

Mills Creek-Iditarod Trail Hut to Hut System

Master Development Plan for Huts

DRAFT

July 7, 2005

Prepared by

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- Mills Creek-Iditarod Trail Map
- Mills Creek Site Plan
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- Ohio Creek Site Plan
- Ohio Creek Site—Photo Map
- Center Creek Valley Site Map
- Center Creek Valley Site—Photo Map
- Center Creek Pass Site Map
- Center Creek Pass Site—Photo Map
- Waypoints Associated with Hut Sites
- Precipitation Records for Areas Near Hut Sites
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1—Proposal Overview

Alaska Huts (full name: Alaska Mountain and Wilderness Huts Association) submitted a proposal in September 2004 to Chugach National Forest for four backcountry huts along a trail dubbed the Mills Creek-Iditarod Trail. The proposed trail, approximately 32 miles of existing and new foot trail on the northern Kenai Peninsula, is located on Chugach National Forest lands in Southcentral Alaska, approximately equidistant from Anchorage and Seward along the Seward Highway (see map, attached). The huts are proposed as multi-party huts sized to accommodate an education group or several independent parties overnight. They would include a hut keeper during the busier summer season and spring skiing season, and basic non-perishable food would be available at the huts during those times. The operation proposed is much simpler and oriented toward cooperative efforts with hut users than typical lodges but includes greater amenities than camping or the single-party public use cabins now available on the Forest. The huts would be open to the general public. Chugach National Forest has accepted the proposal as a formal application and has begun an environmental impact statement (EIS) process that is anticipated to culminate in a decision about whether to issue a special use permit, and the stipulations of any permit, in late 2006.

The philosophy, purposes and goals, and history behind the project, along with a description of the area and anticipated operations and effects, are addressed in the September 2004 proposal document and are not repeated in this document. This document is meant principally to further define those features that would be visible on the land and the supporting operational details that would be apparent in the field—use, occupancy, visual and noise effects, principally. At this time, the principal purpose is to provide information to the Forest Service for evaluation in the EIS. This plan is intended as a living document and is expected to be refined further with operational and design detail once a decision is reached. This document presents details of a concept. Numbers and dimensions are approximate and may be revised based on further study, field knowledge, and discussion with Chugach National Forest

“Hut” is a term used for mountain shelters in the Alps, New Zealand, Canada, the Lower 48, and elsewhere. The term encompasses a wide range of building types, from the very small and humble, to multi-story buildings capable of sleeping 100-200 people. Typically what they have

in common is access by human power (i.e. users do not drive to them) and hostel-like accommodations—often sleeping in common spaces with others, or with very rustic accommodations using one’s own sleeping bag or sleeping bag liner. Some offer food and beverages, some do not.

While huts, lodges, and hotels have common aims of serving the needs of travelers for a place to rest, huts are not the same as the typical lodge or hotel. “Hut” in this document means the following:

- Huts are non-profit. They are designed to serve the public interest at the lowest cost for minimal services. Hut keepers will be paid a low wage, but there is no incentive to maximize profits for owners or shareholders because there are no owners or shareholders.
- Huts do not provide standard plumbing and electricity, nor the appliance and advantages these features afford.
- Huts are often self-serve and, when staffed by a hut keeper, are minimally staffed (one person generally on duty when anyone is on duty, and nobody on duty for most of each 24 hour period).
- Huts are rustic and provide only very small sleeping spaces within a larger sleeping room (i.e. each space is without its own door). Huts users sleep in a sheet sleep sack or sleeping bag. There are no linens.
- Huts depend on hut users to help make the operation run smoothly. There are no waiters or busboys or dishwashers.
- Food provided is likely to be almost exclusively non-perishable and quite simple, with preparation of one meal to be eaten by all hut users. There will be no menu of choices. Much of the year, no food will be available.
- The amenities and services at huts fall well below high-end eco-tourism/fishing/hunting lodges in Alaska, or road-side B&Bs, and a notch above Forest Service public use cabins, providing for a unique mix of people.

2—The Mills Creek-Iditarod Trail

2.1 Trail Standards

Alaska Huts has taken responsibility for most of the new trail construction required. However, all portions of the trail would be the sole property of Chugach National Forest. The trail will be built to Forest Service standards. It is possible that Alaska Huts will raise private funding and hire private contractors and/or enlist service groups and volunteers to take on physical construction or that Alaska Huts will raise public funding that may be directed to Chugach National Forest for construction by Forest crews and Forest Contractors.

There are three trailheads proposed—two on the Seward Highway at existing trailheads, and one new trailhead on the Alaska Railroad. There are several segments of new trail proposed:

- Mills Creek Segment
- Stormy Creek Segment
- Center Creek Segment

Each of these is further described below in Section 2.4.

2.2 Trailheads

Western (Manitoba) Trailhead. There are two options to be evaluated for the western trailhead—one adjacent to a highway pullout at mile 48 on the Seward Highway, and one at an existing gravel pit at mile 48.8. Alaska Huts has proposed a minimum capacity of 14 spaces. All or a portion of this trailhead is anticipated to be constructed as part of the Forest’s own separate proposal to improve and re-open the Manitoba Cabin as a public use cabin. Replacement of a footbridge over Canyon Creek near this trailhead is also part of that project.

Northern (Johnson Pass) Trailhead. The existing trailhead for the Johnson Pass Trail would serve as an intermediate trailhead along the ultimate Mills Creek-Iditarod Trail. The parking area currently has a capacity of 24 or more cars. Alaska Huts does not propose to expand this parking area.

Eastern (Railroad) Trailhead. The railroad trailhead is at approximately rail mile 50, near the Placer River. The Forest is evaluating the whistlestop site and associated trails as part of its backcountry Whistlestop project concurrent with the Hut to Hut evaluation. Alaska Huts proposes to tie into the whistlestop components developed by the Glacier Ranger District. No parking is necessary, as hikers will be coming and going in this area by rail.

2.3 Trail Maintenance

New and existing portions of the trail would be the sole property of Chugach National Forest. Alaska Huts has committed to routine maintenance of the new trail segments constructed. This means regular trail condition surveys, clearing of blown-down trees (primarily in spring), cutting back brush and vegetation, repairing minor drainage/erosion problems, maintaining trail markers and Alaska Huts signs, and communicating any foreseen major reconstruction need or problem to the Forest Service. Major repairs (e.g. damage from catastrophic flood) will be undertaken by the Forest Service.

2.4 Trail Segments

The attached trail map shows the proposed trail. The line has been located deliberately based on field exploration. Further ground truthing will be necessary to refine the route before construction.

Mills Creek Trail (7 mi). The Mills Creek Trail begins on a Forest Service public easement through State of Alaska Land on a mining access road. At mile 3, there is an option to continue following the mining road across Mills Creek to the west side or to create new foot trail along the bench well above Mills Creek on the east side. Alaska Huts prefers to remain on the east side

and construct a new trail, which would stay away from mining claims. From this point, there would be approximately 4 miles of new trail construction to reach the Mills Creek hut site. Grades going into and out of Timberline Creek will need to be refined.

Design Uses—The Mills Creek segment to approximately mile 7 at the Mills Creek hut site should be designed for and managed for use by hikers and mountain bikes. The construction standard should be class 3. To mile 3, no change is anticipated, and the trail will be shared with occasional ATVs that use the trail by special permit (the area is closed to motorized use year round except for miners with legitimate permits). This trail is not to be designed for winter use. Any winter access into this valley is best following the lay of the land to avoid avalanche areas, and the vegetation is generally open enough to allow experienced skiers to select the safest possible route.

Phasing—This segment, along with the Stormy Creek segment and Mills Creek hut, is proposed to be built last. The portions of this route above Timberline Creek are principally on old glacial outwash terraces with little vegetation and good trail foundation soils. The first phase of construction would mark a distinct route and allow these portions to be walked in. Upgrades would be made over time.

Bridges—Bridges are anticipated at Juneau Creek, Timberline Creek, and Stormy Creek. As a class 3 trail designed for bikes, it likely will be necessary to place culverts at several small cross-drainages, similar to the Johnson Pass Trail.

Stormy Creek Trail (7 mi.). The Stormy Creek segment connects the Mills Creek hut site with the existing Johnson Pass Trail at Johnson Pass summit, approximately trail mile 7 to mile 14. This segment climbs steeply over Stormy Creek Pass (elev. 3750 ft), the high point on the entire trail, and includes a steep section just above Bench Lake. The route up Stormy Creek lies on the south side of the creek to the toe of the rock glacier, and then follows the north side of the creek, mostly remaining near the creek to avoid perennial wet areas below snow patches. It follows the valley bottom nearly to the head of the valley. East of the pass, the route crosses to the south side of the outlet stream and stays on the south side to Bench Lake. Except a short wetland area at the base of slope southwest of Bench Lake, the route uses dry ridges between Bench and Johnson Lakes to reach the Johnson Pass Trail.

Design Uses—Because of the steep sections and relative isolation and wilderness qualities, this trail is proposed to be class 2 and to be designed and managed for hikers. It would involve crossing small waterways without a bridge. The steep areas mentioned above are not suitable for mountain bikes, and to design the trail for bikes would involve deep trail cuts, many switchbacks, and the crossing of many steep and hard snow patches that linger long into the summer. Mountain bikes would not be prohibited but would not be recommended, and bikers would need to be prepared to carry their bike up the pass.

Phasing—This segment, along with the Mills Creek segment and Mills Creek hut, are proposed for construction last. Most of this segment is well-suited for minimal construction: the ground is glacial till/gravel with thin organic moss and lichen. The first phase of construction would mark

a distinct route and allow it to be walked in. The ascent above Bench Lake and the ascent to Stormy Creek Pass would require greater attention to avoid drainage and erosion problems.

Bridges—A bridge likely will be necessary to cross upper Stormy Creek near the rock glacier. Another small bridge may be necessary to cross the stream draining from Stormy Creek Pass toward Bench Lake. Other cross drainages on this trail segment can be designed for hopping across, water bars, etc.

Stormy Creek Pass Potential Weather Shelter—Alaska Huts proposed a small shelter, no larger than 10 ft by 10 ft, as a foul-weather escape in the Stormy Creek Pass area. This building would be in an A-frame or four-walls format, with a door, but un-insulated and unheated. It would be located near the pass but away from the lake and distant from a water source to discourage routine overnight use. This shelter is proposed for evaluation in the EIS and authorization in the permit in case further experience suggests it would be appropriate. It may not be necessary and may never be built.

Center Creek Trail (9 mi). The Center Creek segment has three sub-parts: (a) between the Johnson Pass Trail and the Lower Center Creek hut site, a distance of approximately 2 miles; (b) between the Lower Center Creek hut site and Center Creek Pass hut site, a distance of approximately 5 miles; and (c) from Center Creek Pass to the railroad, a distance of 2.5 miles to the tracks and nearly 3.5 to the Spencer whistlestop location.

Design Uses—Sub-part ‘a’ is proposed to be designed for and managed for use by cross-country skiers, hikers, and mountain bikers and to be built to trail class 3 standards. Sub-parts ‘b’ and ‘c’ are proposed to be designed for and managed for use by hikers only and are proposed by Alaska Huts to be built to trail class 2 standards because of steep terrain, the relatively isolated nature and wilderness character of the upper valley, and protection of wetland areas. The wetlands will require boardwalk segments that should be narrow rather than wide. Sub-part ‘c’ is part of the Whistlestop proposal, and the Glacier Ranger District has proposed this route as trail class 3. Subpart ‘c’ is a summer-only trail because of the route crosses the starting zones for avalanches (differing from other trails, which may cross runout zones or not involve avalanche zones at all).

Phasing—Sub-parts ‘a’ and ‘b,’ along with the two huts at the Lower Center Creek and Center Creek Pass sites, are first priority for construction. Subpart ‘c’ is third priority after construction of the hut at Ohio Creek. Sub-parts ‘a’ and ‘b’ will be useable in most areas just by clearing the corridor of hemlock, alder, and willow. Some areas will require early drainage control or planking across wetland areas to protect from erosion.

Bridges—Bridges will be necessary at the unnamed tributary of Center Creek (near the Center Creek Valley hut site); at the Center Creek-Divide Creek confluence; and at two more crossings of upper Center Creek. In addition, a bridge/piling-supported segment will be necessary across a backwater off the Placer River at the base Center Creek Pass. The trail is anticipated to tie into a backbone trail proposed under the Whistlestop project that would run north-south roughly paralleling the railroad tracks. The Center Creek Pass segment therefore will not require a bridge of its own across Placer River to reach the whistlestop location itself north of the river. Minor drainage can be accommodated with water bars and stepping stones. Narrow plank boardwalks

on sleepers are proposed for wetland crossings between the two Center Creek hut sites. Subpart ‘a’ of the Center Creek segment will need drainage work in several locations, and culverts may be appropriate to accommodate mountain bikes in this subpart.

Hut Access Trails and Other Trails. Each hut is set somewhat off the main through-trail and is connected by a short spur, as depicted on the attached site plans. At Center Creek Pass, a short trail would circle the lake and lead to a Placer Valley overlook. At the other sites, very short trails would connect site features (hut, outbuilding, fire ring, tent platforms, and water source).

3—The Huts

3.1 Common Features and Sleeping Capacity of Hut Sites. Although the shape of the huts may vary from each other based on site topography and orientation to views and sun, there are many common features. Each hut site will include:

The Hut. The conceptual design for the main hut building will be approximately 1,000 SF of enclosed space on the ground floor with a useable “attic” under the sloped ceiling for sleeping. Snow loads, building codes, accessibility guidelines for people with disabilities, and the Forest Service’s Built Environment Image Guide create parameters for hut design. Building codes limit the number of people who can be housed upstairs to 10. The balance will be housed typically in the downstairs (including accessible sleeping space) and the outbuilding (see notes about outbuilding phasing and a paragraph on hut site capacity, below). The downstairs of the main hut will meet accessibility guidelines.

Area snow loads (see attached) are high; the conceptual design process uses 500 pounds per square foot (ten times the Seward and Anchorage snow load). This drives a building form based on a strong post-and-beam type frame, with large timbers, likely exposed on the inside of the building. The roof typically would be pitched quite steeply (e.g. 12:12 pitch) and likely clad in metal roofing to shed snow and lighten the snow load. The building form is likely to be very simple—a basic rectangle with a peaked roof. Large roof overhangs are likely. The steep pitch means the building’s visual “mass” will be low, with a “light” and “pointy” roof somewhat mimicking the surrounding evergreen tops and mountain peaks behind. The typical total building height is expected to be in the range of 23-27 feet from the underside of the floor to the top of the roof. Exterior finishing would be compatible with the Forest Service’s Built Environment Image Guide and, where appropriate, would reflect the area’s mining and Iditarod Trail history.

Outbuilding. A single outbuilding is anticipated at each hut site. It likely would be built in stages. At first, it could comprise only 250 SF of enclosed space for cool storage (principally food storage and backhaul recycling storage) and 150 SF of covered, but not enclosed, workbench and firewood storage space under the roof. Additions likely would include a partially heated sauna/sponge-bath area of approximately 100 SF, and unheated sleeping space to accommodate approximately eight (200 SF). See the paragraph below in this section regarding total sleeping capacity within the hut site. Because some of the space is anticipated to be

accommodated in the attic, the outbuilding footprint for enclosed space is anticipated to be approximately 450 SF. The roof will have large overhangs.

Other Features

- **Tent Platform.** One tent platform of approximately 8 ft by 8 ft. and constructed of mineral soil or decking would be located near the hut and outbuilding. See the paragraph below in this section regarding total sleeping capacity within the hut site.
- **Water Source.** A surface water source for dipping and hauling water and/or for installing a water intake and small-diameter transmission line (e.g. 1-2 inch PVC ‘hose’) would be located near each hut for summer water supply. The water line would transmit water to one larger or two smaller tanks outside the hut. Each hut as needed also would include a roof water collection system delivering water to the same tank. A tank(s) with a total capacity of 500 gal tank is typical and would fit within a screened area 4 ft to 5 ft square as part of the hut or outbuilding (e.g. on the deck or under the eaves). The water line and tank would be drained in the freezing season. Water purification would take place by use of water filters, including hut users’ own backpacking filters and/or in-line filters on the water intake line, and with a chlorine product within the tank when a hut keeper is present. Purification will be subject to Alaska Department of Environmental Conservation review. Water use will be very limited at huts by design (water conservation as part of the education message): Hut users will haul water from the tank spigot located outdoors. Any bathing will be by dry sauna and/or sponge bath. Winter water supply would be by dipping and hauling water, when available, and by snowmelt. Hut users would be responsible for their own water purification in winter.
- **Fire Ring.** Except as noted below, each hut site would include a designated fire ring for outdoor campfire. Because virtually all firewood would be imported, the fire ring would be 24 inches across or less and designed to encourage small fires, not large bonfires.
- **LZ.** Each site includes a helicopter landing zone (LZ) for use during helicopter re-supply periods for anything not sling-loaded and for use during emergencies. These areas would be designated on a site plan but otherwise would not involve construction or tree cutting at most sites.
- **Drainage Area.** Each site would include a designated area for drainage of gray water into the soil. This is envisioned as a small leach field. As noted above, water use will be low at huts—on the order of 50-60 gallons per day total at full occupancy (compared to 200 gal per person per day in typical urban areas with hot and cold running water). This quantity means very low water drainage needs. If required, a pre-filter to Alaska Department of Environmental Conservation standards will remove particles before water discharge. See attached example diagram and DEC seasonal camp requirements. Based on DEC guidelines, a drainage field of no more than 40 square feet is anticipated.
- **Solar Panels.** Each hut will use a set of solar panels. These are assumed to be a free-standing set of several panels, mounted on poles no more than 20 feet high with stabilizing

cables, totaling approximately 50 SF. These will be placed in inconspicuous south-facing locations near the huts. All or a portion of the panels may be incorporated into the hut and/or outbuilding wall or roof. The solar cells will run a limited 12-volt DC electrical system. Key uses are: powering a fan for efficiency of the composting toilet; running a high-efficiency air-to-air heat recovery ventilator to provide fresh air and reduce fuel consumption while the building is being heated; charging communications equipment (satellite phone and/or radio) needed for emergency communications and routine administrative use; and powering small electric lights to minimize use and fire risk of combustible lighting, such as propane lights, candles, or lanterns. An additional draw only when a hut keeper is present is a small super-efficient electric refrigerator rather than a propane refrigerator. The solar system is sized to operate spring, summer, and fall. The system would include four large batteries housed in a warm, ventilated location (likely with the compost toilet tank). Note that buildings will be designed to operate “manually,” and may run completely without electricity in winter. Each site will include a very small portable propane generator that may be used to recharge batteries in winter. Routine generator use is not anticipated.

Sleeping Capacity at Each Site

Within each Resource Protection Area, no more than 20 overnight hut users will be present. The only additional people will be administrative. Hut keepers quarters will be provided and occupied at busier times typically by two hut keepers. Space for up to three other Alaska Huts administrative personnel (e.g. itinerant maintenance people) will be provided. The total physical sleeping capacity of each site will be as follows:

- Semi-private sleeping nooks: 20
- Hut keeper/itinerant spaces inside a building: 3
- Tent platform: 2
- TOTAL 25

To allow for flexibility, the tent platform may be used either by itinerant administrative people or by hut users who prefer the tent space, or by a person who wishes to stay at the hut with a dog (pet dogs would not be allowed inside the buildings). In no case would this allow for more than the total maximum of 20 paying users at the site.

3.2 Site Plan: Mills Creek Site. The Mills Creek site plan is attached. The hut site is on the edge of a low bluff overlooking the broad, flat valley bottom of Mills Creek. It is backed by large patch of 20-30 ft tall hemlocks growing on a low rise between the lower end of Stormy Creek and Mills Creek. The outbuilding will be located in a small bowl immediately north of the hut. Tent platforms will be located just uphill of the outbuilding, tucked into small openings in the hemlock. The fire ring will be located along the bluff edge to the south a short distance.

The main through trail would follow the west and south sides of Stormy Creek; access to the hut would be generally downhill and to the west across the land separating Stormy Creek from the hut site. The summer water line also would follow this route.

This site would include all the “common features of huts” noted above. A few clarification notes:

- A surface waterline 1,300 ft long will convey water from the upstream bend of Stormy Creek to the hut site, first paralleling the creek and then cutting west perpendicular to the creek past small ponds and through the hemlock. The winter water source will be snow melt, although winter use of this hut is expected to be very low.
- The LZ is in a grass area. Grass would need to be trimmed if it was known a helicopter was coming during the mid-late summer.

3.3. Site Plan: Ohio Creek Site. The Ohio Creek site plan is attached. The hut site is located approximately 300 vertical feet above the Bench Creek valley bottom and about 700 feet north of the Ohio Creek gorge. The hut and outbuilding would be located within a patch of hemlock trees 20-35 feet tall overlooking vistas from Bench Lake to peaks in upper Ohio Creek. Access would be from below, intersecting the Johnson Pass Trail north of the Ohio Creek bridge after the existing trail has climbed up out of the valley bottom.

The two alternatives for this site would include all the “common features of huts.” Following are additional items and clarification:

- The access spur from Johnson Pass Trail will climb about 250 vertical feet over about 1,700 feet (horizontal). En route are the summer tent platforms and winter snowmachine parking area. The sub-set of the route from platform/parking area to the hut site is approximately 700 feet.
-
- A snowmobile parking area on a break in the slope below the hut (same area as summer tent platforms) would be provided.
- The line from the water source would run approximately 1,300 feet from the gorge near the upper end of the Resource Protection Area, to the hut site. Winter water source is likely to be snowmelt. Although the stream may have flowing water year round, access to it for dipping and hauling may be difficult.
- Construction of the hut and outbuilding will require cutting hemlock.

3.4 Site Plan: Center Creek Valley Site. The Center Creek Valley site plan is attached. The site is all located in a long narrow strip along the highest terrace west of an unnamed Center Creek tributary. The fire ring and tent platforms are located at the north end of this terrace, where there are views both up and down valley. The LZ is in the middle, the hut and outbuilding near the upper (south) end, and the water source at the extreme upper end. The site overlooks the terraces down to the tributary stream and, farther eastward, to the open flats of the Divide Creek-Center Creek confluence area. To the west is a large area of intermixed hemlock (20-30 ft high) and spruce (some standing dead, and taller).

This site would include all the “common features of huts” noted above. A few clarification notes:

- The tributary may run year round at a low level and may provide water for hauling all or part of the winter. The summer water line would extend approximately 250 feet from the hut (storage tank) into the base of the tributary ‘canyon.’
- The LZ will need to be kept cleared of low willow. Because the ground slopes slightly, some leveling may be warranted.

- An access trail would run south 400 feet from the main trail to the hut and north 200 feet to the fire ring and tent site area.
- At this site forested with spruce, hemlock, cottonwood/poplar species, and alder, cutting of supplementary, lower-quality (non-birch) firewood is anticipated within the Resource Protection Area (see site plans). Higher quality firewood would be brought in during re-supply. Wood harvested would be hauled by hand and amount to about a half cord per year. It would be harvested in a sustainable fashion.

3.5 Site Plan: Center Creek Pass Site. The Center Creek Pass site plan is attached. This site is located on the broad crest of a ridge separating the Center Creek drainage from the Placer River drainage, and separating the Seward Ranger District from the Glacier Ranger District. Hemlock patches are small, and the trees low. Bedrock is exposed in many locations, and tundra vegetation is generally a thin layer over fractured bedrock. Views to the east and southeast include Spencer Glacier and the spectacular peaks surrounding the glacier. Also visible to the east, from the locations near the eastern edge of the pass, are the Alaska Railroad track, a short road from the track to the Spencer Lake, and buses used to transport people to the lake for float trips. Old gravel extraction is also evident. This area is proposed for Whistlestop recreation development, including a large campground and trails, which also would be visible (and the hut potentially visible to people on the valley bottom). The hut site therefore is located close to the west side of the ridge crest, with a broad view of Center Creek valley. The hut would be located west of hemlocks that reach 15 feet tall near a high point (one among many hillocks on the ridge crest), in an area with minimal snow drifting.

This site would include almost all the “common features of huts” noted above, with one exception and other clarifications as noted below:

- No fire ring is planned for this hut. In this higher alpine environment, open fires seem less appropriate.
- Drinking water at this location will come from a small stream that flows off the cliff face 400 feet north of the hut site, which will flow in a water line over undulating ground to the hut water tank. The hut will also collect rain water and depend on rain water more than other huts. The hut will have two tanks of up to 500 gal. *each* rather than one of 500 gal. total. As a backup, the pond may provide a temporary water reservoir in prolonged dry periods.
- A pre-filter for gray water, noted as an option above under “common features,” is anticipated at this site. Soils are shallow. It may be necessary to import drainage soils.
- Some cutting of hemlock will be necessary to locate the hut and outbuilding on the site and ‘nestle them in’ to the landscape. The windward (eastern) portion of the hemlock patch will not be cut at all to retain a strong wind buffer.
- An access spur trail from the main trail would run about 2,000 feet north around the east side of the high point, down to the lake, and back up slightly to the hut.
- A path around the lake, to tent platforms, and to an overlook of Placer River will branch off and rejoin the access trail, adding 1,100 feet of path. This is principally intended to provide a hardened path (native bedrock and soils, possibly with some sections of boardwalk) in areas people will be attracted to, to protect the alpine vegetation.

4—Construction and Operations

4.1 Use and Occupancy of the Huts

Huts are intended for use year round. However, winter and summer uses will differ substantially, with most winter activity on a self-serve basis and most summer activity at a greater level of service. Levels of service, generally secured by reservation, will be as follows:

	Level 1 Meals	Level 2 Self-Serve A	Level 3 Self Serve B	Level 4 Day Use
Hut Keeper	Yes	Yes	No	Yes/No
Sleeping Accommodation	Semi-private sleeping nook.	May be asked to share a space with others, or may use tent you carry.	May need to share a space with others, or may use tent you carry.	Not applicable
Food	Basic breakfast & dinner provided; trail lunch items available; utensils provided. Cooperative kitchen and cleanup tasks.	Carry own food. Use of hut burners, pots/pans, and utensils provided. Cooperative kitchen and cleanup tasks. May need to wait until main meal prep complete.	Carry own food. Use of hut burners, pots/pans, and utensils provided. May need to share space with others.	Beverages and trail food available for purchase and hot midday and evening meal generally available when hut keeper present.
Education	Active	Active	Passive	Active/Passive
Other	Common area, toilet, sauna available.	Common area, toilet available.	Common area, toilet available.	Common area, toilet available to paying day users.

Winter use of all huts will include strong cautions regarding avalanche hazards related to the routes to and features of each site.

Hut keepers are expected to be at huts as indicated in the tables above and below. If warranted at any given hut by excessive unauthorized use or vandalism, Alaska Huts may maintain a volunteer winter caretaker on site. All authorized personnel will be instructed to maintain a tidy site ready for public use at all times and to retain their personal belongings principally within their own quarters.

Huts may occasionally be closed for maintenance, and timing would be focused on the seasons of lowest use. However, no hut would be entirely closed for any regularly scheduled period. The tables on the following pages indicate use and occupancy by season for all huts.

Alaska Huts Seasons of Operation

“Season” of Use	Days	Staffing	Bedding Status	Food status	Solid Waste Status	Education Status
Notes Pertaining to All Seasons →			<i>Sleeping pads always available</i>	<i>Staple dried/ canned foods always available to hut keepers & maint volunteers & available to the public when hut keeper present.</i>	<i>Guests always pack out what they pack in or consume, except as noted below.</i>	<i>Interpretive signs, minimal library, and simple self-serve activities always available.</i>
Spring Skiing 2/10-4/10	60 days	Resident hut keeper on duty 3 nights/week. Roving vol. maint. crew to re-supply for summer, mark trail, do heavier hut cleaning.	Bring own sleeping bag	Food offered on days hut keeper is on duty. Beer, wine, juice available for sale when on duty. Otherwise, self serve/no food or beverage available.	May burn paper and compost vegetable food waste. Large items (e.g. jars) not burnable are flown out at re-supply time.	All self serve interp items & activities available. Active solicitation of educ. groups to use huts.
Summer (Approx 6/1-9/20)	110 days	Resident hut keepers. Roving vol. hut & trail maint/cleaning crews. Roving staff to guide & educate as demanded.	Bring own sleeping bag or sleeping bag liner. Blankets (but not sheets) available. Bag liner available for purchase.	Food offered. Beer, wine, juice available for sale. Late reservations for bunkroom sleeping and independent cooking available.	May burn paper and compost vegetable food waste. Large items not burnable are flown out at re-supply (backhaul).	All self serve interp items & activities available. Active solicitation of educ. groups to use huts, especially mid-week.
Winter Holiday (approx 12/20-1/4)	15 days	Roving maint. team; Hut keeper for groups by special arrangement.	Bring own sleeping bag.	No food available except spices. Food stores locked up. But food may be available by special arrangement.	May burn paper. No composting.	No active solicitation of educ. groups to use huts, but they may use huts.
Winter/Shoulder (all late fall/winter/spring times not noted elsewhere),	120 days, or 33% of year	Roving vol. to check huts, mark trails, and do light cleaning. Hut keeper available for groups by special arrangement.	Bring own sleeping bag.	No food available except spices. Food stores locked up.	May burn paper. No composting.	No active solicitation of educ. groups to use huts, but they may use huts.

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“Season” of Use	Days	Staffing	Bedding Status	Food status	Solid Waste Status	Education Status
Between Seasons Approx. 4/10 to 5/20 and approx. 10/15 to 11/5. timing may vary by hut.	60 days	No hut keeper. Maintenance team may use this time, and a hut could be closed to the public for maint.	Bring own sleeping bag.	No food available except spices. Food stores locked up.	May burn paper. No composting.	No active solicitation of education groups, but they may use huts by special arrangement.

Maximum overnight use at any hut during any period will be capped at 20 hut users. Hut keepers, hut and trail maintenance crews, and other administrative personnel may also be on site overnight. The total number of people on site, including paying hut users and administrative personnel, will not exceed 25. Mid-day day use is likely to an unknown degree at all huts in summer and at the Lower Center Creek hut site in Spring Skiing season. This would be targeted to occur as overnight hut users were on the trail between huts. Total occupancy at the huts for a year is projected at around 4,150 person nights, as indicated in the table below.

Hut System Overnight Occupancy

“Season” of Use	Days	Occupancy/ Night (avg)		Season Total		Grand Total
Total System Occupancy (yr)						4150
Spring Skiing Approx 2/10-4/10	60 days	Mills=0.5 Ohio=4	Cvall=6 Cpass=4	Mills=30 Ohio=240	Cvall=360 Cpass=240	870
Summer Approx 6/1-9/20	110 days	Mills=6 Ohio=6	Cvall=7 Cpass=7	Mills=660 Ohio=660	Cvall=770 Cpass=770	2860
Winter Holiday Approx 12/20-1/4)	15 days	Mills=0 Ohio=6	Cvall=6 Cpass=0	Mills=0 Ohio=90	Cvall=90 Cpass=0	180
Winter/Shoulder All late fall/ winter/ spring times not noted elsewhere	120 days	Mills=0 Ohio=0.5	Cvall=0.5 Cpass=0.5	Mills=0 Ohio=60	Cvall=60 Cpass=60	180
Between Seasons Aprox 4/10 to 5/20 & 10/15-11/5	60 days	Mills=0 Ohio=0	Cvall=0.5 Cpass=0.5	Mills=0 Ohio=0	Cvall=30 Cpass=30	60

Table depicts averages. Cvall and Cpass are Center Creek Valley and Center Creek Pass hut sites. Zero does not mean hut closure, only very low use on average.

Typical Use Scenario. Individual hut users or educational groups make an Internet reservation, typically well in advance for summer (Level 1 use). They receive information about hut operations, the need for self-reliance and Leave No Trace ethics, a brief interpretive guide to the trail, etc. They may be asked to volunteer to carry in small re-supply items. The hut keeper receives periodic communication via cell phone, satellite phone, or radio, and by occasional hard copy carried in, regarding reservations. Hut users hike to a hut, are welcomed by a hut keeper, find an open sleeping space, sign up for a small food preparation or cleaning task, and settle in. The hut keeper, with assistance from hut users, prepares a simple evening meal. Everyone eats together, serving themselves, at the designated hour and participates in cleanup, performing the first ‘scrape and rinse’ of dishes individually, with volunteers helping to wash and rinse dishes. A short after-dinner walk or talk with the hut keeper or invited guest is possible. Activities and items such as binoculars or spotting scope, a guitar, board games, education activities or on-going scientific monitoring/research, will be available. Education groups may have their own “business” to attend to. A small education group may share the space with independent parties. A larger education group may reserve the entire hut.

Late in the reservations process, unreserved spaces up to the maximum total of 20 will be made available for Level 2 self-serve reservations at lower cost. Level 2 people carry their own sleeping bag and food, may be asked to share sleeping space with other parties or have the option to use a tent they carry (subject to availability of the one tent platform available), and they cook their own food. They may use designated burners provided for their use or the main kitchen stove, once the main meal is complete. Any people using the tent platforms for sleeping will be able to (and required to) store their food in a secure area at the hut. Should long periods of high demand for Level 1 reservations develop, Alaska Huts intends to implement a system that ensures some space for Level 2 reservations is retained.

The morning meal will run similarly to the evening routine. Breakfasts are anticipated to be very simple. Trail lunch items will be available for people to purchase and carry. People would mix and match their own lunch items from a selection. The huts would have a suggested tidy-up routine and suggested late-morning departure time. A very simple midday meal may be prepared for day users, or trail lunch items and beverages would be available to them for purchase.

“Winter” use will operate only with Level 3 reservations (self-serve; no hut keeper). “Spring skiing” will operate with Levels 1, 2, and 3 all possible. A hut keeper is expected to be on duty half the days of the week during “Spring Skiing” and may or may not be on-site the other half of the week. If demand is sufficient, the hut keeper and Level 1 reservations could be expanded to the full week, and the spring skiing season could be expanded to earlier (January) and later (later April or even early May) parts of the snow season. When the hut is without a hut keeper, hut users would arrive, possibly with a lock combination or key, and settle themselves. They would have documentation with them of their reservation and post it for other parties to see. Some semi-private sleeping nooks would be closed, locked, and unavailable during these times to avoid the need to heat the full space; hut users could use those sleeping nooks available. For larger groups, mattresses could be placed in the common space. For winter education groups, in particular, it would be possible to open (and heat) the entire building by special arrangement.

Educational courses would function much the same as recreational hut use and could operate under any of Level 1, 2, or 3.

4.2 Resource Protection Areas.

Resource Protection Areas (RPAs) are proposed around each hut to protect such resources as clean drinking water, views and the visual environment, and natural quiet, and to minimize the potential for conflict between hut users and other trail users and between hut users themselves.

The RPAs are anticipated to restrict certain activities in either of two ways:

- (1) Certain violations are expected to be citable by Forest Service law enforcement officials.
- (2) Alaska Huts may create other, minor restrictions within the RPAs that would not be subject to Federal citation but only to “enforcement” by Alaska Huts by denying service.

“Citable” Protections Subject to Forest Service Law Enforcement

Activity	Restriction	Reason
Camping	Independent camping not allowed within RPA.	Avoid attempted use of hut by people without reservations; avoid trampling etc.; retain concentrated use at hut.
Pet Dogs	Must be leashed within RPA. No pet dogs allowed inside hut buildings; exception for service dogs needed by persons with disabilities.	Avoid conflict between dogs and between dogs and people; protect water supply; avoid tracking wastes; avoid allergens in hut.
Firearms/Bow	<ul style="list-style-type: none"> • No discharge of firearms or similar lethal devices allowed within 150 yd radius from any site features (hut, outbuilding, fire ring, etc.) <i>per 36 CFR 261.10(d)</i>. • Firearms brought to hut must be placed in designated safe location and use trigger lock. 	Protect human safety; minimize noise.
Snowmobile Use—Ohio Creek Site Only	No use within RPA, except to access designated hut parking area* via designated corridor (exception if authorized in advance by Alaska Huts at time of reservation for elderly/ disabled or oversize loads). All hut users will be informed to pack their luggage for hand carrying up hill 700 feet.	Minimize noise; minimize exhaust smell; minimize visual snow tracking; minimize conflict between user groups.

Protections Imposed by Alaska Huts

Activity	Restriction*	Reason
Mountain Bikes	Designated parking area.	Minimize traffic in immediate vicinity of hut; avoid visual disarray.
Pet Dogs	Dogs allowed to stay overnight at tent site only, not in buildings. For overnights with dogs and for day users, dogs must be tethered in designated area and not allowed inside hut. Owners responsible for keeping dogs quiet and for disposing of dog waste in designated area or outside of RPA. Reservation for the dog and person required.	Avoid conflict between dogs and between dogs and people; protect water supply; avoid tracking wastes; avoid allergens in hut.
Pack Animals and Winter Dog Teams	Designated tethering area. Owners responsible for keeping animals quiet and for disposing of waste away from the tethering area and trails and >200 ft from water.	Minimize traffic in immediate vicinity of hut; avoid visual disarray; protect water supply; avoid tracking wastes; minimize noise at hut; concentrate ground cover impacts.

RPA Boundaries. Following are descriptions of the north, south, east, and west boundaries of Resource Protection Areas for the four hut sites. The attached trail map shows these areas,

Mills Creek Hut Site

North: Confluence of Mills and Stormy Creek
South: Top of hemlock patch
East: Stormy Creek
West: Mills Creek

Ohio Creek Hut Site

North: Northern edge of hemlock patches
South: Ohio Creek gorge
East: Top of steeper slope above hut
West: Johnson Pass Trail

Center Creek Valley Hut Site

North: Top of bluff south of Center Creek (on west) to Center Creek itself (on east)
South: Steep slope break and canyon uphill—approx. elev. 2,100'
East: Top of uppermost stream terrace across unnamed stream from hut site.
West: Western edge of hemlock stand/1st meadow area west of hut site.

Center Creek Pass Hut Site

North: Top of cliff—approx elev. 2,600'
South: Top of first prominent rise south of hut site along crest of pass—approx elev 2,200'
East: Steep drop to east, just east of lower small pond—approx elev. 2,050'
West: Steep drop to west—approx elev 2,050'

4.3 Re-Supply

An “aircraft re-supply event” is defined as the aircraft trips necessary to move a given set or supplies to one or more of the huts within a concentrated time, typically within one day. Primary aircraft re-supply events are anticipated to be three times per year: February, May, and October. To account for unforeseen needs over the life of a long-term permit, the permit should authorize another six aircraft re-supply events per year when needed. These may require special notice to the Forest Service. Because of cost, these are considered highly unlikely; they would be most likely for emergency hut repairs or unexpected depletion of firewood or propane.

Within any aircraft re-supply event, a helicopter will deliver firewood, backhaul empty propane tanks, deliver filled propane tanks, backhaul recycling and trash, deliver food, backhaul items for repair, deliver maintenance items for installation, etc. Each of the three annual re-supply events is intended to serve all huts that need service. Fixed-wing aircraft landing on snow may substitute for helicopters at the Mills Creek and Ohio Creek hut sites in February and early May.

- The permit should authorize the number of “aircraft re-supply events” and not the specific number of overflights, which may vary slightly depending on the size, shape, and volume of loads.
- Total anticipated weight of propane and firewood fuels per hut PER YEAR is 17,000 lbs. This is expected to be 8 aircraft trips per hut PER YEAR.
- Total anticipated weight for food per hut PER YEAR is 8900 lb. This is expected to be 5 aircraft trips per hut PER YEAR.
- Trips for maintenance items will vary but mostly are anticipated to be included in the totals above. Larger items may require specific trips (new roof sheeting, or a new large window, or a new compost toilet tank, for example). These would be unusual and are not anticipated at more than two trips per year average.
- The PER YEAR quantities above would be split over three aircraft re-supply events. The TOTAL aircraft trips to any one hut is expected to be 15 (30 one-way passes) PER YEAR. For all four huts, this is 60 trips (120 one-way passes) per year. The maximum per re-supply event is anticipated to be no more than 30 trips (60 one-way passes) over one to two days, originating from more than one staging area (i.e. helicopter flying one route for a portion of one day and then moving to a different route). Typical re-supply runs appear to be 5 to 9 miles one way, amounting to 4-8 minutes each way.
- Re-supply of minor items: Between aircraft re-supply events, minor re-supply will take place by backpack, mountain bike, or pack animal, with backpack the most likely.

Alaska Huts will coordinate its re-supply events with other aircraft trips to the area whenever possible to share costs and reduce noise impacts. For example, it may be possible to coordinate with Chugach Powder Guides, air taxi tours, or Forest Service aircraft work.

4.4 Construction Process and Phases

Construction of each hut is planned to begin on the road system for maximum access by workers, ability to reduce the amount of material to fly in to the remote hut sites, and ability to erect the building quickly on the backcountry site to minimize site damage. Methods will be conducive to this set-up, knock-down, fly-in plan: likely timberframe construction with structural insulated panels (SIPs) for walls, floor, and roof. Fly-in of the materials for each hut is anticipated to occur during a well-orchestrated 1-2 day period of shuttling materials by sling-load. Another part or full day is anticipated for delivery of interior furnishings and backhaul of scrap and tools; this may be combined with a first “re-supply event” (see Re-supply, above).

Construction of the hut system is segregated into the distinct priority phasing indicated below. Alaska Huts intends that components be constructed as quickly as possible, but this priority order has been established for implementation.

- Phase 1 is the two huts along Center Creek and the trail from the Johnson Pass Trail to the Center Creek Pass Hut.
- Phase 2 is the Ohio Creek Hut just off the Johnson Trail and south from the Center Creek Valley Hut.
- Phase 3 is the trail from Center Creek Pass connecting to the railroad.

- Phase 4 is the Mills Creek Hut and the trail to the hut along Mills Creek and over Stormy Creek Pass to connect with the Johnson Pass Trail

4.5 Emergency Operations

Alaska Huts will develop a detailed emergency operations plan. The plan emphasizes education for self-reliance by hut users and communications to coordinate in cases of search and rescue or injury. Features include:

- Hut users will be educated as part of the Alaska Huts mission in the need to be self reliant and prepared for emergencies. This will occur through the web site, at the time of reservation, at trailhead signs, and at the huts themselves.
- Alaska Huts will not be able to provide definitive avalanche, flood, wildlife, or weather hazard information but does intend to share and disseminate information to and from other users and agencies such as the Forest Service Avalanche Center and River Forecast Center.
- The key element of assistance in emergency and search and rescue when hut keepers are present will be communications. Alaska Huts will seek to provide a communications system meant to allow hut keepers access to State Troopers/9-1-1, which is the designated statewide authority for search and rescue coordination. At some huts (e.g. Center Creek Pass), this could be cell phone or radio communications, or it will be satellite telephone. The exact system to use will depend on site features and costs. Any radio antennae needed would be located on a building or co-located on a solar panel pole. No radio repeater installation is anticipated, favoring satellite phone instead if radio reception is not possible.
- Hut keepers will be required to have first aid training from a certifying agency such as Wilderness Medical Associates. Wilderness Advanced First Aid/CPR training, or reasonable equivalent, will be the minimum requirement. Wilderness First Responder certification or greater is preferred.
- Summer hut keepers will have bear awareness training.
- Winter hut keepers will be required to have a minimum of Level I Backcountry Avalanche Hazard Evaluation and Rescue Techniques training offered by the Alaska Mountain Safety Center or equivalent level I certification through the American Avalanche Association.

In emergencies, the hut buildings and hut keepers will seek to:

- Provide initial response/first aid to persons known to be in need of aid if those persons are (a) at the hut, (b) known to be nearby on the trail system, (c) at a known nearby off-trail location.
- Assist in coordination of hut and trail users for emergency response when necessary, including data gathering from hut and trail users ('last seen' information).
- Likely make the first contact to State Troopers (and through them to other emergency officials such as Forest Service, Alaska Mountain Rescue Group, Life Flight/air ambulance, etc.).

- As appropriate, provide interim search and rescue coordination for lost persons (location and route not known) pending arrival of formal search and rescue groups.
- Be a base of operations, allowing use of the huts by more highly-trained emergency responders, for coordination and organization of all responders (sometimes multiple agencies).
- Share hut communications and emergency equipment as available, although it is assumed that search and rescue groups would arrive fully prepared with their own equipment.
- Accommodate people without reservations who are in need of warmth/shelter for their health and safety. A system will be in place for charging a fee to these people, to help ensure this is not abused.

Equipment. At all times, even when no hut keeper is present, Alaska Huts will endeavor to make available the following equipment. However, Alaska Huts cannot guarantee that these items will be available and in working order.

- Safety equipment such as fire extinguishers, smoke alarm and CO detector.
- Safety instructions concerning use of combustion appliances and other hut systems.
- Survival equipment stored in the main building and outbuilding (in case of structure fire).

Huts during staffed periods will have available:

- First aid kit commensurate with Wilderness First Responder level of training.
- Stretcher / rescue sled
- Communications equipment.
- In winter, extra shovels and avalanche probes for use by any trail users called into a rescue situation, in case they do not have adequate equipment of their own.
- Rescue pack—first aid kit, sleeping bag, pad, tarp or tent, stove.
- Bear spray and deterrents (not firearms).

Firearms and Other Safety/Emergency Issues

- Huts will be supplied with trigger locks; anyone entering a hut except on-duty law enforcement officers will be required to use the trigger lock and place firearms in a designated closed area.
- Hut keepers or volunteers who already have a high level of experience and who have safety training (i.e. from National Rifle Association or ADF&G) in firearms may be allowed to have firearms at the huts. A trigger lock must be used when the gun is stored. However, firearms will not be a requirement for hut keepers. The number of people at huts and sturdy construction are expected to deter bears. Should a bear become a problem, experts will be called in for active hazing and deterrence (rubber bullets and other non-lethal methods)
- Contingency planning for wildfire, earthquake, extraordinary weather, volcanic ash fallout, and bridge washout/ trail flooding are expected to be part of hut operating plans.

4.6 Human Waste

A commercial composting toilet system, such as the Pheonix Composting Toilet, will be installed in each hut. Two stools (two bathrooms or stalls) will be connected to the compost

tank. Because of Alaska's cool climate, the tanks will be installed in enclosed and insulated areas, and propane heat will be available when needed to keep the composting tank above 50 degrees Fahrenheit. Because of the application of heat, the composting process is expected to be efficient and to result in humus that is virtually pathogen free. The composted material will be transported manually (wheelbarrow) and spread manually (wide spread; flung) on the surface. This will be done as necessary, assumed to be once per year or less, at a location at least 200 ft from water. Based on input from Forest botanists, locations may be designated to avoid "over-fertilizing" certain plant communities.

During the "Winter" season, when use is low, the compost toilet will be allowed to freeze and the tank to serve only as a holding tank. During "Spring Ski" season, the tank would be warmed and composting re-started.

4.7 Solid Waste

Staffed huts during staffed periods at huts where food is provided will dispose of solid waste as outlined below, subject to further approvals by the Alaska Department of Environmental Conservation.

- Reduce packaging before shipping items in.
- Burn paper/paperboard/cardboard/wood packaging in hut stove, sauna stove, or covered outdoor burn barrel at least once per week.
- Dispose of woodstove, fire ring, and burn barrel ash first in compost toilet, as a compost aid, and then in a widespread surface dispersal method in areas greater than 200 ft from facilities and use areas and greater than 200 ft from water.
- Wash and crush aluminum cans—store in secure location.
- Wash and flatten steel cans—store in secure location.
- Wash glass—store in secure location.
- Fly out aluminum, steel, glass as backhaul during re-supply events for recycling
- Non-meat/fat organic food waste—compost in composting toilet.
- Meat and fat—small amounts of waste anticipated. Burn very small amounts in burn barrel. Otherwise carry out via guests and staff.
- Spent AAA, AA, C, D, and other small batteries—carry out via guest or staff.
- Old paint/paint thinner/petroleum products/large solar system batteries/hazards—store and fly out once per year and dispose of at waste facility.

At huts during self-serve periods (no hut keeper), solid waste disposal will operate mostly on a pack-it-in/pack-it-out principle:

- Encourage reduced packaging before setting out.
- Stove available for burning basic paper packaging.
- Everything hut users bring in—Pack it in; pack it out.
- Extra items left will be disposed of by hut volunteers or staff by methods listed above as appropriate.
- Larger, non-burnable maintenance waste and hazardous material used for maintenance—store securely and fly out as backhaul during re-supply.

4.8 Water Use and Disposal

Drinking Water

Water issues are addressed here and under the descriptions of hut features, above. All hut sites include a surface water line running from a stream to the hut or outbuilding. The water line, once placed, is anticipated to be virtually invisible in most locations because of tall grass and seasons worth of fallen grass. Inconspicuous marker stakes may be placed on occasion at valve locations used for draining the line.

Mills Creek Site—Source: Stormy Creek surface water. Clear water from persistent snow fields and possibly core of rock glacier. Watershed is small (3 sq. mi.). No upstream development in watershed. Waterline intake is anticipated at major bend of Stormy Creek. Surface water line 1,300 feet long to hut water tank. Stormy Creek may not run all winter, or may not be reasonably available in winter. Snowmelt is anticipated for any winter use.

Ohio Creek—Source: Ohio Creek surface water. Clear, possible light silt, from persistent snow and hanging glaciers. Watershed is small (4.5 sq mi). No upstream development in watershed. Winter usefulness not known but flow is likely year round. Water line anticipated to be 1,300 feet.

Center Creek Valley—Source: Surface water from unnamed tributary of Center Cr. Clear water, likely with light silt, from persistent snow and small hanging glaciers. Watershed is about 1.5 sq. mi. Some flow likely year round. A summer water line is anticipated to deliver water to hut water tank. The intake would be located 250 feet upstream on the tributary at approximately the point the tributary exits a canyon. Center Creek is farther away but has definite flow year round and may be useful in winter, in combination with snow melt. No development in watershed.

Center Creek Pass—Combination of sources: (1) Rainfall catchment from hut roofs, with tank; (2) surface water via 400 ft water line from small stream off north end of pass area (north of hut and pond)—may not run in dry weather, so water storage may be larger than other huts; (3) use of pond water. Winter water source will be snow melt.

The aim is to keep water use low. Water conservation is part of the hut education program. Therefore, water will be hauled from the water storage tank for use in the hut. No running water is anticipated to be provided at sinks in the huts. This will keep water use, and resulting wastewater quantities, low—estimated to be less than 60 gallons per day at full hut capacity, well under the 180-gallon per day limit on certain gray water treatment options outlined by Alaska Department of Conservation (see attachments).

Waste Water

Wastewater issues are discussed here and under features of the hut sites, above. Water will be conserved, and water conservation will be part of the education program at huts. For example, dishwashing will include the following steps (a) scraping clean; (b) initial dirty water rinse (leave

only minor film); (c) hot water wash with soap; (d) hot water rinse; (e) bleach water rinse. Steps a and b are designed to eliminate the need to use large quantities of water in c, d, and e.

The composting toilet will evaporate most urine. Small amounts of residual leachate from the compost toilet will drain to a single hut site drain field. This leachate is not expected to contain solids and therefore is not expected to require solids removal.

Sink gray water from the kitchen will be dealt with differently during different seasons. Whenever the compost toilet is in operation, some gray water will be used as necessary to irrigate the compost. In summer and spring skiing season, remaining gray water will be collected and routed through a filter if necessary to a small drain field per Alaska Department of Environmental Conservation requirements (see attached diagram and description). There are not expected to be ample soils for this at Center Creek Pass, so soils for a small drainage system will be imported if necessary as part of the construction process. The gray water line from kitchen sinks will be buried between the hut and the drainage field.

During winter, when the hut is not staffed and use is low, the drain system will be unhooked and water will drain into a bucket. Hut users will be directed to empty the bucket either by spraying over a designated (large) snow area or by dumping into a snow hole (a concentrated area) depending on the site characteristics and permit stipulations. This is the same as methods used at Forest Service campgrounds and public use cabins, with the addition of some direction to users.

Concepts for the drainage system are outlined in attached DEC publications, along with a note regarding sizing of the drainage area at an estimated 40 square feet.

Master Development Plan for Huts

Attachment—Recorded Precipitation in Areas Surrounding Hut Sites

MONTHLY PRECIPITATION AVERAGES: 1971 - 2000 (inches)

SNOTEL SITE NAME	ELEV.	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
GRANDVIEW	1100	7.1	6.6	7	6.4	6	5.4	4.5	4.2	3	2.4	3.4	6.9	63
SUMMIT CREEK	1400	4.2	3	2.6	2.7	1.8	1.8	1.6	2	1.2	2.2	2.6	4.4	30.2
TURNAGAIN PASS	1880	7	5.2	8	7.9	5.1	5.6	6	4.1	2.6	2.5	4.3	7.5	66.8

Precipitation in the table above is all snowfall and rainfall expressed in water equivalent

SNOW LOAD INFORMATION

SITE	ELEV Feet	MAX SWE inches	WEIGHT lbs/sq ft	DEPTH inches	YEAR	YRS
						REC
Bertha Creek	950	37	192.4	82	1988	36
Grandview	1100	62.9	327.08	127	1988	25
Kenai Summit	1390	23.9	124.28	70	1980	36
Pass Creek	1200	17	88.4	53	1980	27
Summit Creek	1400	17.3	89.96	52	2001	16
Turnagain Pass	1880	68.5	356.2	159	2001	24

SWE=snow water equivalent

YRS REC=years of record from which this maximum was taken

Data compiled June 2005 by Larry Rundquist
from USDA National Resource Conservation Service web sites: <http://ambcs.org>.