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$\gamma_b \Delta^c \dot{\gamma} \cap \sigma^b \quad \wedge c_n \nabla^{\gamma_b \gamma_\sigma \nabla n \nabla^a l^a \sigma^b}$

Barrel Shed Remediation and Replacement Project Summary. The Barrel Shed is located at the Lake Hazen Camp in Quttinirpaaq National Park on Ellesmere Island, Nunavut. The closest community is Grise Fiord approximately 600km away. Parks Canada wants to document and dismantle the Lake Hazen Barrel Shed and remove the barrels from the park and to install a storage unit that meets health and safety and storage requirements of the site. Some large pieces of equipment, ie) engine and bulldozer blade beside the barrel shed will also be removed and taken out of the park for disposal. The existing barrel shed is a risk to staff occupational health and safety as it is a confined space. Fuel vapours from the barrels cause poor interior air quality and the irregular shape of the structure makes it difficult to organize and locate items. There is no ventilation, no windows, or lighting in the structure. The barrel shed was constructed in the 1960's by the Defence Research Board and is designated as a cultural resource by the Parks Canada Agency. As such a Cultural Resource Impact Assessment will be conducted and determine appropriate measures to document the structure prior to it being dismantled. The shed skin will be removed. Barrels will be unstacked using a manual barrel hoist and emptied on site the level the footprint of the shed or airstrip. Empty barrels will be flown out of the park for disposal. Foot print will be levelled. A small amount of soil from the barrels is contaminated with fuel. The contaminated soil will be deposited into the existing land farm for treatment. Materials and equipment flying in and out of the park will be shuttled from the site to the airstrip by snowmobile and qamutik, UTV or ATV and trailer. Currently, all other structures in camp are at capacity, a new shed will be erected on a new foot print. The new shed will act as cold storage for food, equipment, and non-burnable waste until it can be flown out. The approximate footprint of the barrel shed is 8.5m x 5.0m. The new shed will be approximately 4.5x4m and will have wood footings and a plywood floor. The project will begin in May of 2021 and is expected to take place between May and August annually until 2023. However, it may take additional seasons to fly out the remaining empty barrels. Staffing levels are estimated at 2 park staff with 15 days on site, and 2 field unit staff, with 10 days on site in 2021 and 2022. Successive years will only require regular staffing of the camp. Existing infrastructure at the Lake Hazen camp (ie kitchen with water and grey water systems, sleepers, toilets and incinerator) will be used by staff conducting work on site. Black human waste and burnable garbage are incinerated on site via an industrial diesel fired unit. Non-burnable garbage is packed and stored in animal proof containers / buildings until it can be flown out. All personnel, materials, equipment and waste that cannot be managed on site are brought in and out of camp by twin otter fixed wing plane or helicopter. Lake Hazen camp is a Zone 3 site that allows for mechanized travel. Snowmobile and qamutik, ATV/trailer or UTV will be used to shuttle materials around camp, to and from the airstrip and landfarm. A gantry crane and chain hoist will be used to remove the top layer of barrels to the ground and extract the ground level barrels. A grinder may also be required to cut large/heavy pieces of old equipment into manageable sizes to remove them by plane. (ie: bulldozer blade, engine and push frame). Empty Barrels will be flown out to Resolute Bay where they will be cleaned, crushed and sent for disposal. The Quttinirpaaq Joint Park Management Committee voted in favour on February 14 2017 and was on site in 2018 and supports the removal of the barrel shed and the construction of a smaller, safe storage shed.

▷ΔΑΝΟC: NA

[illegible]

Post-Closure Phase: from to

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Inuktitut	Iñuktitut	Pitme't	Dinag'at	Aqummit	Nunavut
Lake Hazen Camp - Quttinirpaaq National Park	Site Cleanup/Remediation	Crown	The Barrel shed and the replacement shed are within a Zone 3 area within the existing footprint of the camp. Lake Hazen Camp was constructed by the Defence Research Board in the 50's. The Site was sampled in the late 90's and remediation of contaminated soils was completed on site in the early 2000's. The existing landfarm was constructed for this purpose and will be used to remEDIATE the naphtha contaminated soils from the barrel shed.	The barrel shed has been designated as a cultural resource, by Parks Canada. A Cultural Resource Impact Assessment will determine how best to document the resource prior to its removal. It is located beside another cultural resource building; an Attwell Shelter installed by the Defence Research Board. Removal of the barrel shed will not effect the Attwell Shelter. There are a number of archeological sites in the surrounding area several kilometers away, but none in the zone 3 area of camp.	Lake Hazen Camp is in Quttinirpaaq national Park. The closest community of Grise Fiord is over 600km away.
Lake Hazen Camp - Quttinirpaaq National Park	Landfarm	Crown	The Barrel Shed was constructed by the Defense Research Board out of old fuel drums. Soil samples have been taken and shown a small and localized level of naphtha contamination. The contaminated soils will be taken to the on site landfarm for remediation. We will work with the Royal Military College to determine the appropriate buffer outside of the identified contaminated area to ensure the contaminated soils are captured and placed in	There are a number of archeological sites in the surrounding area several kilometers away, but none in the zone 3 area of camp.	Lake Hazen Camp is in Quttinirpaaq national Park. The closest community of Grise Fiord is over 600km away.

			the landfarm as well as appropriate remediation measures		
Lake Hazen Camp - Quttinirpaaq National Park	Camp	Crown	Lake Hazen Camp was constructed by the Defence Research Board in the 50's. Parks Canada has used this area to support park operations and research since the 80's. It consists of a kitchen, sleeping quarters, office, toilets, outbuildings and a laboratory. These facilities will be used by the staff staying on site.	There are a number of archeological sites in the surrounding area several kilometers away, but none in the zone 3 area of camp.	Lake Hazen Camp is in Quttinirpaaq National Park. The closest community of Grise Fiord is over 600km away.
Lake Hazen Camp - Quttinirpaaq National Park	Other	Crown	The Barrel shed has been used to store equipment to support camp and park operations. Constructing a new shed of approximate 4.5x4m in size will replace the old barrel shed and used for the same purpose.	There are a number of archeological sites in the surrounding area several kilometers away, but none in the zone 3 area of camp.	Lake Hazen Camp is in Quttinirpaaq National Park. The closest community of Grise Fiord is over 600km away.

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ᓄᓇᓕᓯᓪᓐ	Liza Ningiuk	Quttinirpaaq Joint Parks Management Committee	2017-02-14
ᓄᓇᓕᓯᓪᓐ ᓄᓇᓕᓯᓪᓐ	Tabitha Mullin	Quttinirpaaq Joint Parks Management Committee	2017-02-14
ᓄᓇᓕᓯᓪᓐ	David Kooneeliusie	Quttinirpaaq Joint Parks Management Committee	2017-02-14
ᓄᓇᓕᓯᓪᓐ	Liza Ningiuk	Joint Quttinirpaaq Park Management Committee	2018-06-26
ᓄᓇᓕᓯᓪᓐ ᓄᓇᓕᓯᓪᓐ	Tabitha Mullin	Joint Quttinirpaaq Park Management Committee	2018-06-26
ᓄᓇᓕᓯᓪᓐ	Ludy Pudluk	Joint Quttinirpaaq Park Management Committee	2018-06-26

$\epsilon \Delta^{\alpha} j^{\beta} \wedge J^{\alpha} e^{\beta} \dot{D} \dot{n} \llcorner^{\alpha} r^{\beta} C D P L \downarrow^{\beta}$

$a^b r^c \sigma^d \wedge c^e d^f \delta \sigma^g \gamma^h$  በበፍጋቦ:

## North Baffin

$\epsilon \Delta^{\frac{1}{2}} j^c \wedge J^{\flat} e_D \dot{n} \lrcorner R^{\flat} r^b C D P L \downarrow^c$

[illegible]

### Project transportation types

Transportation Type	How Access Is Made To The Site	Length of Use
Air	All access to Quttinirpaaq is by air. Staff, materials, equipment and waste are transported by Twin Otter, DC3 or Helicopter	
Land	Materials and equipment flying in and out of the park will be shuttled from the site to the airstrip by snowmobile and qamutik, UTV or ATV and trailer.	

### Project accomodation types

## Permanent Camp

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Λ<sup>9</sup>D<sup>c</sup> Δ<sup>8</sup>Γ<sup>b</sup>Δ<sup>9</sup> Δ<sup>7</sup>CΔDσD<sup>a</sup>Δ<sup>6</sup> Δ<sup>5</sup>ΔCΔ<sup>c</sup>, Γ<sup>c</sup>ΔDΠ<sup>c</sup>, Ξ<sup>b</sup>ΔCΔ<sup>d</sup>, ΔσD<sup>c</sup> ΔD<sup>b</sup>Γ<sup>c</sup>

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grinder	1	12	cut up large peices of equipment for removal
UTV	1	8ftx4ft	move materials between airstrip and camp
ATV and Trailer	1	8ftx4ft	Move materials between airstrip and camp
Snowmobile and qamutik	1	2ftx16ft	move materials around camp
chain hoist	1	2x2ft	lift barrels from the shed
gantry crane	1	10x10ft	unstack barrels from the shed
hand and power tools	20	12	construct new shed

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Propane	fuel	8	100	800	Lbs	camp kitchen appliances
Diesel	fuel	6	205	1230	Liters	tent heaters and camp incinerator
Gasoline	fuel	4	205	820	Liters	fuel for atv, utv, snowmobile

$$\Delta L^{\epsilon_b} \quad \triangleleft \triangleright^{\epsilon_b} \quad C \triangleright \triangleleft \dot{L}^{\epsilon_b} \triangleright^{\epsilon_b}$$

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0	Potable water will be supplied by the existing system in camp. Usage is approx.20L per person per day. 50 person days in camp per year is 1000L. This is well within the capacity of the system.	The source is Lake Hazen.

$\triangleleft^b C d^c$ 
$$\Delta^b C d_{\sigma} \Delta^a \sigma^a$$
[illegible]

$\Delta \epsilon_{\text{NFC}}^{\text{c}} \approx \Delta \epsilon_{\text{CPL}}^{\text{c}}$

See The attached Project Description



# **Additional Information**

**SECTION A1: Project Info**

**SECTION A2: Allweather Road**

**SECTION A3: Winter Road**

**SECTION B1: Project Info**

**SECTION B2: Exploration Activity**

**SECTION B3: Geosciences**

**SECTION B4: Drilling**

**SECTION B5: Stripping**

**SECTION B6: Underground Activity**

**SECTION B7: Waste Rock**

**SECTION B8: Stockpiles**

**SECTION B9: Mine Development**

**SECTION B10: Geology**

**SECTION B11: Mine**

**SECTION B12: Mill**

**SECTION C1: Pits**

**SECTION D1: Facility**

**SECTION D2: Facility Construction**

**SECTION D3: Facility Operation**

**SECTION D4: Vessel Use**

**SECTION E1: Offshore Survey**

**SECTION E2: Nearshore Survey**

**SECTION E3: Vessel Use**

## SECTION F1: Site Cleanup

Approximately 100 old fuel barrels will be removed from the park. Contaminated soils from the structure will be remediated in the existing landfarm on site. Several large old pieces of equipment ie) push bar, engine and bulldozer blade will be removed from the park.

## SECTION G1: Well Authorization

## SECTION G2: Onland Exploration

## SECTION G3: Offshore Exploration

## SECTION G4: Rig

## SECTION H1: Vessel Use

## SECTION H2: Disposal At Sea

## SECTION 11: Municipal Development

[illegible]

Lake Hazen Camp consists of the barrel shed, laboratory, fuel shed, 2 sleepers, office and toilets. The Barrel shed and the replacement shed are within a Zone 3 area within the existing footprint of the camp. Lake Hazen Camp was constructed by the Defense Research Board in the 50's and has been used by Parks Canada and researchers since the 80's.

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The Barrel Shed is approximately 80m from the shore of Lake Hazen. A small seasonal stream also runs behind it <50m away. Lake Hazen is an important habitat for Arctic char, Peary Caribou and Polar Bear are present in Quttinirpaaq National Park. No Known denning or calving grounds are in the immediate area of the camp. The Lake Hazen thermal oasis is used by many bird and waterfowl species to nest and raise young. Many bird species use the immediate surrounding area however none are known to nest in camp. On occasion some adults with chicks wonder thru camp. Muskox are common in the area.

[illegible]

There are a number of archeological sites and areas of importance to Inuit along the shores of Lake Hazen but none in the zone 3 area of camp.

### Miscellaneous Project Information

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The removal of the barrel shed is an impact because it is a cultural resource. Mitigations will be determined thru a Cultural Resource Impact Assessment by Parks Canada to identify how best to document the heritage value prior to its removal. The Lake Hazen Camp was established in the 50's and has been used ever since. The camp area is primarily sand and has some compaction around buildings and walkways. One trail from the airstrip to the camp and one trail from camp to the fuel cache, landfarm and incinerator area on the other end of the airstrip are used to minimize disturbance and compaction in additional areas. Aircraft must fly at a minimum height of 2000ft when in the park to avoid wildlife disturbance. Dust and noise from the use of equipment to shuttle materials will be kept to

a minimum by taking the fewest trips possible and staying on the existing trails and airstrip. Low impact / Leave no Trace principles are used in camp and all staff contactors and visitors are provided with a park orientation that reviews low impact camping practices, correct behaviors to avoid and manage wildlife encounters and how to respect archeological sites.

### **Cumulative Effects**

## Impacts

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[illegible]
$$(P = \langle \text{b b d a p n r a e s b} \rangle^c, N = \langle \text{b b d s r y d c d r a e s b} \rangle^c \langle \text{c d r y d r s b} \rangle^{s b} \langle \text{d r a e s r c} \rangle^c \rceil, M = \langle \text{b b d s r y d c d r a e s b} \rangle^c \langle \text{c d r y d r s b} \rangle^{s b} \langle \text{d r a e s b} \rangle^c \rceil, U = \langle \text{b b d r l a e s r c} \rangle^{s b})$$

1 point	Lake Hazen Camp - Quttinirpaaq National Park
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