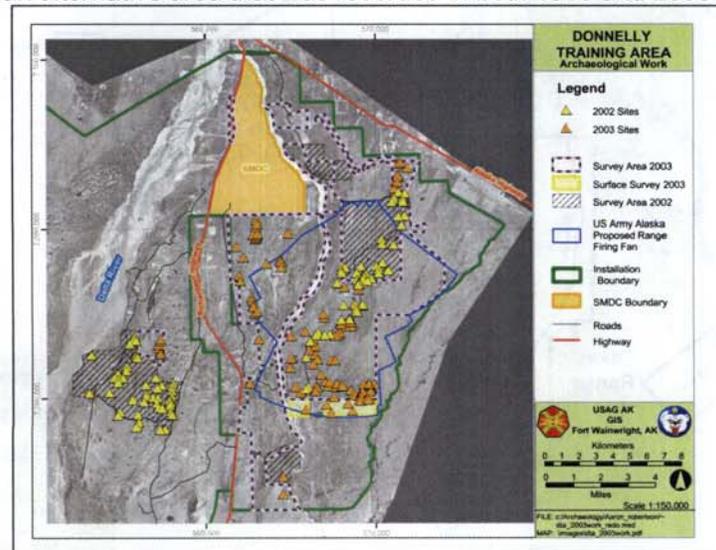


Figure 132: Location of Eddy Drop Zone firing fan

**XMH-1084**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination:** Not evaluated

The site is located on a north/south trending moraine. Site affords a 360 degree unobstructed view of the surrounding terrain. The nearest known water is a marsh, approximately 200 meters northwest; in wet years this marsh may be a lake. Surface visibility is approximately 40%. The ground surface of the site is vegetated primarily by dwarf scrub, moss, lichen, and forbs, with several barren areas scattered around. UTM coordinates for the site are: [REDACTED]



*Figure 133: General view of site, XMH-1084 heading north*

XMH-1084 consists of two tertiary basalt flakes of good quality and one tertiary rhyolite flake of fair quality. Preliminary flake type analysis indicates late stage lithic reduction occurred at the site. Subsurface examinations have yet to be conducted or density plots calculated. No artifacts were collected.

**Recommendations**

XMH-1086 has initially been classified as a small lithic scatter where later stages of lithic reduction occurred. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

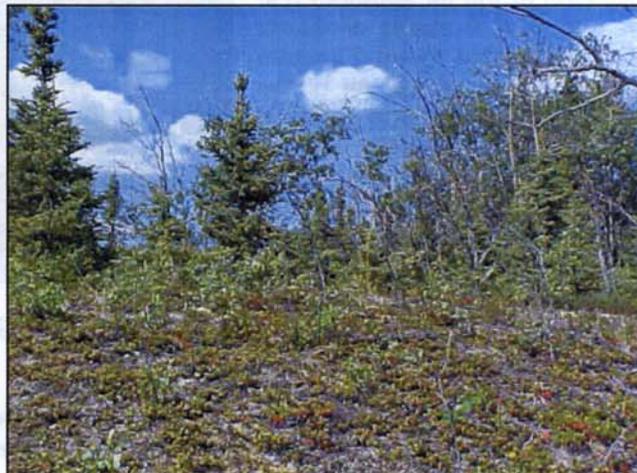
**XMH-1085**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination:** Not evaluated

Site is located on a high point at the south end of a north-south trending ridge with an unobstructed view to the east, south and west. No water sources are visible in the immediate area; however Spring Lake is located approximately 600 meters to the north. Due to heavy ground cover surface visibility is minimal in the immediate area. The ground surface of the site is vegetated primarily by tall scrub and forbs. UTM coordinates for the site are: [REDACTED]



**FIGURE 134 : GENERAL VIEW OF SITE, XMH-1085 HEADING WEST**

XMH-1085 consists of one dark-gray tertiary chert flake found in a shovel test pit. A total of two shovel tests were excavated to glacial till but only one produced cultural material (ST 2). ST 2 contained one chert flake in a 30cm X 30cm shovel test at depths ranging from 10-35cmbs with four distinct layers; 0 to 5 cm below the surface contains the organic root mat or o-horizon, 5 to 9 cm a b-horizon of reddish orange silty soil, 9 to 14 centimeters below the surface is a silty sandy mixture some gravels, and 14 to 31 cm is an orange silty sandy soil with a high density of gravels that appears to be glacial till. The one flake was collected. The positive shovel test is located 3 meters due south of the site datum.

### Recommendations

XMH-1085 has been classified as a buried site and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

### XMH-1086

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

Site XMH-1086 is located on a high point at the southern end of a north/south running ridge. The site is elevated approximately 20 meters above the surrounding terrain with an unobstructed view to the south, east and west. No lakes are visible in the immediate vicinity; however Spring Lake is located approximately 700 meters to the north. Due to wind erosion there is a moderate degree of surface visibility. The ground surface of the site is vegetated primarily by tall scrub and forbs, with several barren areas scattered around. UTM coordinates for the site are: [REDACTED]

XMH-1086 consists of 10 pieces of lithic debitage found on the southern slope of the high point. One dark gray chert tertiary flake was located at the far southern end of the site, and 9 quartz or quartz crystal flakes were found 2 meters north of the chert flake. All of the quartz flakes were found within a low to moderate density artifact concentration that is 2 meters in diameter. Three Density Plots (DP) were calculated at the site, two were placed over the artifact concentration and the third over the chert flake. DP1 (S11 / W0.5) contained 1 quartz or quartz crystal secondary flake. DP2 (S11 / E0.5) contained the majority of the artifacts from the concentration with 7 secondary flakes and 1 tertiary flake. DP3 (S13.5 / E0.5) contained the single chert flake. Artifact density is calculated as being up to 3.33 artifacts per-square meter. A flake type analysis indicates later stages of lithic reduction occurred at the site. Subsurface excavations have yet to be conducted.



FIGURE 135: GENERAL VIEW OF SITE, XMH-1086  
HEADING SOUTH

### Recommendations

XMH-1086 has initially been classified as a small lithic scatter where later stages of lithic reduction occurred. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

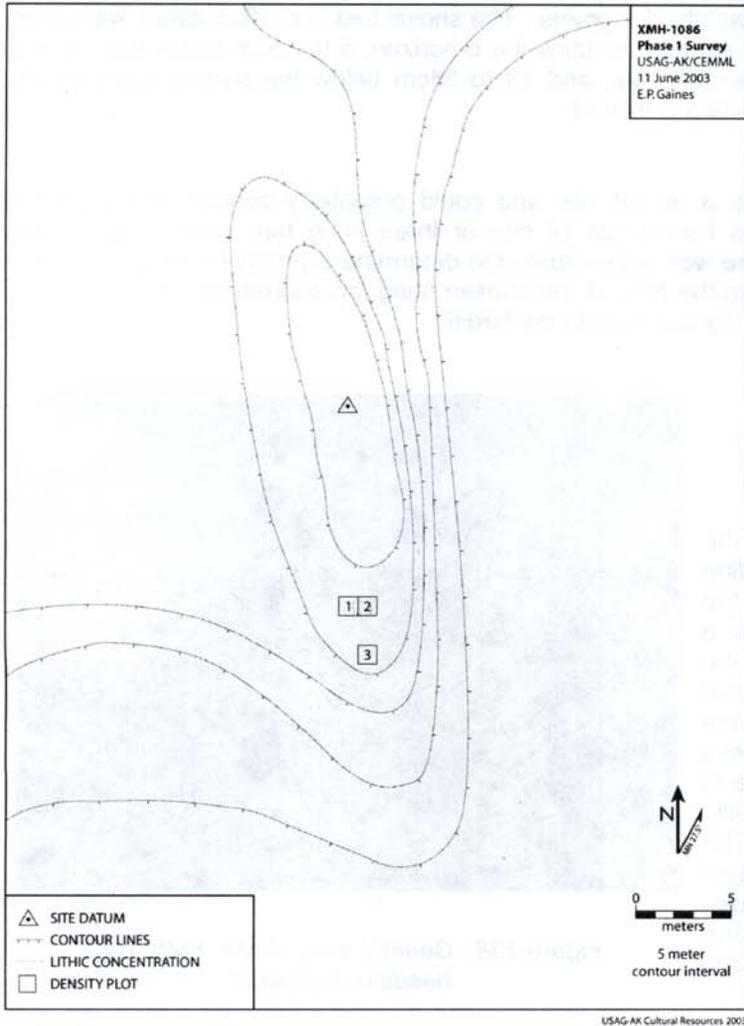


Figure 136: Site map of testing at XMH-1086.

### XMH-1087

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

Site is located on a high point at the south end of a north/south trending ridge elevated 5 meters above the surrounding terrain. Site affords a 180 degree unobstructed view of the surrounding terrain to the east and south. No lakes are visible from the site, but Spring Lake is located 700 meters to the north. Due to heavy ground cover, surface visibility is

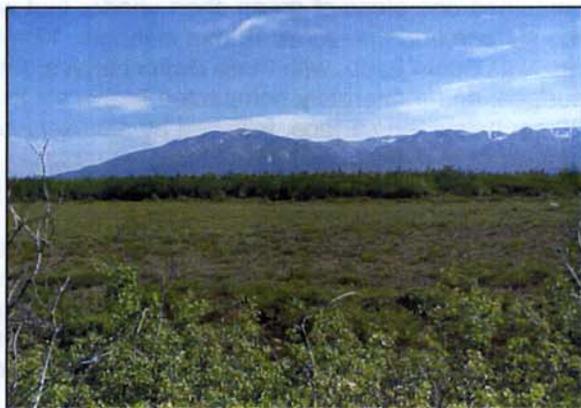


Figure 137: General view of site, XMH-1087 heading east

minimal. The ground surface of the site is vegetated primarily by tall scrub and forbs. UTM coordinates for the site are: [REDACTED]

XMH-1087 consists of a blade fragment found in a shovel test pit. A total of two shovel tests were excavated to glacial till but only one produced cultural material (ST 1). ST 1 is located 12 meters south of the site datum, and contained one dark-gray chert blade fragment that measures 42 mm in length and 19 mm in width, and weighs 5.5 grams. The shovel test was 30cm deep, with three distinct layers; 0 to 5cm below the surface contains the o-horizon, 5 to 13cm below the surface contains a red brown loess with some roots, and 13 to 34cm below the surface contains an orange brown sandy silty soil containing glacial till.

#### **Recommendations**

XMH-1087 has been classified as a buried site and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### **XMH-1088**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site is located on a high point at the south end of a north/south trending ridge elevated 5 meters above the surrounding terrain. Site affords a 180 degree unobstructed view of the surrounding terrain to the east and south. No lakes are visible from the site, but Spring Lake is located less than 600 meters to the north. Due to heavy ground cover, surface visibility is minimal in the immediate area. The ground surface of the site is vegetated primarily by dwarf scrub and forbs. UTM coordinates for the site are: [REDACTED]



*Figure 138: General view of site, XMH-1088 heading southwest*

XMH-1088 consists of one piece of green chert shatter found in a shovel test pit. A total of two shovel tests were excavated to glacial till but only one produced cultural material (ST 2). ST 2 contained one piece of green chert shatter that was recovered from a depth of 5 to 17 cm below the surface and measures 19 mm in length, 17 mm in width, and weighs 2.75 grams. The shovel test was 30cm deep, with three distinct layers; an organically rich o horizon exists 5cm below the surface, and moderately compacted brown silt exists below the o horizon to an average depth of 20 cm below the surface, followed by a loosely compacted sandy, silty soil with a high density of gravels.

#### **Recommendations**

XMH-1088 has been classified as a buried site and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-1089**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

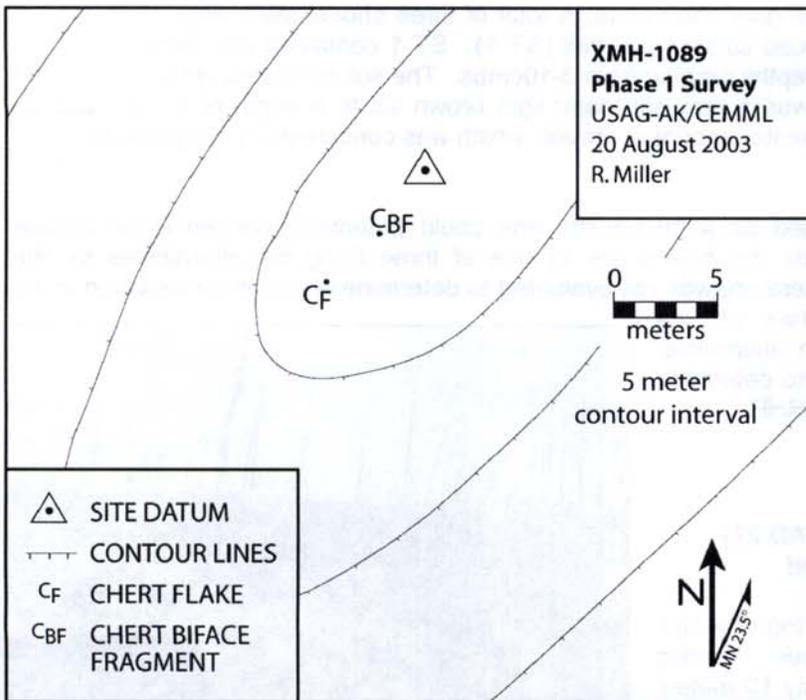
**Determination: Not evaluated**

Site XMH-1089 is located on the top of a high point on a northeast/southwest trending ridge. The site is elevated only 10 meters above the surrounding terrain and is approximately 20 meters in diameter. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the south and east. Two other sites are located on the same landform; XMH-1090 is 150 meters to the southwest and XMH-1091 is 300 meters to the southwest. No water sources are visible in the immediate area, but a small unnamed lake is located approximately 600 meters to the west. Due to wind erosion and recent episodes of forest fires, a high degree of surface visibility was observed at the site. The ground surface of the site is vegetated primarily by dwarf scrub and forbs, with several large barren areas scattered around. The site has also been impacted by military activity; it has been cleared of vegetation and the remnants of a small temporary structure are present. UTM coordinates for the site are: [REDACTED]



Figure 139: General view of site, XMH-1089 heading east

Due to wind erosion and recent episodes of forest fires, a high degree of surface visibility was observed at the site. The ground surface of the site is vegetated primarily by dwarf scrub and forbs, with several large barren areas scattered around. The site has also been impacted by military activity; it has been cleared of vegetation and the remnants of a small temporary structure are present. UTM coordinates for the site are: [REDACTED]



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Figure 140: Site map of testing at XMH-1089.

XMH-1089 CONSISTS OF ONE BASALT BIFACE FRAGMENT AND ONE GRAY CHERT FLAKE. THE BIFACE FRAGMENT IS 5.0CM LONG, 3.0CM WIDE, AND WEIGHS APPROXIMATELY 14.0GM. SUBSURFACE TESTING HAS YET TO BE CONDUCTED AT THE SITE. NO ARTIFACTS WERE COLLECTED.

**Recommendations**

XMH-1089 has initially been classified as a small lithic, however the site could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE

of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-1090**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1090 is located on the top of a high point on a northeast/southwest trending ridge. The site is elevated only 10 meters above the surrounding terrain to the south and gradually descends in all other directions. Numerous other hills are present both southwest and northeast of the site with large expanses of muskeg to the east and south. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the south and east. No water sources are visible in the immediate area, but a small unnamed lake is located approximately 500 meters to the west, northwest. There is approximately 50% surface visibility with vegetation, consisting low scrub, moss, lichen, and forbs. Also the site has been minimally disturbed by military activity. UTM coordinates for the site are: [REDACTED]



Figure 141: General view of site, XMH-1090 heading west

XMH-1090 consists of a small gray chert flake. A total of three shovel tests were excavated to glacial till but only one produced cultural material (ST 1). ST 1 contained one flake found in a 30cm X 30cm shovel test at depths ranging from 3-10cmts. The soil consisted of the following; 3 cm below the surface there was a gray silt loam, light brown silt to a depth of 17 cm, and an orange /brown silt with a moderate amount of gravels which was considered to be glacial till.

**Recommendations**

XMH-1090 has been classified as a buried site and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-1091**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1091 is located on top of a high point on a northeast/southwest trending ridge. The site is elevated only 10 meters above the surrounding terrain to the south and gradually descends in all other directions. Numerous other hills are present both southwest and northeast of the site with large expanses of muskeg to



Figure 142: General view of site, XMH-1091 heading east

the east and south. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the south and east. No water sources are visible in the immediate area, but a small unnamed lake is located approximately 500 meters to the northwest. Due to wind erosion and recent episodes of forest fire, a moderate amount of surface visibility was observed at the site. The ground surface of the site is vegetated primarily by low scrub, moss, lichen and forbs. UTM coordinates for the site are: [REDACTED]

XMH-1091 consists of four gray chert tertiary flakes all of which appear to be the same material. Preliminary flake type analysis indicates later stages of lithic reduction occurred at the site. No primary or secondary flakes were located. Subsurface examinations have yet to be conducted or density plots calculated. No artifacts were collected.

#### **Recommendations**

XMH-1091 has initially been classified as a small lithic scatter where late stage lithic reduction occurred. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP.

#### **XMH-1092**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1092 is located on a narrow northwest/southeast trending ridge. There are not any good landmarks visible in any direction due to tree cover. There is a very small, nearly dry pond visible approximately 30 meters to the southwest. Guitar Lake is located approximately 500 meters to the southwest. There is good ground cover and thus no surface visibility at the site. UTM coordinates for the site are: [REDACTED]



*Figure 143: General view of site, XMH-1092 heading south*

XMH-1092 consists of seven tertiary chert flakes found in one shovel test pit. A total of two shovel tests were excavated 30cm in diameter to glacial till. One positive shovel test (ST1) contained seven tertiary chert flakes, one tertiary basalt flake, and one tertiary flake of an unidentified material at a depth of 15-35cmbs. The shovel test was 55cm deep, with four distinct layers, 0-5cm is the organic layer, 5-15cm is a dark yellowish brown loess, 15-35cm is a light yellowish brown loess, and 35-55cm is glacial till. The artifacts were collected. No density plots were calculated.

#### **Recommendations**

XMH-1092 has been classified as a buried site and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-1093**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1093 is located on a small, narrow north/south trending ridge. Site affords a 360 degree unobstructed view of the surrounding terrain. The Alaska Range is visible to the southwest and Donnelly Dome is visible to the south, but the Granite Mountains are unobstructed by a prominent ridge to the east. The nearest water source is a small, unnamed lake located one kilometer to the northeast. The ground surface of the site is vegetated primarily by low scrub, moss, and lichen, with a surface visibility is estimated at 10%. UTM coordinates for the site are:



*Figure 144: General view of site, XMH-1093 heading south*

XMH-1093 consists of one basalt flake found in a shovel test pit. A total of four shovel tests were excavated 30cm in diameter to glacial till. One positive shovel test (STB) contained one tertiary basalt flake found at a depth of 20-25cms. The shovel test was 45cm deep with four distinct layers, 0-6cm is the organic layer, 6-21cm is dark yellow brown loess, 21-38cm is dark red brown loess, and 38-45cm is glacial till. No density plots were calculated or artifacts collected.

**Recommendations**

XMH-1093 has been classified as a buried site and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

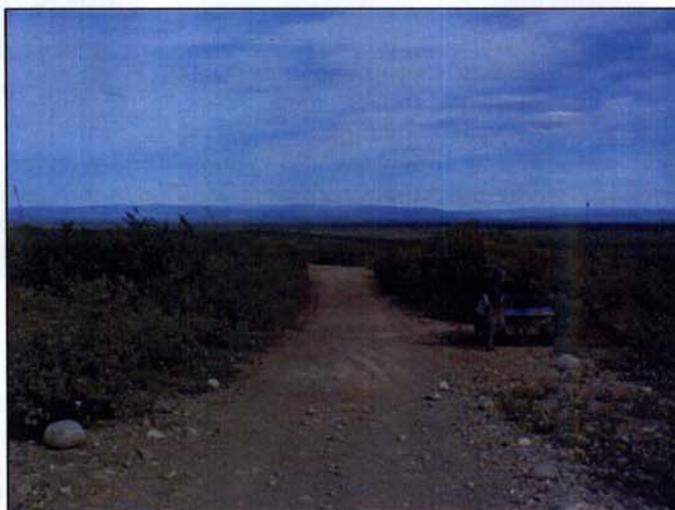
**XMH-1094**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1094 is located on a northeast/southwest trending ridge with 33 mile loop trail (33ML) running through the middle of it. Donnelly Dome is visible to the southwest and the Granite Mountains can be seen to the east. The nearest water source is North Caribou Lake located approximately one and a half kilometers to the southwest. The ground surface of the site is vegetated primarily by low scrub, forbs, grasses and sedges, with several barren areas scattered around. Surface visibility is approximately 75% due to



*Figure 145: General view of site, XMH-1094 heading west*

33ML running the length of the ridge. UTM coordinates for the site are: [REDACTED]

Site XMH-1094 consists entirely of one gray chert uniface fragment found on the surface in the middle of 33ML. The uniface is 43.02mm long, 32.35mm wide, and weighs 10.20gm. The artifact was collected due to the fact that it was in a roadway. No density plots were calculated.

**RECOMMENDATIONS**  
 XMH-1094 has been classified as an isolated find; however the site could potentially contain more cultural material.

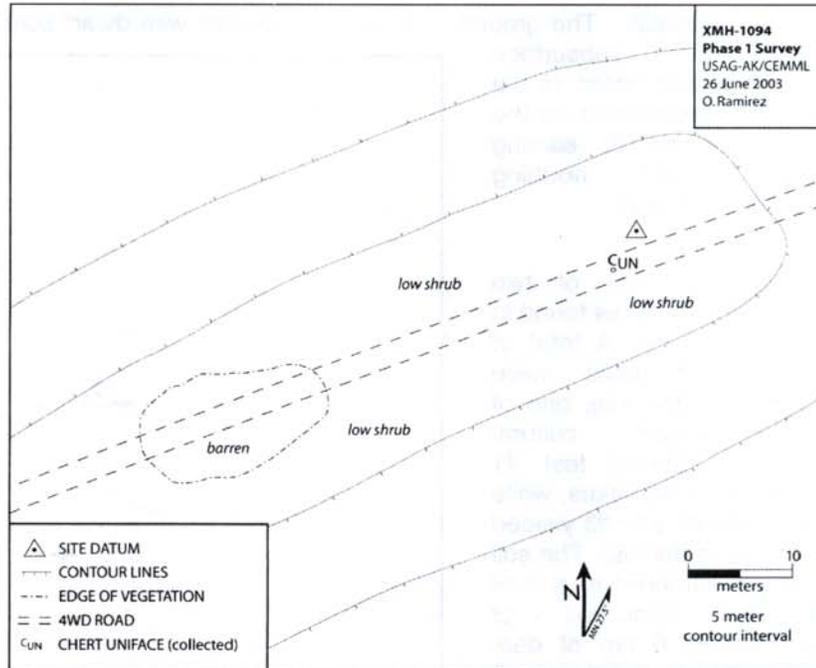


Figure 146: Site map of testing at XMH-1094.

This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-1095**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1095 is located on a small rise, approximately 5 meters above the surrounding terrain. Site affords approximately a 180 degree unobstructed view of the southeast with a view of Granite Mountain. The eastern slope of the rise steeply slopes down to the surrounding area while the western, northern and southern slopes are gentle. To the east of the site is a low, swampy area that contains some small patches of muskeg. The closest water source to the site is a small lake located approximately 1km to the northwest. The ground surface in and around the site is not visible due to vegetation. The majority of the area is covered with sapling birch intermingled with a moderate



Figure 147: General view of site, XMH-1095 heading east

amount of deadfall. The ground surface was covered with dwarf scrub, moss, and lichen. No obvious subsurface disturbance was noted at the site. UTM coordinates for the site are: [REDACTED]

XMH-1095 consists of two dark-gray chert flakes found in a shovel test pit. A total of three shovel tests were excavated at the site, one of which yielded cultural materials. Shovel test #1 yielded two chert flakes, while shovel tests #2 and #3 yielded no cultural materials. The soil profile encountered in shovel test #1 consisted of approximately 6 cm of dark brown root mat underlain by 6 cm of a red silt. The red silt was underlain by 16 cm of a beige-brown silt which was in turn underlain by 15 cm of yellow-orange silt with glacial till. The excavation of shovel tests at the site was ceased upon encountering glacial till. The artifacts collected from the shovel probe were collected from approximately 6-12cm below the surface. No density plots were calculated.

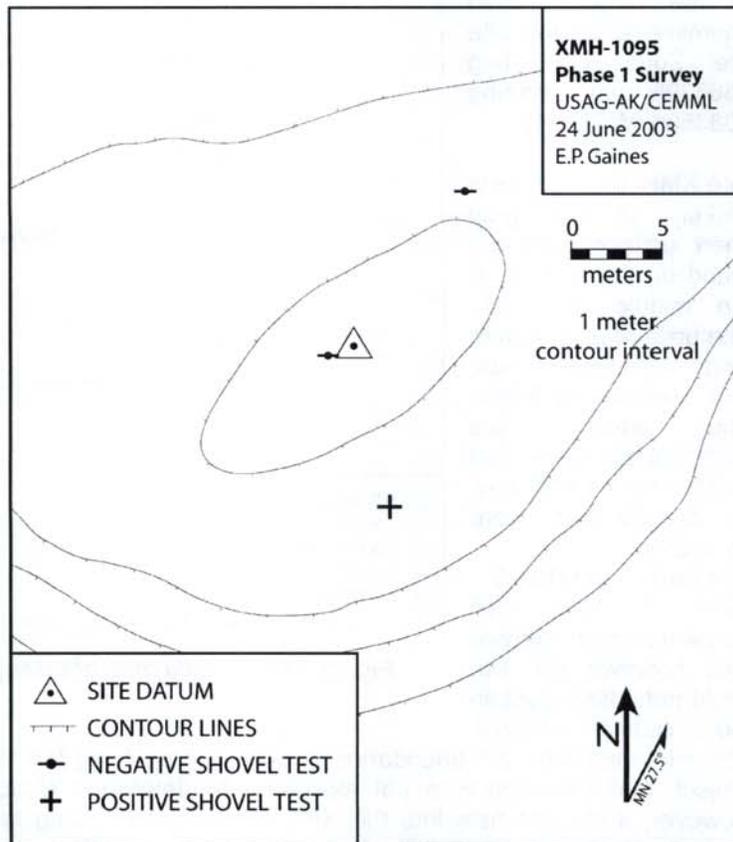


Figure 148: Site map of testing at XMH-1095.

### Recommendations

XMH-1095 has been classified as a buried site and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

### XMH-1096

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

Site XMH-1096 is located on top of a small isolated hill. The hilltop is approximately 25 meters in diameter and is elevated 10 to 15 meters above the surrounding terrain. A 2 kilometer or longer southeast/northwest running ridge can be seen to the southeast. Site affords a 360 degree unobstructed view of the surrounding terrain and good views of the



Figure 149: General view of site, XMH-1096 heading south

Granite mountains. No lakes are visible in the immediate area, but Caribou Lakes are located approximately 1 kilometer to the southwest. Due to wind erosion and recent episodes of forest fires, a high degree of surface visibility was observed at the site. UTM coordinates for the site are:

XMH-1096 consists of 3 pieces of lithic debitage identified on the ground surface. These pieces include one piece of tan chert shatter, one piece of gray chert shatter, and one black basalt tertiary flake. All artifacts were found on the southeast slope of the hill within a 15 meters diameter area. Subsurface excavations have yet to be conducted.

#### RECOMMENDATIONS

XMH-267 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-1097

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination:** Not evaluated

Site XMH-1097 is located on a small isolated hilltop. The hilltop is approximately 20 meters in diameter and is elevated 10 to 15 meters above the surrounding terrain. Site affords a 360 degree unobstructed view of the surrounding terrain. No lakes are visible in the immediate vicinity, but Caribou Lakes are located less than 1 kilometer to the west. Due to wind erosion and recent episodes of forest fires, a high degree of surface visibility was observed. UTM coordinates for the site are: [REDACTED]



Figure 150: General view of site, XMH-1097 heading north

XMH-1097 consists of one fine-grained black basalt tertiary flake and one black chert secondary flake. Both flakes were observed on the surface of the southeast slope of the hill within a 5 meters diameter area. Subsurface excavations have yet to be conducted.

#### RECOMMENDATIONS

XMH-1097 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-1098

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination:** Not evaluated

Site XMH-1098 is located on a small isolated hilltop. The hilltop is approximately 15 meters in diameter and is elevated 15 to 20 meters above the surrounding terrain. The surrounding terrain

consists of isolated hills that are separated by generally flat areas in between. Site affords a 360 degree unobstructed view of the surrounding terrain. No lakes are visible in the immediate vicinity, but Caribou Lakes are located less than 1 kilometer to the west. Due to wind erosion and recent episodes of forest fires, a high degree of surface visibility was observed. The ground surface of the site is vegetated primarily by moss and lichen, with some low scrub. UTM coordinates for the site are: [REDACTED]

XMH-1098 consists of a gray chert uniface found on the ground surface. The uniface fragment is 22 mm in width and 15 mm in height and weighs 1.75 grams. No artifacts were collected or subsurface excavations conducted.

**Recommendations**

XMH-1098 has been classified as an isolated find; however the site could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.



Figure 151 : General view of site, XMH-1098 heading south

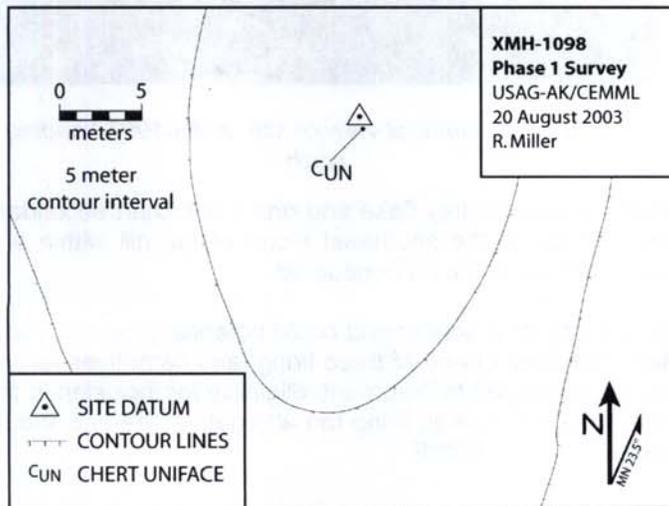


Figure 152: Site map of testing at XMH-1098.

**XMH-1099**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination:** Not evaluated

Site XMH-1099 is located on a small isolated hilltop. The hilltop is approximately 25 meters in diameter and is elevated 20 meters above the surrounding terrain. The surrounding terrain consists of isolated hills that are separated by generally flat areas. Site affords a 360 degree unobstructed view of the surrounding terrain. No lakes are visible in the immediate vicinity, but Caribou Lakes are located less than 1 kilometer to the west. Due to wind erosion and recent episodes of forest fires, a high degree of surface visibility was observed. UTM coordinates for the site are: [REDACTED]



Figure 153: General view of site, XMH-1099 heading south

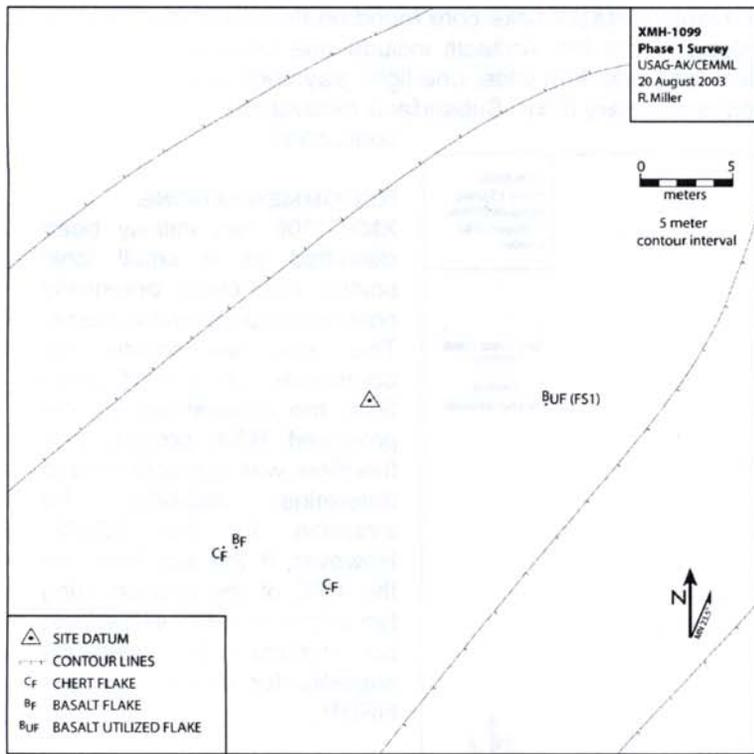


Figure 154: Site map of testing at XMH-1099.

XMH-1099 consists of 4 pieces of lithic debitage observed on the ground surface. The pieces include one large black fine grained basalt primary flake with use wear present on one of the sides, flake measures 69 mm in height, 46 mm in width and weighs 38 grams. The other pieces include an tan chert secondary flake, a light gray chert secondary flake, and a fine grained black basalt tertiary flake. All artifacts were observed on the top of the hill within 15 meters of each other. Subsurface excavations have yet to be conducted.

**RECOMMENDATIONS**

XMH-1099 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to

determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-1100**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

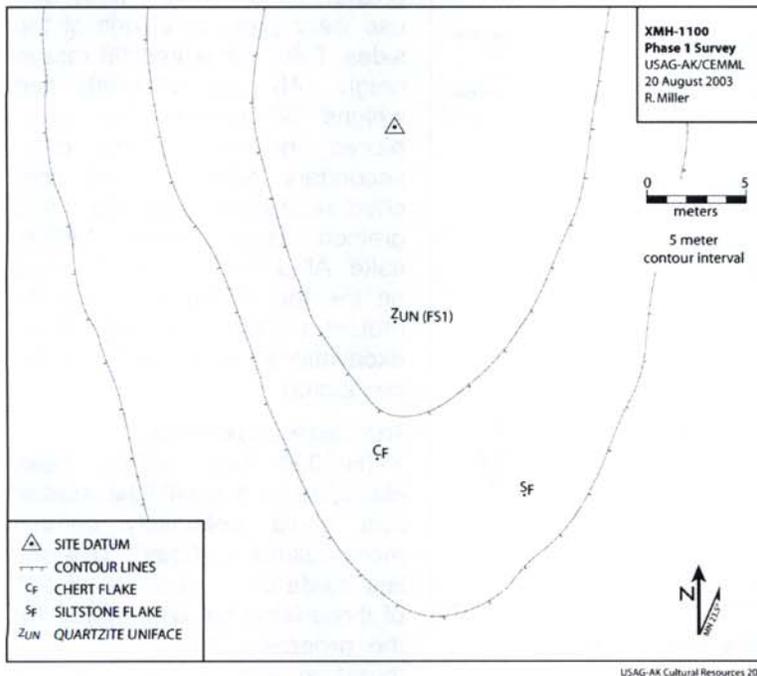
**Determination: Not evaluated**

Site XMH-1100 is located on a large isolated hill. The hill is approximately 45 meters north/south and 25 meters east/west and is elevated 30 meters above the surrounding terrain. The hill slopes gradually on the north side and descends more steeply on the south side. Site affords a 360 degree unobstructed view of the surrounding terrain, and North Caribou Lake and South Caribou Lake are visible less than one kilometer to the southwest and the Granite mountains are visible in the distance to the southeast. Due to recent episodes of forest fires, a high degree of surface visibility was observed at the site. UTM coordinates for the site are: [REDACTED]



*Figure 155: General view of site, XMH-1100 heading south*

XMH-1100 consists of two flakes and a large uniface flake core found on the exposed surface in a 15 meter area on the southeast slope of the hill. Artifacts include one large gray quartzite uniface flake core that measures 16cm long and 9cm wide, one light gray chert secondary flake and one tan siltstone (most likely chert) secondary flake. Subsurface excavations have yet to be conducted.



*Figure 156: Site map of testing at XMH-1100.*

**RECOMMENDATIONS**

XMH-1100 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-1101**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination:** Not evaluated

Site XMH-1101 is located on a high point of an east/west running knoll. The site overlooks an unnamed lake approximately 50m to the south and has a 360° unobstructed view of the surrounding area. The site has a high percentage of surface visibility with the surrounding area composed of mixed forest with low scrub, moss lichen and tussock fields. UTM coordinates for the site are: [REDACTED]



Figure 157: General view of site, XMH-1101 heading south

XMH-1101 consists of two tertiary flakes located on the surface. One fine grained basalt flake and one gray chert flake. Subsurface examinations have yet to be conducted. Density plots have not been calculated.

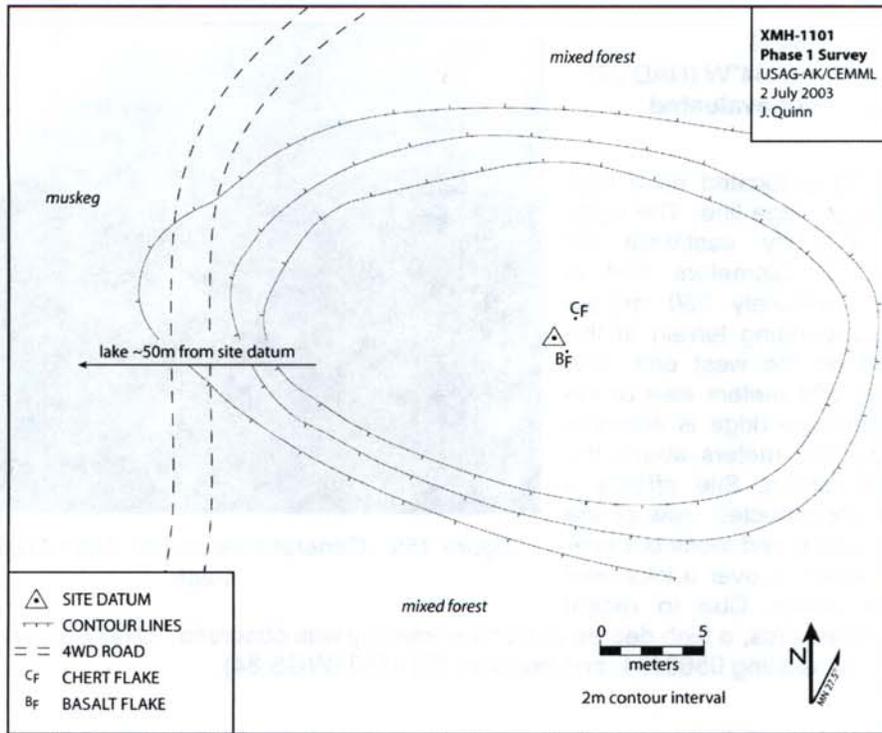


Figure 158: Site map of testing at XMH-1101.

**RECOMMENDATIONS**

XMH-1101 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the

NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-1102

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1102 is located on a high point of a small north/south running knoll (10m x 30m), approximately 200m from an unnamed lake to the south, with a 360° view of the surrounding area. The location has a high surface visibility with the surrounding area composed of mixed forest with low scrub, moss lichen and tussock fields. UTM coordinates for the site are: [REDACTED]

XMH-1102 consists of a single tertiary rhyolite flake found on the surface. A total of seven shovel tests have been excavated, approximately 5m, and were from 20-30cm deep, to glacial till. All shovel tests pits were negative.

#### **RECOMMENDATIONS**

XMH-1102 has been classified as an isolated find; however the site could potentially contain more cultural material. Site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project.

#### XMH-1103

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1103 is located on a high point of a larger ridge line. The ridge line runs generally east/west for approximately 2 kilometers and is elevated approximately 250 meters above the surrounding terrain at the highest point on the west end. The site is located 500 meters east of the high point where the ridge is elevated approximately 100 meters above the generally flat terrain. Site affords a 180 degree unobstructed view of the surrounding terrain and looks out over Butch Lake, which is over a kilometer away to the south. Due to recent episodes of forest fires, a high degree of surface visibility was observed. UTM coordinates for the site are: [REDACTED]



*Figure 159: General view of site, XMH-1103 heading south*

XMH-1103 consists of 2 pieces of lithic debitage observed on the ground surface, within a 14 meter area. These pieces include a piece of gray banded chert shatter and a black basalt secondary flake. Subsurface excavations have yet to be conducted.

#### **RECOMMENDATIONS**

XMH-1103 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the

NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-1104**

**Latitude:** [REDACTED]

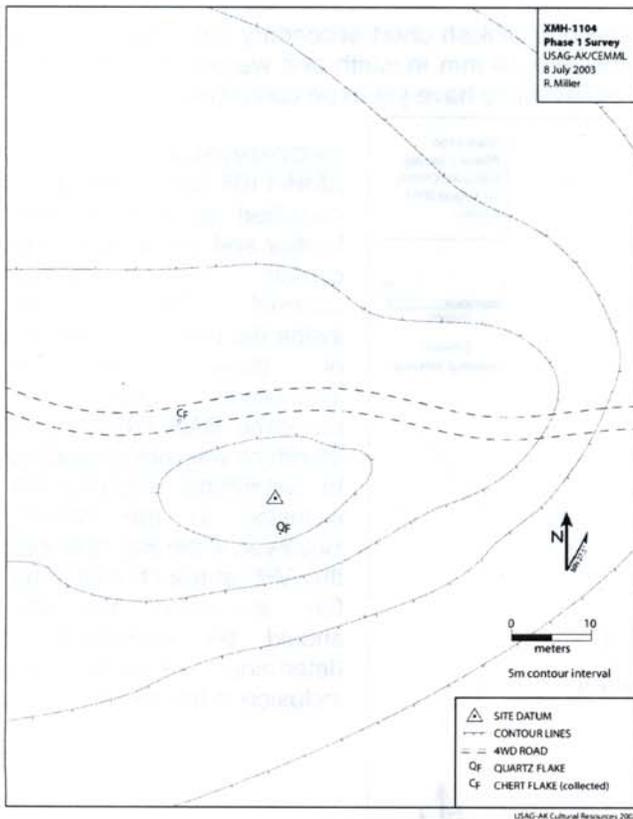
**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1104 is located 500 meters east of the high point on a generally flat area on top of the ridge. At this point the ridge is elevated approximately 100 meters above the generally flat terrain to the south looking down on Butch Lake. Looking southeast provides good views to the Granite Mountains. Due to recent episodes of forest fires, a high degree of surface visibility was observed. UTM coordinates for the site are:



Figure 160: General view of site, XMH-1104 heading north



XMH-1104 consists of two flakes found on the ground surface. These include a grayish white chert secondary flake and a quartz secondary flake observed 20 meters apart. The chert flake was observed on a two track and was collected due to the likelihood that it would be impacted by vehicular traffic. Subsurface excavations have yet to be conducted.

**RECOMMENDATIONS**

XMH-1104 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

Figure 161: Site map of testing at XMH-1104.

**XMH-1105**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

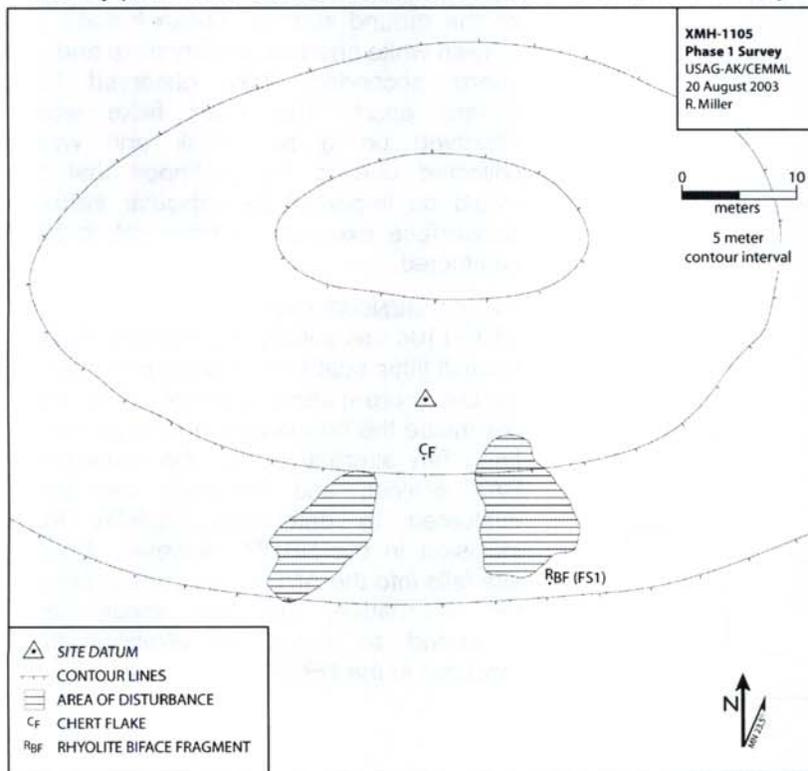
**Determination: Not evaluated**

Site XMH-1105 is located at the top of an isolated hill. The hill is elevated 30 meters above the surrounding terrain and is 40 meters in diameter. The hill is adjacent to a long (2 kilometer) ridge located to the west and numerous other isolated hills to the east. Immediately below the hill to the east and west are two small (15 meter diameter) dry lakebeds, no other larger lakes are visible in the immediate area. Site affords a 360 degree unobstructed view of the surrounding terrain. Due to recent episodes of forest fires, a moderate to high degree of surface visibility is available. UTM coordinates for the site are: [REDACTED]



Figure 162: General view of site, XMH-1105 heading south

XMH-1105 consists of one biface fragment and one pinkish chert secondary flake found on the surface. The biface measures 29 mm in length and 29 mm in width and weighs 12 grams. No density plots were calculated and subsurface excavations have yet to be conducted.



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**RECOMMENDATIONS**

XMH-1105 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

Figure 163: Site map of testing at XMH-1104

**XMH-1106**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1106 is located on a high point of a larger ridge line. The ridge line runs generally east/west for approximately 2 kilometers and is elevated approximately 250 meters above the surrounding terrain at the highest point on the west end. The site is located 500 meters east of the high point where the ridge is elevated approximately 100 meters above the generally flat terrain. Site affords a 180 degree unobstructed view of the surrounding terrain and looks out over Butch Lake, which is over a kilometer away to the south. Due to recent episodes of forest fires, a high degree of surface visibility was observed. UTM coordinates for the site are [REDACTED]



*Figure 164: General view of site, XMH-1106 heading north*

XMH-1106 consists of two flakes found on the ground surface. These include one fine-grained black basalt tertiary flake and one tan chert secondary flake. These artifacts were observed 15 meters apart on the southern slope of the high point. Subsurface excavations have yet to be conducted.

**RECOMMENDATIONS**

XMH-1106 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-1107**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1107 is located at the top of a large isolated hill. The hill is elevated 100 meters above the generally flat terrain. Site affords a 360 degree unobstructed view of the surrounding terrain, with good views of a large ridge to the west, and Butch Lake, which is approximately 1 kilometer to the south. Due to recent episodes of forest fires, a moderate to high degree of surface visibility is available. UTM coordinates for the site are: [REDACTED]



*Figure 165: General view of site, XMH-1107 heading south*

XMH-1107 consists of numerous (150+) pieces of lithic debitage and 3 tools (see table below). The quartz flakes (100+) were found on the western slope of the hill within a 5 meter area. The quartz flakes were concentrated into an area in association with a large (50 x 30 cm) quartz boulder that appears to have been utilized for material (some battering marks or flake scars are evident), as well as five other quartz cobbles that appear to have been either tested or used as cores. Two Density Plots DP1 (S12.5/W32) & DP2 (S12.5/ W33) were taken from the quartz procurement/ production area, DP1 yielded 42 quartz flakes and DP 2 yielded 51 quartz flakes. An additional Density Plot (DP3 S23.5/W11.5) was taken from the southern slope where one chert uniface and a chert flake were found in nearby vicinity. A flake type analysis indicates primary and secondary lithic reduction of quartz from a large bolder occurred at the site, as well as later stages of lithic reduction occurred at the site of non-quartz materials. Artifact density is calculated as being up to 31.66 artifacts per-square meter.



Figure 166 : Photo of utilized bolder from XMH-1107

All of the non-quartz flakes (8) and the 3 tools were found on the southern slope of the hill within a 30 meter area (Figure 169). Lithic tools included one chert bifacial projectile point base (FS 1) and two chert unifacial end scrapers (FS 2 and 3). The non-quartz flakes included the following materials; gray quartzite, dark gray basalt, red chert, and gray chert. Subsurface excavations have yet to be conducted. No artifacts were collected.

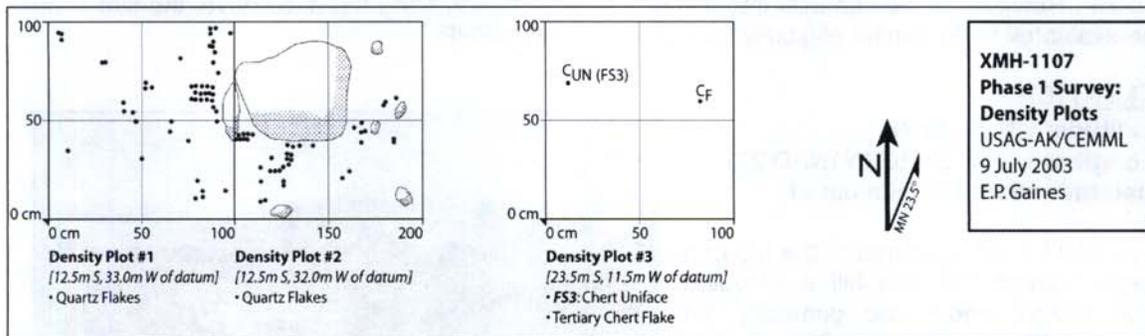


Figure 167: Density plots from XMH-1107, showing utilized bolder

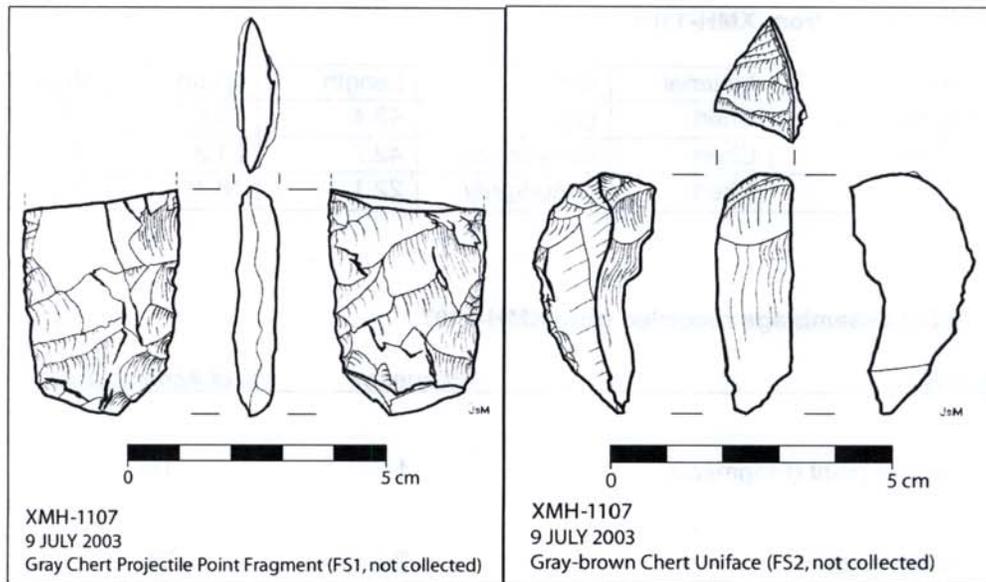


Figure 168: Illustrations of lithic tools from XMH-1107

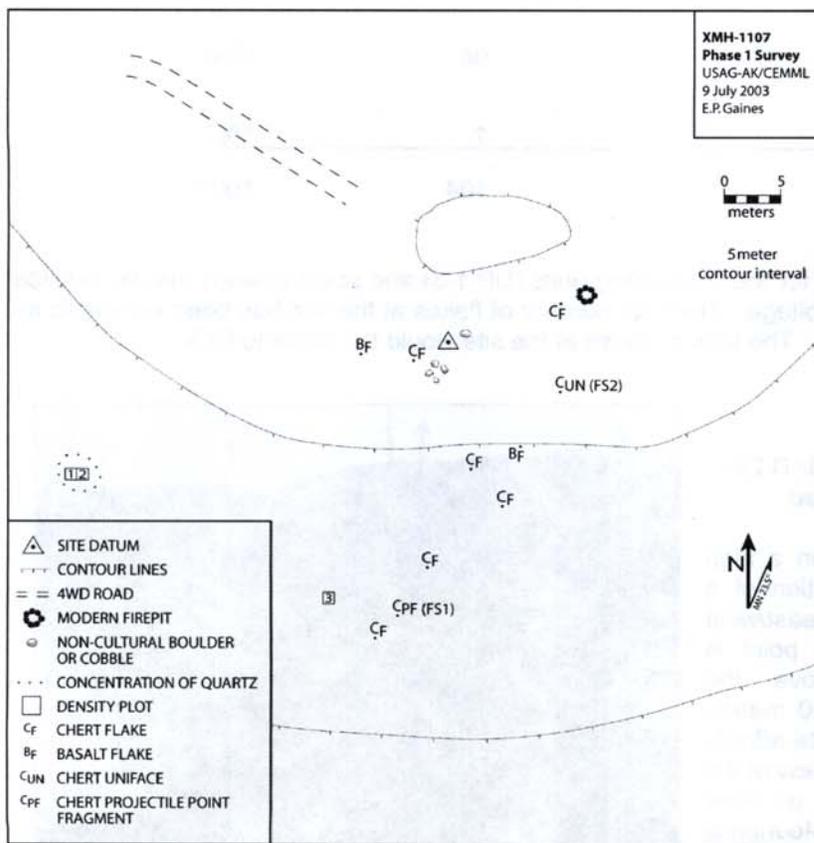


Figure 169: Site map of testing at XMH-1107

### Recommendations

XMH-1107 has initially been classified as lithic procurement/ production site where both primary reduction of locally occurring material type (quartz) and late stage lithic reduction or tool use and maintenance of non-locally occurring material types occurred at the site. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**Table 7: Lithic tools from XMH-1107**

FS#	Artifact type	Material	Color	Length	Width	Weight
FS1	Proj. pt. base	Chert	gray	43.4	30.5	11.7 gm
FS2	Uniface	Chert	Gray/brown	42.7	21.3	8.1 gm
FS3	Uniface	Chert	Green/gray	22.1	18.4	2 gm

**Table 8: Lithic assemblage recorded from XMH-1107.**

Artifact Class	Frequency	% of Assemblage
<b>Bifaces</b>		
Projectile point (Fragment)	1	1%
<b>Unifaces</b>		
End scrapers	2	2%
Utilized Bolder	1	1%
Large flake cores	5	5%
<b>Debitage</b>		
Flakes	94	90%
<b>Shatter</b>	<b>1</b>	<b>1%</b>
Total	104	100%

\* The total of 94 flakes came for the 3 sampling units (DP 1-3) and several flakes that lay outside the main concentration of debitage. The total number of flakes at the site has been estimated as being in excess of 150 flakes. The total of flakes at the site would be closer to 93%.

**XMH-1108**

**Latitude:** [REDACTED]  
**Longitude:** [REDACTED]  
**Determination: Not evaluated**

Site XMH-1108 is located on a high point of a northeastern portion of a approximately 2 kilometers east/west running moraine. The high point is elevated 40 meters above the surrounding terrain and is 20 meters long and 40 meters wide. Site affords a 360 degree unobstructed view of the surrounding terrain, and provides good views of the Granite Mountains to the southeast and Donnelly Dome to the southwest. No lakes are visible in the immediate area, but a possible dry lakebed exists 150 meters to the



Figure 170: General view of site, XMH-1108 heading north

south. Due to recent forest fires, the surface visibility at the site is moderate to high. UTM coordinates for the site are: [REDACTED]

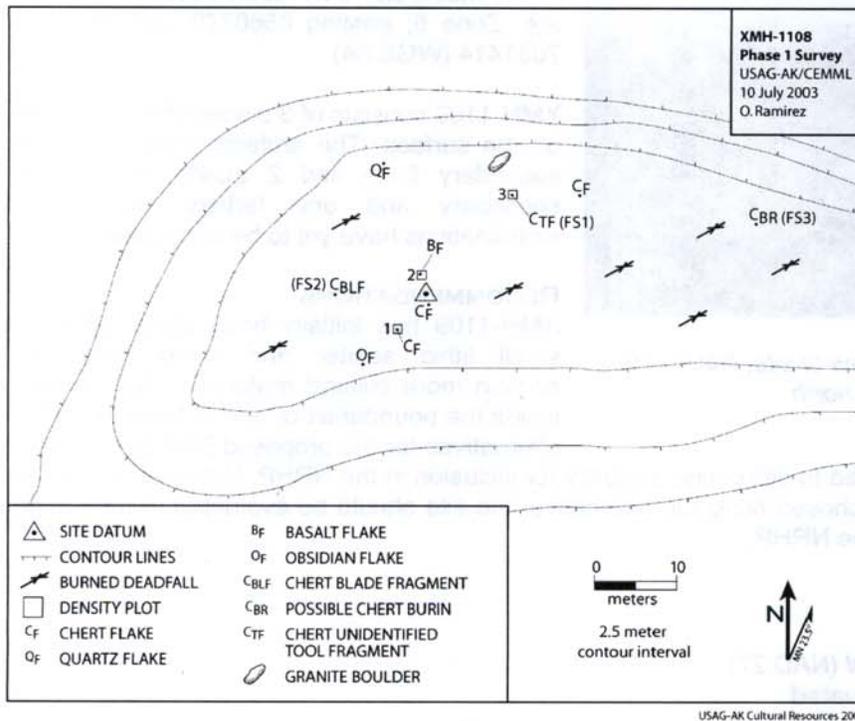


Figure 171: Site map of testing at XMH-1108

XMH-1108 consists of three tool fragments and 6 pieces of lithic debitage found on the ground surface. The tools include; 1 unidentified tool fragment of gray chert that weighs 4.25 grams and measures 23.75 mm long by 25.5 mm wide and is 6.75 mm in thickness. The other 2 tools that could be identified in the field are a medial blade fragment with retouch/ use wear on both sides that weighs .75 grams and measures 12.5 mm long by 15 mm wide and is 4.7 mm in thickness and a

brown chert burin that weighs 12 grams and measures 48 mm long by 32 mm wide. The remaining artifacts are all tertiary flakes that consist of 3 gray chert tertiary flakes, 1 grayish black basalt tertiary flake, 1 reddish gray quartzite tertiary flake, and 1 obsidian tertiary flake. Three Density Plots (DP) were calculated at the site that each contained a single artifact. DP1 (S5.5/W4) contained a chert tertiary flake, DP2 (N2/W1) contained a basalt tertiary flake as well, and DP3 (N12/E10) contained the unidentified chert tool fragment. Artifact density is calculated as being up to 1 artifact per-square meter. Subsurface examinations have yet to be conducted.

### Recommendations

XMH-1108 has initially been classified as a small lithic scatter where late stage lithic reduction occurred. Site could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

### XMH-1109

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

Site XMH-1109 is located on a high point that is part of a long (approximately 2 kilometers) generally east/west running ridge. The hill is elevated 40 meters above the surrounding terrain and is 65 meters long and 30 meters wide. Site affords a 360 degree unobstructed view of the surrounding terrain, with good views of the Granite Mountains to the southeast and Donnelly



Figure 172: General view of site, XMH-1109 heading north

Dome to the southwest as well as Caribou Lakes 1 kilometer to the northwest. Due to recent forest fires, the surface visibility at the site is moderate. UTM coordinates for the site are: [REDACTED]

XMH-1109 consists of 3 pieces of flakes found on the surface. The artifacts include 1 chert secondary flake and 2 quartz flakes, one secondary and one tertiary. Subsurface examinations have yet to be conducted.

**RECOMMENDATIONS**

XMH-1109 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and

therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-1110**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1110 is located on a northeast-southwest trending bluff overlooking Jarvis Creek to the west. Donnelly Dome is visible to the southwest, the Alaska Range to the west, and the Granite Mountains to the east. The nearest water is Jarvis Creek located approximately 500 meters to the northwest and North Caribou Lake is approximately one kilometer to the south. There is no surface visibility due to vegetation. UTM coordinates for the site are: [REDACTED]

XMH-1110 consists of a chert flake found in a shovel test unit. A total of four shovel tests were excavated to glacial till. One positive shovel test (STBG) contained one tertiary gray chert flake found at a depth of 35-45cmbs. The shovel test was 50cm deep, with four distinct layers, 0-8cm is the organic layer, 8-23cm is yellow brown loess, 23-45cm is strong brown loess, and 45-50cm is glacial till. The artifact was collected. No density plots were calculated.



Figure 173: General view of site, XMH-1110 heading southwest

**Recommendations**

XMH-1110 has been classified as a buried site and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-1111**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1111 is located on a high point that is part of a long (approximately 2 kilometers) generally east/west running ridge. The hill is elevated 40 meters above the surrounding terrain and is 65 meters long and 30 meters wide. Site affords a 360 degree unobstructed view of the surrounding terrain, with good views of the Granite Mountains to the southeast and Donnelly Dome to the southwest. No lakes are visible in the immediate area, but a possible dry lakebed exists 150 meters to the south. The nearest large lakes are North and South Caribou Lakes approximately two kilometers to the west. Due to recent forest fires, the surface visibility at the site is moderate to high. UTM coordinates for the site are: [REDACTED]



Figure 174: General view of site, XMH-1111 heading north

Due to recent forest fires, the surface visibility at the site is moderate to high. UTM coordinates for the site are: [REDACTED]

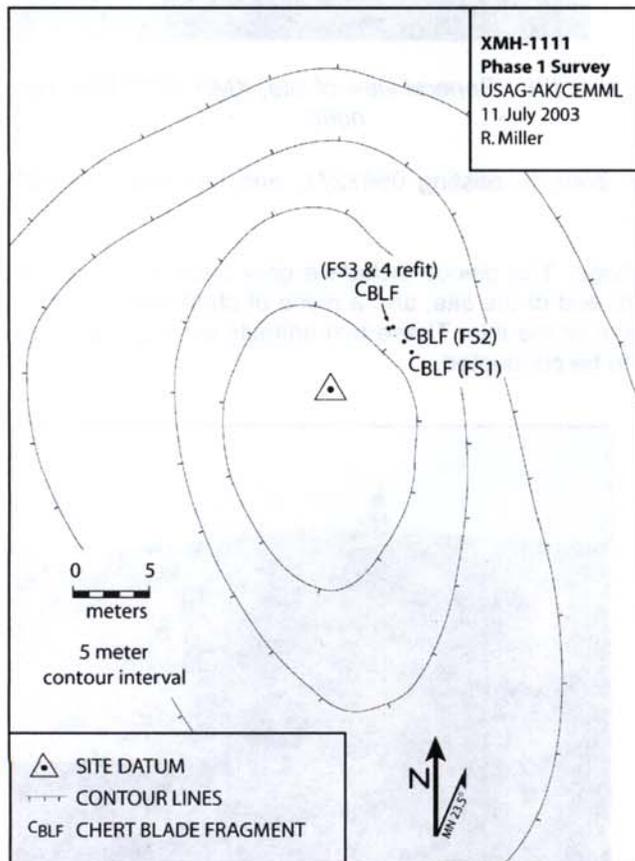


Figure 175: Site map of testing at XMH-1111

XMH-1111 consists of four blade fragments found on the surface, 2 chert blade fragments both of which exhibit retouch/use wear on either side, and 2 basalt blade fragments that refit into a single blade (see table below). No density plots were calculated and subsurface excavations have yet to be conducted.

**RECOMMENDATIONS**

XMH-1111 has been classified as a blade production site; however the site could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**Table 9: Lithic tools from XMH-1111**

FS#	Artifact Type	Material	Color	Length	Width	Weight
FS1	Blade fragment	chert	gray	11 mm	11 mm	.25 gm
FS2	Blade fragment	chert	gray	13 mm	11 mm	.25 gm
FS3	Blade fragment	basalt	black	11 mm	10 mm	.15 gm
FS4	Blade fragment	basalt	black	12 mm	6 mm	.10 gm

**XMH-1112**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1112 is located at the top of a large isolated hill. The hill is elevated 50 meters above the surrounding terrain. Hill is 70 meters north/south by 25 meters east/west and is characterized by two high points separated by a low point of less than 2 meters in elevation. Site affords a 360 degree unobstructed view of the surrounding terrain. Located less than 100 meters to the west there is a lake (mostly dry). Due to recent episodes of forest fires, a moderate to high degree of surface visibility is available. UTM coordinates for the site are: [REDACTED]



*Figure 176: General view of site, XMH-1112 heading north*

XMH-1112 consists of 2 pieces of lithic debitage. The pieces include a gray chert tertiary flake which was found at the high point on the north end of the site, and a piece of chert shatter which was found at the high point at the southern end of the site. These two artifacts are separated by 50 meters. Subsurface excavations have yet to be conducted.

**RECOMMENDATIONS**

XMH-267 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.



*Figure 177: General view of site, XMH-1113 heading east*

**XMH-1113**

Latitude: [REDACTED]  
Longitude: [REDACTED]  
Determination: Not evaluated

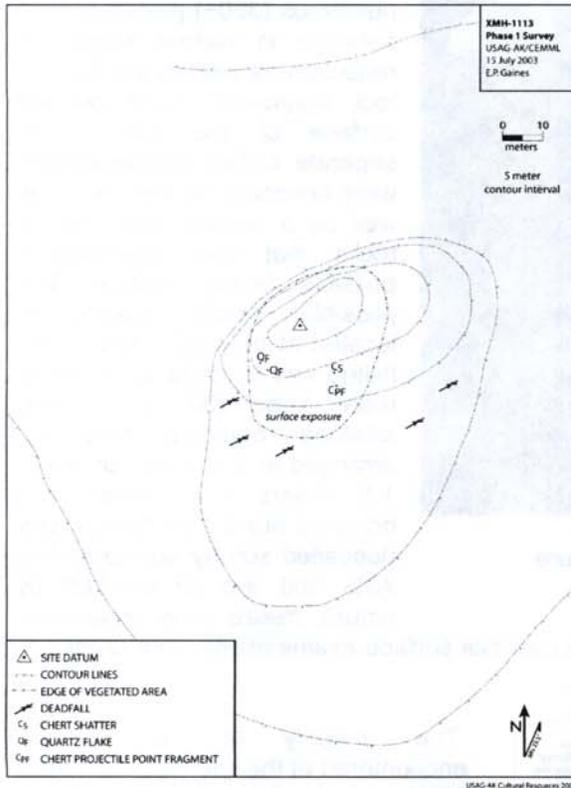


Figure 178: Site map of testing at XMH-1113

Site XMH-1113 is located at the top of a large isolated hill. The hill is elevated 40 meters above the surrounding area. The hill continues on north for another 100 meters where it rises in elevation approximately 30 meters. Site affords a 320 degree unobstructed view of the surrounding terrain. Site XMH-1114 is located 200 meters to the north. No lakes are visible from the site. Due to recent episodes of forest fires, a high degree of surface visibility is available. UTM coordinates for the site are:

Site XMH-1113 consists of one bifacial projectile point fragment and 3 of lithic debitage. A projectile point midsection fragment measuring 21.6 mm in width and 22.4 mm in height weighing 3.5 grams was found on the southeast slope of the hill along with a piece of chert shatter. Additionally 2 quartz flakes were found on the southwest slope of the hill in an area where several (5+) quartz cobbles are eroding from below the surface. Subsurface examinations have yet to be conducted.

#### RECOMMENDATIONS

XMH-1113 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-1114

Latitude: [REDACTED]  
Longitude: [REDACTED]  
Determination: Not evaluated

Site XMH-1114 is located at the top of a large isolated hill that is elevated 60 meters above surrounding terrain. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the north. No lakes are visible in the immediate vicinity, but numerous small dry lakes are located within a kilometer, the closest of which is located 500 meters to the west. Due to recent episodes of forest fires, a



Figure 179: General view of site, XMH-1114 heading north



located on the southeastern slope of the hill. Concentration 3 is consists of over 25 flakes approximately 75% of them are a cream colored chert, while the remaining 25% consist of a gray-banded chert. This concentration measures 4 meters in diameter and is located 10 meters down slope from the top of the hill.

Three Density Plots were calculated at the site. DP1 (17N/8E) was placed on concentration 1 and contained 63 pieces of flaked stone of either gray banded chert or black fine grained basalt and one of green chert. This density plot contained mainly tertiary flakes (a total of 61) with only 2 secondary flakes. DP2 (N28/ E19) was placed on concentration 2 and contained 46 pieces of flaked stone all of which were gray banded chert tertiary flakes. DP3 (N19/ W9) was placed on concentration 3 and contained 15 flakes of either a cream colored chert or a gray banded chert, all of which were tertiary flakes.

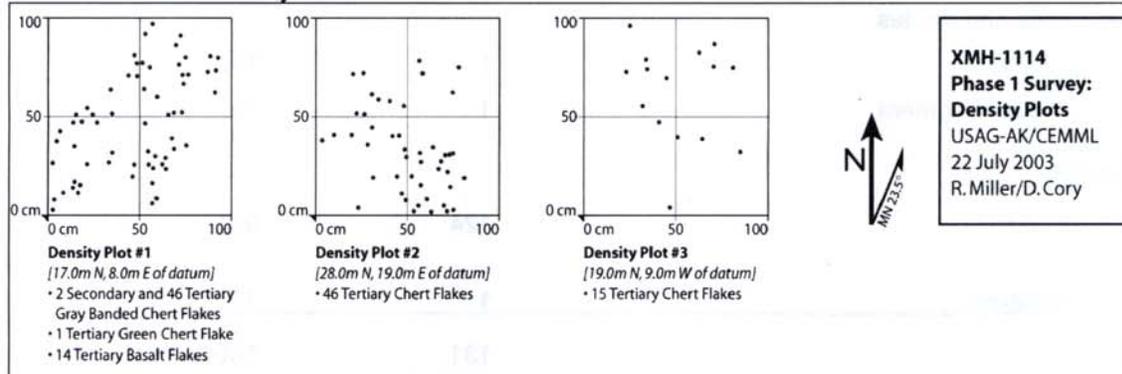


Figure 182: Density Plots from XMH-1114

The remaining 5% of the lithic debitage that were encountered outside of the artifact concentrations consist of over 25 pieces of flaked stone and 6 tools or tool fragments. These artifacts were observed throughout the southern slope of the hilltop. The tools observed at the site consist of blades, two biface fragments and two uniface, measurements are listed below in Table 8. Artifact density is calculated as being up to 41.33 artifacts per-square meter. Subsurface excavations have yet to be conducted.

### Recommendations

XMH-1114 has initially been classified as a large lithic scatter where production and later stages of lithic reduction occurred. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

Table 10. Lithic tools recorded from XMH-1114.

FS#	Artifact type	Material	Color	Length	Width	Weight
FS1	blade	basalt	black	29 mm	10 mm	0.5 gm
FS2	biface fragment	chert	Gray banded	43 mm	19 mm	6 gm
FS3	blade fragment	basalt	black	16 mm	12 mm	0.75 gm
FS4	retouched flake	chert	gray banded	41 mm	12 mm	1.9 gm
FS5	biface fragment	quartz	white	42.5 mm	25 mm	13.5 gm
FS6	uniface	chert	gray banded	75 mm	39 mm	24.5 gm

**Table 11. Lithic assemblage recorded from XMH-1114.**

Artifact Class	Frequency	% of Assemblage
<b>Bifaces</b>		
Biface fragments	2	1%
<b>Unifaces</b>		
Scrapers	1	1%
Unifacially retouched flake	1	1%
<b>Blade Cores and Blades</b>		
Blade	1	1%
Blade Fragment	1	1%
<b>Debitage</b>		
Flakes*	124	94%
<b>Shatter</b>	<b>1</b>	<b>1%</b>
<b>Total</b>	<b>131</b>	<b>100%</b>

\* The total of 124 flakes came from the 3 sampling units (DP 1-3) and several flakes that lay outside the main concentrations of debitage. The total number of flakes at the site has been estimated as being in excess of 350 flakes. The total of flakes at the site would be closer to 99%.

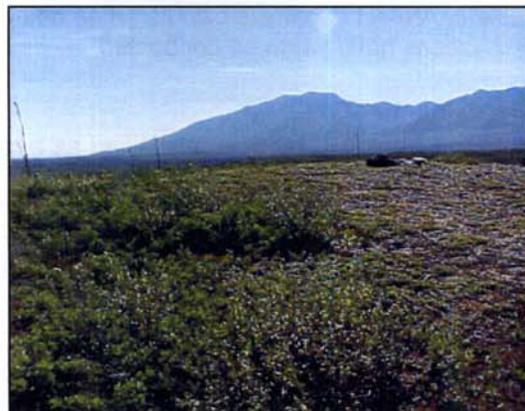
**XMH-1115**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1115 is located at the top of a hill. The hill is elevated 30 meters above the generally flat terrain that exists between the numerous other hills that surround the site. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the north. No lakes are visible in the immediate vicinity, but numerous small dry lakes are located within a kilometer, the closest of which is located 700 meters to the south. Due to recent episodes of forest fires, there is a high degree of surface visibility available at the site. UTM coordinates for the site are: [REDACTED]



*Figure 183: General view of site, XMH-1115 heading east*

XMH-1115 consists of one bifacial projectile point fragment observed on the surface of the hill. The projectile point is a midsection fragment made of a cream colored chert. No other artifacts were observed at the site. Subsurface excavations have yet to be conducted.

**RECOMMENDATIONS**

XMH-1115 has been classified as an isolated find; however the site could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives

for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-1116**

**Latitude:** [REDACTED]  
**Longitude:** [REDACTED]  
**Determination: Not evaluated**

Site XMH-1116 is located at the top of an isolated hill. The hill is elevated 50 meters above the generally low hilly terrain. Site affords a 360 degree unobstructed view of the surrounding terrain, and Butch Lake which is less than one kilometer to the southwest. UTM coordinates for the site are:

[REDACTED]



*Figure 184: General view of site, XMH-1116 heading south*

XMH-1116 consists three flakes located on the surface. The flakes include one green gray chert secondary flake, one quartz secondary flake, and one quartz primary flake. No other artifacts were observed at the site. Subsurface excavations have yet to be conducted.

**RECOMMENDATIONS**

XMH-1116 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-1117**

**Latitude:** [REDACTED]  
**Longitude:** [REDACTED]  
**Determination: Not evaluated**

Site XMH-1117 is located on a high point of a larger hill. Site is elevated 30 meters above the surrounding terrain and less than 100 meters to the west of XMH-1115. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the north and east. No lakes are visible from the site, but numerous small lakes are located within a kilometer, the closest of which is 500 meters to the southeast. Due to recent episodes of forest fires, a high degree of surface visibility is available. UTM coordinates for the site are:

[REDACTED]



*Figure 185: General view of site, XMH-1117 heading west*

Site XMH-1117 consists of two flakes on the ground surface. The flakes include one green gray chert tertiary flake and one gray chert tertiary flake found 15 meters apart on the top of the hill. Subsurface excavations have yet to be conducted.

**RECOMMENDATIONS**

XMH-1117 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-1118**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1118 is located at the top of an isolated hill elevated 30 meters above the surrounding terrain. Butch Lake is approximately 500 meters south and is visible from the site. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the South. Due to recent episodes of forest fires, a moderate degree of surface visibility is available at the site. UTM coordinates for the site are: [REDACTED]



*Figure 186: General view of site, XMH-1118 heading south*

XMH-1118 consists of flakes on the surface of the hill. The flakes include two chert tertiary flakes. No other artifacts were observed at the site. Subsurface excavations have yet to be conducted.

**RECOMMENDATIONS**

XMH-1118 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-1119**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1119 is located on the southwestern slope of a north/south trending ridge elevated 40 meters above the surrounding terrain. Butch Lake is approximately 150 west and is visible from the site. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the south and west. Due to recent episodes of forest fires, a moderate degree of surface visibility is available at the site. UTM coordinates for the site are: [REDACTED]



*Figure 187: General view of site, XMH-1119 heading east*

Site XMH-1119 consisted of one microblade and eleven flakes located on the surface. The microblade is a gray chert and measures 22 mm high and 9 mm wide and weighs 2 grams. The flakes are all small (all but one flake is less than 20 mm in length) tertiary flakes of numerous materials types. Three Density Plots (DP) were calculated at the site, one within the small artifact concentration consists of 8 flakes within a 50 cm area. DP1 (15S / 0E) contained 2 flakes, DP2 (9S / 1E) contained 1 flake, and DP3 (1N / 2W) contained 8 flakes within the artifact concentration. Subsurface excavations have yet to be conducted.

#### RECOMMENDATIONS

XMH-1119 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-1120

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1120 is located on a northeast/southwest trending ridge. There are small ponds visible 50 meters to the north and northwest. A small pond is also visible to the southeast, 300 meters from the site. Site affords a 360 degree unobstructed view of the surrounding terrain. The Granites can be seen to the southeast, Donnelly Dome is visible to the southwest, and views of the Alaska Range are to the west. The site has no surface visibility due to vegetation. UTM coordinates for the site are: [REDACTED]



*Figure 188: General view of site, XMH-1120 heading east*

Site XMH-1120 consists of one flake found during systematic shovel testing. A total of three shovel tests were excavated 30cm in diameter to glacial till. One positive shovel test (STUNO) contained one tertiary basalt flake at a depth of 10-20cmbs. The shovel test was 45cm deep, with four distinct layers, 0-8cmbs is the organic layer, 8-16cmbs is a strong brown loess, 16-40cmbs is a dark yellow brown loess, and 40-45cmbs is glacial till. The artifact was collected. No density plots were calculated at the site.

#### Recommendations

XMH-1120 has been classified as a buried site and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-1121

Latitude: [REDACTED]  
Longitude: [REDACTED]  
Determination: Not evaluated

Site XMH-1121 is located on a small knoll. North Caribou Lake is visible 200 meters away to the northeast and a small pond is in between the site and the lake. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the south with views of Donnelly Dome, Alaska Range and Granites. The site contains zero percent surface visibility. UTM coordinates for the site are: [REDACTED]



Figure 189: General view of site, XMH-1121 heading northwest

XMH-1121 consists of one flake found in a shovel test unit. A total of three shovel tests were excavated 30cm in diameter to glacial till. One positive shovel test (STM) contained one tertiary flake of an unidentifiable material at a depth of 10-30cmbs. The shovel test was 60cm deep, with four distinct layers, 0-5cmbs is the organic layer, 5-10cmbs is a dark brown loess, 10-55cmbs is a heavily mottled layer consisting of transitions between dark yellow brown loess and brown loess, 55-60cmbs is glacial till. The artifact was collected and no density plots were calculated.

### Recommendations

XMH-1121 has been classified as a buried site and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP

### XMH-1122

Latitude: [REDACTED]  
Longitude: [REDACTED]  
Determination: Not evaluated

Site is located on a northeast/southwest running glacial moraine. Nearest known water appears in the form of a marsh, approximately 400 meters east/southeast of the site. Site affords approximately a 240 degree unobstructed view of the surrounding terrain to the north, west and south. Surface visibility is approximately 60%. UTM coordinates for the site are: [REDACTED]

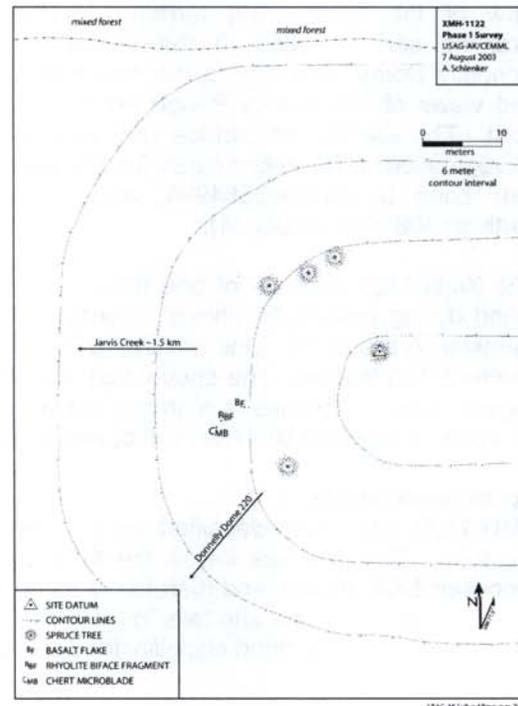


Figure 190: Site map of testing at XMH-1122

XMH-1122 consists of microblade, biface fragment and flake on the ground surface. The Microblade fragment is made of gray chert, 1.3cm long, 0.7 cm wide and 0.2 cm thick. The biface fragment is a tan chert projectile point tip, 2.6cm long 1.9cm wide and 0.5cm thick. The flake is a rough basalt tertiary flake. All artifacts were found on the surface. No subsurface testing or density plots were conducted or photographs taken of the site.

#### RECOMMENDATIONS

XMH-1122 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-1123

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

Site XMH-1123 is located at the top of a hill elevated 15 meters above the surrounding terrain. A small dry lake is located 80 meters away. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the north and east. Due to recent episodes of forest fires, a high degree of surface visibility is available. UTM coordinates for the site are:

[REDACTED]



Figure 191: General view of site, XMH-1123 heading south

Site XMH-1123 consists of two flakes found on the ground surface. The flakes include one pinkish gray chert tertiary flake and a gray brown chert secondary flake. The artifacts were found on top of the hill 2 meters apart. Subsurface excavations have yet to be conducted.

#### RECOMMENDATIONS

XMH-1123 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-1124

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

Site XMH-1124 is located at the top of a hill elevated 20 meters above the surrounding terrain. A small dry lake is located 100 meters away. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the north and west towards the lake. Due to recent episodes of forest fires, a high degree of



Figure 192: General view of site, XMH-1124 heading west

surface visibility is available. UTM coordinates for the site are: [REDACTED]

XMH-1124 consists of flakes found on the ground surface. The flakes include one black fine-grained basalt tertiary flake and one black chert tertiary flake. Both artifacts were found on the south slope of the hill within a 10 meter area. Subsurface excavations have yet to be conducted.

#### RECOMMENDATIONS

XMH-1124 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-1125

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1125 is located at the top of a hill elevated 40 meters above the surrounding terrain. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the north. No lakes are visible from the site, but numerous small lakes are located within a kilometer distance, the closest of which is located 200 meters to the north. Due to recent episodes of forest fires, a high degree of surface visibility is available. UTM coordinates for the site are: [REDACTED]



Figure 193: General view of site, XMH-1125 heading north

XMH-1125 consists of three flakes found on the ground surface. The flakes include three black fine-grained basalt tertiary flakes found within a 2 meter area on top of the hill. Subsurface excavations have yet to be conducted.

#### RECOMMENDATIONS

XMH-1125 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-1126

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1126 is located at the top and on the south slope of a large hill elevated 40 meters above surrounding terrain. Four small



Figure 194: General view of site, XMH-1126 heading north

lakes are located approximately 300 meters away to the west and another small lake visible is 400 meters to the east. The hill slopes off steeply in all directions except to the west where a bench extends out nearly 100 meters and is 20 meters lower

in elevation. Site affords approximately a 180 degree unobstructed view of the surrounding terrain

to the east. Due to recent episodes of forest fires, a high degree of surface visibility is available at the site. UTM coordinates for the site are:

[REDACTED]

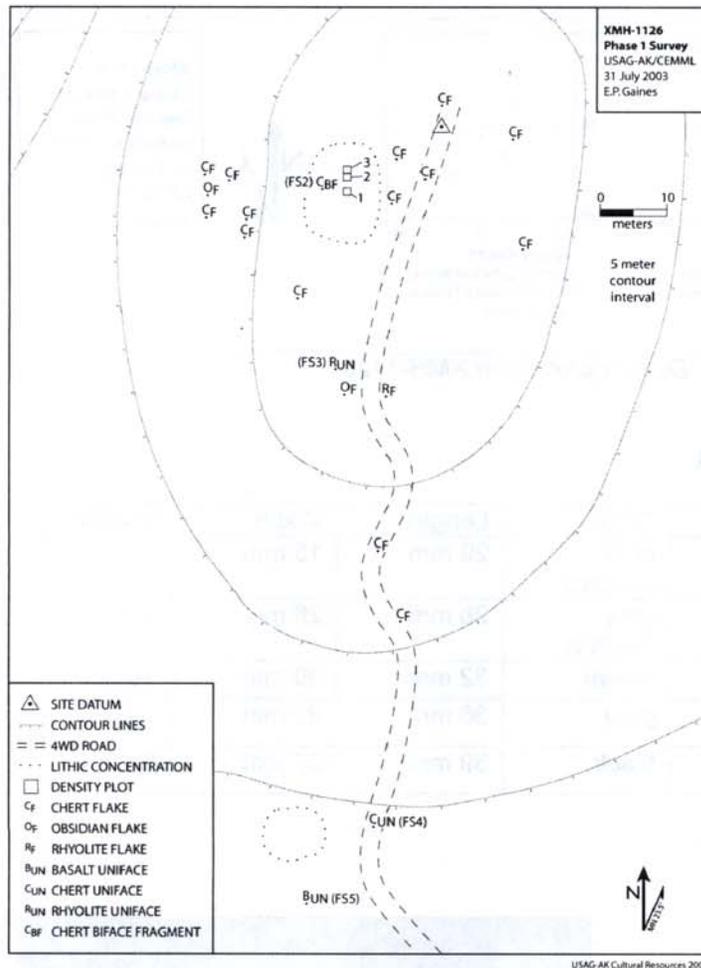


Figure 195: Site map of testing at XMH-1126

Site XMH-1126 consists of one biface fragment, 4 uniface and numerous (80 +) pieces of lithic debitage on the ground surface. Materials at the site include gray-banded chert, white chert, brown rhyolite, black fine-grained basalt, brown rhyolite, black obsidian, and a gray obsidian. Approximately 85% of the flakes were tertiary; the remaining 15% were secondary flakes except for a single primary flake.

Two separate artifact concentrations were observed on the hill, concentration 1 located near the top of the hill on the southwest slope and concentration 2 farther down slope on the southern side of the hill. Concentration 1 consists of 50 + flakes, as well as a chert projectile point fragment (FS2) and a chert uniface (FS1), within approximately a 12 meter area. The majority (75 to 80%) of the flakes from this concentration are

of black fine-grained basalt, while the remaining portion (20 to 25%) is gray-banded chert. Concentration 2 consists of 10 + flakes of various materials within approximately an 8 meter area. Numerous (20+) other flakes were observed scattered through out the top of the hill and continuing down slope to the south until reaching the area where concentration 2 is located.

Three Density Plots (DP) were calculated at the site, all of which were placed within artifact concentration 1. DP1 (10S/15E) contained 3 tertiary pieces of flaked stone and a chert uniface (FS1). DP2 (8S/15E) contained 4 tertiary pieces of flaked stone and 1 piece of secondary flaked stone, and DP3 (7S/15E) contained 5 tertiary pieces of flaked stone and one primary piece of flaked stone. Artifact density is calculated as being up to 5 artifacts per-square meter. Subsurface excavations have yet to be conducted.

### Recommendations

XMH-1126 has initially been classified as a large lithic scatter where production and later stages lithic reduction occurred. This site lies inside the boundaries of one of three firing fan alternatives

for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

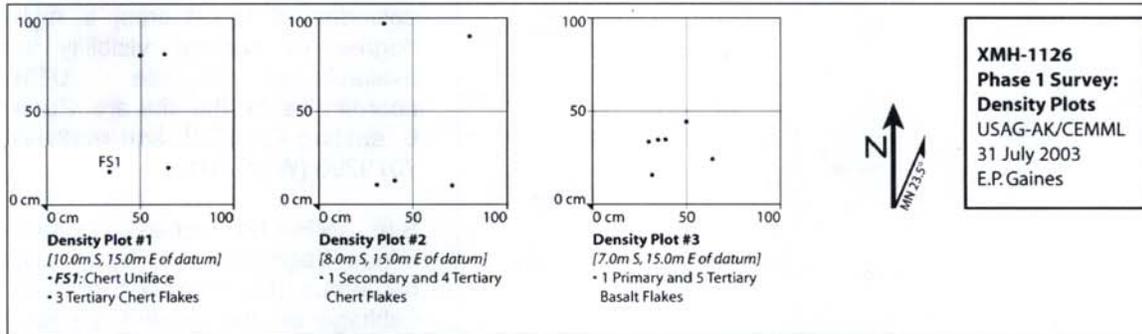


Figure 196: Density plots from XMH-1126

Table 12: Lithic tools from XMH-1126

FS#	Artifact type	Material	Color	Length	Width	Weight
FS1	Uniface	chert	gray banded	29 mm	15 mm	1 gm
FS2	proj.pt. base fragment.	Chert	gray banded	28 mm	26 mm	4 gm
FS3	Uniface	Rhyolite	brown	32 mm	30 mm	10 gm
FS4	Uniface	Chert	gray	36 mm	32 mm	14 gm
FS5	Uniface	basalt	black	39 mm	37 mm	9 gm

**XMH-1127**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1127 is located at the top of a hill elevated 25 meters above the surrounding terrain. To the south a small dry lake is located 100 meters away. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the north. Due to recent episodes of forest fires, a high degree of surface visibility is available. UTM coordinates for the site are: [REDACTED]



Figure 197: General view of site, XMH-1127 heading south

XMH-1127 consists of two flakes found on the ground surface. The flakes include two quartz crystal secondary flakes less than 10 meters apart. Subsurface excavations have yet to be conducted.

#### RECOMMENDATIONS

XMH-1127 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-1128

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1128 is located at the top of a small rise. The small rise is at the southern end of a north/south trending ridge elevated 15 meters above the surrounding terrain. North of the site the ridge begins to descend to a lower, generally flat area and good views are provided looking in this direction, as well as to the east and west where numerous smaller hills are located. No lakes are visible in the immediate area, but a small lake is located 700 meters to the southeast. Due to recent episodes of forest fires, a high degree of surface visibility was observed on top of the rise. UTM coordinates for the site are: [REDACTED]



Figure 198: General view of site, XMH-1128 heading north

XMH-1128 consists of four flakes on the ground surface. The flakes include one tan chert tertiary flake, one gray chert tertiary flake, one gray-banded chert tertiary flake, and one white chert with a reddish band tertiary flake. All of the artifacts were observed within a 2 meter area. Subsurface excavations have yet to be conducted.

#### RECOMMENDATIONS

XMH-1128 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-1129

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

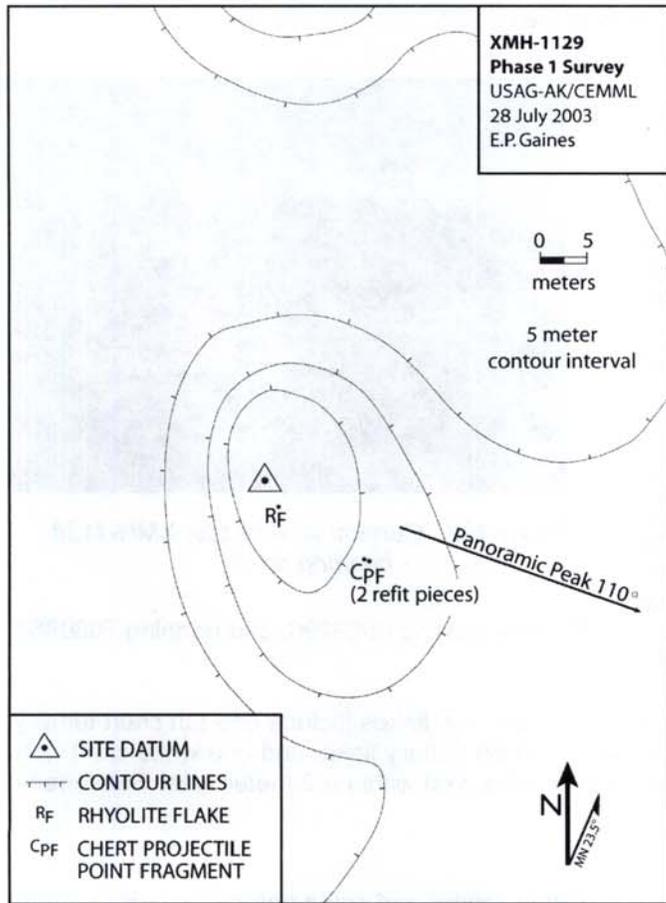
**Determination: Not evaluated**

Site XMH-1129 is located at the top of a small rise. The small rise is at the southern end of a north/south trending ridge elevated only 15 meters above the surrounding terrain. North of the site the hill begins to descend to a lower generally flat area and good views are provided in this direction. No lakes are visible from the site, but a small lake is located 500 meters to the southeast. Sites XMH-1134, XMH-



Figure 199: General view of site, XMH-1129 heading south

1135 and XMH-1136 are located less than 100 meters away on the adjoining set of hills. Due to recent episodes of forest fires, a high degree of surface visibility was observed on the rise. UTM coordinates for the site are: [REDACTED]



Site XMH-1129 consists of three lithic artifacts on the ground surface. The artifacts include one green gray rhyolite secondary flake, and two black chert projectile point fragments that are refits. The projectile point fragments are located only 0.5 meters apart and the other flake is located 15 meters to the northwest. The projectile point fragments measure 14 mm long, 17 mm wide and weigh 1 gram; and 13mm long, 14 mm wide and weigh 1.75 grams. Subsurface excavations have yet to be conducted.

#### RECOMMENDATIONS

XMH-1129 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

Figure 200: Site map of testing at XMH-1129

#### XMH-1130

Latitude: [REDACTED]  
Longitude: [REDACTED]  
Determination: Not evaluated



Figure 201: General view of site, XMH-1130 heading north

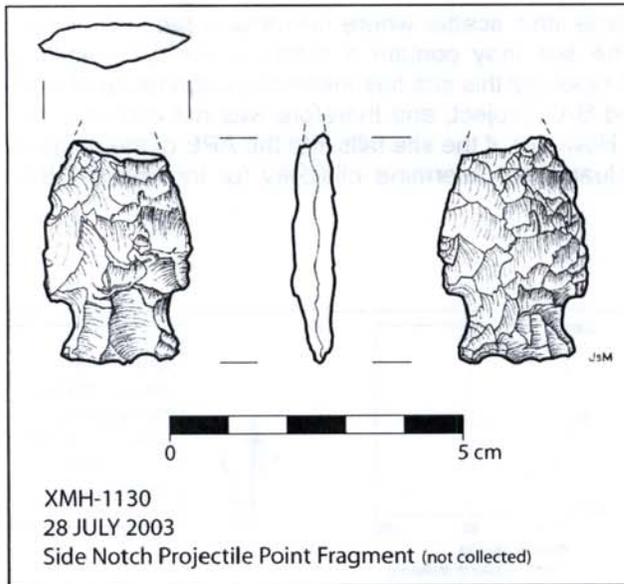


Figure 202: Illustrations of projectile point from XMH-1130

one expedient flake core and numerous (225+) pieces of lithic debitage on the ground surface. Artifacts were observed throughout the entire surface of both rises on the ridge. One chert flake was observed on a lower rise that was less than 50 meters from artifacts noted on the two higher rises.

The southern concentration consists of 200 + flakes and extends for over 50 meters north/south and 20 meters east/west. All but two of the observed tools were in this concentration. A ground stone fragment of quartzite appears to have a highly polished surface. However, field analysis

was unable to determine this positively. The northern concentration consists of 25 + pieces of flaked stone measuring 10 meters in diameter, as well as two chert unifaces. Materials noted at the site include green gray chert, black chert, gray banded chert, white chert, gray chert, orange brown chert, gray green rhyolite, gray/brown rhyolite, black fine grained basalt, medium grained gray/brown quartzite, red fine-grained quartzite, and obsidian.

Three Density Plots (DP) were calculated at the site, all within the southern artifact concentration. DP1 (9S/1E) contained 6 pieces of flaked stone, a projectile point fragment (FS1), and a biface fragment (FS2). DP2 (19N/6W) contained 5 pieces of flaked stone, a burin (FS7), and a microblade fragment (FS8). DP3 (18N/8W) contained 4 pieces of flaked stone (all tertiary flakes).

Twenty-one tools and other diagnostic artifacts observed at the site, they are listed in Table 12. No subsurface excavations have yet been conducted or any artifacts collected.

**Recommendations**

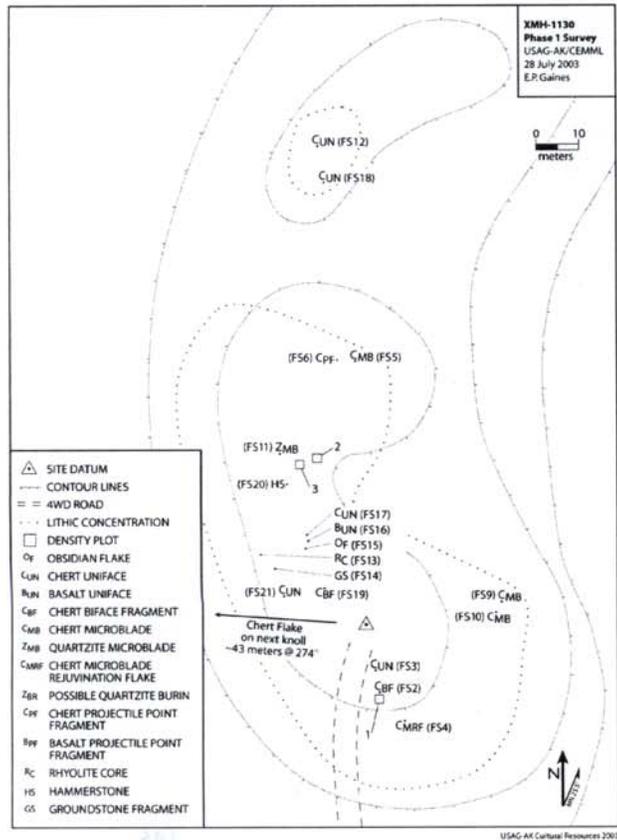


Figure 203: Site map of testing at XMH-1130

Site XMH-1130 is located on two high points separated by approximately 10 meters on a ridge line. Site is elevated 100 meters above the surrounding terrain, and affords a 360 degree unobstructed view. No lakes are visible in the immediate vicinity, but a small lake is located 200 meters to the southeast. Due to recent episodes of forest fires, a high degree of surface visibility was observed. Also an ATV trail has disturbed the southern slope of

the hill exposing a large surface area. UTM coordinates for the site are:



Site XMH-1130 consists of 20 tools, including a side-notch projectile point,

XMH-1130 has initially been classified as a large lithic scatter where microblade production and later stages of lithic reduction occurred. The site may contain a Northern Archaic tradition component on the basis of the projectile point typology this site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

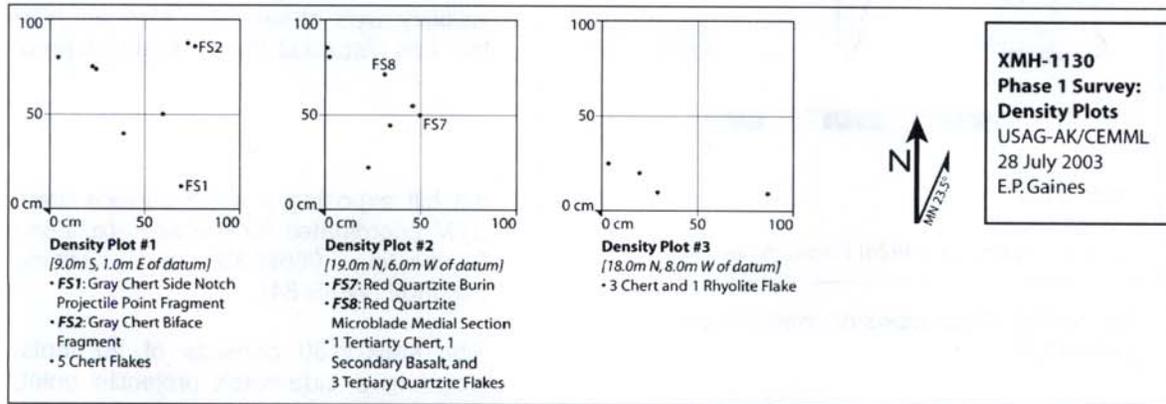


Figure 204: Density plots from XMH-1130

**Table 13. Lithic assemblage recorded from XMH-1130.**

Artifact Class	Frequency	% of Assemblage
<b>Bifaces</b>		
Projectile point (Side notch)	1	3%
Projectile point (Fragment)	1	3%
Biface	1	3%
Biface fragments	1	3%
<b>Unifaces</b>		
Unifaces	6	16%
Unifacially retouched flake	1	3%
<b>Microblade Cores and Microblades</b>		
Microblade core rejuvenation flakes	1	3%
Microblades	4	11%
<b>Burin?</b>	1	3%
<b>Large flake cores</b>	1	3%
<b>Hammer stone</b>	1	3%
<b>Debitage</b>		
Flakes*	16	43%
Shatter	1	3%
<b>Total</b>	<b>3</b>	<b>100%</b>

\* The total of 16 flakes came for the 3 sampling units (DP 1-3) and one flake that lay outside the main concentrations of debitage. The total number of flake at the site has been estimated as being in excess of 225 flakes. The total of flakes at the site would be closer to 93%, the microblades and unifaces would be 3% and all others 1%.

**Table 14. Lithic tools recorded from XMH-1130.**

FS#	Artifact type	Material	Color	Length	Width	Weight
FS1	proj. pt. side notched	chert	Gray	38.5 mm	20.25 mm	7.75 gm
FS2	biface frag	chert	Gray	24 mm	9 mm	0.25 gm
FS3	Uniface	chert	Gray	29 mm	22 mm	5 gm
FS4	microblade rejuvenation flake	chert	Gray banded	24 mm	13 mm	1.75gm
FS5	microblade frag	chert	Gray	16 mm	6 mm	0.25 gm
FS6	proj. pt. midsection	basalt	Gray	22 mm	28 mm	5.25 gm
FS7	Burin	quartzite	Red	21 mm	7 mm	1.75 gm
FS8	microblade frag.	quartzite	red	10 mm	8 mm	0.25 gm
FS9	microblade frag.	chert	black	14 mm	4 mm	0.25 gm
FS10	microblade frag	chert	Gray	15 mm	7 mm	0.5 gm
FS11	microblade	quartzite	red	41 mm	9 mm	1.5 gm
FS12	Uniface	chert	black	22 mm	19 mm	3.25 gm
FS13	core	rhyolite	Gray/brown	112 mm	118 mm	< 100 gm
FS14	ground stone frag.	quartzite	Gray/brown	142 mm	128 mm	< 100 gm
FS15	Retouched flake	obsidian	black	22 mm	12 mm	1.25 gm
FS16	Uniface	basalt	black	35 mm	21 mm	8.5 gm
FS17	Uniface	chert	Gray	22 mm	19 mm	3 gm
FS18	Uniface	chert	white	22 mm	27 mm	3.5 gm
FS19	Biface	chert	black	33 mm	11 mm	1.75 gm
FS20	Hammer stone	basalt	black	118 mm	42 mm	< 100 gm
FS21	Uniface	chert	gray	38 mm	29 mm	8.25 gm

**XMH-1131**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1131 is located at a high point on a glacial moraine. The high point is 20 meters in diameter and is elevated 40 meters above the surrounding terrain. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the north and east. No lakes are visible from the site, but numerous small lakes are located within a



*Figure 205: General view of site, XMH-1131 heading east*

kilometer, the closest of which is 600 meters to the northeast. Site XMH-1132 is located less than 100 meters to the east on an adjoining set of moraines. Due to forest fires, a high degree of surface visibility was observed on the moraine. UTM coordinates for the site are: [REDACTED]

Site XMH-1131 consists of three pieces of lithic debitage found on the surface of the moraine. The pieces include one brown chert secondary flake and two black fine-grained basalt tertiary flakes. The artifacts were found within a 15 meters area on the top of the moraine. Subsurface excavations have yet to be conducted.

#### RECOMMENDATIONS

XMH-1131 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-1132

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

Site XMH-1132 is located at a high point on a glacial moraine. The high point is 20 meters in diameter and is elevated 50 meters above the surrounding terrain. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the north and east. No lakes are visible from the site, but numerous small lakes are located within a kilometer, the closest of which is 600 meters to the northeast. Site XMH-1131 is located less than 100 meters to the west on an adjoining set of moraines. Due to recent episodes of forest fires, a high degree of surface visibility was observed on the moraine. UTM coordinates for the site are: [REDACTED]



Figure 206: General view of site, XMH-1132 heading west

Site XMH-1132 consists of four pieces of lithic debitage found on the surface of the moraine. The pieces include one large gray chert secondary flake, one large piece of gray-banded chert shatter, and two black fine-grained basalt tertiary flakes. The artifacts were found within a 20 meters area on the top of the moraine. Subsurface excavations have yet to be conducted.

#### RECOMMENDATIONS

XMH-1132 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

XMH-1133

Latitude: [REDACTED]

Longitude: [REDACTED]

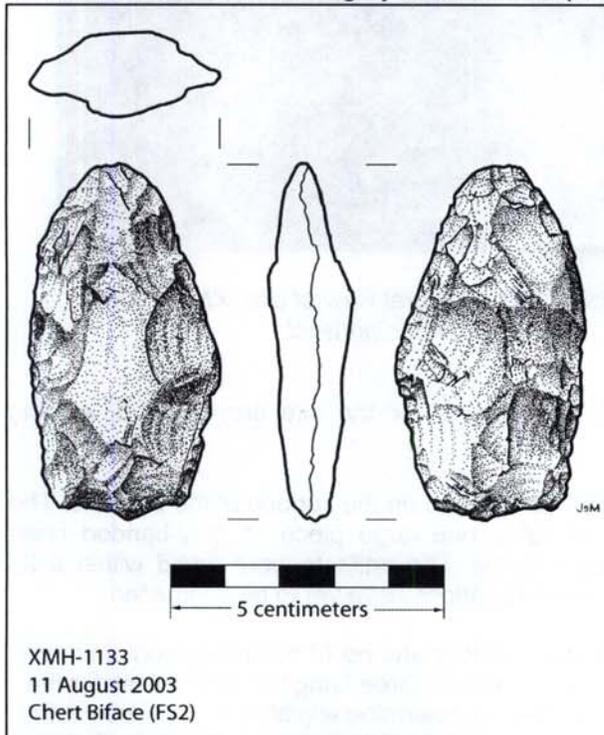
Determination: Not evaluated

Site XMH-1133 is located on a high point of a glacial moraine. The high point is 30 meters in diameter and is elevated 50 meters above the surrounding terrain. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the north and east. No lakes are visible from the site, but numerous small lakes are located within a kilometer, the closest of which is 500 meters to the northeast. Due to recent episodes of forest fires, a high degree of surface visibility was observed on the moraine. UTM coordinates for the site are: [REDACTED]



Figure 207: General view of site, XMH-1133 heading east

Site XMH-1133 consists of two lithic tools and one piece of lithic debitage found on the ground surface. The tools include a gray chert uniface (FS1) that measures 39 mm in length and 26 mm in width and weighs 7 grams. The other tool identified at the site is a light gray chert biface (FS2) that measures 65 mm in length and 34 mm in width and weighs 29 grams. The other piece of lithic debitage identified includes a gray chert tertiary flake. The artifacts were found within a 10 meters area on the top of the moraine. Subsurface excavations have yet to be conducted.



RECOMMENDATIONS  
XMH-1133 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

Figure 208: Illustrations of Biface from XMH-1133

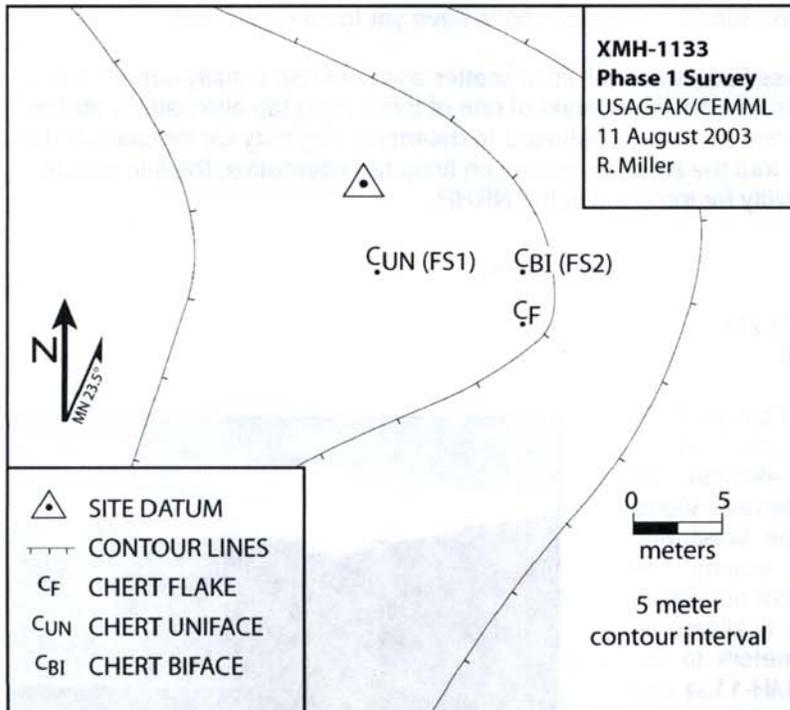


Figure 209: Site map of testing at XMH-1133

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**XMH-1134**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1134 is located at a high point on a glacial moraine. The high point is 25 meters in diameter and is elevated 30 meters above the surrounding terrain. Views are limited to the lower areas west and southwest in the immediate vicinity. No lakes are visible from the site, but numerous small lakes are located within a kilometer, the closest of which is 200 meters to the southeast. Sites XMH-1129, XMH-1135 and XMH-1136 are located less than 100 meters away on the adjoining set of moraines. Due to recent episodes of forest fires, a high degree of surface visibility was observed on the moraine. UTM coordinates for the site are: [REDACTED]



Figure 210: General view of site, XMH-1134 heading south

Site XMH-1134 consists of three pieces of lithic debitage identified on the ground surface. These include one piece of quartz shatter and one gray chert secondary flake that were found within a 6 meter area on the south slope of the moraine. The other artifact found

at the site includes one quartz secondary flake that is located 35 meters to the northeast on the far northeast side of the moraine. Subsurface excavations have yet to be conducted.

**RECOMMENDATIONS**

XMH-1134 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-1135**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination:** Not evaluated

Site XMH-1135 is located at a high point on a glacial moraine. The high point is 25 meters in diameter and is elevated 30 meters above the surrounding terrain. Views are limited to the lower areas west and southwest in the immediate vicinity. No lakes are visible from the site, but numerous small lakes are located within a kilometer, the closest of which is 300 meters to the southeast. Sites XMH-1129, XMH-1134 and XMH-1136 are located less than 100 meters away on the adjoining set of moraines. Due to recent episodes of forest fires, a high degree of surface visibility was observed on the moraine. UTM coordinates for the site are: [REDACTED]



Figure 211: General view of site, XMH-1135 heading south

Site XMH-1135 consists of four pieces of lithic debitage on the ground surface. The lithic debitage pieces include one quartz secondary flake, one quartz crystal secondary flake and two gray siltstone pieces of a single tested cobble. Subsurface excavations have yet to be conducted.

**RECOMMENDATIONS**

XMH-1135 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-1136**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1136 is located at a high point on a glacial moraine. The high point is 40 meters in diameter and is elevated 75 meters above the surrounding terrain. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the north. No lakes are visible from the site, but numerous small lakes are located within a kilometer, the closest of which is 300 meters to the southeast. Sites XMH-1129, XMH-1134 and XMH-1135 are located less than 100 meters away on the adjoining set of moraines. Due to recent episodes of forest fires, a high degree of surface visibility was observed on the moraine top. UTM coordinates for the site are: [REDACTED]



*Figure 212: General view of site, XMH-1136 heading southwest*

Site XMh-1136 consists of three pieces of lithic debitage on the ground surface. The pieces include two quartz secondary flakes and one quartz tertiary flake. The artifacts were all found within a 20 centimeter area adjacent to a large quartz boulder on the southwest side of the moraine. Subsurface excavations have yet to be conducted.

and one quartz tertiary flake. The artifacts were all found within a 20 centimeter area adjacent to a large quartz boulder on the southwest side of the moraine. Subsurface excavations have yet to be conducted.

**RECOMMENDATIONS**

XMH-1163 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-1137**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

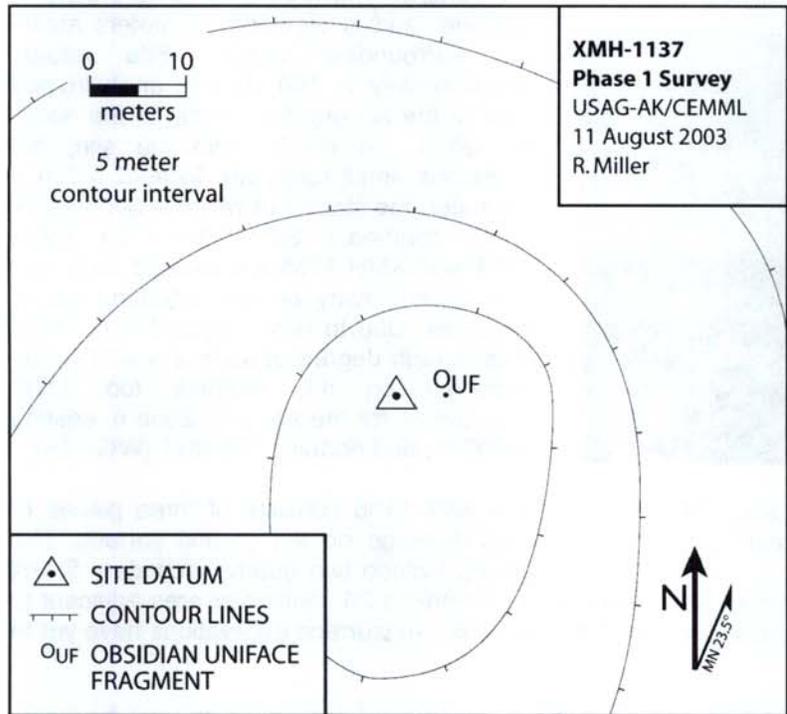
**Determination: Not evaluated**

Site XMH-1137 is located at a high point on a glacial moraine. The high point is 15 meters in diameter and is elevated 15 meters above the surrounding terrain. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the east. No lakes are visible from the site, but numerous small lakes are located within a kilometer, the closest of which is 200 meters to north. Due to recent episodes of forest fires, a high degree of surface visibility was observed on the moraine top. UTM coordinates for the site are: [REDACTED]



*Figure 213: General view of site, XMH-1137 heading northeast*

Site XMH-1137 consists of one obsidian uniface fragment identified on the ground surface. The fragment measures 23 mm in length and 14 mm in width and weighs 1.75 grams. No other artifacts were identified at the site and subsurface excavations have yet to be conducted.



**Recommendations**

XMH-1052 has been classified as an isolated find; however the site could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

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Figure 214: Site map of testing at XMH-1137

**XMH-1138**

**Latitude:** [REDACTED]  
**Longitude:** [REDACTED]  
**Determination: Not evaluated**

Site XMH-1138 is located at a high point on a glacial moraine. The high point is 30 meters in diameter and is elevated 40 meters above the surrounding terrain. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the east towards Granite Creek. No lakes are visible, but several small dry lakes are located within a kilometer, the closest of which is 500 meters to the south. UTM coordinates for the site are:

[REDACTED]

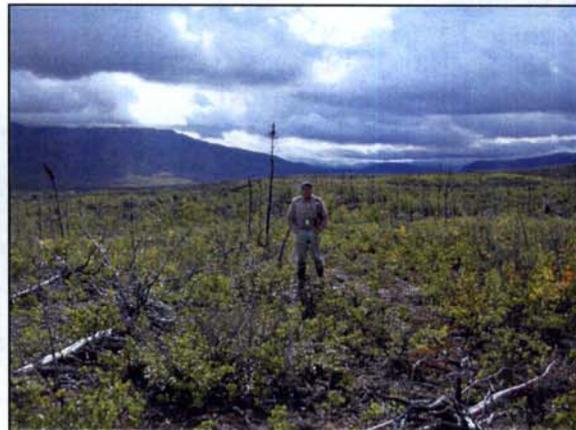
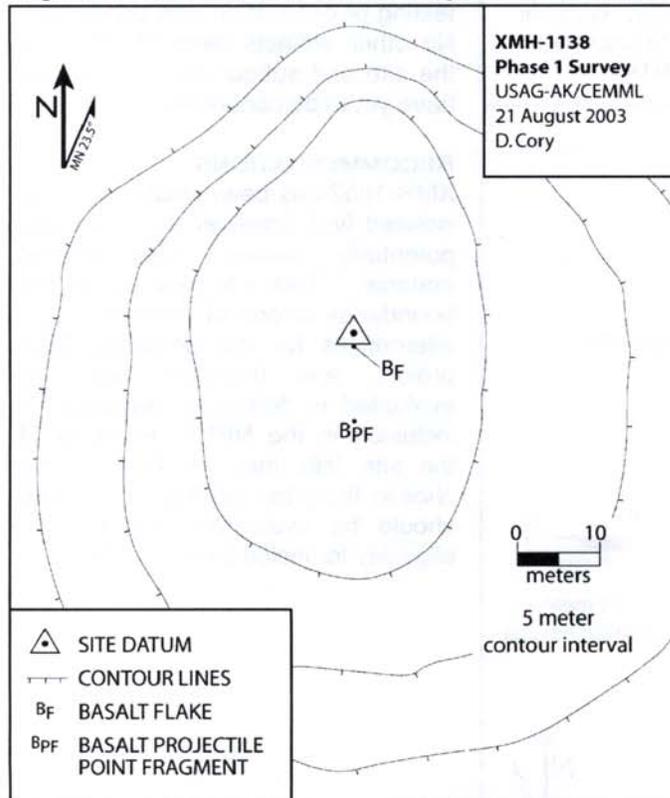


Figure 215: General view of site, XMH-1138 heading south

Site XMH-1138 consists of one black fine-grained basalt projectile point midsection fragment and one black fine-grained basalt tertiary flake identified on the ground surface. The projectile point fragment measures 23.5 mm in length and 18 mm in width and weighs 2.5 grams. No other artifacts were identified at the site and subsurface excavations have yet to be conducted.



#### RECOMMENDATIONS

XMH-1138 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

Figure 216: Site map of testing at XMH-1138

#### XMH-1139

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

Site XMH-1139 is located on the side of a glacial moraine. No lakes are visible from this location. The closest water source is Granite Creek to the southeast, approximately 500 meters. Surface visibility is approximately 30%. Recent fires contribute to some visibility. The artifact was located on a sloping bench of approximately 8% slope. UTM coordinates for the site are: [REDACTED]

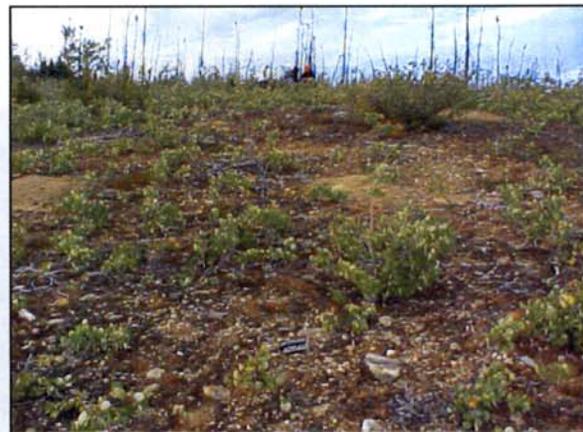
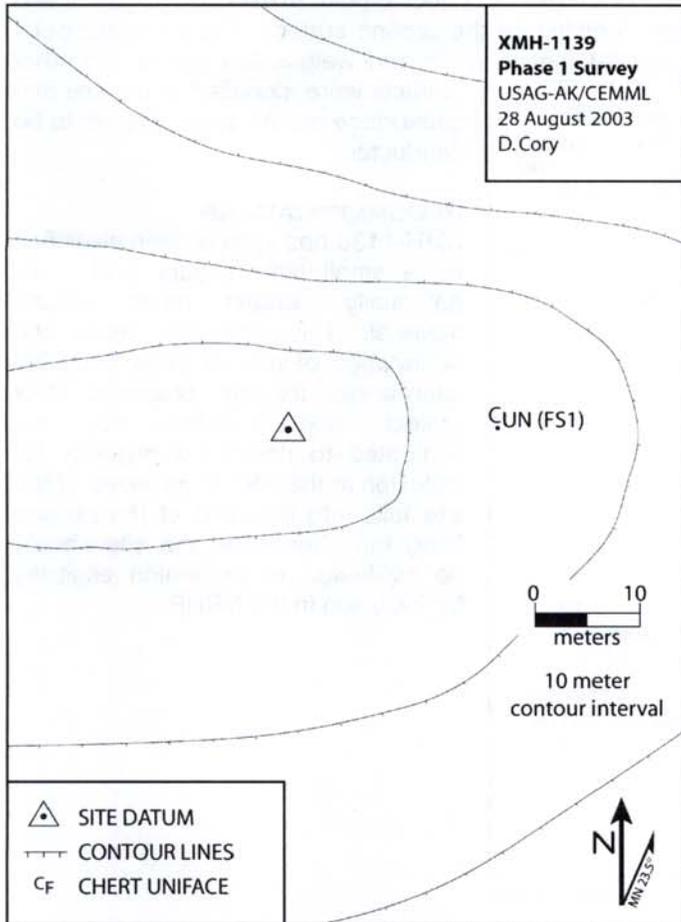


Figure 217: General view of site, XMH-1139 heading west



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XMH-1139 consists of one large gray banded chert uniface. No shovel testing or excavation was conducted. No other artifacts were identified at the site and subsurface excavations have yet to be conducted.

#### RECOMMENDATIONS

XMH-1052 has been classified as an isolated find; however the site could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-1139

Figure 218: Site map of testing at

#### XMH-1140

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

Site XMH-1140 is located on a prominent east/west trending ridge. The nearest water source is a very small pond located approximately 400 meters to the southeast. Site affords a 360 degree unobstructed view of the surrounding terrain. Two other small ponds are visible 750 meters to the northeast and North and South Caribou Lakes are visible 1.25 kilometers to the north. The Granite Mountains are visible to the southeast, Donnelly Dome to the southwest, and the Alaska Range to the west. There is no surface visibility at the site. UTM



Figure 219: General view of site, XMH-1140 heading east

coordinates for the site are: [REDACTED]

XMH-1140 consists of two flakes found during systematic shovel testing. A total of three shovel tests were excavated 30cm in diameter to glacial till. One positive shovel test (STUNO) contained two tertiary chert flakes at a depth of 20-30cmbs and one tertiary basalt flake at a depth of 35-44cmbs. The shovel test was 50cm deep with six distinctive layers, 0-7cm is the organic layer, 7-20cm is a dark yellowish brown loess, 20-27cm is a brown loess, 27-30cm is dark brown loess, 30-44 cm is a dark yellowish brown loess, and 44-50cm is glacial till. The artifacts were collected. No density plots were calculated.

#### **Recommendations**

XMH-1140 has been classified as a buried site and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### **XMH-1141**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1141 is located on a northwest/southeast trending ridge. The nearest water source is a very small pond located approximately 200 meters to the northeast. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the south and west. Butch Lake can be seen one kilometer to the south. The Granite Mountains are visible to the southeast, Donnelly Dome to the southwest, and the Alaska Range to the west. There is approximately 5-10 percent surface visibility contained wholly on the southeast facing slope of the ridge. UTM coordinates for the site are: [REDACTED]



*Figure 220: General view of site, XMH-1141 heading east*

Site XMH-1141 consists of two flakes found in a shovel test pit. A total of six shovel tests were excavated 30cm in diameter to glacial till. One positive shovel test (STB) contained two chert tertiary flakes at a depth of 5-10cmbs. The shovel test was 45cm deep with five distinct layers, 0-5cm is the organic layer, 5-15cm is a yellowish brown loess, 15-25cm is dark yellowish brown loess, 25-40cm is a strong brown loess, and 40-45cm is glacial till. The artifacts were collected. No density plots were calculated.

#### **Recommendations**

XMH-1141 has been classified as a buried site and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-1142**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1142 is located on a small rise, approximately 5 meters in diameter. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the south and east and a panoramic view of Granite Mountain to the southeast. To the east of the site is a low, swampy area that contains some small patches of muskeg. The closest water source to the site is a small lake located approximately 1km to the northwest. The ground surface in and around the site is not visible due to vegetation.



Figure 221: General view of site, XMH-1142 heading south

The majority of the area is covered with sapling birch intermingled with a moderate amount of deadfall. The ground surface was covered with dwarf scrub, moss, and lichen. No obvious subsurface disturbance, either cultural or natural, was noted at the site. UTM coordinates for the site are: [REDACTED]

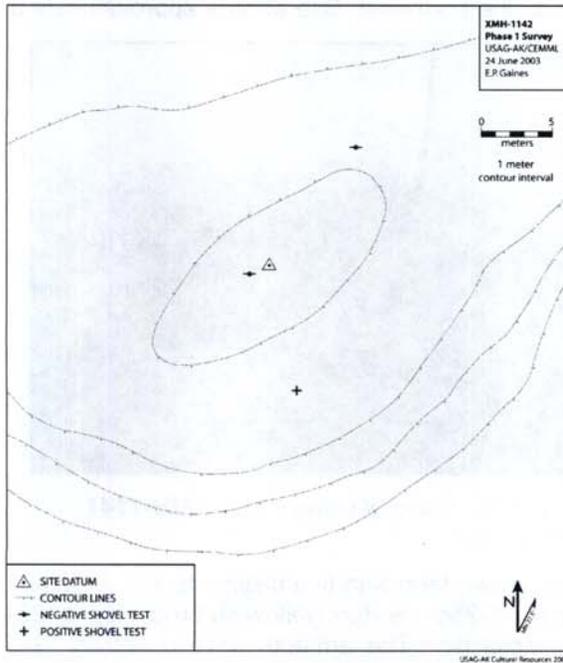


Figure 222: Site map of testing at XMH-1139

XMH-1142 consists of two flakes found in a shovel test pit. A total of three shovel tests were excavated at the site, one of which yielded cultural materials. Shovel test 1 yielded two dark gray chert flakes and is located slightly down slope and to the south of the highest portion of the rise. Shovel tests 2 and 3 yielded no cultural materials. The soil profile encountered in shovel test #1 consisted of approximately 6 cm of dark brown root mat underlain by 6 cm of red silt. The red silt was underlain by 16 cm of brown silt which was in turn underlain by 15 cm of yellow-orange silt with glacial till. The excavation of shovel tests at the site was ceased upon encountering glacial till. The artifacts collected from the shovel probe were collected from approximately 6-12cm below the surface. No density plots were calculated for site.

**Recommendations**

XMH-1142 has been classified as a buried site and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-1143**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1143 is located on a high point on the east side of a glacial moraine. The nearest water source is a small pond approximately 50 meters in diameter located approximately 45 meters to the east. The majority of the pond was dry containing only a small amount of water at the time of the survey. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the south and west. Donnelly Dome and Granite Mountains are visible to the south. Due to recent burns, surface visibility is approximately 50%. UTM coordinates for the site are: [REDACTED]



*Figure 223: General view of site, XMH-1143 heading south*

XMH-1143 consists of one basalt tertiary flake and one gray chert tertiary flake. These artifacts were located by a visual inspection of the surface. No cultural site disturbance was observed. No excavations or shovel testing were conducted.

**RECOMMENDATIONS**

XMH-1143 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

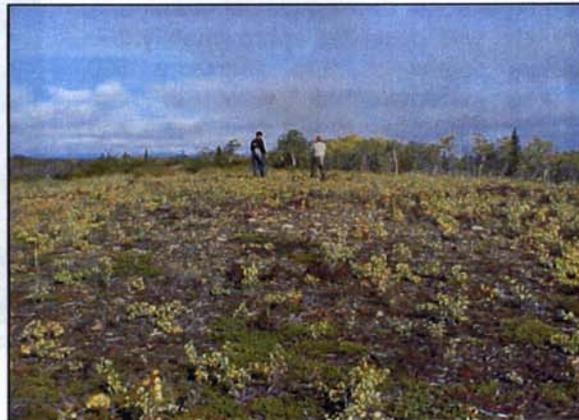
**XMH-1144**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1144 lies on top of the tallest glacial moraine in the area. A dry lake was observed approximately 475 meters to the south. Site affords a 360 degree unobstructed view of the surrounding terrain. Surface visibility is approximately 50% with the other 50% made up of moss and low bush cranberry. A two-track road cuts north/ south through the site with minimal impact to the site. The presence of bullet shell casings indicates some military activity has taken place here in the past. UTM coordinates for the site are: [REDACTED]



*Figure 224: General view of site, XMH-1144 heading south*

XMH-1144 consists of 6 chert flakes and one rhyolite biface blank. The site was located by a visual inspection of landform surface. Three density plots were placed on the site, each with one artifact contained in them. DP 1 (11.5 S/ 5E) contained two tertiary chert flake. DP 2 (12.5 S/5 E) was empty. DP 3 (2 W/1.5 N) contained one biface blank. Artifact density is calculated as being

up to 1 artifact per-square meter. No artifacts were collected. Subsurface examinations have yet to be conducted.

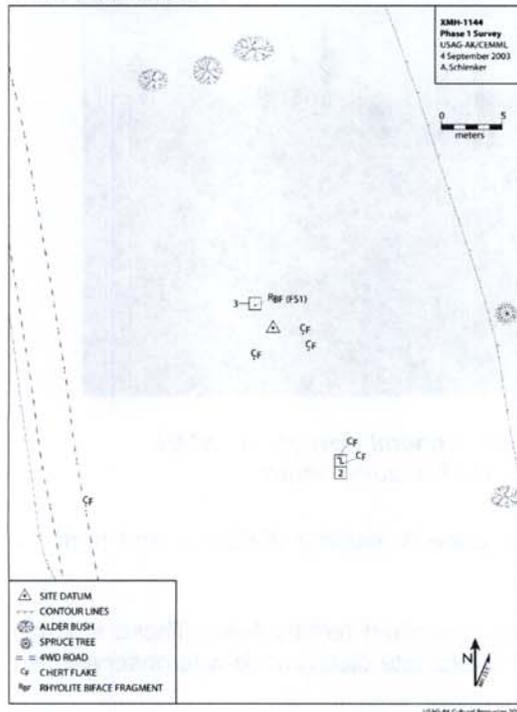


Figure 225: Site map of testing at XMH-1144

#### RECOMMENDATIONS

XMH-1144 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-1145

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

Site XMH-1145 is located on a high point of a north/south running glacial moraine. A dry lake was observed approximately 200 meters southwest. Site affords a 300 degree unobstructed view of the surrounding terrain to the east, south and west. Donnelly dome and the Granite mountains fall into this 300 degree view. To the north a slightly taller moraine obstructs the view. Recent fires contribute to 60% visibility of ground surface. Site disturbance in the form of a road going from north to south, generally following the spine of the moraine, has contributed to some loss of integrity. Numerous military shell casings are present. UTM coordinates for the site are: [REDACTED]



Figure 226: General view of site, XMH-1145 heading north

XMH-1145 consists of one black basalt tertiary flake and two gray chert tertiary flakes located on the ground surface. No shovel testing or excavations were conducted. Site XMH-1146 is located 89 meters to the south.

## RECOMMENDATIONS

XMH-1146 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

### XMH-1146

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1146 is located on a south facing, gradually sloping glacial moraine. Site XMH-1145 is located approximately 89 meters to the north. The closest water source is approximately 400 meters to the southeast. A dry lake is present to the southwest at a distance of approximately 100 meters. Site affords a 250 degree unobstructed view of the surrounding terrain to the east, north and west. The view to the north is obstructed by a slightly taller rise (site XMH-1145) to the north on the same moraine. Site disturbance in the form of a two-track road cutting North to South has contributed to some loss of site integrity. Visibility in the roadway is upward of 80% and off the road approximately 10-20% visibility is available. UTM coordinates for the site are: [REDACTED]



Figure 227: General view of site, XMH-1146 heading south

visibility is available. UTM coordinates for the site are: [REDACTED]

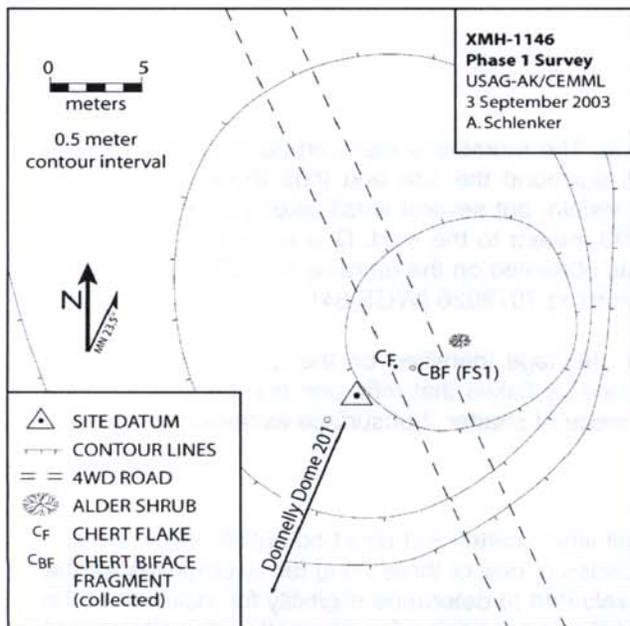


Figure 228: Site map of testing at XMH-1146

XMH-1146 consists of two artifacts observed on the roadway. One bifacial projectile point base (FS1) and one tertiary projectile point base (FS1) and one tertiary projectile point base were located. Both artifacts were made of a black chert. The biface was collected. FS1 was located 3 meters at 70° from datum. No shovel testing or excavations were conducted.

## RECOMMENDATIONS

XMH-1146 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

XMH-1147

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

Site XMH-1147 is located on top of a small glacial moraine running southeast/northwest. A water source was observed approximately 200 meters to the southwest. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the east. No unnatural site disturbance was observed. Recent fires have contributed to approximately 40% surface visibility. UTM coordinates for the site are: [REDACTED]



Figure 229: General view of site, XMH-1148 heading north

consists of one gray chert tertiary flake located on the surface. No shovel testing or excavations were conducted.

**RECOMMENDATIONS**

XMH-1147 has been classified as an isolated find; however the site could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine

eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

XMH-1148

Latitude: [REDACTED]

Longitude; [REDACTED]

Determination: Not evaluated

Site XMH-1148 is located at the top of a moraine. The moraine is elevated 30 meters above the surrounding terrain. Numerous small moraines surround the site and thus there are no good views provided from this location. No lakes are visible, but several small lakes are located within a 500 meter distance the closest of which is 200 meters to the east. Due to recent episodes of forest fires, a high degree of surface visibility was observed on the moraine top. UTM coordinates for the site are: [REDACTED]

Site XMH-1148 consists of four pieces of lithic debitage identified on the ground surface. The pieces include two large gray banded chert secondary flakes that refit, one orange gray siltstone secondary flake, and one orange gray siltstone piece of shatter. Subsurface excavations have yet to be conducted.

**RECOMMENDATIONS**

XMH-1148 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

**XMH-1149**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1149 is located at the top of a moraine. The moraine is elevated 25 meters above the surrounding terrain. A small lake is located 200 meters away to the northeast. Moraine provides good views to the lake and beyond, but the views in any other direction are obstructed by other moraines. Due to recent episodes of forest fires, a high degree of surface visibility was observed on the moraine. UTM coordinates for the site are: [REDACTED]



Figure 230: General view of site, XMH-1149 heading north

Site XMH-1149 consists of 29 pieces of lithic debitage encountered on the surface of the south and southeast slope of the moraine. One lithic concentration consisting of 25 flakes within a 1.5 meter area was located 10 meters down slope to the southeast of the top of the moraine. Three other artifacts were observed less than 5 meters down slope from the artifact concentration and one other was observed 20 meters east from the top of the moraine.

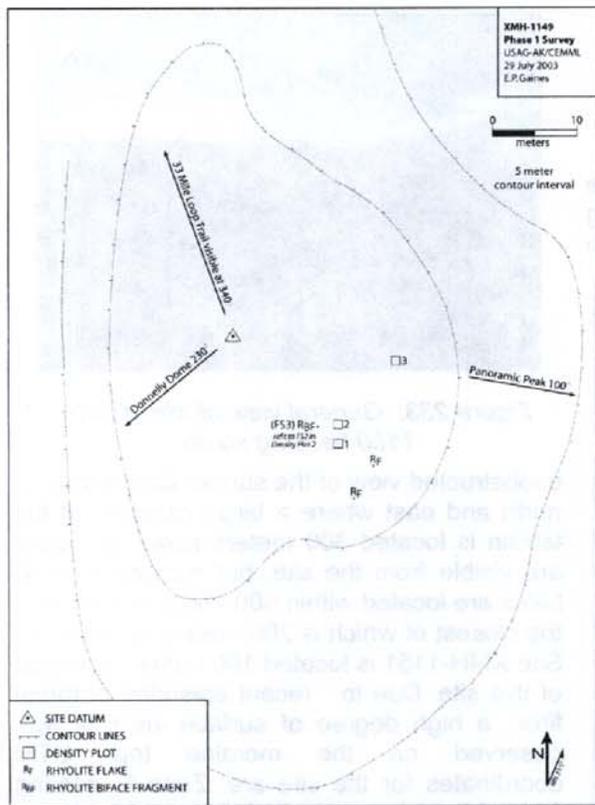


Figure 231: Site map of testing at XMH-1149

Materials noted at the site include purple and pink rhyolite, brown rhyolite, gray rhyolite with purple inclusions, and a purple rhyolite with gray inclusions (most likely the same material as the gray rhyolite with purple inclusions). Interesting to note that, excluding the brown rhyolite, these materials are like no other materials encountered in the area and that no other material types are noted for the site.

Tools at the site include two brown rhyolite biface fragments that refit and a purple rhyolite uniface. The biface fragments include the midsection that measures 19 mm in height and 19 mm in width and weighs 1.5 grams and the tip, which measures 19 mm in height and 9 mm in width and weighs 0.75 grams high. The other tool found at the site is a purple rhyolite uniface that measures 32 mm in height and 9 mm in width and weighs 4.25 grams.

Three Density Plots (DP) were calculated at the site. DP1 (11S/12E) was placed within the artifact concentration and contained 21 flakes, the rhyolite uniface and the tip of the rhyolite biface fragment. DP2 (12.5S/12E)

was placed south of the artifact concentration over a single rhyolite flake, and DP3 (3.5S/19E) was placed over a single rhyolite flake on the east slope of the moraine. Subsurface excavations have yet to be conducted.

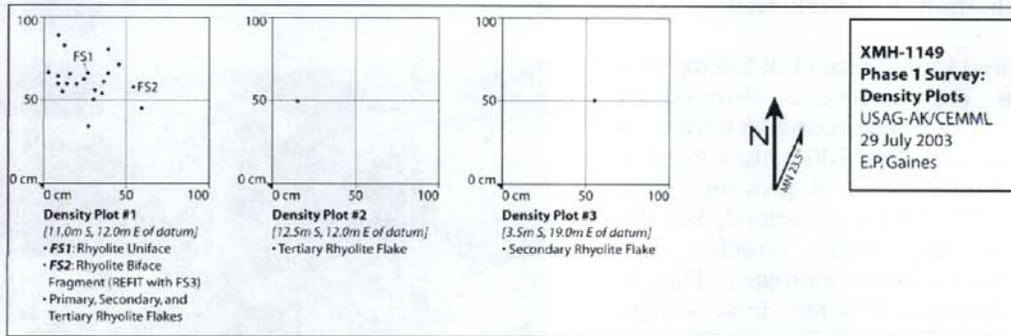


Figure 232: Density plots from XMH-1149

### Recommendations

XMH-1149 has initially been classified as a medium lithic scatter where both primary and late stage lithic reduction occurred. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

### XMH-1150

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

Site XMH-1150 is located at the top of a moraine elevated 40 meters above the surrounding terrain. Site affords approximately a 180 degree



Figure 233: General view of site, XMH-1150 heading south

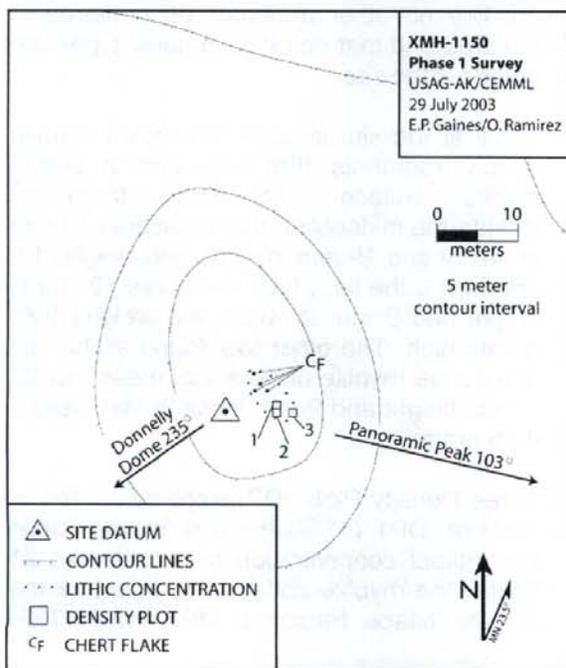


Figure 234: Site map of testing at XMH-1150

unobstructed view of the surrounding terrain to north and east where a large expanse of flat terrain is located 300 meters away. No lakes are visible from the site, but numerous small lakes are located within 500 meters of the site, the closest of which is 200 meters to the west. Site XMH-1151 is located 100 meters due east of this site. Due to recent episodes of forest fires, a high degree of surface visibility was observed on the moraine top. UTM coordinates for the site are: [REDACTED]

Site XMH-1150 was first identified by the presence of nine pieces of lithic debitage encountered on the surface of the east slope

of the moraine. All of which were tertiary flakes observed within a 6 meter diameter area that was noted as a low density artifact concentration. Materials include gray chert, light gray chert, and black fine-grained basalt. No tools were identified at the site.

Three Density Plots (DP) were calculated at the site. DP1 (6E/0N) contained 3 tertiary flakes, DP2 (1S/ 6E) contained 1 tertiary flake, and DP3 (1S/8E) contained 1 tertiary flake as well. Subsurface excavations have yet to be conducted.

### Recommendations

XMH-1150 has initially been classified as a small lithic scatter where late stage lithic reduction occurred. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

### XMH-1151

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

Site XMH-1151 is located at the top of a moraine elevated 40 meters above the surrounding terrain. Site affords approximately a 180 degree unobstructed view of the surrounding terrain to the north and east where a large expanse of flat terrain is located 300 meters away. No lakes are visible from the site, but numerous small lakes are located within 500 meters of the site, the closest of which is 300 meters to the west. Site XMH-1150 is located 100 meters due west of this site. Due to recent episodes of forest fires, a high degree of surface visibility was observed on the moraine top. UTM coordinates for the site are: [REDACTED]



Figure 235: General view of site, XMH-1151 heading south

Site XMH-1151 consists of three pieces of lithic debitage encountered on the surface of the top of the moraine, all of which were found within a 4 meter area. The artifacts at the site include 2 gray banded chert tertiary flakes and one light gray chert secondary flake. Subsurface excavations have yet to be conducted.

### RECOMMENDATIONS

XMH-1151 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

### XMH-1152

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated



Figure 236: General view of site, XMH-1152 heading north

Site XMH-1152 is located on a small knoll overlooking Butch Lake. The nearest water source is Butch Lake, which is located 500 meters to the southeast of the site. Site affords a 360 degree unobstructed view of the surrounding terrain. The Granite Mountains are visible to the southeast, Donnelly Dome to the southwest, and the Alaska Range to the west-southwest. Surface visibility at the site is approximately 20 percent. UTM coordinates for the site are: [REDACTED]

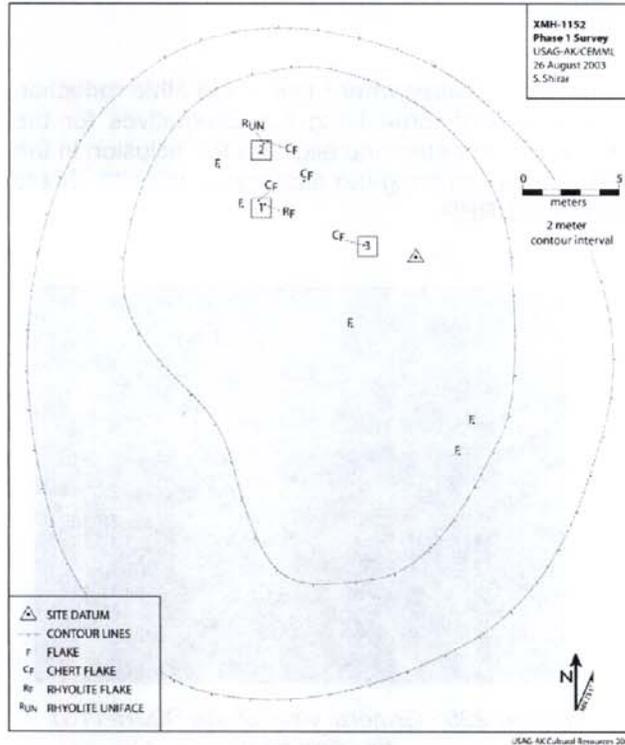


Figure 237: Site map of testing at XMH-1152

Site XMH-1152 consists of five tertiary rhyolite flakes, four tertiary chert flakes, and one rhyolite uniface found on the surface. The uniface is 3.0cm long, 2.5cm wide, and weighs 3gm. None of the artifacts found were collected. Three Density Plots were calculated at the site. DP1 (N2/W9) consists of one tertiary chert flake and one tertiary rhyolite flake. DP2 (N5/W9) consists of one tertiary chert flake and one rhyolite uniface. DP3 (N0/W3) consists of one tertiary chert flake.

#### Recommendations

XMH-1152 has initially been classified as a small lithic scatter where late stage lithic reduction occurred. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-1153

Latitude: [REDACTED]

Longitude: [REDACTED] Determination: Not evaluated

The site is located on the top of a high point on a bluff 60 meters north/south by 40 meters east/west and is elevated approximately 40 meters above the surrounding terrain. The high point is a rise on a long (over 2 kilometers) northeast/southwest trending bluff that overlooks Jarvis Creek 500 meters to the east. A dry lake is located approximately 100 meters away to the west. Site affords approximately a 260 degree unobstructed view of the surrounding terrain to the east, south and west of the site. Due to recent forest fires, a high degree of surface visibility is available. UTM coordinates for the site are: [REDACTED]



Figure 238: General view of site, XMH-1153 heading north

Site XMH-1153 consists of 11 pieces of lithic debitage, 2 flake cores and 2 tool fragments

observed on the surface. Artifacts are located on the top of the bluff and on the southern slope extending 30 meters down slope. One artifact concentration was observed on the top of the bluff that consists of 5 flakes, a siltstone core (FS1) and a chert uniface (FS2) within a 10 meter diameter area. The remaining artifacts were randomly scattered on the high point and on the southern slope. The majority of the flakes (9 of 11) at the site were tertiary flakes with only one secondary flake and one piece of shatter. Materials noted at the site include gray chert, gray banded chert, black chert, dark red chert, brownish gray siltstone, and quartz.

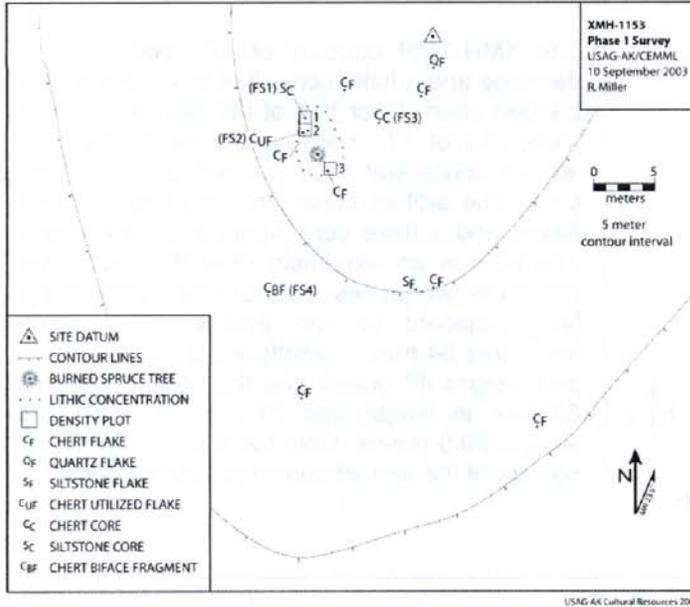


Figure 239: Site map of testing at XMH-1153

Three Density Plots were calculated at the site, all of which were placed on the artifact concentration. DP1 (8S/11E) contained the siltstone core (FS1), DP2 (N28/E19) contained the chert uniface (FS2). DP3 (11S/9E) contained a single chert tertiary flake. Subsurface excavations have yet to be conducted.

#### Recommendations

XMH-1153 has initially been classified as a small lithic scatter where later stages of lithic reduction occurred. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for

inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

Table 15. Lithic tools recorded from XMH-1153.

FS#	Artifact type	Material	Color	Length	Width	Weight
FS1	Core	siltstone	Brownish gray	41 mm	36 mm	40 gm
FS2	Uniface	Chert	Black	23 mm	8 mm	1.25 gm
FS3	Core	Chert	Gray banded	61 mm	29 mm	41.75 gm
FS4	Biface	Chert	Gray	33 mm	22 mm	4.25 gm

#### XMH-1154

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

The site is located on the top of a small knoll or rise. The moraine is 60 meters north/south by 20 meters east/west and is elevated approximately 10 to 15 meters above the surrounding terrain. It is located 100 meters west of a long (2 kilometers or more) bluff that rises up west of



Figure 240: General view of site, XMH-1154 heading south

Jarvis Creek. The terrain surrounding the site is generally flat in the immediate vicinity to the east, west and south. A dry lake is visible that is less than 100 meters away. Thus good views are provided looking in all directions except south. UTM coordinates for the site are: [REDACTED]

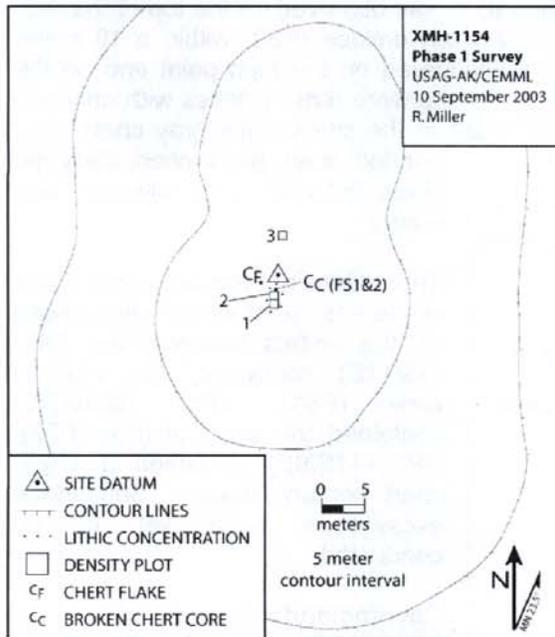


Figure 241: Site map of testing at XMH-1154

Site XMH-1154 consists of 17 pieces of lithic debitage and a flake core all of which are a gray banded chert. Over half of the pieces of flaked stone (10 of 17) were secondary flakes. One artifact concentration is located on top of the knoll. The artifact concentration consists of 14 flakes and a flake core within a 3 meter area. The core is an expedient core that has been broken in two pieces, both of which were found lying adjacent to one another. One piece measures 84 mm in length and 24 mm in width and weighs 47 grams and the other measures 89 mm in length and 11 mm in width and weighs 29.5 grams. Only two flakes were found outside of the artifact concentration located 6

meters to the north

Three Density Plots (DP) were calculated at the site. DP1 (4S/1W) was placed on the artifact concentration and contained 2 flakes. DP2 (3S /1W) was also placed on the artifact concentration and contained 12 pieces of flaked stone. DP3 (4N/0E) was placed on the two flakes 6 meters north of the concentration. Subsurface excavations have yet to be conducted.

**Recommendations**

XMH-1154 has initially been classified as a small lithic scatter where early stages of lithic reduction occurred. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

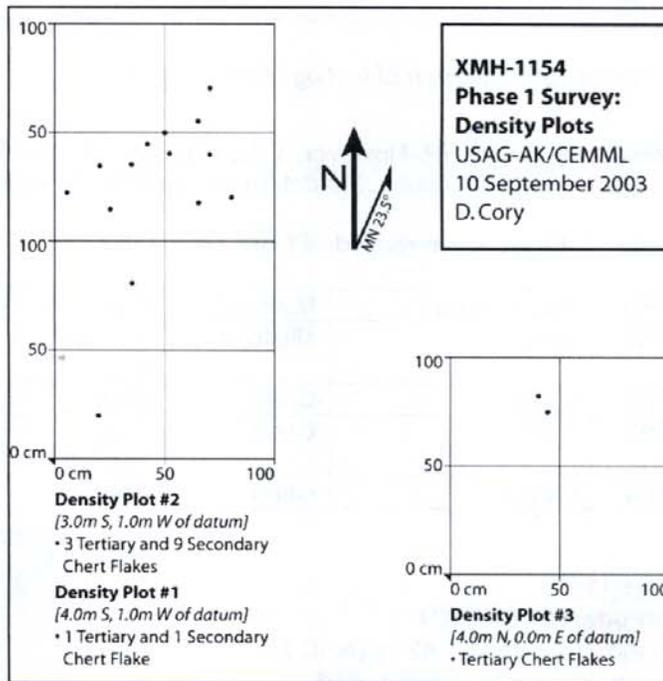


Figure 242: Density plots from XMH-1154

XMH-1155

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

The site is located on the slope of a large northeast/southwest trending bluff (over 2 kilometers) that overlooks Jarvis Creek 500 meters to the east. The surrounding terrain east and south of the site is generally flat and towards the creek, thus good views are provided looking in those directions. Due to recent episodes of forest fires, a high degree of surface visibility is available. Also ground surface has been exposed by a road cut that extends through the site. UTM coordinates for the site are: [REDACTED]

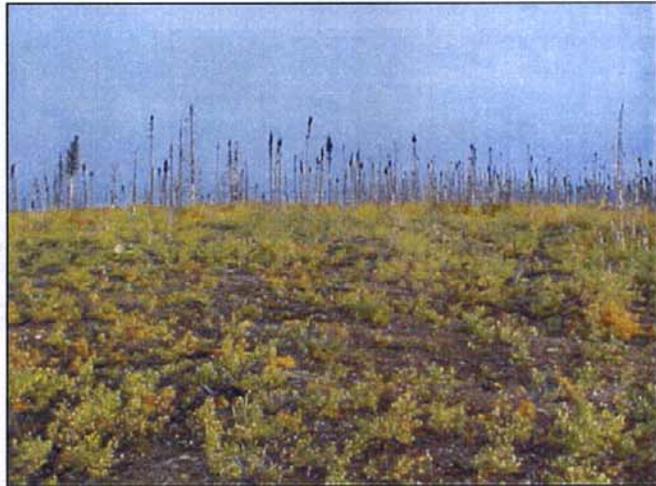


Figure 243: General view of site, XMH-1155 heading north

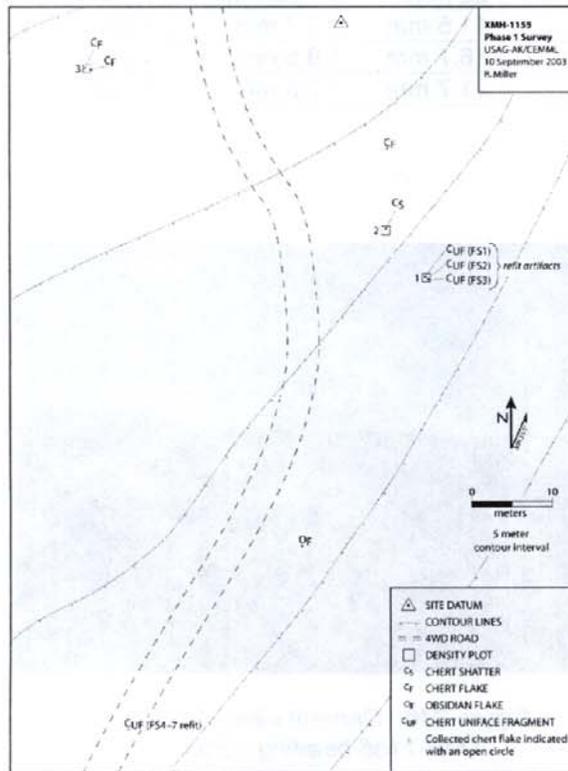


Figure 244: Site map of testing at XMH-1155

Site XMH-1155 consists of five pieces of lithic debitage, and seven uniface fragments that refit into two separate unifaces. Three uniface fragments found adjacent to one another refit into one uniface of green chert. While four other uniface fragments found within a 10 centimeter area come from another single uniface fine grained basalt (two of which refit). Artifacts were observed Five pieces of flaked stone were observed at the site as well that included a gray banded chert secondary flake, 2 gray banded chert tertiary flakes, an obsidian tertiary flake, and a piece of chert gray banded chert shatter.

Three Density Plots (DP) were calculated at the site. DP1 (32S/10E) contained the three green chert uniface fragments, DP2 (26S/6E) contained a piece of chert shatter, and DP3 (6S/32W) contained 2 chert tertiary flakes. Subsurface excavations have yet to be conducted.

### Recommendations

XMH-1155 has initially been classified as a small lithic scatter where late stage lithic reduction occurred. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and

therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

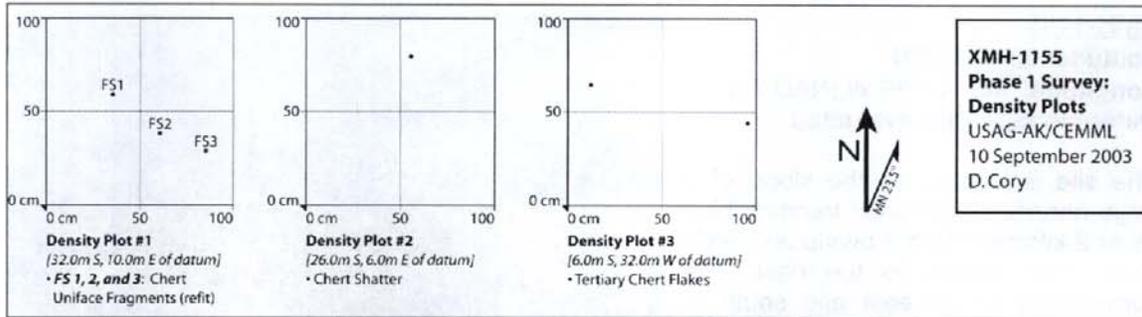


Figure 245: Density plots from XMH-1155

Table 16. Lithic tools recorded from XMH-1155.

FS#	Artifact type	Material	Color	Length	Width	Weight
FS1	Uniface frag.	chert	green	28 mm	22 mm	7 gm
FS2	Uniface frag.	chert	green	20 mm	11 mm	3.25 gm
FS3	Uniface frag.	chert	green	22 mm	20 mm	3 gm
FS4	Uniface frag.	basalt	black	22 mm	12.6 mm	2 gm
FS5	Uniface frag.	basalt	black	11.5 mm	7.7 mm	1 gm
FS6	Uniface frag.	basalt	black	16.7 mm	9.5 mm	1 gm
FS7	Uniface frag.	basalt	black	11.7 mm	7.8 mm	1 gm

**XMH-1156**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination:** Not evaluated

The site is located on a rise of a larger ridge or bluff. The rise is part of a long (over 2 kilometer) southwest/ northeast trending ridge that is elevated over 100 meters above the generally flat terrain to the east towards Jarvis Creek which approximately 500 meters away. Thus the best view is provided looking east. No lakes are visible. Due to recent episodes of forest fires, and wind erosion a high degree of surface visibility is available. UTM coordinates for the site are: [REDACTED]

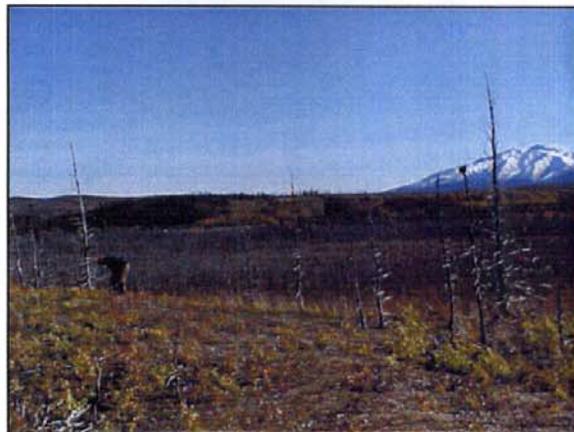


Figure 246: General view of site, XMH-1156 heading north

Site XMH-1156 consists of 37 pieces of lithic debitage found on the surface of the site. One artifact concentration consists of 26 flakes found within a 3 meter area.

**Recommendations**

XMH-1156 has initially been classified as a small lithic scatter where late stage lithic reduction occurred. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

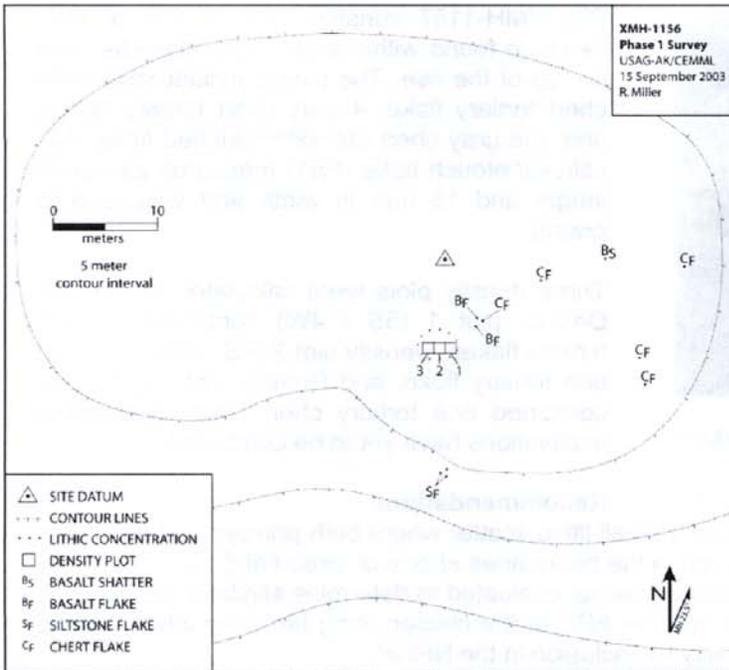


Figure 247: Site map of testing at XMH-1156

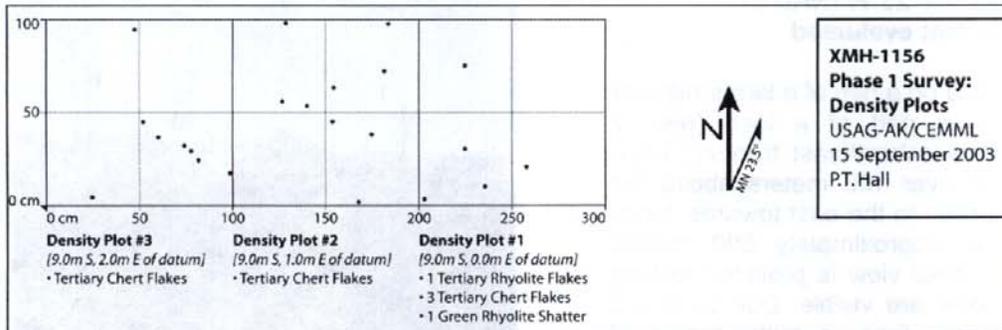


Figure 248: Density plots from XMH-1156

**XMH-1157**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination:** Not evaluated

The site is located on a rise of a larger ridge or bluff. The rise is part of a long (over 2 kilometer) southwest/northeast trending ridge that is elevated over 100 meters above the generally flat terrain to the east towards Jarvis Creek which is approximately 500 meters away. Thus the best view is provided looking east, but no lakes are visible. Due to recent episodes of forest fires, a high degree of surface visibility is available. UTM coordinates for the site are: [REDACTED]



Figure 249: General view of site, XMH-1157 heading south

Site XMH-1157 consists of 6 pieces of lithic debitage found within an 8 meter diameter area on top of the rise. The pieces include one white chert tertiary flake, 4 gray chert tertiary flakes, and one gray chert utilized/retouched flake. The utilized/retouch flake (FS1) measures 23 mm in length and 15 mm in width and weighs 6.75 grams.

Three density plots were calculated at the site. Density plot 1 (5S / 4W) contained 2 chert tertiary flakes, Density plot 2 (4S / 4E) contained one tertiary flake, and Density plot 3 (4S / 2E) contained one tertiary chert flake. Subsurface excavations have yet to be conducted.

#### Recommendations

XMH-1157 has initially been classified as a small lithic scatter where both primary and late stage lithic reduction occurred. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-1158

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

The site is located on a rise of a larger ridge or bluff. The rise is part of a long (over 2 kilometer) southwest/northeast trending ridge that is elevated over 100 meters above the generally flat terrain to the east towards Jarvis Creek which is approximately 500 meters away. Thus the best view is provided looking east, but no lakes are visible. Due to recent episodes of forest fires, a high degree of surface visibility is available. UTM coordinates for the site are: [REDACTED]



Figure 250: General view of site, XMH-1158 heading south

Site XMH-1158 consists of 3 pieces of lithic debitage found on the southeast slope of the rise. The pieces include one chert tertiary flake, one basalt tertiary flake, and one quartz tertiary flake. No density plots were calculated and subsurface excavations have yet to be conducted.

#### RECOMMENDATIONS

XMH-1158 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-1159

Latitude: [REDACTED]  
Longitude: [REDACTED]  
Determination: Not evaluated

The site is located on a rise on a larger ridge or bluff. The rise is part of a long (over 2 kilometer) southwest/northeast trending ridge that is elevated over 100 meters above the generally flat terrain to the east towards Jarvis Creek which is approximately 500 meters away. Thus the best view is provided looking east, but no lakes are visible. Due to recent episodes of forest fires, a high degree of surface visibility is available. UTM coordinates for the site are:



Figure 251: General view of site, XMH-1159 heading south

Site XMH-1159 consists of pieces of lithic debitage found on the east slope of the rise. The pieces include two gray banded chert tertiary flakes. No density plots were calculated and subsurface excavations have yet to be conducted.

#### RECOMMENDATIONS

XMH-1159 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### XMH-1160

Latitude: [REDACTED]  
Longitude: [REDACTED]  
Determination: Not evaluated



Figure 252: General view of site, XMH-1160 heading south

small unnamed pond and 300 meters northwest of Fiddle Lake. The site consists of one obsidian microblade and one piece of chert shatter observed on the surface of 33 Mile Loop Trail. Subsurface examinations have yet to be conducted. UTM coordinates for the site are:

Site XMH-1159 is located on a high point of an east/west trending glacial moraine ridge along which 33 Mile Loop Trail runs. The site is approximately 100 meters west of a

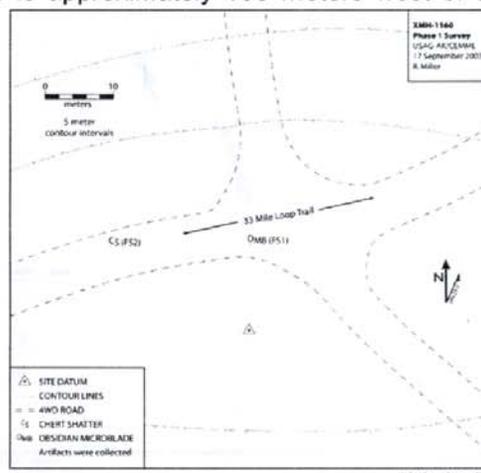


Figure 253: Site map of testing at XMH-1160

## RECOMMENDATIONS

XMH-1159 has initially been classified as a small lithic scatter and could potentially contain more cultural material. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

### XMH-1161

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

Site XMH-1159 is located on the east facing slope that rises. Good views are provided to the northeast, but no lakes are visible. Drum and Spring Lake are located 200 meters to the west. Surface examinations and subsurface testing in the immediate area yielded no additional artifacts. The area has been only slightly disturbed by wind erosion, and thus a limited amount of surface visibility was observed. UTM coordinates for the site are: [REDACTED]

XMH-1159 consists of a single black basalt broken flake that was found on the road surface of 33 Mile Loop Trail. This single artifact was collected due to its location on the road surface and probability that it would be impacted by vehicle traffic.

### XMH-1162

Latitude: [REDACTED]

Longitude: [REDACTED]

Determination: Not evaluated

Site XMH-1162 is located on the south end of a glacial moraine and elevated approximately 5-6 meters above a wetland to the northeast. Water is available approximately 150 meters to the northeast. A view to the east is moderate,

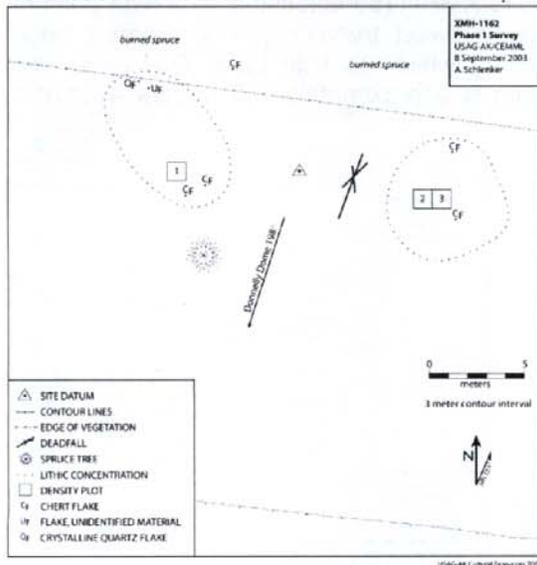


Figure 255: Site map of testing at XMH-1162



Figure 254: General view of site, XMH-1162 heading northeast

approximately 180°. Surface visibility is approximately 35%. Site disturbance consists of military shell casings, live blank cartridges and a fire which left numerous burned standing black spruce. UTM coordinates for the site are: [REDACTED]

XMH-1162 consists of 14 gray chert flakes, 1 quartz flake, and 1 salt and pepper chert flake. No tools were located. No shovel testing or excavations were conducted. All artifacts were located by a visual inspection of the landform surface. A large flat expanse, adjacent to the site, at a bearing of northwest is a likely location for site expansion. Three Density Plots (DP) were conducted, DP1 (7W/ .5S), DP2 (6 E/2S), DP3 (7E/2S).

**Recommendations**

XMH-1162 has initially been classified as a small lithic scatter where later stages of lithic reduction occurred. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

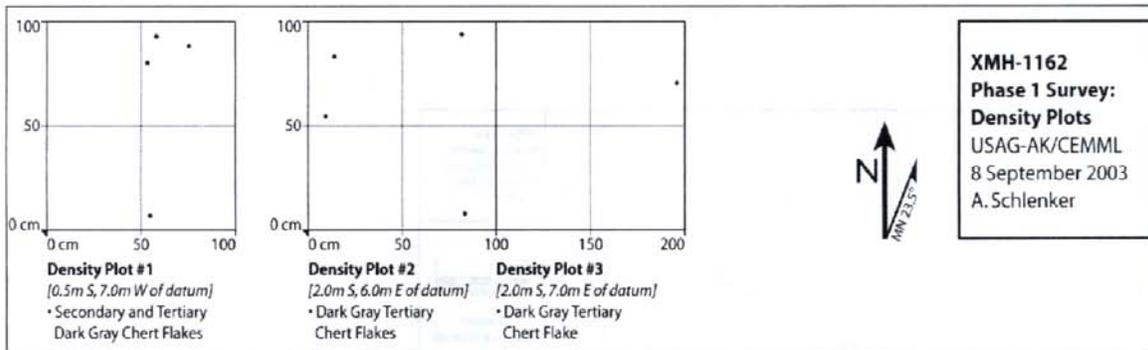


Figure 256: Density plots from XMH-1162

**XMH-1163**

**Latitude:** [REDACTED]

**Longitude:** [REDACTED]

**Determination: Not evaluated**

Site XMH-1163 is located on the south end of a large glacial moraine which runs southwest/northeast. The site is located approximately 15 meters above a large flat expanse of burned spruce forest to the south and east. The south slope is extremely steep, causing the top of it to slough off and erode quickly. A dry lakebed was observed approximately 50 meters to the west. Donnelly Dome is located at 230° southwest. Surface visibility is poor on top and moderate on the south slope. Site disturbance in the form of a game trail runs along the top of the south slope. The south slope is eroding and exposing artifacts. It is highly likely the site continues on top of moraine. UTM coordinates for the site are: [REDACTED]

XMH-1163 consists of the 11 found on the surface of the site; one was black chert flake, one basalt flake, and nine rhyolite flakes. No shovel testing or excavations were conducted. Three Density Plots (DP) were calculated at the site, DP1 (16S/1W) was located directly below a boulder on the south slope and contained 4 flakes. DP2 (17S/1W) contained 1 flake and DP3 (7.5S/ 9S) contained 4 flakes.

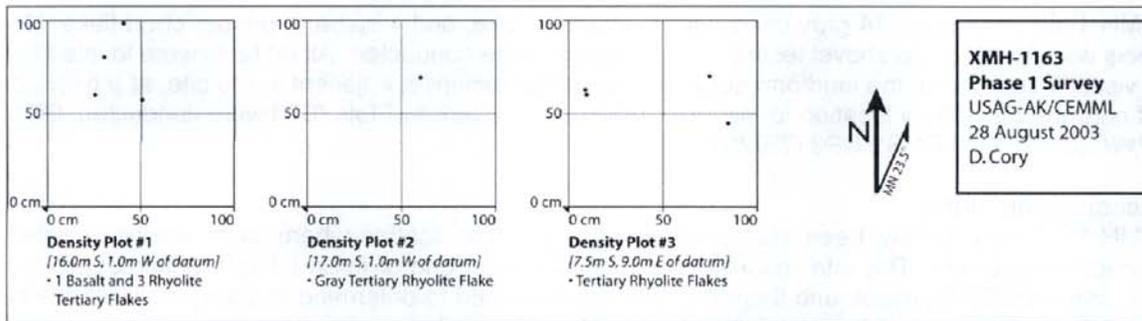


Figure 257: Density plots from XMH-1163

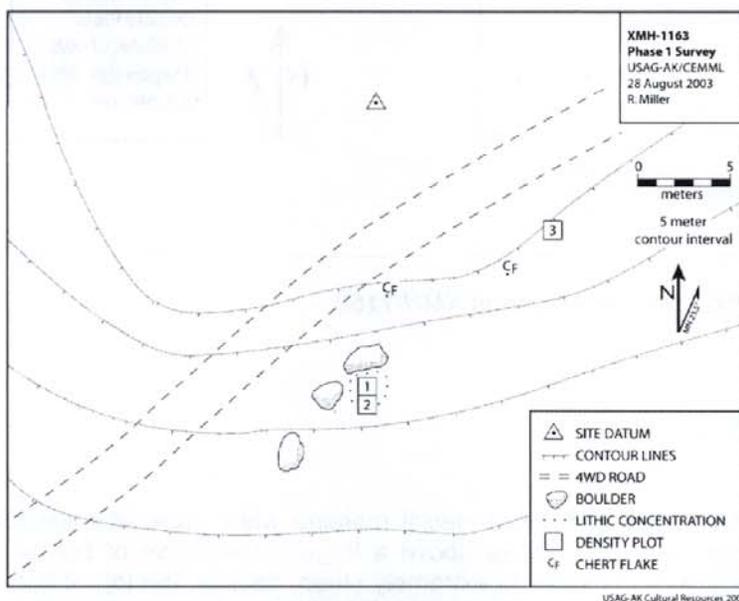


Figure 258: Site map of testing at XMH-1163

### Recommendations

XMH-1163 has initially been classified as a small lithic scatter where later stages of lithic reduction occurred. This site lies inside the boundaries of one of three firing fan alternatives for the proposed BAX project, and therefore was not evaluated to determine eligibility for inclusion in the NRHP. However, if the site falls into the APE of the chosen firing fan alternative, the site should be evaluated to determine eligibility for inclusion in the NRHP.

#### 4.6 Erosion control and bridge replacement at the Northwest Training Center Rock (NWTC) Climbing Site, Fort Wainwright, Black Rapids Training Area (south of Donnelly Training Area East)

The United States Army has proposed an erosion control and bridge replacement project at the Northwest Training Rock Climbing site, located within U.S. Army Garrison Alaska (USAG-AK) lands, south of Ft. Wainwright's Donnelly Training Area at Black Rapids Training Area. The project involves streambank stabilization at Terry Creek and Fall Creek, east of the Richardson highway, with the placement of riprap and fills material. Additionally, the existing footbridge at Fall Creek is in poor condition, and will be replaced in kind.

The proposed projects are located on Terry Creek and Fall Creek; stream bank stabilization and erosion control would occur at both project locations, with the footbridge at Fall Creek replaced in kind. All equipment used in the stabilization and pedestrian footbridge replacement will utilize existing roads paralleling each creek.

#### Survey and Field Methods

In the summers of 2003, one archaeological survey crews (comprised of five archaeologists) employed by the Center for Environmental Management of Military Lands (CEMML, Colorado State University), conducted a pedestrian survey of the proposed Gravel Source and Access Road at Ft. Wainwright's Donnelly Training Area.

The project's Area of Potential Effect (APE) encompassed an area larger than the anticipated construction footprint, in order to ensure coverage of areas that may incur secondary impacts during construction or use. All of the area shown in red was surveyed in the summer of 2003 (Figure 259).

Parallel pedestrian transects spaced at 20m were walked systematically across the APE and surrounding area. Systematic sub-surface shovel testing was undertaken in across the APE. Shovel tests were typically 30cm in diameter and excavated into glacial till or consolidated outwash. All soil removed was screened through ¼" hardware cloth.

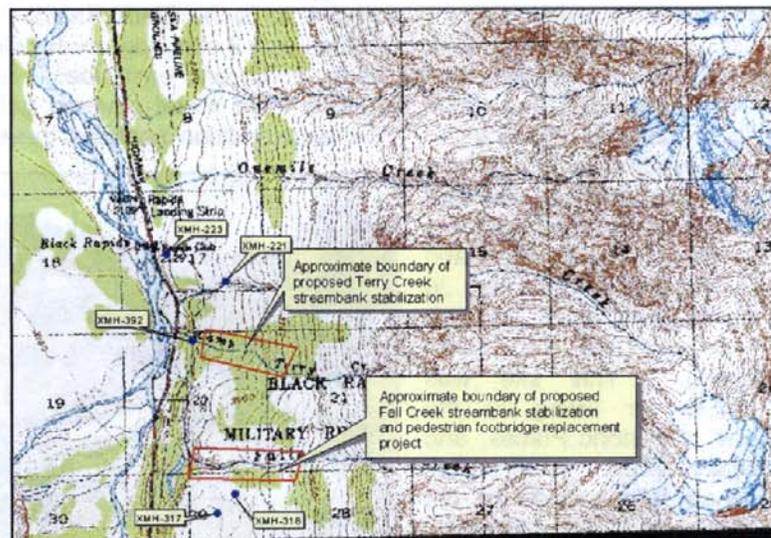


Figure 259. Location of Terry Creek and Fall Creek proposed project area, with previously recorded sites identified. USAG-AK Black Rapids Training Area (from USGS Mt. Hayes C-4 quad)

## Results/Summary

Pedestrian survey of the proposed project area failed to identify any cultural resources within the boundaries of the proposed project's area of potential effect. The proposed stabilization work will be conducted on existing roads that parallel the creek banks; no impacts outside of the immediate stream banks or existing roads will occur. Thus, the project will have no effect on historic properties.

## Cultural Resources

Five historic and prehistoric sites have been recorded in the vicinity of the proposed project areas (Figure 259). To the south of Fall Creek, two prehistoric sites were recorded by Bacon & Holmes (1980: 95, 41-45): XMH-317 is a sparse lithic scatter, comprised of ten chert waste flakes, observed on the down slope of a small outcrop; at XMH-318, a retouched flake and single waste flake were observed on a steep slope. Neither of these locations has been evaluated for extent of sub-surface material or eligibility for listing in the National Register of Historic Places. Both of these sites fall outside of the proposed project's area of potential effect, and will not be impacted by the proposed project.

Site XMH-392, near the crossing of Camp Terry Creek and the Richardson Highway (see figure 1), is the location of a Black Rapids White Alice Communication System (WACS). The Black Rapids WACS was opened in 1960, providing TD-2 microwave communication between Donnelly Dome WACS (19 miles north) and McCallum WACS (20 miles south). Facilities at the repeater station included a 1560 square foot radio relay building, a 722' chain link security fence, 2500 gallons of underground storage, and a TD-2 tower. The station was declared excess in 1979, and subsequently purchased by Alascom in 1984. As of 1988, the site was maintained and continued in use, and was determined eligible for listing in the National Register in 1988 (Reynolds 1988: 60).

Site XMH-221, located north of Camp Terry Creek, comprised a thin scatter of flakes, collected from the surface at the time of survey (Cook 1976c: 4). Exploratory testing failed to recover additional material, and subsequently was determined not eligible for listing in the National Register (Cook 1976c: 4).

The fifth remaining site recorded near the project area is the Black Rapids Roadhouse/Hunting Lodge, XMH-223. The original roadhouse consisted of a 2 story log constructed building. Single story log additions were constructed on the north, south and east sides, creating an L-shaped configuration. Both the north and south additions have metal covered gables roofs, running perpendicular to the original construction. The east addition contains three additional rooms.

The Black Rapids roadhouse is one of a few remaining roadhouses that operated along the Valdez-Fairbanks trail, (now the Richardson Highway) between 1904 and 1923. Originally there were more than 30 roadhouses, which were linked by one day's travel (Phillips 1984: 56; Smith 1974: 23, 94-95). This site was determined eligible for listing in the National Register of Historic Places, and listed in February 2001. The Black Rapids Roadhouse falls outside of the proposed project's area of potential effect.

### PEDESTRIAN BRIDGE

The Falls Creek bridge was originally built in the 1960's, although no records of the specific



Figure 260. Pedestrian bridge at Fall Creek, to be replaced in kind

date are available. The bridge was then replaced in the 1970's, following the original bridge design and construction footprint. Both the original bridge construction and bridge replacement in the 1970s were constructed by Army engineers, but no specific records documenting the bridge's design or construction exist.

This bridge provided troop access to training lands. Training activities provided by Fort Wainwright during the Cold War era does not achieve "exceptional importance." Training activities represent Garrison training, consisting of training activities common to all installations in providing for combat readiness. For training facilities less than 50 years old to achieve "exceptional importance," it is necessary to document that new training or combat doctrine was developed at the facility that has importance in directing how the Army approached training or combat Department wide. No new training or combat doctrine was developed at Fort Wainwright. It followed training doctrine established elsewhere.

Based on National Register criteria, the bridge is not eligible for listing in the National Register of Historic Places: the original structure has been replaced, and is less than 50 years old; it is not an example of a distinctive design; and does not hold a significant association with a specific event or person. Subsequently, the bridge is not considered a 'historic property,' for purposes of Section 106.

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