STATE OF ALASKA
Application for Permits to Mine in Alaska (APMA)

☐ Single Year ☑ Multi-year - Start: 2019 Finish: 2024 APMA (District/Year/Number): 5690

What type activity are you planning to perform? (1)		Surface estate of mineral properties: (2)	
☐ Exploration/Reclamation	☐ Access Equipment	☑ State (General)	☑ State (Mental Health)
☐ Mining/Reclamation	☐ Suction Dredge	☐ Private (Patented)	☑ Federal
☑ Hardrock Exploration/Reclamat	☐ Reclamation	☐ Private (Native Corp.)	☐ City or Borough

Mineral Property Owners: (3) Company name and contact name if applicable	Lessee: (4) Company name and contact name if applicable	Operator: (5) Company name and contact name if applicable
Alyu Mining Inc., Haines Mining & Exploration Inc.	Constantine North Inc.	Constantine Mining LLC
Mailing Address for official correspondence: PO Box 130, Haines, AK, 99827	Mailing Address for official correspondence: Suite 320, 800 West Pender Street Vancouver BC, V6C 2V6	Mailing Address for official correspondence: Suite 320, 800 West Pender Street Vancouver BC, V6C 2V6
Home phone# (winter): 541-785-3543	Home phone# (winter): 604-629-2348	Home phone# (winter): 604-629-2348
Work phone# (winter): 541-785-3543	Work phone# (winter):	Work phone# (winter):
Home phone# (summer): 541-785-3543	Home phone# (summer): 604-629-2348	Home phone# (summer): 604-629-2348
Work phone# (summer): 541-785-3543	Work phone# (summer):	Work phone# (summer):
Cell/Satellite:	Cell/Satellite: 604-789-6043	Cell/Satellite: 604-789-6043
FAX: 907-766-2613	FAX:	FAX:
E-mail: none	E-mail: allegra@constantinemetals.com	E-mail: allegra@constantinemetals.com
Winter contact effective dates _____ to _____. Summer contact effective dates _____ to _____.	Winter contact effective dates _____ to _____. Summer contact effective dates _____ to _____.	Winter contact effective dates _____ to _____. Summer contact effective dates _____ to _____.

Project Name If Applicable: (6)	# of Workers: (7)	Start-Up/Shut Down: (Month/Day) (8)
Palmer Project	20-30	05/01 to 10/31.
Mining District: (9)	Applicable USGS Map: (10)	On What Stream Is This Activity? (11)
Juneau Office, Haines Recording District	Skagway B4	Klehini River - 2 miles away

Legal Description of mineral properties to be worked and other projected related activities (MTRS): (12)

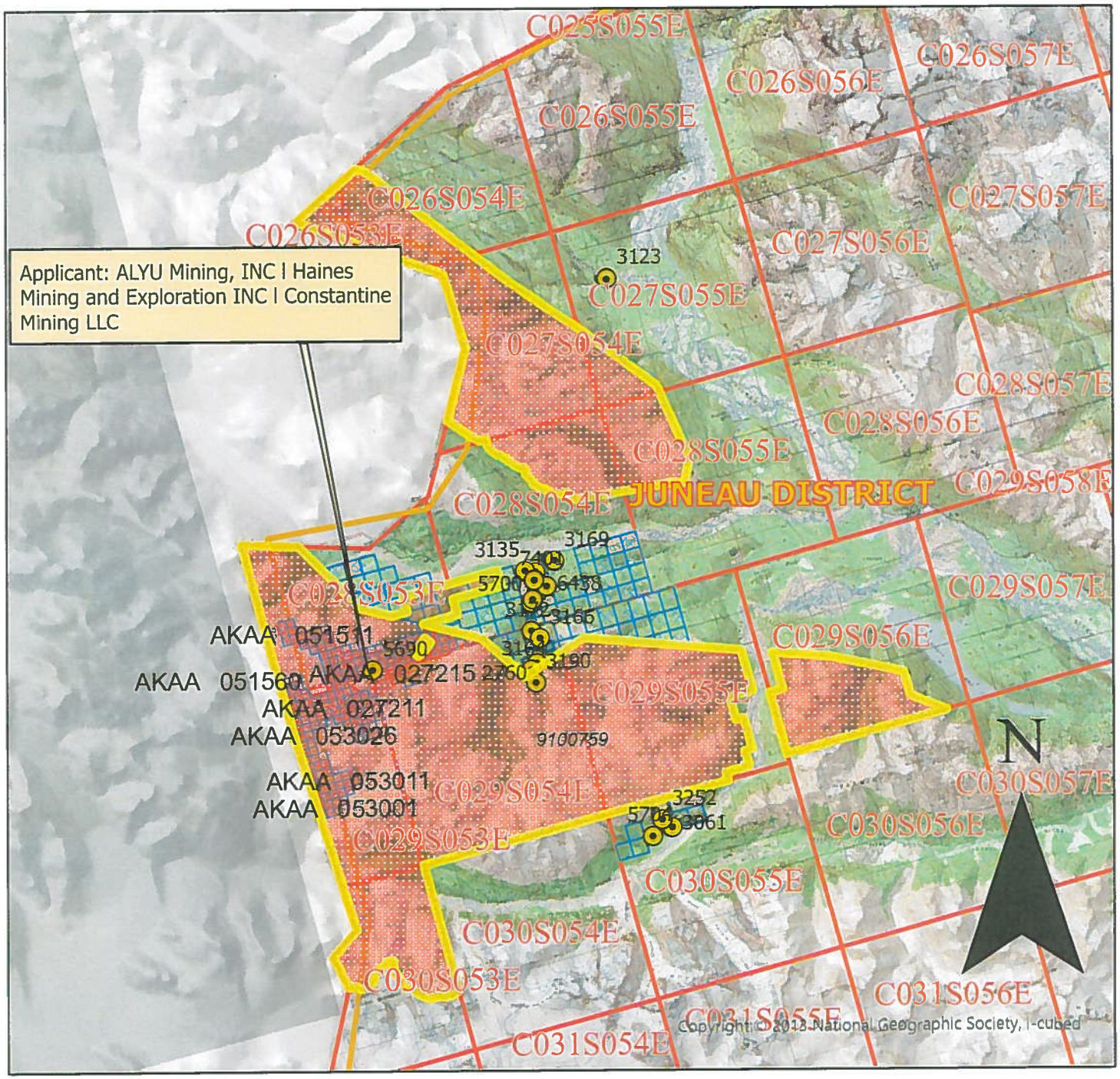
Copper River Meridian - Township 28S: R53E SEC25, 33, 34, 35, 36, R54E SEC 30;
Copper River Meridian - Township 29S: R54E SEC 5, 6, R53E SEC 1, 2, 3, 12, 15

Internal Use Only:

Date Application Received Complete: _____ Adjudicator: _____ LAS Entry: _____

CID: _____ CID: _____ CID: _____

APMA 3131 Active Area



This map was created on 5/1/2023 by the Alaska Department of Natural resources as a courtesy to supplement the application received. This map displays a graphical illustration only. Source documents remain the official record.

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APMA Type

Scale: 1:292,477

- Hardrock Exploration
- Mechanical Placer Mining
- Suction Dredge / Dredging
- Federal Mining Claim
- Permit Lease ME Poly

0 3.5 7 Miles

Center: 136°12'10"W 59°25'47"N

State Mining Claims

CASE_ID	CSTMRNM	SPCLCDDSCR	CSSTTSDSCR	CLAIM_NAME	NTPSTDT	RFRSHDT
ADL 661284	Constantine North, Inc	Mining Claim (MC)	Active (35)	JARVIS 18	27-Sep-07	4/29/2023 3:00
ADL 661285	Constantine North, Inc	Mining Claim (MC)	Active (35)	JARVIS 19	27-Sep-07	4/29/2023 3:00
ADL 661286	Constantine North, Inc	Mining Claim (MC)	Active (35)	JARVIS 20	27-Sep-07	4/29/2023 3:00
ADL 661287	Constantine North, Inc	Mining Claim (MC)	Active (35)	JARVIS 21	27-Sep-07	4/29/2023 3:00
ADL 661288	Constantine North, Inc	Mining Claim (MC)	Active (35)	JARVIS 22	27-Sep-07	4/29/2023 3:00
ADL 661289	Constantine North, Inc	Mining Claim (MC)	Active (35)	JARVIS 23	27-Sep-07	4/29/2023 3:00
ADL 661290	Constantine North, Inc	Mining Claim (MC)	Active (35)	JARVIS 24	27-Sep-07	4/29/2023 3:00
ADL 662062	Constantine North, Inc	Mining Claim (MC)	Active (35)	GE 2	30-Nov-07	4/29/2023 3:00
ADL 662063	Constantine North, Inc	Mining Claim (MC)	Active (35)	GE 3	30-Nov-07	4/29/2023 3:00
ADL 662064	Constantine North, Inc	Mining Claim (MC)	Active (35)	GE 4	30-Nov-07	4/29/2023 3:00

Federal Mining Claims

CLAIM_NUM	CLAIM_NAME	STATUS	REFRESH_DATE
AKAA 027186	#1 OF MARMOT MINE	RECORDED	4/2/2023 7:00
AKAA 027187	#2 OF MARMOT MINE	RECORDED	4/2/2023 7:00
AKAA 027188	#3 OF MARMOT MINE	RECORDED	4/2/2023 7:00
AKAA 027189	#4 OF MARMOT MINE	RECORDED	4/2/2023 7:00
AKAA 027190	MVP MINING CLAIMS #1	RECORDED	4/2/2023 7:00
AKAA 027191	MVP MINING CLAIMS #2	RECORDED	4/2/2023 7:00
AKAA 027192	MARMOT #S	RECORDED	4/2/2023 7:00
AKAA 027193	MARMOT #6	RECORDED	4/2/2023 7:00
AKAA 027194	MARMOT #7	RECORDED	4/2/2023 7:00
AKAA 027195	MARMOT #8	RECORDED	4/2/2023 7:00
AKAA 027196	MARMOT #9	RECORDED	4/2/2023 7:00
AKAA 027197	MARMOT #10	RECORDED	4/2/2023 7:00
AKAA 027198	MARMOT #20	RECORDED	4/2/2023 7:00
AKAA 027199	MARMOT #21	RECORDED	4/2/2023 7:00
AKAA 027200	MARMOT #22	RECORDED	4/2/2023 7:00
AKAA 027201	MARMOT #23	RECORDED	4/2/2023 7:00
AKAA 027202	MARMOT #24	RECORDED	4/2/2023 7:00
AKAA 027203	MARMOT #25	RECORDED	4/2/2023 7:00
AKAA 027204	MARMOT #26	RECORDED	4/2/2023 7:00
AKAA 027205	MARMOT #27	RECORDED	4/2/2023 7:00
AKAA 027206	MARMOT #28	RECORDED	4/2/2023 7:00
AKAA 027207	MARMOT #29	RECORDED	4/2/2023 7:00
AKAA 027208	MARMOT #30	RECORDED	4/2/2023 7:00
AKAA 027209	MARMOT #31	RECORDED	4/2/2023 7:00
AKAA 027210	MARMOT #32	RECORDED	4/2/2023 7:00
AKAA 027211	MARMOT #33	RECORDED	4/2/2023 7:00
AKAA 027213	MARMOT #101	RECORDED	4/2/2023 7:00
AKAA 027214	MARMOT #102	RECORDED	4/2/2023 7:00
AKAA 027215	MARMOT #103	RECORDED	4/2/2023 7:00
AKAA 027216	MARMOT #104	RECORDED	4/2/2023 7:00
AKAA 027217	MARMOT #10S	RECORDED	4/2/2023 7:00
AKAA 027218	MARMOT #106	RECORDED	4/2/2023 7:00
AKAA 027219	MARMOT #107	RECORDED	4/2/2023 7:00
AKAA 027220	MARMOT #108	RECORDED	4/2/2023 7:00
AKAA 027221	MARMOT #109	RECORDED	4/2/2023 7:00
AKAA 027222	MARMOT #110	RECORDED	4/2/2023 7:00
AKAA 027223	MARMOT #111	RECORDED	4/2/2023 7:00
AKAA 027224	MARMOT #112	RECORDED	4/2/2023 7:00
AKAA 027225	MARMOT #113	RECORDED	4/2/2023 7:00
AKAA 027226	MARMOT #114	RECORDED	4/2/2023 7:00
AKAA 027227	MARMOT #11S	RECORDED	4/2/2023 7:00
AKAA 027228	MARMOT #116	RECORDED	4/2/2023 7:00
AKAA 027229	MARMOT #117	RECORDED	4/2/2023 7:00
AKAA 027230	MARMOT #118	RECORDED	4/2/2023 7:00
AKAA 027231	MARMOT #119	RECORDED	4/2/2023 7:00
AKAA 027232	MARMOT #120	RECORDED	4/2/2023 7:00
AKAA 027233	MARMOT #121	RECORDED	4/2/2023 7:00
AKAA 027234	MARMOT #122	RECORDED	4/2/2023 7:00
AKAA 027235	MARMOT #123	RECORDED	4/2/2023 7:00
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AKAA 027237	MARMOT #125	RECORDED	4/2/2023 7:00
AKAA 027238	MARMOT #126	RECORDED	4/2/2023 7:00

AKAA 027239	MARMOT #127	RECORDED	4/2/2023 7:00
AKAA 027240	MARMOT #128	RECORDED	4/2/2023 7:00
AKAA 027241	MARMOT #129	RECORDED	4/2/2023 7:00
AKAA 027242	MARMOT #130	RECORDED	4/2/2023 7:00
AKAA 027243	MARMOT #131	RECORDED	4/2/2023 7:00
AKAA 027244	MARMOT #132	RECORDED	4/2/2023 7:00
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AKAA 027273	MARMOT #161	RECORDED	4/2/2023 7:00
AKAA 027274	MARMOT #162	RECORDED	4/2/2023 7:00
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AKAA 027279	MARMOT #171	RECORDED	4/2/2023 7:00
AKAA 027280	MARMOT #172	RECORDED	4/2/2023 7:00
AKAA 029575	RAT DAWG #43	RECORDED	4/2/2023 7:00
AKAA 029576	RAT DAWG #44	RECORDED	4/2/2023 7:00
AKAA 029577	RAT DAWG #53	RECORDED	4/2/2023 7:00
AKAA 029578	RAT DAWG #54	RECORDED	4/2/2023 7:00
AKAA 029579	RAT DAWG #55	RECORDED	4/2/2023 7:00
AKAA 029580	RAT DAWG #56	RECORDED	4/2/2023 7:00
AKAA 029581	RAT DAWG #57	RECORDED	4/2/2023 7:00
AKAA 029582	RAT DAWG #58	RECORDED	4/2/2023 7:00
AKAA 029583	RAT DAWG #64	RECORDED	4/2/2023 7:00
AKAA 029584	RAT DAWG #65	RECORDED	4/2/2023 7:00
AKAA 029585	RAT DAWG #66	RECORDED	4/2/2023 7:00
AKAA 029586	RAT DAWG #67	RECORDED	4/2/2023 7:00
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AKAA 051511	JARVIS 1	RECORDED	4/2/2023 7:00
AKAA 051512	JARVIS 2	RECORDED	4/2/2023 7:00
AKAA 051513	JARVIS 3	RECORDED	4/2/2023 7:00
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AKAA 051540	ICE # 68	RECORDED	4/2/2023 7:00
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AKAA 051542	ICE # 70	RECORDED	4/2/2023 7:00
AKAA 051543	ICE # 71	RECORDED	4/2/2023 7:00
AKAA 051544	ICE # 72	RECORDED	4/2/2023 7:00
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AKAA 051546	ICE # 74	RECORDED	4/2/2023 7:00
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AKAA 051563	KIC # 6	RECORDED	4/2/2023 7:00
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AKAA 051569	KIC #12	RECORDED	4/2/2023 7:00
AKAA 051570	KIC #13	RECORDED	4/2/2023 7:00
AKAA 051571	KIC #14	RECORDED	4/2/2023 7:00
AKAA 051572	KIC #15	RECORDED	4/2/2023 7:00
AKAA 051573	KIC #16	RECORDED	4/2/2023 7:00
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AKAA 051575	HOT DAWG # 2	RECORDED	4/2/2023 7:00
AKAA 051576	HOT DAWG # 3	RECORDED	4/2/2023 7:00
AKAA 051577	HOT DAWG # 4	RECORDED	4/2/2023 7:00
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AKAA 051600	HOT DAWG #27	RECORDED	4/2/2023 7:00
AKAA 051601	HOT DAWG #28	RECORDED	4/2/2023 7:00

AKAA 052651	CLAY # 17	RECORDED	4/2/2023 7:00
AKAA 052652	CLAY # 18	RECORDED	4/2/2023 7:00
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AKAA 052661	CLAY # 27	RECORDED	4/2/2023 7:00
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AKAA 052664	CLAY # 30	RECORDED	4/2/2023 7:00
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AKAA 052671	CLAY # 37	RECORDED	4/2/2023 7:00
AKAA 052672	CLAY # 38	RECORDED	4/2/2023 7:00
AKAA 052673	CLAY # 39	RECORDED	4/2/2023 7:00
AKAA 052674	CLAY # 40	RECORDED	4/2/2023 7:00
AKAA 052675	CLAY # 41	RECORDED	4/2/2023 7:00
AKAA 052676	CLAY # 42	RECORDED	4/2/2023 7:00
AKAA 052677	CLAY # 43	RECORDED	4/2/2023 7:00
AKAA 052678	CLAY # 44	RECORDED	4/2/2023 7:00
AKAA 052679	CLAY # 45	RECORDED	4/2/2023 7:00
AKAA 052680	CLAY # 46	RECORDED	4/2/2023 7:00
AKAA 052681	CLAY # 47	RECORDED	4/2/2023 7:00
AKAA 052682	CLAY # 48	RECORDED	4/2/2023 7:00
AKAA 052683	CLAY # 49	RECORDED	4/2/2023 7:00
AKAA 052684	CLAY # 50	RECORDED	4/2/2023 7:00
AKAA 052685	CLAY # 51	RECORDED	4/2/2023 7:00
AKAA 052686	CLAY # 52	RECORDED	4/2/2023 7:00
AKAA 052687	CLAY # 53	RECORDED	4/2/2023 7:00
AKAA 052688	CLAY # 54	RECORDED	4/2/2023 7:00
AKAA 052689	CLAY # 55	RECORDED	4/2/2023 7:00
AKAA 052690	CLAY # 56	RECORDED	4/2/2023 7:00
AKAA 052691	CLAY # 57	RECORDED	4/2/2023 7:00
AKAA 052692	CLAY # 58	RECORDED	4/2/2023 7:00
AKAA 052693	CLAY # 59	RECORDED	4/2/2023 7:00
AKAA 052694	CLAY # 60	RECORDED	4/2/2023 7:00
AKAA 052945	MARMOT HOLE # 1	RECORDED	4/2/2023 7:00
AKAA 052946	MARMOT HOLE # 2	RECORDED	4/2/2023 7:00
AKAA 052947	MARMOT HOLE # 3	RECORDED	4/2/2023 7:00
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Mental Health Trust Leases

CASE_ID	CSTMRNM	CSTYPDSCRP	SPCLCDDSCR	CSSTTSDSCR	FILE_TYPE	RFRSHDT
MHT 9100759	Constantine Mining, Llc	Mineral Lease (471)	Comp Tlo Auth (4701)	Issued (35)	MHT	1/5/2023 3:00

CONSTANTINE

Amendment to Multi-Year 2019-2023 Application for Permits to Mine in Alaska #5690

April 3, 2023

Operator:
Constantine North Inc.
800 West Pender St., Suite 320
Vancouver, BC V6C 2V6
Canada

Claim Holder:
Constantine Mining LLC

Project Amendment Narrative

Submitted to:
Alaska Department of Natural Resources
Division of Mining, Land, and Water
Anchorage Office
550 West 7th Avenue
Suite 1020 Anchorage
AK 99501-3562

CONSTANTINE

Table of Contents

1.0 Summary

Constantine North Inc. ("Constantine") requests an amendment to existing APMA #5690, issued in 2019. The amendment is required for activities on State Lands, specifically geotechnical and environmental work. The planned work includes overburden drilling, monitoring well installation and geophysical (seismic) surveys. Trail access is required to facilitate these activities. The work is planned to start June 2023. All personnel will be housed on private land (at the Big Nugget Camp).

The requested amendment is detailed below. Note that the proposed work is conceptual, and exact work locations and technical specifications may deviate slightly after field fit.

2.0 Proposed Activity Area

State Claims

Work is planned on nine State Claims within Constantine's State Claim Package north and south of Glacier Creek, in two primary activity areas respectively named the "Plateau" and "Klehini" sites (Table 1 and Figure 1). Appendix A provides proposed drillholes locations.

Table 1 List of Claims that have disturbance proposed

Claim Name	Claim Number	Claim Owner
GE2	662062	Constantine Mining LLC
GE3	662063	Constantine Mining LLC
GE4	662064	Constantine Mining LLC
JARVIS 18	661284	Constantine Mining LLC
JARVIS 19	661285	Constantine Mining LLC
JARVIS 20	661286	Constantine Mining LLC
JARVIS 21	661287	Constantine Mining LLC
JARVIS 22	661288	Constantine Mining LLC
JARVIS 23	661289	Constantine Mining LLC
JARVIS 24	661290	Constantine Mining LLC

Land Management and Timber Sale

Constantine's State Claim package includes a portion of the Haines State Forest Resource Management Area, administered by DNR-Forestry. Proposed activities at the Klehini site overlap with small tract timber sale plots operated on by local logging businesses. This area is bisected by Porcupine Road and has some substantial trails already in place. Proposed activities at the Plateau site overlap with the "Baby Brown" timber package sold to NWFP Inc. in 2021. This includes 12 miles of yet-to-be built road and two bridge crossings to access 13 timber units (Figure 2).

Constantine has been working with the local Haines State Forester to ensure compatibility with the Haines State Forest Management Plan and that there is limited and positive impact to proposed and ongoing logging operations in the area. Access trails proposed by Constantine in this document overlap proposed timber roads where

feasible. Additionally, impacts have been avoided to areas identified as important to the State Forest (Climate change study block and Inventory stands; Figure 2).

According to the Haines Borough 2025 Comprehensive Plan (2012), Constantine's proposed activities fall within the Resource Development area as designated in the Plan's Future Growth Maps. The Resource Development Land Designation is for land where resource development, extraction or harvest activities occur or are reasonably expected, including uses such as timber harvest, mineral extraction, and quarries.

3.0 Description of Work

Constantine plans to expand geotechnical and environmental work to the north and south of the confluence of Glacier Creek with the Klehini River. Two areas of interest have been identified and are termed the "Plateau" and "Klehini" sites (Figure 1). The planned work includes seismic refraction surveys, overburden drilling, monitoring well installation and various hydrogeology studies. This work will determine soil conditions, depth to bedrock and further characterize the hydrogeological environment.

Equipment

A list of equipment that will be used for the proposed work is provided in Table 2 below.

Table 2 List of Equipment needed to support proposed work

Quantity	Equipment	Purpose
1	Helicopter – AS350B2 or AS350 B3e	Transport personnel, equipment, and fuel
1	Sonic track mounted drill (350 HP)	Drill for overburden drill program
1	Track mounted crawler transport (350 HP)	Support vehicle for overburden drill
1	Bulldozer (Cat D5 or similar200 HP)	Trail / pad clearing and reclamation work
1	Excavator (Cat 320 or similar 300 HP)	Trail / pad clearing and reclamation work
1	Skidder (John Deere 648 or similar 250 HP)	To move & deck felled timber
1	small brusher Bobcat 70 (90HP)	To clear seismic lines
2-3	4x4 Pick up trucks 1 and ¾ ton	Transport personnel, equipment and fuel
1-3	ATVs and/or Side by Sides	Transport personnel
1-2	Honda 10 hp water pump 2-inch discharge (or similar)	Pump for water withdrawal to support sonic drilling

Site Access

Trail access to the seismic study areas drill sites will be required to mobilize the track-mounted drill and support vehicles. An estimated total of 5.6 miles (9 km) of new trail is required to access the areas of interest and conceptual drill sites (Figure 3). Earthworks are scheduled to begin in early June, with the Klehini site targeted first.

Plateau Site

Initial access to the Plateau site to support preliminary brushing and environmental work will be helicopter supported. Temporary helicopter landing zones will be brushed to provide safe access.

To provide support for the overburden drill program, approximately 3.7 miles (6 km) of access trails will need to be created using bull dozers and excavators to achieve access to the Plateau and drilling sites from the existing legacy logging roads (see Figure 4). The primary proposed access trail is approximately 1.3 km in length at a maximum gradient of 12% and a maximum total width of trail surface of 25 feet (7.5 m). This trail proceeds on a similar route as the proposed logging road to access State of Alaska DNR Forest Service Baby Brown timber sale

units U701 and U702. Trail routing was designed to accommodate future logging roads already proposed to access the Baby Brown U8 timber sale.

Secondary access trails will be generated once on the topographic plateau to the designated sonic drilling sites. These trails are designed at a maximum 25 feet (7.5 m) in width and horizontal to vertical incline gradients of up to 30%. As these trails are more temporary, higher gradients have been accepted.

Reinstallation of a bridge across Glacier Creek at existing abutments is being evaluated as a component of the Baby Brown Timber harvest (see Figure 2). There is active planning taking place with support of the Haines State Forest authority for planning this option, *however the bridge may not be installed in time for the proposed activities*.

If the forestry bridge is not installed, heavy equipment with spill kit and leak protective measures will ford across Glacier Creek as needed and logistics will be helicopter supported. The Glacier Creek crossing site is noted on Figure 4. Estimated co-ordinates for the crossing are listed in the Stream Crossing section (Table 3).

Klehini Site

General access to the Klehini site is via an existing Haines State Forestry Road. Approximately 2.7 miles (4.3 km) of access trails will need to be generated to the respective drill sites (Figure 5). Trails have been designed to start from the closest point to existing roads and trails to minimize disturbance. All trails are designed at a 25 feet (7.5 m) maximum disturbance width, with no significant gradients expected.

Overburden Drill Pads

A track-mounted sonic drill rig (or similar) will be used to conduct the overburden drilling (Photo 1). Access to the drill pads will be via trails primarily cleared by heavy equipment, which will also be used to clear and level drill pad sites. Where practical clearing may only be brush clearing and ground disturbance by excavation will be minimized.

Each drill pad will be roughly 30 ft x 100 ft (9 x 30 m) and located on the trails where possible.

Drillholes and Monitoring Wells

An estimated 51 total drill holes are planned at the Plateau and Klehini sites. Approximate latitude and longitude of these preliminary drill hole locations are presented in Appendix A.

Overburden drillholes will be advanced via a sonic drill rig, generally using 4" (102 mm) inner diameter core barrel and 6" (152 mm) outer diameter casing. The bulk of these holes will be unlined and will collapse after the required samples are collected. The top of abandoned holes will be plugged with bentonite clay or grout.

Holes identified for an environmental monitoring well are drilled through unconsolidated till and fluvial deposit. The wells produce a 5-inch hole, approximately 65 - 265 ft (20 - 80 m) deep, and a schedule-80 PVC well is installed. A well consists of a pre-packed well screen (usually 20-slot) and a silica sand filter pack installed within the annulus between the screen and hole wall (Figure 8). A bentonite seal is installed above the filter pack near surface to prevent surface water from entering the well. The well opening is protected by a metal monument (see Photo 2 for example). Nested shallow and deep wells may be installed at select sites. Prior to abandonment, the wells will be plugged and capped. An estimated 8-10 monitoring wells are planned to be installed.

Photo 1 Track Mounted Sonic drill rig (Palmer Project, 2021)

Photo 2 Example of Environmental Monitoring Well (Palmer Project, 2021)

Seismic Survey

A shallow seismic refraction survey is scheduled to take place from June 25th to mid August 2023. The purpose of the work is to broadly map overburden depth and bedrock type, with results calibrated by the overburden drilling program. Logic Geophysics & Analytics LLC (Anchorage, AK) has been retained for the work.

Site Access

Seismic work is planned for both the Plateau and Klehini sites. Roughly 5.24 miles (8.4 km) of seismic work is planned. Prior to the seismic survey, lines must be cleared of vegetation prior to allow access for data collection (see Photo 3 for example of cleared line). These lines will be surveyed and will be brushed roughly 5-15 feet (1.5-4.5 m) wide by hand or a mechanical brusher with the intended goal of minimizing ground disturbance. Minimal earthwork is expected for geophysics lines. Once cleared, the geophysics team will access work points along the brushed lines by foot. Helicopter support may also be required for deployment of personnel and mobilization of equipment.

Seven lines will be cleared to facilitate the seismic survey at the Plateau site (for a total of 2.74 miles or 4.4 km), and four seismic lines will be cleared at the Klehini Site (total length of 2.5 miles or 4.0 km); see Figure 4 and Figure 5).

Survey Methods

Along each cleared line geophones will be placed at strategic intervals (Photo 4). Seismic energy will be provided from small explosive charges buried in hand-excavated shot holes. Explosives will be transported by helicopter, truck and by hand. A licenced blaster will be on site to supervise the transportation, handling, and detonation of the explosives. Explosives will be buried prior to initiation to produce the most effective signature. Minimal surface disturbance is expected due to the explosives due to the ½ pound charge size and the fired charge being buried to a nominal three-foot depth. A video showing an example of a fired charge has been included with this submission package (Appendix B).

Explosives

Blast Schedule

The seismic work is planned from June 25th to roughly mid-August. Seismic surveys will occur after line brushing is completed.

The cables are laid out, geophones are planted, and 12 to 15 shot holes pre-dug along the line. The crew then plants and sets off each charge sequentially along the line. Depending on site conditions and access, there will be one or two shooting windows during the field day, each window from 1 to 2 hours, likely late morning and mid-afternoon.

Blast Design

Zero-delay electric detonators will be used to set off the charges. Typically, the smallest 10-foot leads are used, but contractors can use longer leads if those aren't available.

Cables and geophones are expected to be laid out in 755 feet (230 meter) increments. The crew will start with 5 stick off-ends [165 – 330 feet (50 to 100 m) off each end of the cables], 2 stick at end shots, and 1 stick internal shots. Each charge is triggered by one detonator. Approximate average explosives use is 5.5 pounds per 330 feet (100 m) of seismic line.

Explosive Handler & Certification

Constantine has retained Advanced Blasting Services LLC (based out of Wasilla, AK) for the handling of explosives required for the seismic studies.

The ATF Permit Number for Advanced Blasting Services is 9-AK-170-20-3K-00338. Handlers' certifications are available upon request.

All explosives handling and storage will comply with applicable state and federal regulations.

Type and Amount of Explosives

Explosive type will be ½ pound dynamite sticks. A total of 968 sticks (484 pounds) is estimated for this project. Any leftover explosives will be returned to the supplier. Storage of explosives will be on private lands.

Public Safety

- Before a charge is connected the blaster will confirm that all non-crew personnel are outside of the 330 feet (100 meter) buffer zone, and the blasting apprentice will visually confirm the immediate area is clear of personnel and wildlife.
- Every member of the trained geoscience crew will take guarding positions to ensure that no personnel or wildlife encroaches upon the blast area.

Photo 3 Example of a brushed line for seismic work (Palmer Project, 2021)

Photo 4 Geophone used for seismic data collection (Palmer Project, 2021)

4.0 Other Considerations

Timber Salvage

Constantine will not be using any marketable timber for this project. Timber salvage and staging for line and trail clearing is required as part of the expectations of State Forester. The list below describes this activity:

- Under the direction of the State Forester, fell trees in line with trail layout and buck to desired length.
- Limbed tops may be used as decking material for salvaged logs.
- A skidder will be used to move economic logs onto decks spaced at nominal ¼ mile intervals.
- Logs will be recovered at later date by timber industry interests.

Water Use

The overburden drilling requires roughly 2,000 gallons of water per 12-hour shift (for a maximum of 4,000 gallons/day). The overburden drilling and associated water use will run from mid-July to October. Water will be pumped directly to the drill or to a 1,000-gallon tank on a tracked crawler transport. The pump intake will be screened to protect fish. As the daily consumptive use will be more than 500 gallons per day for over 10 days a Temporary Water Use Authorization (TWUA) is required to support this work.

Constantine holds four active TWUA permits, authorizing water withdrawal at a total of 19 designated sites (F2021-024, F2021-025, F2019-048, F2019-049). **Constantine is in the process of amending existing Temporary Water Use Authorization F2019-048 to add three water sources to support the sonic drilling** (Figure 6). Fish Habitat Permits will be obtained from ADF&G as needed.

Wetlands

Constantine will avoid earthworks and drilling in wetlands. Wetland mapping encompassing the Plateau and Klehini areas was completed in 2017 (Figure 7). Existing mapping shows **no overlap between known wetlands and planned earthworks activities**. Constantine plans to verify wetland mapping prior to earthworks (to be completed by HDR Inc.). If new wetland areas are identified, proposed activities will be modified to avoid impacts to wetlands.

Stream Crossings

Glacier Creek

If the forestry bridge is not installed over Glacier Creek, then equipment will need to ford the creek to access the Plateau site (see Table 3 for crossing co-ordinates). To access the Plateau site, the number of stream crossings across Glacier Creek with the Sonic Drill Rig and heavy equipment will be kept to a minimum. During the months of June to October the instantaneous discharge for this location has been measured at a range of 40 cfs to 275 cfs (station name, P06, HDR Inc). Refer to the Site Access – Plateau section for additional information regarding the Glacier Creek stream crossing.

"Plateau Creek"

One small creek that runs through the Plateau site will need to be potentially crossed at five locations to allow access to drill sites (Table 3). Instantaneous discharge measured at this creek was 0.25 cfs and 0.52 cfs on August 7th 2015 and July 1st 2016, respectively (station name, P23, Integral). The number of creek crossings will be kept to a minimum, and after ground truthing the road may be re-aligned to reduced the number of crossings where possible.

Immediately prior to any stream crossing, all heavy equipment will be closely inspected for loose hose lines and leaks. All drilling and fuel handling/storage will be conducted at least 100 feet way from nearby surface water.

Fish Habitat Permits will be obtained from ADF&G as needed.

Table 3 Approximate co-ordinates of Stream crossings

Creek Name	Latitude (NAD 83)	Longitude (NAD 83)	Claim Name	Claim Number	Township	Section
Glacier Creek	59.4176287	-136.3015061	GE2	662062	T28S, R54E, CM	SEC 30, T28S, R54E, CM
Plateau Creek	59.4162758	-136.3329971	Jarvis 23	661289	T28S, R53E, CM	SEC 25, T28S, R53E, CM
Plateau Creek	59.4168543	-136.3287174	Jarvis 19	661285	T28S, R53E, CM	SEC 25, T28S, R53E, CM
Plateau Creek	59.4170696	-136.3280224	Jarvis 19	661285	T28S, R53E, CM	SEC 25, T28S, R53E, CM
Plateau Creek	59.4175798	-136.325834	Jarvis 19	661285	T28S, R53E, CM	SEC 25, T28S, R53E, CM
Plateau Creek	59.4176268	-136.3122491	Jarvis 20	661286	T28S, R53E, CM	SEC 25, T28S, R53E, CM

Fish and Wildlife Mitigation

Fish

Anadromous fish have been recorded at the fording location on lower Glacier Creek and downstream locations of the small unnamed tributary ("Plateau Creek", Figure 4.). Mitigation measures to prevent leaks from equipment will be implemented prior to stream crossings. Day-to-day logistics such as worker transfer and fuel supply will be dealt with via helicopter support.

Five seismic lines intersect with Plateau Creek. It is unknown if there are resident fish in these areas (see Figure 4). As a precaution, the geophysics contractor (Logic Geophysics) will be required to follow guidelines and setbacks while working around surface water:

- Ammonium nitrate-fuel oil mixtures will not be used in or near water.
- Shock-tubes and detonation wires are to be recovered and removed after each blast.
- Explosives shall not be detonated within, beneath or adjacent to freshwater bodies in the work area.
- For shallow hole explosive technique, the minimum offset from fish-bearing streams and lakes will be 37 feet (per 1 lb. charge)

Bears

Constantine staff and contractors operate under a Bear Management Plan with the primary objective reducing the chance of a negative human-bear interaction. The plan outlines training, the use of bear deterrents and the management of attractants. A bear guard will be used where appropriate to protect field workers. The location of bear bait stations will be identified at the start of the field season and possible hazards managed.

Eagles

Constantine operates under a Raptor Management Plan and is committed to an annual survey for Golden and Bald Eagle nesting activity prior to field work. The 2023 Raptor survey is planned for the last week of May. Information gathered from this annual survey is used to plan field activities to avoid or minimize disturbance to nesting raptors in the Project area. If an active nest is identified an appropriate buffer will be applied (0.5 miles).

Migratory Birds

The avian breeding window around Glacier Creek is April 15th to July 15th (as per USFWS). Constantine will perform avian nest surveys prior to surface disturbance to determine the presence/absence of ground or shrub-nesting

birds. If an active nest is identified during the avian breeding season a buffer will be applied in consultation with a qualified professional and disturbance will be avoided until after July 15th.

Fuel Handling

Constantine has two permitted fuel storage facilities: 1) on private land, located at the Big Nugget Camp, mile 7.2 Porcupine Road (Haines), and 2) on BLM land, located at Glacier Creek Laydown. Both facilities are registered with the DEC as Class 2 facilities and operate under a Tier-1 site-specific Spill Prevention, Control, and Countermeasure Plan (SPCCP) that meets all the requirements of 40 CFR part 112.7. Additional details regarding these sites and fueling procedures are included in the original APMA application.

Spill kits will be available for all mobile equipment. Duck ponds will be used by all mobile equipment that has the capacity to leak fluids, placed under the engine compartment. All stationary auxiliary fuel cells will have a form of secondary containment. Fuel cells will either be placed in secondary containment or have it built into their design. Mobile auxiliary fuel cells under 55 gallons will be stored in a suitable duckpond or secondary containment. Fuel storage over 55 gallons and equipment refueling will not occur within 100 feet of surface water.

Plateau site

A helicopter will sling fuel in an as need basis to all respective equipment. Fuel fly-tanks are double hulled or will be placed in secondary containment and have a capacity of ~100 gallons.

Klehini Site

Fuel will be hauled via day tanks in the back of pickup trucks to the equipment required, following all standard fuel transferring procedures.

Cultural and Archeological Site Plan

Pursuant to 43 CFR 10.4, Constantine will immediately notify the Alaska State Historic Preservation Office upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR 10.2) and will stop all activities in the vicinity of the discovery for a maximum of 30 days or when notified to proceed. Constantine will simultaneously notify local tribes, Chilkat Indican Village (CIV) and Chilkat Indian Association (CIA).

Constantine will comply with the Alaska Historic Preservation Act (AS 41.35) which prohibits the removal or destruction of cultural resources (historic, prehistoric [including paleontological], and archaeological sites, locations, remains, or objects) on land owned or controlled by the State. This includes reporting historic and archaeological sites on lands covered under contract with or licensed by the State or governmental agency of the State. Constantine will not knowingly disturb, alter, injure, or destroy any historical or archaeological site, structure, building, or object.

If paleontological resources are discovered in the performance of any surface disturbing activities, the item(s) will be left intact and immediately brought to the attention of the Alaska State Historic Preservation Office, CIV and CIA. If significant paleontological resources are found, Constantine will avoid the area, record the location, and recover data.

Macroscopic fossils have not been identified by geological mapping in areas of proposed disturbance, and the potential for discovery of paleontological resources on surface is low. If previously undiscovered paleontological resources are discovered in the performance of any surface disturbing activities, the item(s) or condition(s) will be left intact and immediately brought to the attention of the Alaska State Historic Preservation Office. If significant paleontological resources are found, avoidance, recordation, and data recovery will be required.

Constantine has a Chance Find Policy in place which is specifically covered with all site workers during orientation.

5.0 Reclamation Plan

Estimated Disturbance

Total disturbance is estimated at 19.59 acres (refer to Table 4 for detail).

Constantine has submitted 2023 bonding for proposed activities through a State-wide bonding pool for a total of 36 acres of disturbance, with 15 acres of existing and 21 acres of newly proposed disturbance (including the 19.59 acres detailed here).

Table 4 Expected disturbance area associated with proposed work.

Activity	Disturbance Area (acres)	Note
Site Access (Trails)	10.24 acres (Plateau) 5.57 acres (Klehini) *Total = 15.81 acres*	For disturbance calculation, trail width is estimated at a conservative maximum of ~25 feet with a total expected length of 3.7 miles (6 km) at the Plateau Site and 1.9 (3 km) at the Klehini Site. Total trail length is 5.6 miles (9 km).
Overburden Drill Pads	1.48 acres (Plateau) 2.30 acres (Klehini) *Total = 3.78 acres*	An estimated 51 drill holes are proposed (~20 at the Plateau Site, and ~31 at the Klehini Site); disturbance area is for 51 pads at 30 x 100 ft.
Seismic Lines	n/a seismic lines expected to be brushed by hand	~2.7 miles (4.4 km) at the Plateau Site, and ~2.5 miles (4.0 km) at the Klehini Site. Total seismic line length 5.2 miles (8.7 km).
Total	**19.59 acres**	**Reclamation of trails to be discussed with Haines State Forester.**

Disturbance Calculations

For final disturbance calculations the geometry of cleared areas is recorded by drone and then georeferenced and converted into polygons in ArcGIS. The ArcGIS geometry calculator tool is used to determine the acreage for each polygon.

Reclamation of Disturbed Areas

Reclamation is intended to return disturbed land to a level of productivity comparable to pre-exploration levels. Post-exploration land use includes wildlife habitat, hunting, and disperse recreational activities. The post-exploration land use is not expected to differ from pre-exploration land use.

Access Road Reclamation

The need for reclamation and stabilization will be reviewed with Haines State Forest authorities. There is the potential for main and secondary lines to remain open to facilitate access to marketable trees and timber resource salvage. Spur roads to drill sites will likely be reclaimed. On dozer established trails with cuts - woody debris and available topsoil will be segregated into berm or piles. This material will then be spread back over top of any regraded areas that created the debris as a reclamation aid. Reclamation activities will occur prior to the end of the 2023 field season or as agreed upon with the State Forester. If needed a seed mix will be applied to encourage growth.

Overburden Drill Pad Reclamation

Photos are taken of the site in 4 cardinal directions and from the air prior to any disturbance, after pad completion, and after site reclamation. For reclamation, all drilling-related products are cleaned up and removed. Refuse and scrap is removed from all sites, regardless of reclamation status. Any sumps will be filled and any disturbed ground will be recontoured as needed. All decisions and work are recorded. Reclamation activities will occur prior to the end of the 2023 field season.

Overburden drill sites will be covered with woody debris and available topsoil for reclamation. If needed a seed mix will be applied to encourage growth.

Drillhole Reclamation

Drillhole reclamation will comply with permits and regulations with the following goals: to prevent entry of surface water and foreign substances, to prevent artesian water from reaching surface, to prevent the physical hazard of an open hole in the ground, and to conserve groundwater.

Upon completion of drilling, management will decide whether the hole will be a monitoring well (water source, geophysical survey hole, hydrology well, etc.) or if it will be reclaimed.

For monitoring wells, both dry and those containing static water, the holes will be flagged for future reclamation. PVC will be installed to keep the hole open.

In all cases, casing will be cut to ground level, the hole will be capped with an aluminum or steel cap, and stamped with drill hole information, and reclaimed collars will be photographed in all 4 cardinal directions.

The following material may be used for reclamation (top plug) and/or the establishment of monitoring wells:

- Portland cement
- Bentonite pellets
- Silica sand

Trash Disposal

There is no change to trash disposal from the original APMA.

No sanitary facilities are established on the project site. All crews are housed off-site, on private property, and travel to and from site daily. All solid waste from site is contained and removed on a regular basis, where it is transferred to trucks and transported to the local municipal waste facility in Haines, AK. Recycling of materials from site is done when practical.

Vegetation Reclamation

There is no change to vegetation reclamation from the original APMA.

Constantine consulted with the Alaska Plant Material Center (Palmer, AK) for the optimum seed mix. The recommended mix (below) was also reviewed with both State Forest and BLM personnel, prior to application. Seed and fertilizer will be applied by hand to disturbed cut slopes and fill areas where appropriate. Elsewhere, natural revegetation will take place (e.g., slide alder).

Seed mix:

- 60% 'Norcoast' Bering hairgrass
- 30% 'Arctared' Red fescue,
- 5% Boreal yarrow
- 5% Annual ryegrass

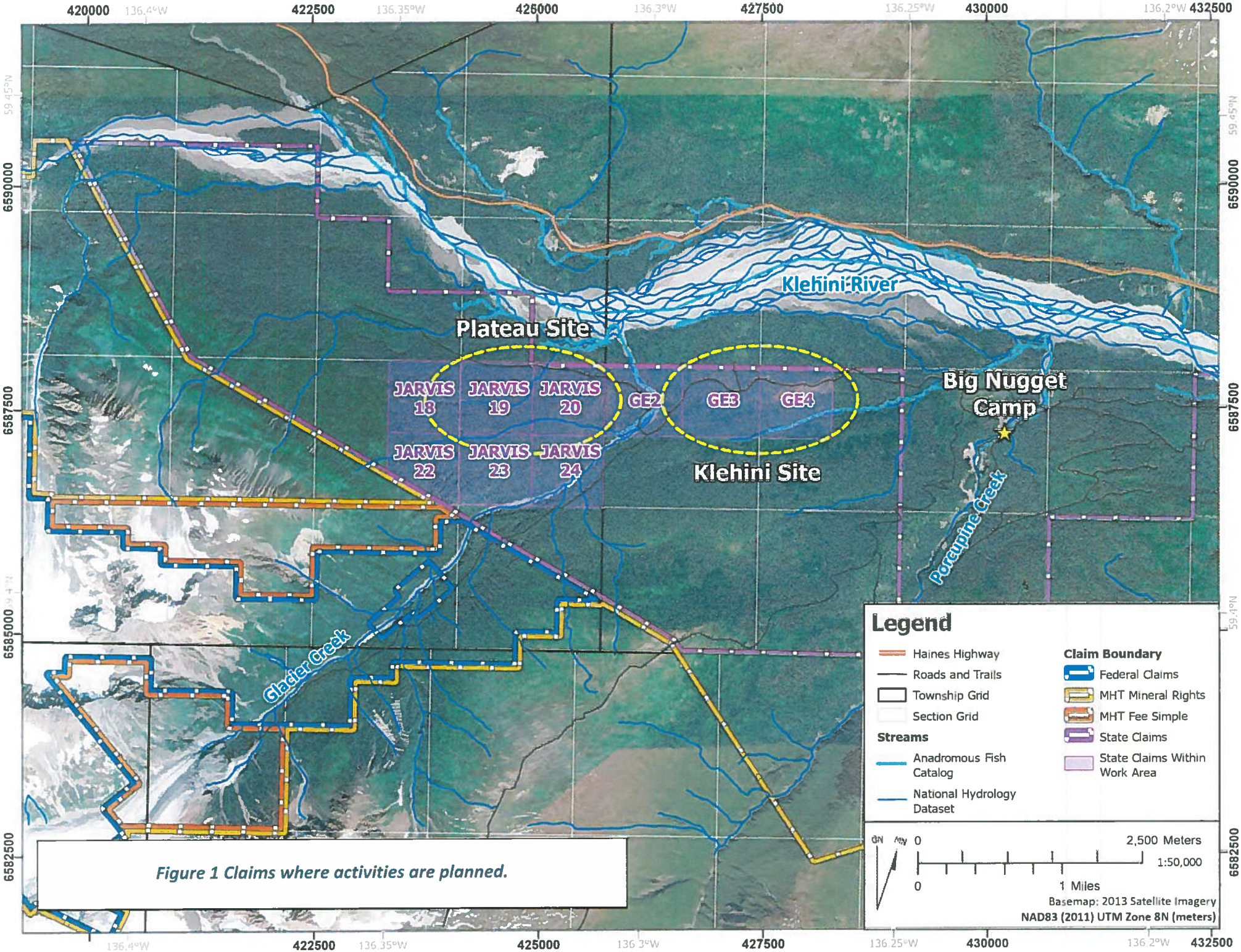

Figure 1 Claims where activities are planned.

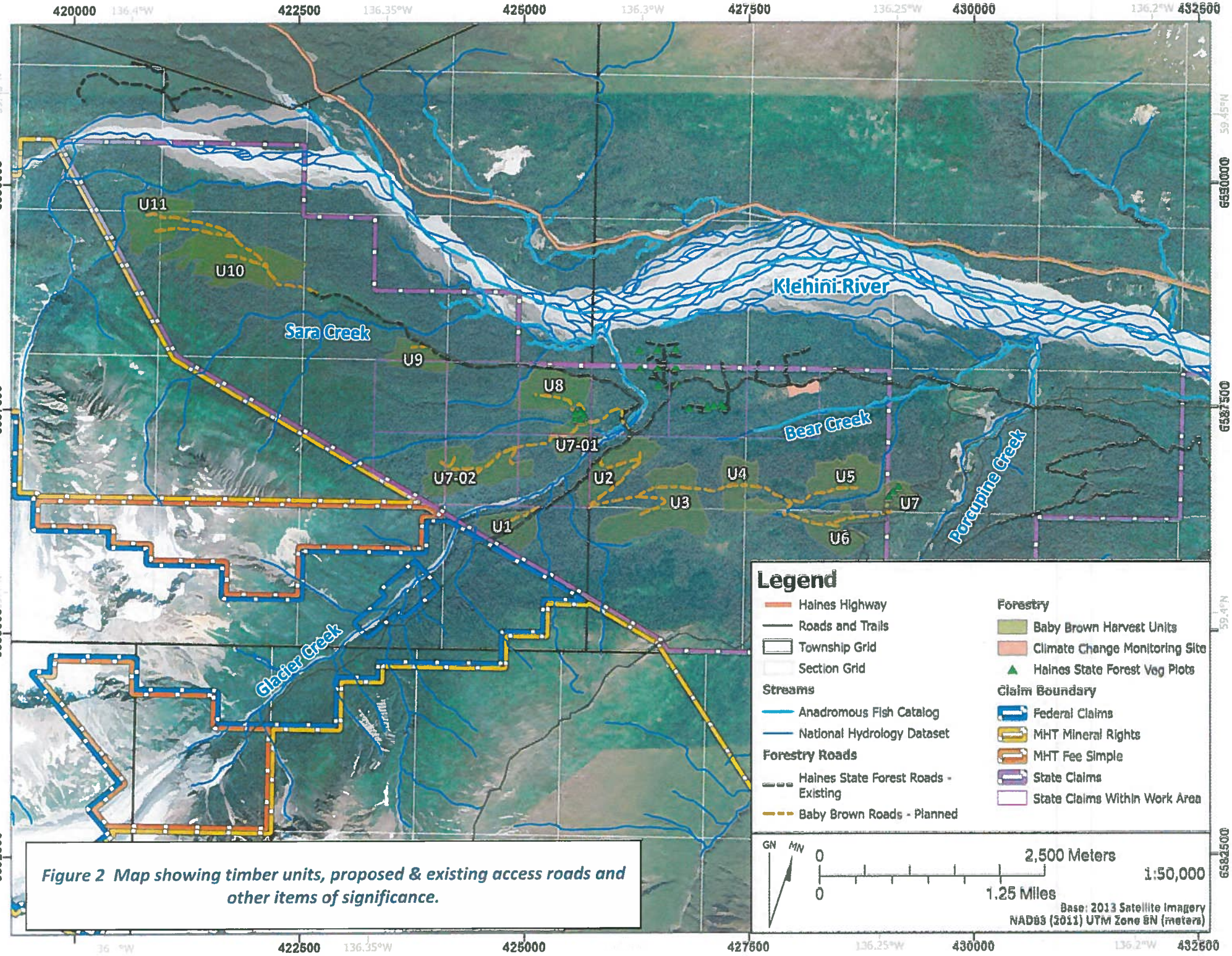

Figure 2 Map showing timber units, proposed & existing access roads and other items of significance.

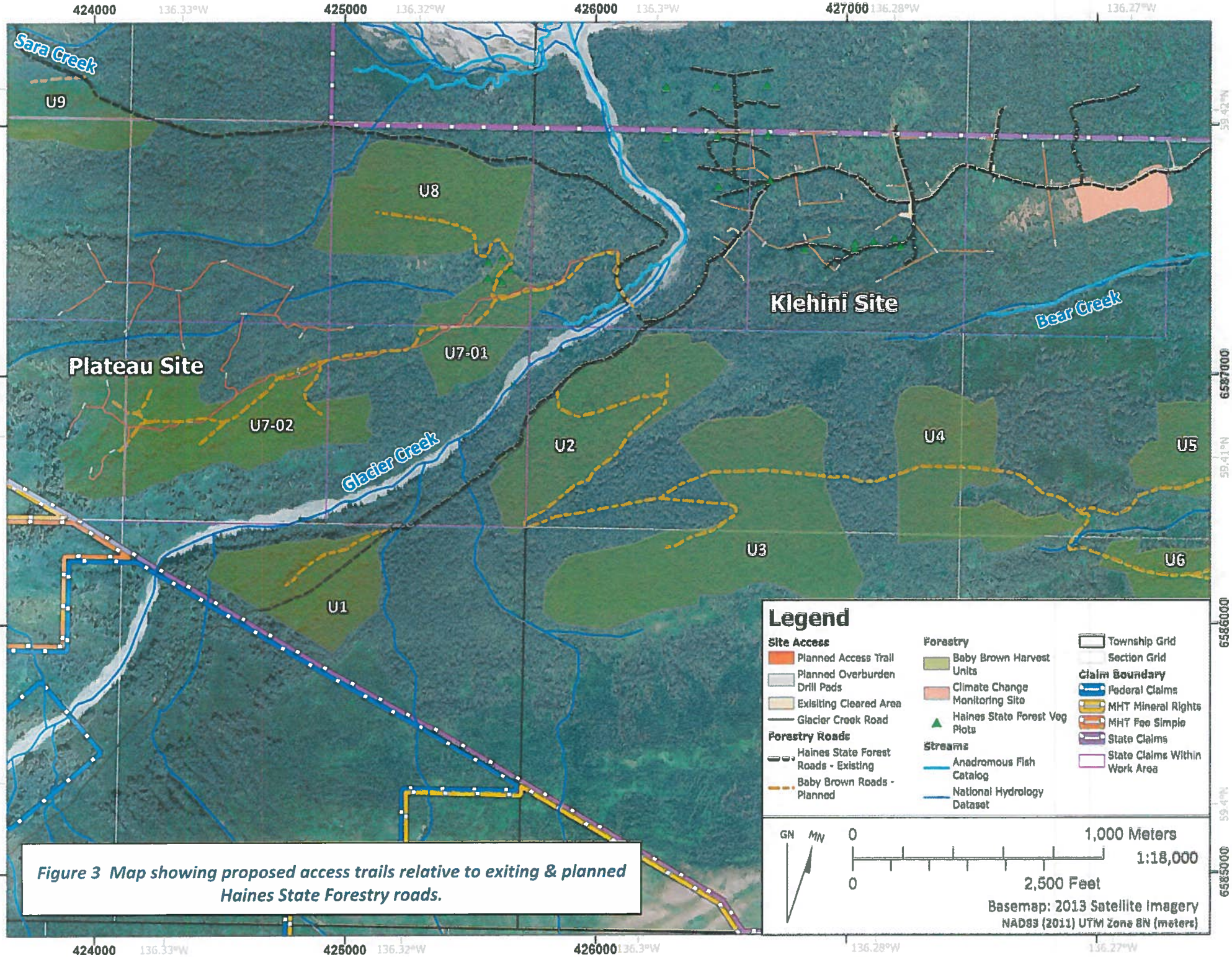

Figure 3 Map showing proposed access trails relative to exiting & planned Haines State Forestry roads.

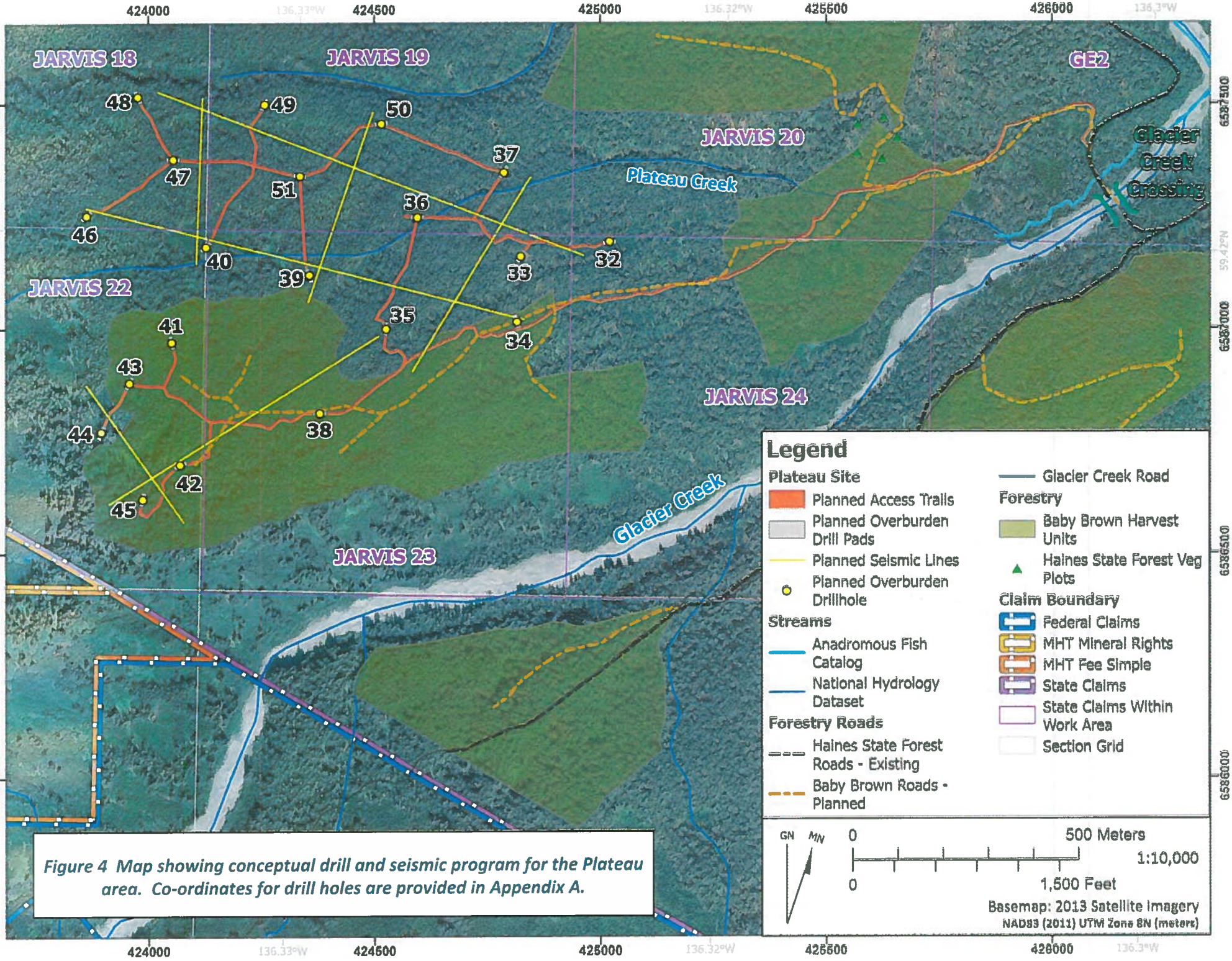

Figure 4 Map showing conceptual drill and seismic program for the Plateau area. Co-ordinates for drill holes are provided in Appendix A.

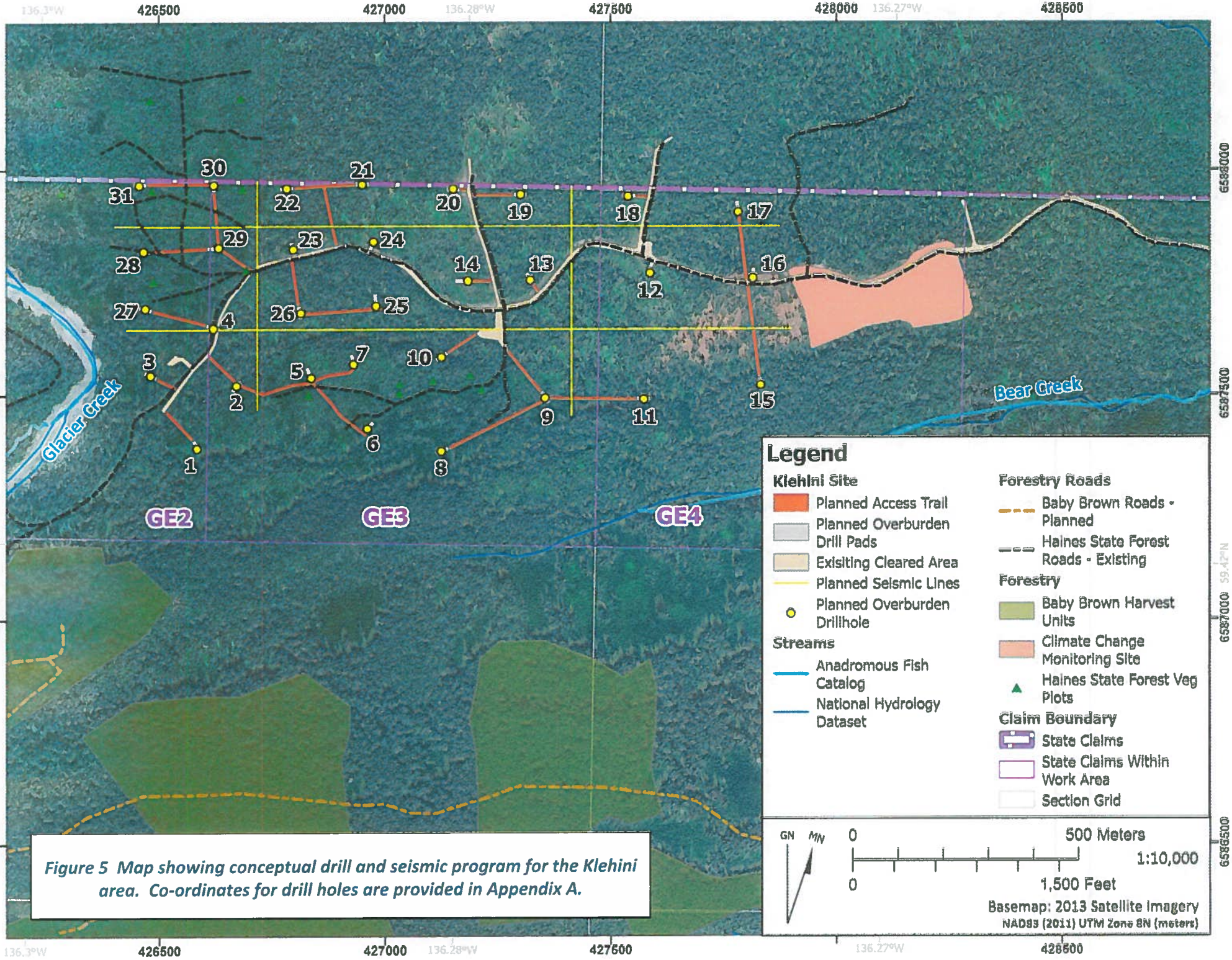

Figure 5 Map showing conceptual drill and seismic program for the Klehini area. Co-ordinates for drill holes are provided in Appendix A.

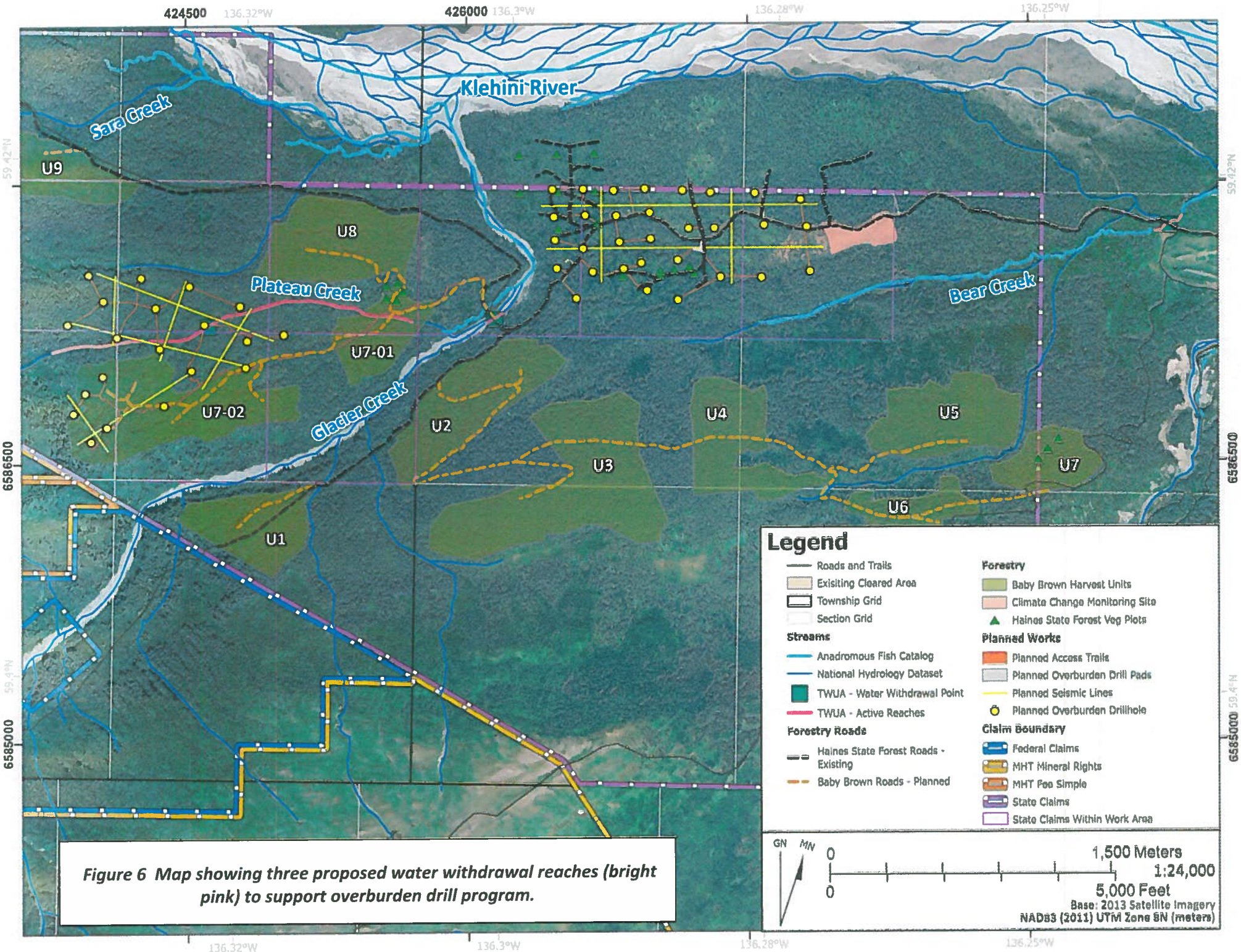

Figure 6 Map showing three proposed water withdrawal reaches (bright pink) to support overburden drill program.

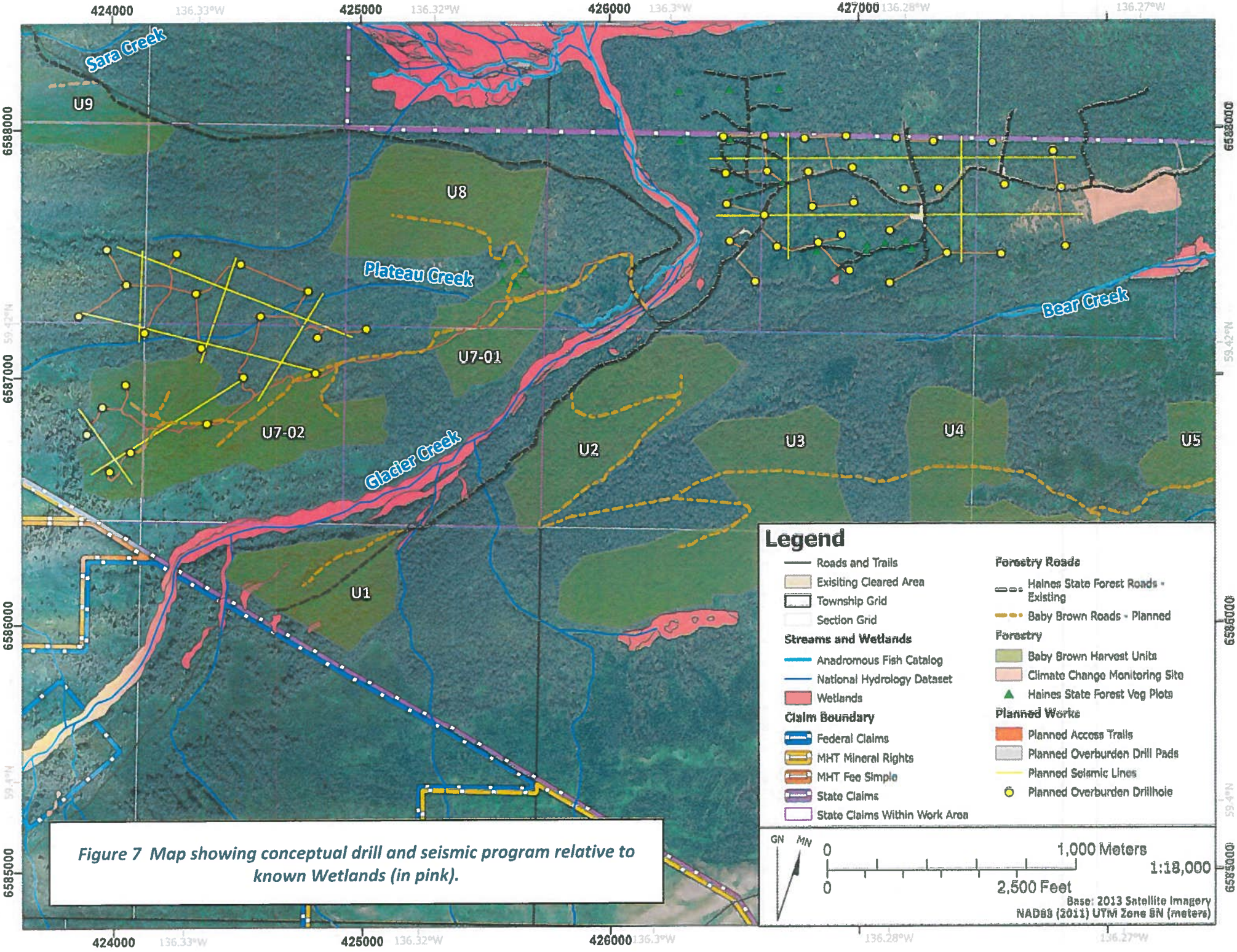

Figure 7 Map showing conceptual drill and seismic program relative to known Wetlands (in pink).

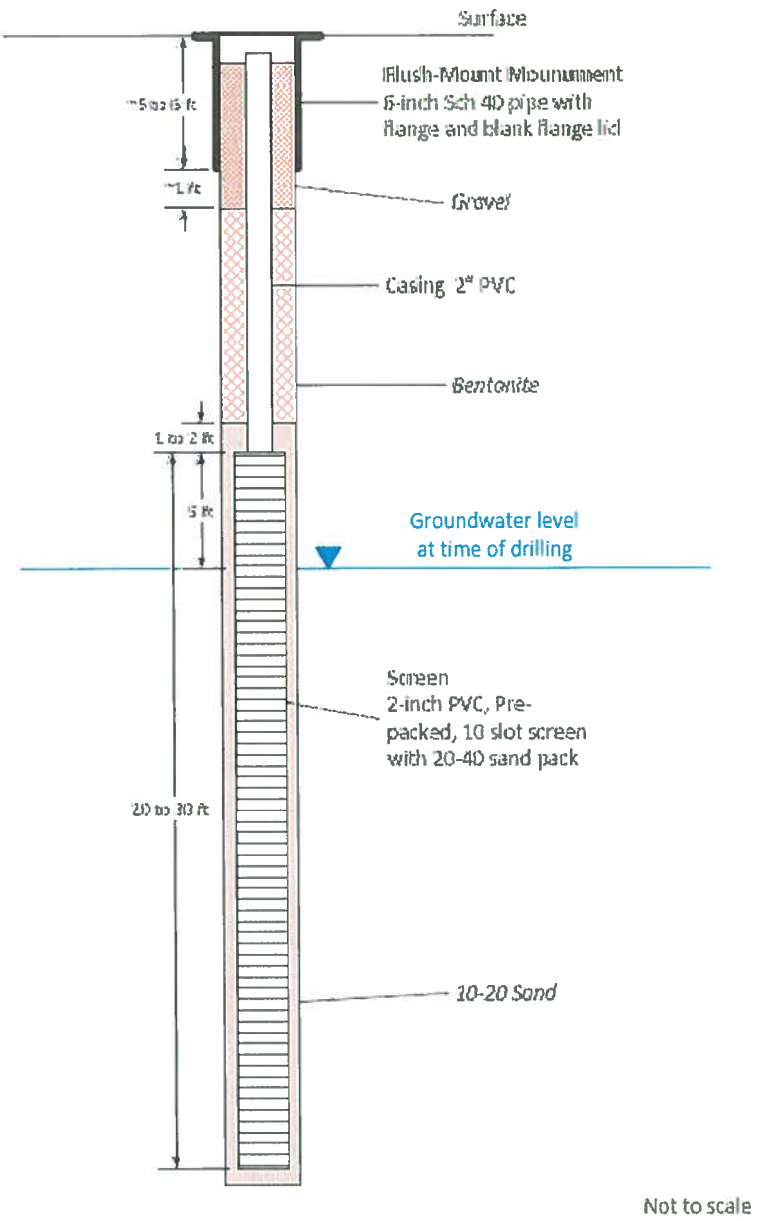

Figure 8: Schematic of monitoring well construction

Appendix A: Proposed drill sites and additional locations (AHEA Reclamation Spreadsheet – electronic submission)

Appendix B: Video of fired charge (electronic submission)

2022 ANNUAL RECLAMATION STATEMENT (33)

☐ Placer Mining
☐ Suction Dredging
☑ Hardrock Exploration APMA # 5690

Complete and return this statement by December 31, 2022. If you did not operate, fill in your name, check bottom box, sign, and return form.

In accordance with AS 27.19 (Reclamation Act):

I, Micheal Vande Guchte hereby file an annual reclamation statement for the 2022 mining operation described in subject Application for Permits to Mine in Alaska. (Submission of this statement does not constitute reclamation approval.)

Volume of material disturbed in 2022: _____ cubic yards (Includes strippings and processed material.)

Sluice days last season: _____ Cubic yards of material processed daily: _____ Annually: _____

Total acreage disturbed in 2022: State _____, Federal 15, Private _____. (Includes stripped areas, mining cuts, overburden and tailing stockpiles and disposal areas, temporary stream diversions, stream bypasses, and settling ponds.). Federal operators should include area of camp and access roads.

Length _____ feet and Width _____ feet of stream diversion.

Stream diversion: ☐ Temporary ☐ Permanent ☑ No Diversion (check one).

Total Area reclaimed in 2022: 0 acres.

Total un-reclaimed acres: 15 (This should match "total acreage currently disturbed" on the 2023 Reclamation Plan Form.)

For areas reclaimed, the following reclamation measures were used (check only measures that were used).
You must include photographs or videotapes of the completed reclamation work:

☐ Spread and contoured tailings
☐ Spread topsoil, vegetation, overburden muck or fines on the surface of contoured tailings
☐ Reestablished flood plain with stream channel in stable position
☐ Ponds are reclaimed
☐ Backfilled and reclaimed temporary stream diversions
☐ Camp removed, cleaned up and left free of debris
☑ Hardrock Exploration: Complete and submit an electronic Annual Reclamation Report

Other Reclamation Measures Taken:

see 2022 Reclamation Report

☐ Did not operate in 2022 and therefore did not conduct reclamation.

Relationship to Claim(s)
☐ Owner ☐ Lessee ☑ Operator
☐ Agent For: _____

Signed Michael Vande Guchte Digitally signed by Michael Vande Guchte Date: 2023.04.28 15:20:04 -07'00' Date _____

2023 RECLAMATION PLAN FORM (HARDROCK EXPLORATION)

☑ A. RECLAMATION PLAN	☐ B. RECLAMATION PLAN VOLUNTARY	☐ C. LETTER OF INTENT (34)
(REQUIRED if the operation will disturb five or more acres this year, OR 50,000 cubic yards, OR if the operation has a cumulative disturbed area of five or more acres).	(for an operation below limits shown in Box A but wanting to qualify for the statewide bonding pool. (Operations on BLM Lands and others not filing Letter of Intent).	(less than five acres to be disturbed AND less than 50,000 cubic yards AND less than five acres unreclaimed area).

In accordance with Alaska Statute 27.19, reclamation is required of all mining operations. Reclamation bonding is required of operations with disturbance of 5 acres or greater. Completion of this application will meet the requirements for a "Reclamation Plan" for operations 5 acres and larger in size and for a "Letter of Intent To Do Reclamation" for operations under 5 acres. If you do not intend to use the reclamation methods presented below, you must provide additional information concerning your plans for reclamation under separate attachments.

Total acreage currently disturbed: 15 acres. This should match: "Total Unreclaimed Acres" on your 2022 Annual Reclamation Statement for Small Mines, or line #7 on your 2023 Bond Pool Renewal Form. Disturbed ground includes all unreclaimed mining and exploration activity (excluding camps and roads) since October 1991. Federal operators must include areas of camps and roads.

New acres to be disturbed in 2023 21 acres. Total acreage (currently disturbed plus new acres): 36 acres.

Acreage disturbed by land status: 21 State (general) _____ State (Mental Health) _____ Private 15 Federal

Total acreage to be reclaimed in 2023 10 acres; Total volume of material to be disturbed in 2023: _____ cubic yards.

Include strippings and overburden to be removed. Cubic yards = Length (yards) x Width (yards) x Depth (yards).

☑ Reclamation will be conducted concurrently with activity. ☑ Reclamation will be conducted at the end of the season.

THE FOLLOWING RECLAMATION MEASURES SHALL BE USED:

(These measures are required by law. Those that do not apply may be crossed out; but, an explanation must be given.)

- Topsoil, vegetation, and overburden muck, not promptly redistributed to an area being reclaimed, will be individually separated and stockpiled for future use. This material will be protected from erosion and from contamination by acidic or toxic materials and will not be buried by tailings.
- The area reclaimed will be reshaped to blend with the surrounding area using tailings, strippings, and overburden and be stabilized.
- Stockpiled topsoil, overburden muck, will be spread over the contoured exploration sites to promote natural plant growth such that the area can reasonably be expected to revegetate within five years. Stockpiled vegetation will be spread over topsoil.
- Exploration trenches will be backfilled. Brush piles, stumps, topsoil, and other organics will be spread on the backfilled surface to inhibit erosion and promote natural revegetation. All exploration trenches will be reclaimed by the end of the exploration season in which they are constructed, unless specifically approved by the DMLW (Mining operations are required by law to be reclaimed as contemporaneously as practicable with the mining operation to leave the site in stable condition).
- Shallow auger holes (limited to depth of overburden) will be backfilled with drill cuttings or other locally available material in such a manner that closes the hole to minimize the risk to humans, livestock and wildlife.
- All drill hole casings will be removed or cut off at, or below, ground level. All drill holes will be plugged by the end of the exploration season with bentonite holeplug or equivalent slurry, for a minimum of 10 feet within the top 20 feet of the drill hole. The remainder of the hole will be backfilled to the surface with drill cuttings. If water is encountered in any drill hole, a minimum of 7 feet of bentonite holeplug or equivalent slurry will be placed immediately above the static water level in the drill hole. (NOTE: The operator understands that complete filling of the drill holes, from bottom to top, with bentonite holeplug or equivalent slurry is also permitted and is considered to be the preferred method of hole closure, unless communicated otherwise by DMLW.)
- If artesian conditions are encountered, the operator will take all measures practicable to prevent the offsite discharge of those waters subject to 11 AAC 97.240 and will contact the DMLW for approval of hole plugging measures.
- At closure, all shafts, adits, tunnels, and air vents to underground workings will be stabilized and properly sealed to ensure protection of the public, wildlife and the environment.
- On state lands, all buildings and structures constructed, used, or improved will be removed, dismantled, or otherwise properly disposed of unless the surface owner or manager authorizes that the buildings and structures may stay.
- On state lands, all scrap iron, equipment, tools, piping, hardwear, chemicals, fuels, waste, and general construction debris will be removed or properly disposed of.
- Reclamation measures taken will be consistent with any alternative post mining land use approved by the Commissioner, subject to the provisions of 11 AAC 97.300(h) and the conditions (if any) of an approved reclamation plan.

IMPORTANT: 1. Alternative reclamation measures may be approved if the reclamation measures presented above are not applicable to your site. Please explain in separate correspondence. Submit a sketch and describe additional reclamation measures you propose to conduct at your operation. Reclamation measures must comply with AS 27.19.

BONDING: In accordance with AS 27.19, bonding is required for all operations having a mined area of ≥ five acres on State Land. This area must be bonded for $750.00 per acre, unless the miner can demonstrate that a third party contractor can do the needed reclamation for less. The Statewide Bonding Pool may be joined by completing a bond pool application form and meeting certain requirements. No reclamation plan approval goes into effect until the bonding pool deposit and annual nonrefundable fees are paid. Use bond form to calculate area of disturbance for bonding.

BLM requires that a reclamation plan be consistent with §43 CFR 3809.420, Performance Standards for the Surface Management regulations for Federal Operations. **Refer to 43 CFR 3809 or the BLM minerals website available at** . https://www.blm.gov/programs/energy-and-minerals/mining-and-minerals **for more information on what is needed for a reclamation plan on Federal lands, as they may be different than those identified above.**

Micheal Vande Guchte Printed name (Applicant)	Relationship to Mineral Property: ☐ Owner ☐ Lessee ☑ Operator ☐ Agent For: _____	Date: 28-Apr-2023 APMA #: 5690
Michael Vande Guchte Digitally signed by Michael Vande Guchte Date: 2023.04.28 15:18:56 -07'00' Signature (Applicant)		

STATE OF ALASKA, DEPARTMENT OF NATURAL RESOURCES
STATE WIDE BOND POOL RENEWAL FORM
FOR 2023 OPERATIONS

APMA # 5960 .

Constantine North Inc.
Name

Suite 320, 800 West Pender Street	Vancouver	British Columbia	V6C 2V6
Mailing Address	City	State	Zip

Submits to the State of Alaska, Department of Natural Resources, a renewal of reclamation bonding in accordance with AS 27.19 for mining activity on claim's: see attached list .

located in T. 28S, 29S ., R. 53E, 54E ., Sections 1-3,5,6,11,12,15 ., ____ .M.

The amount of the refund or amount owed was calculated as follows:

1. Number of acres bonded in 2022: 21 . acres
2. Total number of acres disturbed in 2022? 15 . acres

This includes unreclaimed acreage from previous years, October 1991 to present, for state or private lands, and 1981 to present for federal claims. On federal claims include area of camp and access roads.

Bonding credits carried forward from 2022 to 2023:

3. Number of acres bonded in 2022 but not disturbed: (1 minus 2 above) 6 .acres x $ 112.50 = $ 675.00 .

4. Number of acres reclaimed in 2022 and approved by BLM/ DNR. 0 .acres x $ 112.50 = $ 0.00 .
   Federal miners must submit a **Financial Guarantee Amount Reduction Form** from BLM. All miners requesting a reduction of acreage must fill out the application for **Bond Release Form**, and include evidence of their reclamation with Photo/Video documentation unless otherwise specified by DNR.

5. Dollar total of lines 3 + 4: $ 675.00 .

Bonding obligations for 2023:

6. Number of acres disturbed but not bonded in 2022: 0 .acres x $ 150.00 = $ 0.00 .
7. Total number of all unreclaimed acres: 15 .acres x $ 37.50 = $ 562.50 .
   (line 7 should match "total acreage currently disturbed" on your 2022 Reclamation Plan. (2 minus 4 above)
8. New acres to be disturbed in 2023: 21 .acres x $ 150.00 = $ 3150.00 .
9. Dollar total of lines 6 + 7 + 8: $ 3712.50 .
10. Total acreage bonded in 2023 (7 + 8): 36 .acres

If line 5 is larger than line 9 enter the difference here $ ____ .. This amount will be refunded.

If line 9 is larger than line 5, the difference is due DNR $ 3037.50 .. Make check payable to: DEPARTMENT OF NATURAL RESOURCES.

Michael Vande Guchte Digitally signed by Michael Vande Guchte Date: 2023.03.30 11:47:28 -07'00' March 30, 2023
Signed – Miner Date

Dave Charron 5/1/2023
ADNR - Division of Mining, Land & Water Date

FREDERICK TRANSBURG Digitally signed by FREDERICK TRANSBURG Date: 2023.04.14 10:55:04 -08'00'
BLM - Bureau of Land Management Date

Drill Site #	Latitude (ddd.mmmm)	Longitude (-ddd.mmmm)	Datum (NAD83)	Associated APMA	Mining Claim ADL, BLM # or USMS	Fuel Storage (OnSite/OffSite)	Tundra Mat	Trash Containment	Sanitary Facilities	Drill Additives	Artesian Zone	Water Discharged	Reclaimed	Plugged	Cemented	Standing Pipe	Revegetated	Date Reclaimed
1	59.41862488	-136.2936554	NAD 83	5690	662062	OffSite	No	OffSite	OffSite	No	No	No						
2	59.41989517	-136.2921448	NAD 83	5690	662063	OffSite	No	OffSite	OffSite	No	No	No						
3	59.42006302	-136.295517	NAD 83	5690	662062	OffSite	No	OffSite	OffSite	No	No	No						
4	59.42103195	-136.2930908	NAD 83	5690	662063	OffSite	No	OffSite	OffSite	No	No	No						
5	59.42007828	-136.2892456	NAD 83	5690	662063	OffSite	No	OffSite	OffSite	No	No	No						
6	59.41909027	-136.2870178	NAD 83	5690	662063	OffSite	No	OffSite	OffSite	No	No	No						
7	59.42036819	-136.2875977	NAD 83	5690	662063	OffSite	No	OffSite	OffSite	No	No	No						
8	59.41866684	-136.2841187	NAD 83	5690	662063	OffSite	No	OffSite	OffSite	No	No	No						
9	59.41976929	-136.2801056	NAD 83	5690	662063	OffSite	No	OffSite	OffSite	No	No	No						
10	59.42054749	-136.2841797	NAD 83	5690	662063	OffSite	No	OffSite	OffSite	No	No	No						
11	59.41978073	-136.2762604	NAD 83	5690	662064	OffSite	No	OffSite	OffSite	No	No	No						
12	59.42229843	-136.2761078	NAD 83	5690	662064	OffSite	No	OffSite	OffSite	No	No	No						
13	59.42211533	-136.280777	NAD 83	5690	662063	OffSite	No	OffSite	OffSite	No	No	No						
14	59.42207718	-136.2832031	NAD 83	5690	662063	OffSite	No	OffSite	OffSite	No	No	No						
15	59.42010498	-136.2717133	NAD 83	5690	662064	OffSite	No	OffSite	OffSite	No	No	No						
16	59.4222374	-136.2720947	NAD 83	5690	662064	OffSite	No	OffSite	OffSite	No	No	No						
17	59.42354965	-136.2727203	NAD 83	5690	662064	OffSite	No	OffSite	OffSite	No	No	No						
18	59.4238205	-136.2770233	NAD 83	5690	662064	OffSite	No	OffSite	OffSite	No	No	No						
19	59.4238205	-136.2812195	NAD 83	5690	662063	OffSite	No	OffSite	OffSite	No	No	No						
20	59.4239006	-136.283844	NAD 83	5690	662063	OffSite	No	OffSite	OffSite	No	No	No						
21	59.4239502	-136.2873993	NAD 83	5690	662063	OffSite	No	OffSite	OffSite	No	No	No						
22	59.4238472	-136.2903442	NAD 83	5690	662063	OffSite	No	OffSite	OffSite	No	No	No						
23	59.42263412	-136.2900391	NAD 83	5690	662063	OffSite	No	OffSite	OffSite	No	No	No						
24	59.42281342	-136.286911	NAD 83	5690	662063	OffSite	No	OffSite	OffSite	No	No	No						
25	59.42154694	-136.2867737	NAD 83	5690	662063	OffSite	No	OffSite	OffSite	No	No	No						
26	59.42137909	-136.2897034	NAD 83	5690	662063	OffSite	No	OffSite	OffSite	No	No	No						
27	59.42140961	-136.2957764	NAD 83	5690	662062	OffSite	No	OffSite	OffSite	No	No	No						
28	59.42253113	-136.2958832	NAD 83	5690	662062	OffSite	No	OffSite	OffSite	No	No	No						
29	59.42263412	-136.2929535	NAD 83	5690	662063	OffSite	No	OffSite	OffSite	No	No	No						
30	59.42388535	-136.2931976	NAD 83	5690	662063	OffSite	No	OffSite	OffSite	No	No	No						
31	59.42385101	-136.2960968	NAD 83	5690	662062	OffSite	No	OffSite	OffSite	No	No	No						
32	59.41666031	-136.3211212	NAD 83	5690	661290	OffSite	No	OffSite	OffSite	No	No	No						
33	59.41632843	-136.324585	NAD 83	5690	661289	OffSite	No	OffSite	OffSite	No	No	No						
34	59.41502762	-136.3246765	NAD 83	5690	661289	OffSite	No	OffSite	OffSite	No	No	No						
35	59.41483688	-136.3297729	NAD 83	5690	661289	OffSite	No	OffSite	OffSite	No	No	No						
36	59.4170723	-136.3286285	NAD 83	5690	661285	OffSite	No	OffSite	OffSite	No	No	No						
37	59.41800308	-136.3253021	NAD 83	5690	661285	OffSite	No	OffSite	OffSite	No	No	No						
38	59.4131279	-136.3322906	NAD 83	5690	661289	OffSite	No	OffSite	OffSite	No	No	No						
39	59.4158783	-136.3327942	NAD 83	5690	661289	OffSite	No	OffSite	OffSite	No	No	No						
40	59.41639709	-136.336853	NAD 83	5690	661288	OffSite	No	OffSite	OffSite	No	No	No						
41	59.41448975	-136.3381195	NAD 83	5690	661288	OffSite	No	OffSite	OffSite	No	No	No						
42	59.41204071	-136.3376923	NAD 83	5690	661288	OffSite	No	OffSite	OffSite	No	No	No						
43	59.41366196	-136.3397369	NAD 83	5690	661288	OffSite	No	OffSite	OffSite	No	No	No						
44	59.41266632	-136.3407898	NAD 83	5690	661288	OffSite	No	OffSite	OffSite	No	No	No						
45	59.41133881	-136.3391266	NAD 83	5690	661288	OffSite	No	OffSite	OffSite	No	No	No						
46	59.41697311	-136.3415375	NAD 83	5690	661284	OffSite	No	OffSite	OffSite	No	No	No						
47	59.41812897	-136.3381958	NAD 83	5690	661284	OffSite	No	OffSite	OffSite	No	No	No						
48	59.41936874	-136.3396301	NAD 83	5690	661284	OffSite	No	OffSite	OffSite	No	No	No						
49	59.41926956	-136.334671	NAD 83	5690	661285	OffSite	No	OffSite	OffSite	No	No	No						
50	59.41892242	-136.3301239	NAD 83	5690	661285	OffSite	No	OffSite	OffSite	No	No	No						
51	59.41785431	-136.333252	NAD 83	5690	661285	OffSite	No	OffSite	OffSite	No	No	No						

Drill Site #	Latitude (ddd.mmmm)	Longitude (-ddd.mmmm)	Datum (NAD83)	Associated APMA	Mining Claim ADL, BLM # or USMS	Fuel Storage (OnSite/OffSite)	Tundra Mat	Trash Containment	Sanitary Facilities	Drill Additives	Artesian Zone	Water Discharged	Reclaimed (pending regulatory approval)	Plugged	Cemented	Standing Pipe	Revegetated	Date Reclaimed (pending regulatory approval)
CMR22-145	59.38452906	-136.4192877	NAD83	5690	AA 27208	OffSite	N/A	Offsite	Offsite	Yes	No	No	No	No	No	Yes	N/A	N/A
CMR22-146	59.39092681	-136.3863657	NAD83	5690	AA 27229	OffSite	N/A	Offsite	Offsite	Yes	No	No	No	No	No	No	No	N/A
CMR22-147	59.39091933	-136.3864108	NAD83	5690	AA 27229	OffSite	N/A	Offsite	Offsite	Yes	No	No	No	No	No	No	No	N/A
CMR22-148/148B/148C	59.38453357	-136.4192342	NAD83	5690	AA 27208	OffSite	N/A	Offsite	Offsite	Yes	No	No	No	No	No	Yes	N/A	N/A
CMR22-149	59.39092044	-136.3863777	NAD83	5690	AA 27229	OffSite	N/A	Offsite	Offsite	Yes	No	No	No	No	No	Yes	No	N/A
CMR22-150	59.3861638	-136.3878877	NAD83	5690	MHT Lands-Parcel C70451	OffSite	N/A	Offsite	Offsite	Yes	No	No	No	No	No	Yes	N/A	N/A
GT22-019	59.38441538	-136.3828667	NAD83	5690	MHT Lands-Parcel C70451	OffSite	N/A	Offsite	Offsite	Yes	No	No	No	No	No	Yes	N/A	N/A

CONSTANTINE
MINING

2022 Annual Reclamation Report

APMA #5690

Palmer Project
Surface Exploration
Porcupine Mining District, Alaska

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December 2022

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SUMMARY

Constantine Mining LLC completed one geotechnical and six exploration diamond drillholes at the Palmer Property in 2022. One drillhole was installed with slotted PVC pipe for future trace studies and geophysical studies. Two drillholes were installed with mixed slotted and un-slotted PVC pipe for future geophysical studies. All seven drillholes remain open for future hydrogeological, geotechnical, or geophysical studies.

Two new drill pads, one new helipad, and one new pump pad were constructed to support 2022 diamond drilling. One previously reclaimed diamond drill pad and two previously reclaimed pump pads were re-built in 2022. One of the new drill pads falls within the Phase 2 Plan of Operations boundary and is covered under ADNR Reclamation Plan Approval J201985690RPA.

Total overburden and diamond drill site related disturbance at the end of the 2022 program decreased from 1.81 acres to 1.42 acres. This accounts for the reclamation of one helipad and two pump pads (pending regulatory approval), as well as decreased overburden disturbance due to an expanded Phase 2 Plan of Operations boundary (disturbance now covered under ADNR Reclamation Plan Approval J201985690RPA).

No additional construction on Glacier Creek Road was done in 2022 within BLM managed lands. Linear road and cleared area disturbance remains at 11.13 acres. Work on the road within the Phase 2 Plan of Operations area is covered under ADNR Reclamation Plan Approval J201985690RPA.

Total disturbance after the 2022 program is 14.57 acres, which includes 12.75 acres of unreclaimed disturbance and 1.82 acres of reclaimed ground pending regulatory approval. This remains below the 15 acres of disturbance Constantine North Inc. was bonded for in 2022.

The total disturbance for 2022 accounts for 0.047 acres of newly disturbed ground and 0.024 acres of reclaimed ground (pending approval).

LOCATION AND ACTIVITY DESCRIPTION

The Palmer Property consists of 340 federal unpatented lode mining claims (BLM claims), 63 state mineral claims (Jarvis & GE), and Mental Health Trust (MHT) Lands referred to as the Haines Block, which consists of two parcels – C81210 & C70451 (Figure 1). Thirty-nine (39) new state mineral claims were staked in 2020 as the Big Nugget claim block (Porc 1-3, Cahoon 1-13, Big Nugget 1-23).

Constantine Mining LLC is a Joint Venture company owned by Dowa Metals & Mining Alaska (a 100% owned subsidiary of Dowa Metals & Mining Co. Ltd., of Japan) and Constantine North Inc. (a 100% owned subsidiary of Constantine Metal Resources Ltd., of Vancouver, Canada). Constantine North Inc. ("Constantine") is the project operator. The Constantine-Dowa Joint Venture lands held by Constantine Mining LLC include the 340 federal unpatented lode mining claims, 63 state mineral claims (Jarvis & GE) and MHT parcel C70451. The remaining mineral rights including the MHT parcel C81210 and the

Big Nugget claim block are owned 100% by Constantine North Inc.

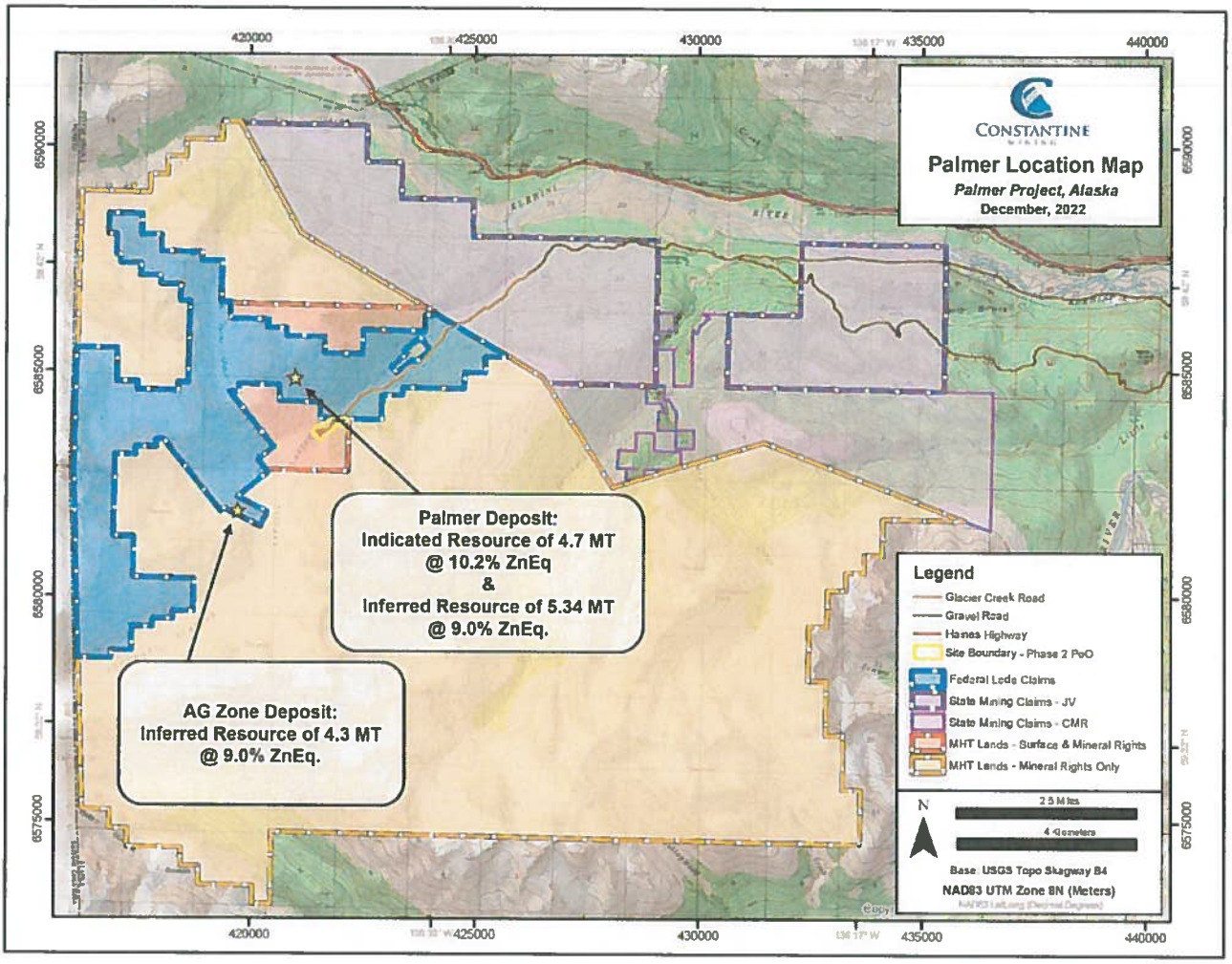


Figure 1. Project Property Map with land status.

A Palmer property map of the federal claims showing the location of the 2022 diamond drilling activities and the location of the Glacier Creek Road is shown in Figure 2.

The Palmer property is host to two volcanogenic massive sulphide deposits, the Palmer Deposit, and the AG Zone Deposit. The deposits have a combined NI 43-101 compliant resource of 4.68 million tonne Indicated Resource (10.2% ZnEq) and 9.59 million tonne Inferred Resource (8.9% ZnEq) using an NSR cut-off of US$75/t. The exploration and geotechnical programs are seasonal, with helicopter-supported drill activity typically from late May to early October each year.

The Palmer Property is located 35 miles (55 km) northwest of the port town of Haines, Alaska. Access from Haines is by the paved, all-weather Haines Highway, across the Klehini river by a bridge, and along the Porcupine gravel logging road that leads to the project camp facilities and to the eastern part of the property. Practical access to most of the property is by helicopter. A 3.4 km (2.1 mile) access road was

constructed in 2014, to extend the existing gravel Porcupine Road up the Glacier Creek valley to the base of the Palmer deposit area.

A laydown yard, the "Glacier Creek Laydown," was also constructed in 2014 and served as the base for drill supplies and helicopter activity in following field seasons. Two more kilometers (1.2 miles) of the Glacier Creek access road was constructed in 2016. In 2017, an additional 500 m (0.3 mile) of road was constructed, of which 300 m (0.2 mile) is on BLM lands. In 2018, the existing borrow pit adjacent to Glacier Creek Laydown was used for resurfacing and a new quarry was developed and subsequently closed.

No additional construction was performed on Glacier Creek Road in 2019, 2020, 2021 or 2022 on BLM managed lands.

All field personnel were lodged at the privately-owned Big Nugget Camp facility rented by Constantine. The Big Nugget camp is located off the property claim group along Porcupine Creek and accessed by 13 km (8 miles) of gravel road connecting to the Haines highway. A helicopter is based either at the Big Nugget Camp or the Glacier Creek laydown area during the active exploration program to provide daily crew access and supplies to drill sites.

The following structures and equipment are temporarily stored within the BLM claim boundaries at the Glacier Creek Laydown:

1. Fuel storage facility (Photo 1)
    a. Fuel containment structure with holding capacity of >11,000 gallon
    b. 1 x 5,000-gallon steel-walled diesel tank
    c. 1 x 3,000-gallon steel-walled Jet-A tank
    (*Note all tanks have been emptied and winterized as of October 2022)
2. Six shipping containers containing drilling supplies (Photo 3)
3. Unused and closed 10,000 gallon double walled fuel tank
4. Miscellaneous drilling equipment and supplies: drill rods, mud tanks, hose line, sling baskets, core boxes,lumber, PVC, and other small items (Photo 3)

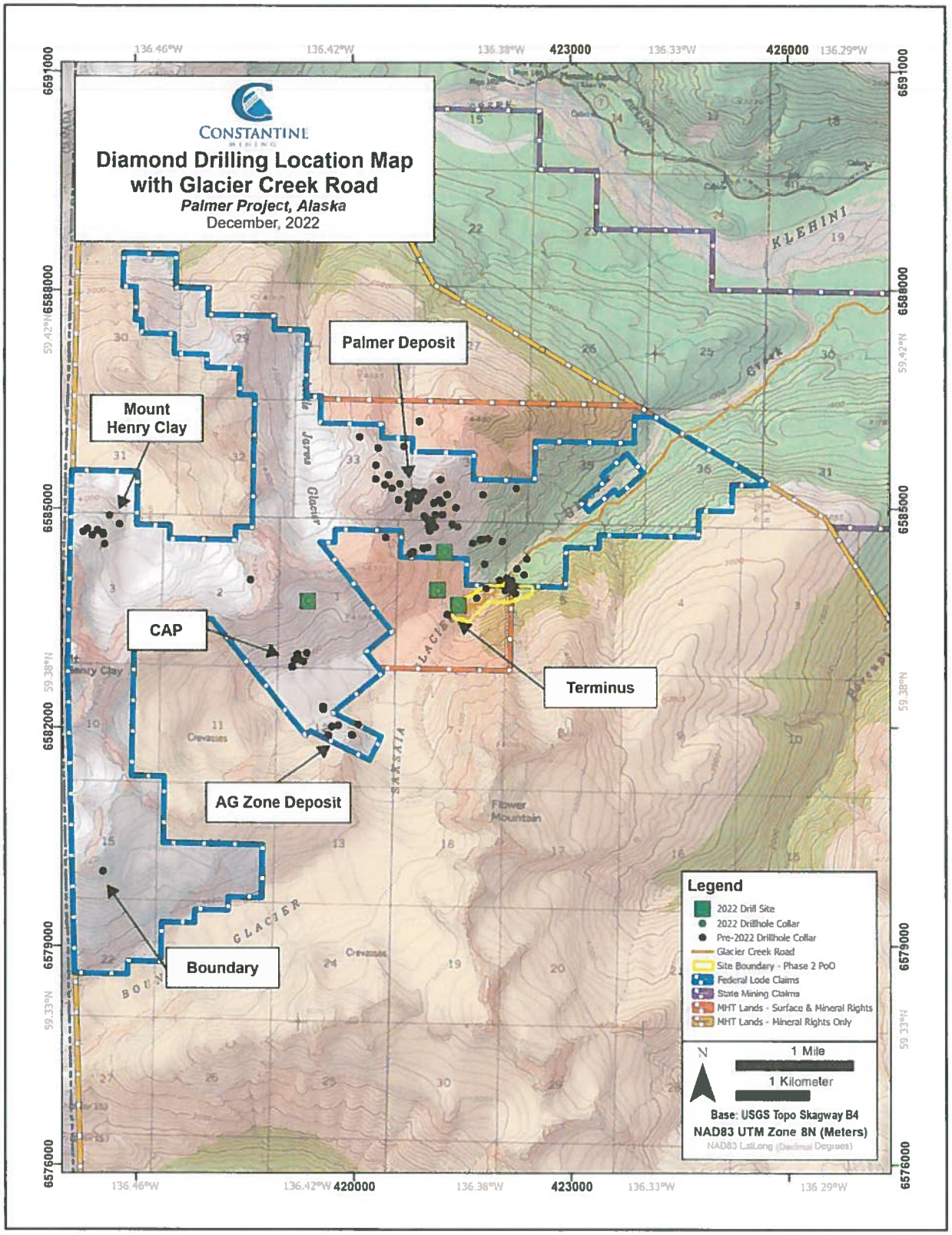


Figure 1. Palmer Project Property Map of the claims and leases with the location of diamond drilling activities and the location of the Glacier Creek Road.

SITE RECLAMATION

Reclamation on BLM claims will be designed to achieve post-exploration land uses consistent with the BLM's land use management plans for the area. The reclamation is intended to return disturbed land to a level of productivity comparable to pre-exploration levels. Post-exploration land use includes wildlife habitat, hunting, and dispersed recreational activities. Post-exploration land use is not expected to differ from pre-exploration land use.

Constantine is currently authorized to conduct up to 40 acres of surface disturbance within the Project Area under the approval of Project Operations and Environmental Assessment (AA-094088; DOI-BLM-AK-A020-2016-0006-EA) and subsequent 2017 Plan modification and Environmental Assessment (DOI-BLM-AK-A010-2017-0025-EA).

Constantine was bonded for 15 acres of disturbance in 2022 and follows authorized reclamation guidelines described in APMA #5690 and provided by the BLM. The authorized surface disturbance under APMA and BLM authorization includes drilling and road construction.

Areas defined as reclaimed in this and past reports (0.634 acres of timber pads and 1.16 acres of road shoulders) are pending evaluation and approval by the BLM. The total unreclaimed disturbance for 2022 accounts for 0.047 acres of newly disturbed ground and 0.024 acres of reclaimed ground (pending approval). **As of 2022, 1.82 acres of reclaimed ground are pending approval.**

The current estimated disturbance as of December 31, 2022, is 12.75 acres. For calculating annual Statewide Bond pool renewal fees, 1.82 acres of approval-pending reclaimed ground are added to the 12.75 acres, for a total of 14.57 acres (rounded up to 15 acres).

The Phase 2 Plan of Operations boundary was updated in 2022 to account for disturbance related to revised infrastructure for underground development. All disturbance within this boundary is covered under ADNR Reclamation Plan Approval J201985690RPA. Due to the expanded boundary, 0.42 acres of surface disturbance from 2021 overburden drilling are no longer covered within this report and are deducted from the 2021 total overburden disturbance of 1.48 acres (reported as 1.49 due to rounding errors). The updated total 2022 overburden disturbance is 1.06 acres (see 'Drill Pad Disturbance - Overburden Drill Pads & Access Roads').

Tables 1 & 2 summarize the acreage of unreclaimed surface disturbance within the Palmer Project Area and associated disturbance factors. Figure 3 is a location map that shows the updated Phase 2 Plan of Operations boundary and claims that have unreclaimed surface disturbance as of December 31, 2022. Table 3 summarizes the MHT, State (ADNR), and Federal (BLM) mining claims that contain unreclaimed surface disturbance at the end of 2022.

Table 1. Summary of disturbance components and associated acreage of disturbance, 2022.

Disturbance Component	Current Unreclaimed Disturbance - Federal Claims (Acres)	Current Unreclaimed Disturbance - MHT Lands - Mineral Rights Only (Acres)	Current Unreclaimed Disturbance - MHT Lands - Mineral and Surface Rights (Acres)	Current Unreclaimed Disturbance - State Mining Claims (Acres)	Current Unreclaimed Disturbance - Total (Acres)
Helicopter-Supported Drilling with timber-frame drill pads	0.32	0	0.023	0	0.34
Overburden Drilling Pads & Access Trails	1.06	N/A*	N/A*	0	1.06
Fuel Station Fire Buffer	0.22	0	0	0	0.22
Linear Exploration Road (BLM only)	5.78	N/A*	N/A*	N/A**	5.78
Equipment Laydown Area	0.5	0	0	0	0.50
Helipad	0.11	0	0	0	0.11
Fuel Station	0.05	0	0	0	0.05
Weather Station Clearing	0.16	0	0	0	0.16
Borrow Pit	0.58	0	0	0	0.58
Borrow Pit Extension	0.08	0	0	0	0.08
Quarry 1	0.56	0	0	0	0.56
Executive Laydown (previously Stockpile #1)	0.82	0	0	0	0.82
Stockpile #2	0.94	0	0	0	0.94
The Cut	1.13	0	0	0	1.13
Quarry 2	0.16	0	0	0	0.16
Road Pullouts	0.26	0	0	0	0.26
Total	**12.73**	**0**	**0.023**	**0**	**12.75**

Note that acreage does not include reclaimed ground pending approval

** Disturbance covered under ADNR Reclamation Plan Approval J201985690RPA*

*** Road on state land is not classified as disturbance*

Table 2. Summary of disturbance changes from 2021 to 2022.

Disturbance Component	Unreclaimed Disturbance reported in 2021 Reclamation Statement (Acres)	Acres Reclaimed 2022*	Additional Acres Disturbed 2022	Unreclaimed Disturbance 2022 (Acres)
Helicopter-Supported Drilling with timber-frame pads	0.32	0.024	**0.047**	0.34
Overburden Drilling Pads and Access Trails	1.49	0	**0**	1.06**
Additional Cleared Areas	0.22	0	**0**	0.22
Linear Exploration Road + Associated Cleared Areas	11.13	0	**0**	11.13
Total	**13.16**	**0.024**	**0.047**	**12.75**

Note that acreage of road disturbance is for portion of road located on federal claims only.
**Pending regulatory approval*
*** 0.42 acres of overburden disturbance from 2021 are now covered under ADNR Reclamation Plan Approval J201985690RPA, decreasing disturbance from 1.48 in 2021 to 1.06 acres in 2022.*

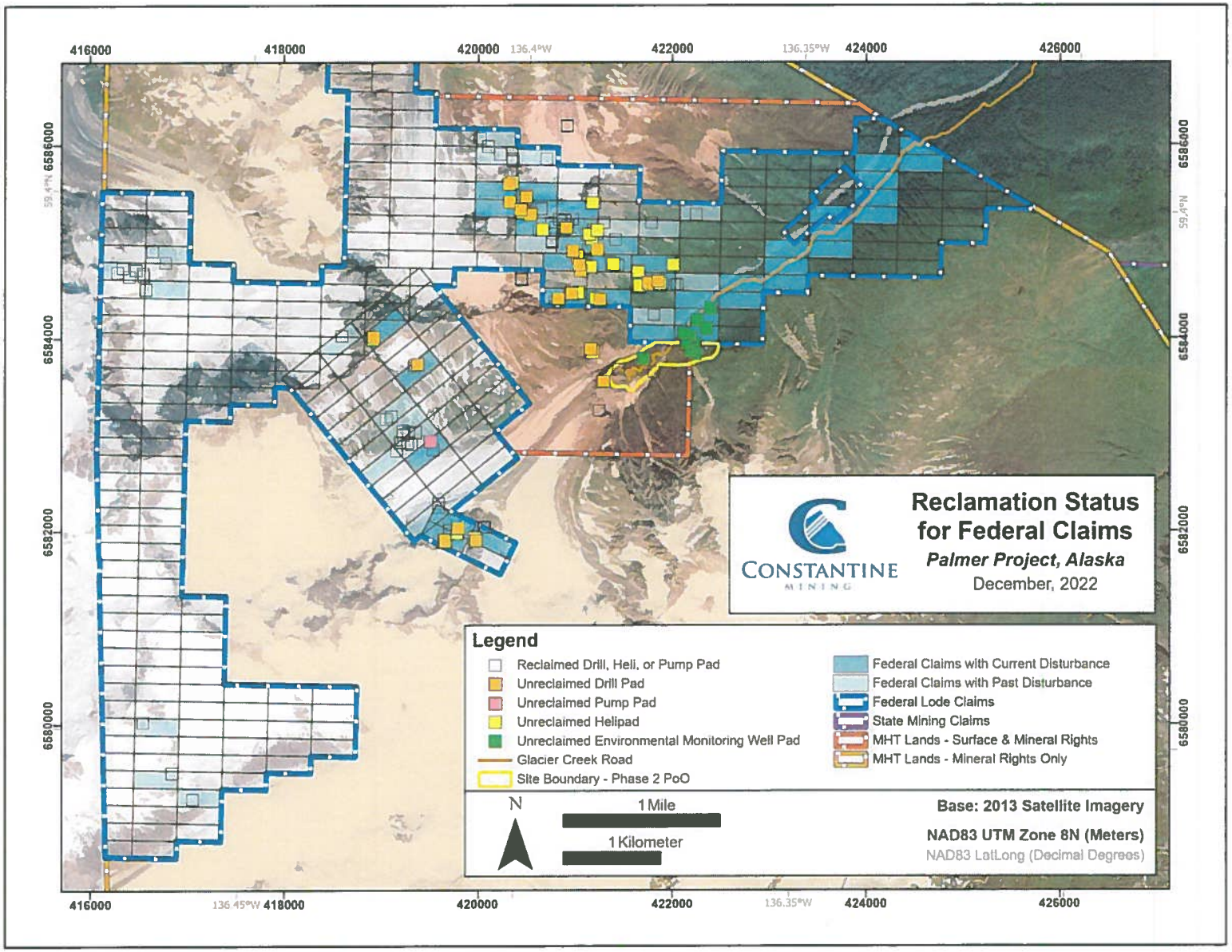


Figure 3. Location Map showing reclamation status for Federal claims (pending BLM approval).

Table 3. List of Palmer Project Mining Claims with past disturbance, including a designation for the current reclamation status of each claim (pending BLM approval).

Claim Type	Claim Name/ Parcel Number	Claim Number	Disturbance Type	Current Status
Federal	#1 OF MARMOT MINE	AA 27186	Drill	Unreclaimed
Federal	#2 OF MARMOT MINE	AA 27187	Drill	Unreclaimed
Federal	M.V.P. MINING CLAIMS #1	AA 27191	Drill	Reclaimed
Federal	MARMOT #6	AA 27193	Drill	Reclaimed
Federal	MARMOT #7	AA 27194	Drill	Reclaimed
Federal	MARMOT #8	AA 27195	Drill	Unreclaimed
Federal	MARMOT #9	AA 27196	Drill	Reclaimed
Federal	MARMOT CLAIM #20	AA 27198	Drill	Unreclaimed
Federal	MARMOT CLAIM #21	AA 27199	Drill	Unreclaimed
Federal	MARMOT CLAIM #22	AA 27200	Drill	Unreclaimed
Federal	MARMOT CLAIM #25	AA 27203	Drill	Reclaimed
Federal	MARMOT CLAIM #27	AA 27205	Drill	Reclaimed
Federal	MARMOT CLAIM #29	AA 27207	Drill	Reclaimed
Federal	MARMOT CLAIM #30	AA27208	Drill	Unreclaimed
Federal	MARMOT #101	AA 27213	Drill	Unreclaimed
Federal	MARMOT #102	AA 27214	Drill	Unreclaimed
Federal	MARMOT #103	AA 27215	Drill	Unreclaimed
Federal	MARMOT #106	AA 27218	Road	Unreclaimed
Federal	MARMOT #112	AA 27224	Drill	Unreclaimed
Federal	MARMOT #113	AA 27225	Drill	Reclaimed
Federal	MARMOT #114	AA 27226	Road	Unreclaimed
Federal	MARMOT #115	AA 27227	Road	Unreclaimed
Federal	MARMOT #116	AA 27228	Drill	Unreclaimed
Federal	MARMOT #117	AA 27229	Drill	Unreclaimed
Federal	MARMOT #119	AA 27231	Road	Unreclaimed
Federal	MARMOT #120	AA 27232	Road	Unreclaimed
Federal	MARMOT #121	AA 27233	Drill	Reclaimed
Federal	MARMOT #122	AA 27234	Road	Unreclaimed
Federal	MARMOT #124	AA 27236	Drill	Unreclaimed
Federal	MARMOT #125	AA 27237	Road	Unreclaimed
Federal	MARMOT #130	AA 27242	Road	Unreclaimed
Federal	MARMOT #131	AA 27243	Road	Unreclaimed
Federal	MARMOT #137	AA 27249	Road	Unreclaimed
Federal	MARMOT #144	AA 27256	Road	Unreclaimed
Federal	MARMOT #150	AA 27262	Road	Unreclaimed
Federal	MARMOT #151	AA 27263	Road	Unreclaimed
Federal	MARMOT #156	AA 27268	Road	Unreclaimed
Federal	MARMOT #161	AA 27273	Road	Unreclaimed
Federal	MARMOT #162	AA 27274	Road	Unreclaimed
Federal	MARMOT #167	AA 27278	Road	Unreclaimed

Claim Type	Claim Name/ Parcel Number	Claim Number	Disturbance Type	Current Status
Federal	RAT DAWG #53	AA 29577	Drill	Reclaimed
Federal	RAT DAWG #54	AA 29578	Drill	Reclaimed
Federal	RAT DAWG #56	AA 29580	Drill	Unreclaimed
Federal	RAT DAWG #57	AA 29581	Drill	Unreclaimed
Federal	RAT DAWG #64	AA 29583	Drill	Reclaimed
Federal	RAT DAWG #66	AA 29585	Drill	Unreclaimed
Federal	RAT DAWG #67	AA 29586	Drill	Unreclaimed
Federal	RAT DAWG #68	AA 29587	Drill	Unreclaimed
Federal	RAT DAWG #77	AA 29590	Drill	Unreclaimed
Federal	ICE 60	AA 51532	Drill	Unreclaimed
Federal	ICE 70	AA 51542	Drill	Reclaimed
Federal	ICE 74	AA 51546	Drill	Reclaimed
Federal	KIC 5	AA 51562	Drill	Reclaimed
Federal	KIC 12	AA 51569	Drill	Reclaimed
Federal	KIC 14	AA 51571	Drill	Reclaimed
Federal	BOUNDLESS 9	AA 52981	Drill	Reclaimed
Federal	BOUNDLESS 12	AA 52984	Drill	Reclaimed
Federal	BOUNDLESS 28	AA 53000	Drill	Reclaimed
Federal	CONNEXION 27	AA 53044	Drill	Reclaimed
Federal	MARMOT HOLE 6	AA 52950	Drill	Unreclaimed
MHT	MHT C70451	9100759	Drill & Road	Unreclaimed
MHT	MHT C81210	9100759	Drill	Unreclaimed
State	JARVIS 26	661292	Road	Unreclaimed
State	JARVIS 27	661293	Road	Unreclaimed
State	JARVIS 24	661290	Road	Unreclaimed
State	GE21	662081	Road	Unreclaimed

DRILLING

Diamond Drilling

In 2022, seven diamond drillholes were completed for a total of 11,633.2 feet (3545.8 metres). Five drillholes were dedicated to exploration totaling 10,345.1 feet (3153.2 m), one drillhole was completed as a water well for future drilling totaling 317.9 feet (96.9 metres) and one drillhole was drilled as a geotechnical drillhole totaling 970.1 feet (295.7 metres). All drillholes were completed from 4 drill pads (Paradise City Pad – 4 drillholes, B-Lo Pad – 3 drillholes, Hari Pad – 1 drillhole and Wormhole Pad – 1 drillhole) and were collared in bedrock.

One hole (CMR22-146) was installed with slotted PVC pipe (2" (51 mm) schedule-80, 40-slot (0.04" (1 mm) slot diameter) for future downhole tracer and geophysical studies and two holes (CMR22-145, CMR22-147) were installed with mixed slotted (2" (51 mm) schedule-80) and un-slotted PVC pipe (2" (51 mm) schedule-80, 40-slot (0.04" (1 mm) slot diameter) for future geophysical studies. Detailed information is available to regulators from CMR upon request.

The water well hole (CMR22-149) was drilled to source future drilling and eliminate the risk of crews laying waterline over dangerous terrain. The hole is lined with 80 metres of HQ rod left in the casing adapter.

Diamond Drillhole Reclamation (2022)

All seven drillholes remain open (unplugged, 3 with PVC pipe installed) for future geotechnical, hydrogeological, or geophysical studies. The drillholes are flagged for future reclamation once all studies have been completed. See the 2019 Annual Reclamation Statement for a detailed description of diamond core drillhole reclamation methods.

At least 1.5 m of casing is typically left at the collar to provide a permanent marker for drillhole location, to allow re-entry, and to facilitate hole plugging and capping. Casing was left in 2022 drillholes. Labeled aluminum or PVC caps were used on all drillholes to cap casing and provide drillhole identification. All collars were photographed (Photos 4-10).

Table 4 summarizes the reclamation status of the diamond drillholes completed in 2022. Figure 4 shows the location and reclamation status of 2022 drillholes.

Table 4. Reclamation status of 2022 diamond drillholes.

Drill Site #	Drillpad	Latitude	Longitude	Datum (NAD83)	Associated APMA	Mining Claim ADL, BLM # or USMS	Fuel Storage (Onsite/Offsite)	Tundra Mat	Trash Containment	Sanitary Facilities	Drill Additives	Artesian Zone	Water Discharged	Reclaimed	Plugged	Plug Type	Cemented	Standing Pipe	Revegetated	Date Reclaimed
CMR22-145	Paradise City	59.3845	-136.4193	NAD83	5690	AA 27208	Off Site	No	Off Site	Off Site	Yes	No	No	No	No	N/A	No	Yes	N/A	N/A
CMR22-146	B-Lo	59.3909	-136.3864	NAD83	5690	AA 27229	Off Site	No	Off Site	Off Site	Yes	No	No	No	No	N/A	No	No	No	N/A
CMR22-147	B-Lo	59.3909	-136.3864	NAD83	5690	AA 27229	Off Site	No	Off Site	Off Site	Yes	No	No	No	No	N/A	No	No	No	N/A
CMR22-148/148B/148C	Paradise City	59.3845	-136.4192	NAD83	5690	AA 27208	Off Site	No	Off Site	Off Site	Yes	No	No	No	No	N/A	No	Yes	N/A	N/A
CMR22-149	B-Lo	59.3909	-136.3864	NAD83	5690	AA 27229	Off Site	No	Off Site	Off Site	Yes	No	No	No	No	N/A	No	Yes	No	N/A
CMR22-150	Hari	59.3862	-136.3879	NAD83	5690	MHT Lands-Parcel C70451	Off Site	No	Off Site	Off Site	Yes	No	No	No	No	N/A	No	Yes	N/A	N/A
GT22-019	Wormhole	59.3844	-136.3829	NAD83	5690	MHT Lands-Parcel C70451	Off Site	No	Off Site	Off Site	Yes	No	No	No	No	N/A	No	Yes	N/A	N/A

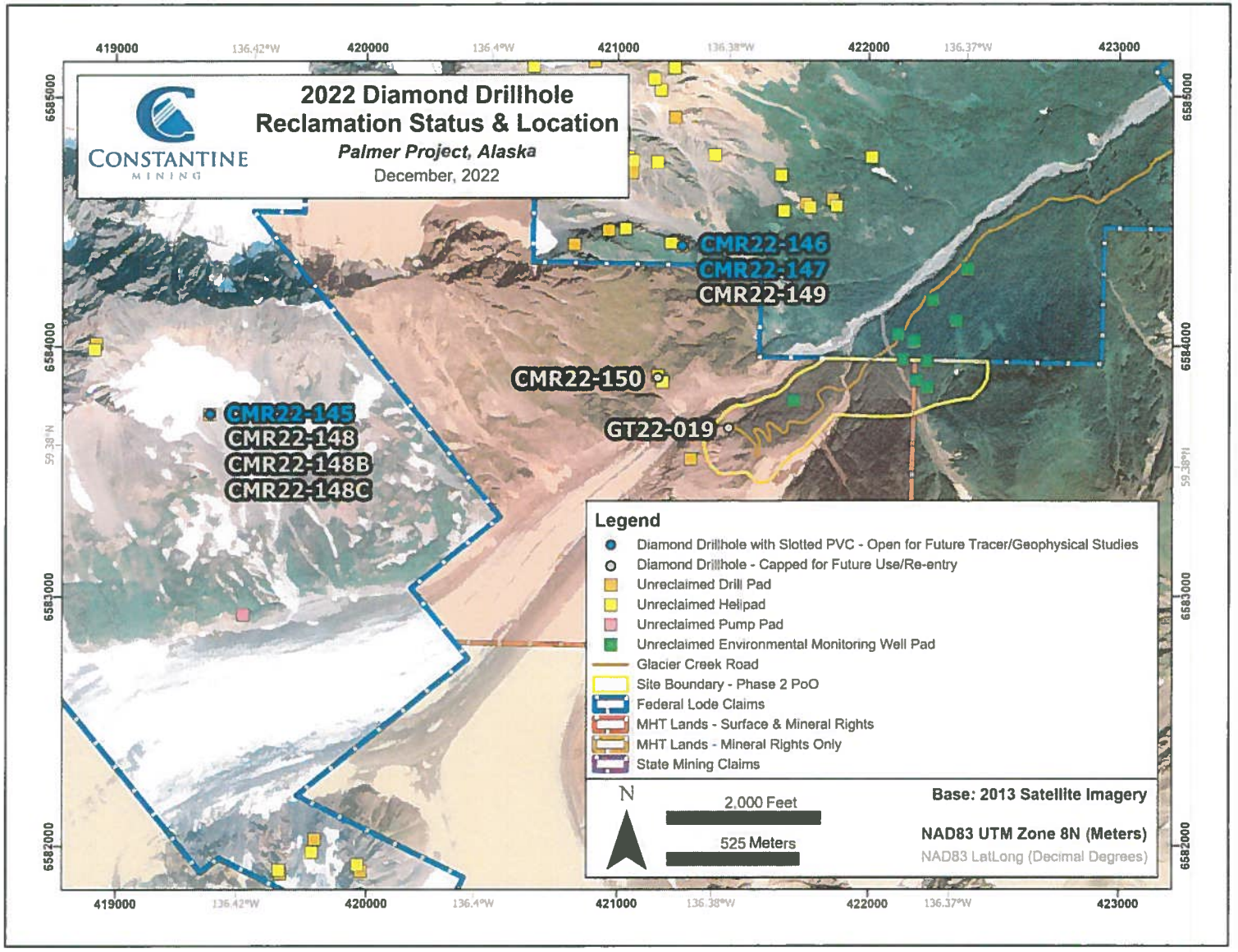


Figure 4. Reclamation status and location of 2022 diamond drillholes.

DRILL PAD DISTURBANCE

Diamond Drill Pads, Access Helipads and Pump Pads

Four wooden diamond drill pads (Paradise City, B-Lo, Hari, and Wormhole) and three wooden helipads (Paradise City Heli, B-Lo Heli, and Hari Heli) were used to support the seven diamond drillholes completed in 2022. Two wooden pump pads (HG Pump, Cantankerous), one gravel pad (Waterfall Pump), and one wooden drill pad (U6) were used to source water for 2022 drilling. A summary of pads used to support the 2022 diamond drill program is featured in Table 5.

Two new diamond drill pads (Paradise City, Wormhole) and one new helipad (Paradise City Heli) were constructed in 2022. Wormhole is covered under ADNR Reclamation Plan Approval J201985690RPA. One previously reclaimed diamond drill pad (Hari) and two previously reclaimed pump pads (HG Pump, Cantankerous) were re-built in 2022. One pump pad (Waterfall Pump) was built in 2022 by flattening gravel beside Waterfall Creek (no wooden pad needed). Paradise City drill and helipad were built on a new site, while the Wormhole drill pad was built at the road-accessible proposed portal site. The existing B-Lo drill and helipad constructed during the 2021 field season as well as the Hari helipad constructed in 2017 were utilized for the 2022 drill campaign. The Waterfall pump pad, built in 2022, was used to source water for both Wormhole and Hari drilling, while Paradise City utilized previously reclaimed pump pads at HG Pump (reclaimed in 2019, rebuilt in 2022) and Cantankerous (reclaimed in 2018, rebuilt in 2022). B-Lo used water sourced from GT14-01 at the existing U6 drill pad (see 'Water Sources').

Table 5. Summary of pads used to support 2022 diamond drilling surface program.

Drill Pad	Access Heli Pad	Pump Pad	Land Status	Area	Drilled Hole ID
Paradise City	Paradise City Heli	HG Pump Cantankerous	BLM	HG (HG-Jasper Prospect)	CMR22-145
					CMR22-148/148B/148C
B-Lo*	B-Lo Heli*	U6*	BLM	SW (Glacier Creek Prospect)	CMR22-146
					CMR22-147
					CMR22-149
Hari	Hari Heli*	Waterfall Pump	MHT – Mineral & Surface Rights Only	Jasper Mountain (HG-Jasper Prospect)	CMR22-150
Wormhole+	N/A – Road Access	Waterfall Pump	MHT – Mineral & Surface Rights Only	Portal (Geotechnical)	GT22-019
4	**3**	**4**			**7**

** Denotes pads built prior to 2022*

+ Disturbance covered under ADNR Reclamation Plan Approval J201985690RPA

Overburden Drill Pads and Access Roads

No new overburden drill pads or access trails were created in 2022. Eleven overburden pads and four access trails were constructed in 2021. In the 2021 Annual Reclamation Statement, all new pads (B, C, D, E, F, G, H, J, K, L, and M) and access trails were used to calculate the disturbance. Pad A was not included since it is on a site of previous disturbance covered under ADNR Reclamation Plan Approval J201985690RPA. For the 2022 Annual Reclamation Statement, pads B, C, J, and associated access trail are now included within the updated Phase 2 Plan of Operations boundary (see 'Site Reclamation') and are therefore also covered under ADNR Reclamation Plan Approval J201985690RPA.

The total 2021 overburden disturbance (including pads B, C, J, and access trail) was 1.48 acres (reported as 1.49 acres due to rounding errors). The disturbance of pads B, C, J, and associated access trail that are now included in the ADNR Reclamation Plan Approval J201985690RPA is **0.42 acres.** This number is subtracted from the 2021 total disturbance to give a total 2022 overburden disturbance of **1.06 acres.**

A summary of pads used for 2021 and 2022 disturbance calculations is shown on Table 6. Figure 5 shows overburden pads and access trails used for 2021 and 2022 disturbance calculations.

Table 6. Summary of pads used for 2021 and 2022 disturbance calculations.

Drill Pad	Pad Used for 2021 Disturbance Calculation?	Pad Used for 2022 Disturbance Calculation?	Land Status	Drill Hole ID
A*	No	No	MHT - Mineral & Surface Rights	GC21-01
B*	Yes	No	MHT - Mineral Rights Only	MW21-05
C*	Yes	No	MHT - Mineral Rights Only	GC21-02
D	Yes	Yes	BLM	MW21-06
E	Yes	Yes	BLM	MW21-08
F	Yes	Yes	BLM	MW21-04
G	Yes	Yes	BLM	GC21-03
				MW21-07
H	Yes	Yes	BLM	N/A
J*	Yes	No	MHT - Mineral Rights Only	MW21-09
K	Yes	Yes	BLM	MW21-10
L	Yes	Yes	BLM	MW21-11
M	Yes	Yes	BLM	MW21-12
12				**12**

**Disturbance covered under ADNR Reclamation Plan Approval J201985690RPA.*

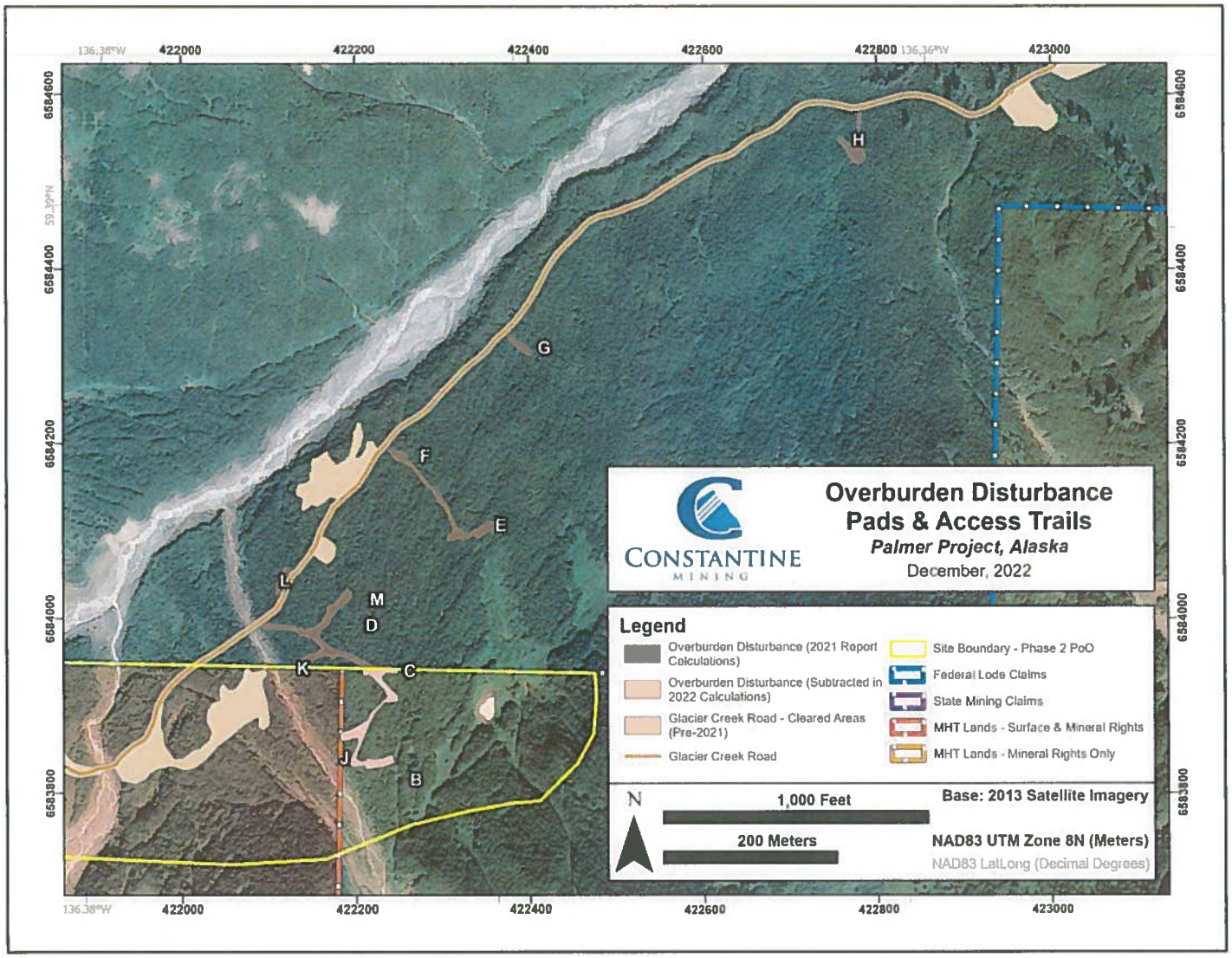


Figure 5. Disturbance from overburden pads and access trails used for 2021 and 2022 disturbance calculations due to updated Phase 2 Plan of Operations boundary.

Drill Site Disturbance

Total existing drill site disturbance prior to the 2022 drill program was 1.81 acres. **Total overburden and diamond drill site related disturbance at the end of the 2022 program decreased to 1.42 acres** (pending regulatory approval).

This accounts for the construction of two diamond drill pads (Hari, Paradise City), one helipad (Paradise City), and three pump pads (Cantankerous, HG Pump, Waterfall Pump) as well as the reclamation of one helipad (Paradise City Heli) and two pump pads (HG Pump, Waterfall Pump). Wormhole drill pad was also reclaimed; however, it falls within the updated Phase 2 Plan of Operations boundary, therefore associated disturbance and reclamation calculations are covered under ADNR Reclamation Plan Approval J201985690RPA.

Photos 11-28 provide documentation of all drill sites, heli access pads and pump pads. Unreclaimed overburden and diamond drill pad-related disturbance acreage is summarized in Table 7.

Table 7. Summary of disturbance due to unreclaimed overburden/ diamond drill pads and access pads/ roads.

Pad Type	Dimensions (ft x ft)	Acres per Pad	Unreclaimed Number of Pads (Constantine Status)	Total Acreage of pad disturbance (Constantine Status, pending regulatory approval)
Diamond drill pad	20x20	0.009	23	0.21
Helipad and pump pads	14x14	0.005	26	0.13
Monitoring Well Pad MW18-02 (cleared alders, dirt)	26x26	0.015	1	0.02
**Overburden Pads and Trails (cleared alders, dirt) - Updated from 2021	*N/A	*N/A	*N/A	1.06

**Overburden pad and access trail dimensions vary - acreage calculated from total cleared area.*
***Excluding disturbance covered under ADNR Reclamation Plan Approval J201985690RPA.*

Total Disturbance = 1.42

Table 8 provides a comprehensive list of all diamond drill, heli and pump pads that are currently unreclaimed (49 in total). Figure 4 shows the location of all unreclaimed diamond drill, heli, pump and environmental monitoring well pads in the project area. Constantine plans to utilize all unreclaimed sites in future programs, both for drilling and as a safety measure to provide secure, safe helicopter access to different areas of the property.

The 2016 Annual Reclamation Statement provides a detailed description, including photos, of pad construction methods. Reclamation of discontinued drill pads and helipads includes salvaging all timber and removal of all associated materials (scrap, etc.). Partial reclamation of drill sites includes removal of all but the main support timbers, and in some places, complete removal of the associated helipad. Refuse and scrap was removed at all sites (reclaimed or not) and all sites were left in a tidy state, with only the secure timbered frame of the drill pads and associated helipads left in place. No fuel, drill additives, or other material were left on site. Decking and timbering prone to damage or weather/snow related dispersion was removed, and safely secured together at a sturdy pad site for future access and re-use.

Table 8. Summary of currently unreclaimed diamond drill, heli and pump pads.

Pad	Pad Type	Pad Use	Pad Status	Decking	Railings	Easting NAD83 (m)	Northing NAD83 (m)	Elevation Geoid12A	Longitude DD	Latitude DD	Mining Claim ADL, BLM # or USMS
B-Lo	Drill		Unreclaimed	Yes	No	421256	6584401	950	-136.3864	59.3909	AA 27229
Camp	Drill		Unreclaimed	Yes	No	421227	6584917	1244	-136.3871	59.3955	AA 27186
Flip Out	Drill		Unreclaimed	No	No	420321	6585593	1508	-136.4033	59.4014	AA 29580
Go	Drill		Unreclaimed	Yes	No	419657	6581891	1340	-136.4136	59.3681	AA 27200
Green	Drill	Temporary-Use Water Source Access	Unreclaimed	Yes	No	420827	6584409	1246	-136.3940	59.3909	AA 27228
Hari	Drill		Unreclaimed	Yes	No	421161	6583875	897	-136.3879	59.3862	MHT Lands-Parcel C70451
HFE-2	Drill		Unreclaimed	Yes	No	421022	6584848	1304	-136.3907	59.3949	AA 27213
JP	Drill	Monitoring Well Access	Unreclaimed	Yes	No	420976	6584901	1357	-136.3915	59.3953	AA 27187
K3	Drill		Unreclaimed	Yes	No	420325	6585408	1546	-136.4032	59.3998	AA 29581
KD	Drill		Unreclaimed	Yes	Yes	421057	6584697	1172	-136.3900	59.3935	AA 27222
Money	Drill	Monitoring Well Access	Unreclaimed	Yes	No	421751	6584572	807	-136.3778	59.3925	AA 27224
Monument	Drill		Unreclaimed	Yes	No	418921	6584012	1819	-136.4274	59.3870	AA 52950
Onion	Drill		Unreclaimed	Yes	No	420908	6585142	1542	-136.3928	59.3975	AA 27195
Paradise City	Drill		Unreclaimed	No	No	419373	6583730	1513.389	-136.4193	59.3845	AA 27208
Peace	Drill		Unreclaimed	Partial	No	420534	6585280	1679	-136.3994	59.3987	AA 29586
Ridge B	Drill	Monitoring Well + Temporary-Use Water Source Access	Unreclaimed	Yes	Yes	420963	6584464	1128	-136.3916	59.3914	AA 27228
RW Pad	Drill		Unreclaimed	Yes	No	420439	6585329	1668	-136.4011	59.3991	AA 29586
T&A	Drill		Unreclaimed	Yes	No	421042	6584758	1228	-136.3903	59.3941	AA 27213
Terminus	Drill		Unreclaimed	Yes	No	421292	6583550	819	-136.3855	59.3833	MHT Lands-Parcel C70451
U6	Drill	Monitoring Well + Temporary-Use Water Source Access	Unreclaimed	Yes	No	421856	6584588	781	-136.3759	59.3927	AA 27224

Pad	Pad Type	Pad Use	Pad Status	Decking	Railings	Easting NAD83 (m)	Northing NAD83 (m)	Elevation Geoid12A	Longitude DD	Latitude DD	Mining Claim ADL, BLM # or USMS
Whack-a-Mole	Drill		Unreclaimed	Yes	No	420495	6585462	1564	-136.4002	59.4003	AA 29585
Wishbone	Drill		Unreclaimed	Yes	No	419978	6581900	1351	-136.4080	59.3682	AA 27199
Zion	Drill		Unreclaimed	No	No	419794	6582028	1239	-136.4112	59.3693	AA 27198
Barbie Heli	Heli	Snowpack Station Access	Unreclaimed	Yes	No	421650	6584685	881	-136.3796	59.3935	AA 27225
Barney Heli	Heli		Unreclaimed	No	No	421178	6585399	1460	-136.3881	59.3999	AA 29590
B-Lo Heli	Heli		Unreclaimed	Yes	No	421213	6584413	968	-136.3872	59.3910	AA 27229
Brazil Heli	Heli	Monitoring Well + Temporary-Use Water Source Access	Unreclaimed	Partial	No	421662	6584542	822	-136.3793	59.3923	AA 27224
Camp Heli	Heli	Snowpack Station Access	Unreclaimed	Yes	No	421171	6585027	1265	-136.3881	59.3965	AA 27187
Fire Heli	Heli		Unreclaimed	Yes	No	420664	6585123	1630	-136.3971	59.3973	AA 29587
Flip Out Heli	Heli		Unreclaimed	Yes	No	420349	6585609	1530	-136.4028	59.4016	AA 29580
Go Heli	Heli		Unreclaimed	Yes	No	419651	6581904	1339	-136.4137	59.3682	AA 27200
Hari Heli	Heli	Monitoring Well Access	Unreclaimed	Yes	No	421179	6583857	882	-136.3876	59.3860	MHT Lands-Parcel C70451
HFE Heli	Heli		Unreclaimed	Yes	No	421019	6584855	1312	-136.3907	59.3949	AA 27213
KD/T&A Heli	Heli	Temporary-Use Water Source Access	Unreclaimed	Yes	No	421060	6584744	1210	-136.3900	59.3939	AA 27213
Long Heli	Heli	Monitoring Well Access	Unreclaimed	Yes	No	421158	6584738	1181	-136.3883	59.3939	AA 27214
Marmot Heli	Heli	Monitoring Well Access	Unreclaimed	Yes	No	421386	6584766	1085	-136.3843	59.3942	AA 27214
Merrill's Heli	Heli		Unreclaimed	Partial	No	421145	6585072	1369	-136.3886	59.3969	AA 27195
Money Heli	Heli	Monitoring Well Access	Unreclaimed	Yes	No	421765	6584557	797	-136.3775	59.3924	AA 27224
Monument Heli	Heli		Unreclaimed	Yes	No	418915	6583989	1813	-136.4275	59.3868	AA 52950
Oxide Creek Heli	Heli	Temporary-Use Water Source Access	Unreclaimed	Yes	No	422012	6584755	768	-136.3732	59.3942	AA 27215

Pad	Pad Type	Pad Use	Pad Status	Decking	Railings	Easting NAD83 (m)	Northing NAD83 (m)	Elevation Geoid12A	Longitude DD	Latitude DD	Mining Claim ADL, BLM # or USMS
Peace Heli	Heli		Unreclaimed	No	No	420545	6585293	1680	-136.3993	59.3988	AA 29586
RW Heli	Heli		Unreclaimed	No	No	420455	6585304	1697	-136.4008	59.3989	AA 29586
Stryker Heli	Heli	Monitoring Well Access	Unreclaimed	Yes	No	421226	6585116	1301	-136.3872	59.3973	AA 27195
TD Heli	Heli	Monitoring Well Access	Unreclaimed	Yes	No	421031	6584471	1091	-136.3904	59.3915	AA 27228
U6 Heli	Heli/ Pump	Monitoring Well + Temporary-Use Water Source Access	Unreclaimed	Yes	No	421872	6584562	770	-136.3756	59.3925	AA 27224
Whack-a-Mole Heli	Heli		Unreclaimed	No	No	420482	6585441	1592	-136.4004	59.4001	AA 29585
Wishbone Heli	Heli		Unreclaimed	Yes	No	419965	6581925	1340	-136.4077	59.3683	AA 27199
Zion Helipad	Heli		Unreclaimed	Yes	No	419782	6581834	1255	-136.4115	59.3691	AA 27198
Cantankerous (CAP SE)	Pump	Temporary-Use Water Source Access	Unreclaimed	Yes	No	419508	6582928	1149	-136.4166	59.3774	AA 51532

ARTESIAN WELLS

No new artesian conditions were encountered in 2022.

WATER SOURCES

Constantine has four Temporary Water Use Authorizations (TWUA) – TWUA F2019-048 Amendment #2, TWUA F2019-049, TWUA F2021-024 Amendment #1, and F2021-025. The authorizations approve 19 water sources to supply water for drills and other work. As per regulations, a maximum of five sites can be permitted per authorization. All 5 water sources used in 2022 were not fish-bearing at the point of withdrawal.

In 2022, water sources used to support drilling and project activities were approved under TWUA permit numbers F2019-048 Amendment #2, F2019-049 and F2021-024 Amendment #1. Water sources included 1 drillhole: "GT14-01" and 4 named streams: "HG", "Cantankerous", "Waterfall Creek/ Starbucks", and "Marble". GT14-01, HG, Cantankerous, and Waterfall Creek were used to supply water for diamond drilling and Marble Creek was used intermittently to provide water for core cutting. Table 9 lists the approved water sources used to support the project in 2022. Photos of the water sources are available in Photos 29-32.

Table 9. Water sources used to supply 2022 project activities.

Water Source Name	HG	Cantankerous	GT14-01	Waterfall Creek/ Starbucks	Marble Creek
Latitude (ddd.mmmm)	59.3837	59.3775	59.3927	59.3806	59.4173
Longitude (ddd.mmmm)	-136.4188	-136.4166	-136.3759	-136.3861	-136.2286
Datum	NAD83	NAD83	NAD83	NAD83	NAD83
Associated TWUA	F2019-049	F2019-049	F2021-024 Amendment #1	F2019-048 Amendment #2	F2019-049
Associated APMA	5690	5690	5690	5690	5690
Mining Claim ADL, BLM # or USMS	AA 27208	AA 51532	AA 27224	C70451	NA (Private Land)
Water Source Type	Glacial Melt / Creek	Glacial Melt / Creek	Drill Hole	Glacial Melt / Creek	Glacial Melt / Creek
Intake Size	2"	2"	2"	2"	1"
Mesh Size	0.375"	0.375"	0.125"	0.375"	0.125"
Submerged	Yes	Yes	N/A	Yes	Yes

Water Source Name	HG	Cantankerous	GT14-01	Waterfall Creek/ Starbucks	Marble Creek
Start Date	1) 07-Aug-22	1) 15-Aug-22 2) 31-Aug-22	1) 11-Aug-22 2) 23-Aug-22 3) 06-Sept-22 4) 11-Sept-22	1) 14-Sept-22 2) 27-Sept-22	1) 19-Jun-22 2) 20-Jun-22
Stop Date	1) 15-Aug-22	1) 30-Aug-22 2) 22-Sept-22	1) 22-Aug-22 2) 05-Sept-22 3) 10-Sept-22 4) 12-Sept-22	1) 19-Sept-22 2) 05-Oct-22	1) 01-Oct-22 2) 12-Oct-22
Avg GPM	20	20	20	20	5
Engine Size (HP)	25	25	25	25	5

SUMPS

No sumps were required in 2022.

FUEL AND HAZARDOUS SUBSTANCES

All fuel-related activities are compliant with EPA Tier I Spill Prevention, Control, and Countermeasure (SPCC) Plan requirements and SPCC Spill inspections were conducted on a weekly basis. No reportable spills occurred in 2021.

At the Glacier Creek laydown, within the claim boundaries, the Glacier Creek Fuel Depot (Photo 1) holds 5000 gallons of diesel and 3000 gallons of Jet A fuel. The tanks are in a sturdy 11,000+ gallon containment, built well in excess of 110% capacity of total fuel storage tanks, fulfilling the BLM/EPA requirements. The containment is wood-framed and lined with 30 mL urethane-coated fabric. The 11,000+ gallon containment can also host the portable, 70-gallon, double-walled, steel fly tanks. Containment was pumped of water periodically following heavy rains. All required signage, fire extinguishers, and spill kits are in place. All tanks were emptied, and fuel pumps removed for winterization as of October 2022.

A 10,000-gallon tank was staged at the Glacier Creek Laydown at the end of the 2018 season (Photo 2). It is currently not in use and is staged for Phase II Plan of Operation.

ROAD

Work on the Glacier Creek Road is summarized in the 2018 Annual Reclamation Report. Work on the road within the Phase 2 Plan of Operations area is covered under ADNR Reclamation Plan Approval J201985690RPA. No additional disturbances to BLM managed lands were performed on Glacier Creek Road in 2022. Glacier Creek Road is divided into 4 phases (Figure 6) spanning 5 years from 2014–2018.

Total acreage of all ground disturbances for the road and related constructions on BLM managed lands has remained unchanged from 2021 to 2022 at an estimated 11.13 acres; see Tables 2, 10 and 11.

Note that the acreage of the reclaimed road shoulders and cut slopes for the BLM section of Phase 1 has been deducted from the total disturbance.

The estimated acreage of disturbance was calculated based on an average nominal road width of 4.3 m (14 ft), and an average road width of 8 m (26 ft), including shoulders and cut slopes (i.e., an average of 1.85 m (6 ft) of ground disturbance on either side of the 4.3 m (14 ft) wide road to include road shoulders and cut slopes). The road shoulders and cut slopes are areas that can be reclaimed while the main road stays open. The shoulders and cut slopes for Phase 1 have been fully reclaimed and approved by BLM. The shoulder and cut slopes for Phases 2 and 3 have been fully reclaimed and are pending approval by the BLM.

The total estimated acreage of disturbance for the road (once reclamation acreage was accounted for) was then added to the disturbance acreage calculated for pullouts and other cleared areas (weather station clearing, the laydown, the fuel station, the helipad, one borrow-pit, the quarry, stockpiles, and "The Cut").

The pullout disturbance area is based on an ideal pullout size of 4.5 m x 30 m (note that many of the pullouts are smaller than 4.5 x 30 m). The geometry of the additional cleared areas was mapped with a Trimble GeoXH and then plotted and converted into polygons in ArcGIS. The ArcGIS geometry calculator tool was used to determine the acreage for each polygon. All existing road on Federal lands has been inspected by BLM and reclamation is pending approval.

Road reclamation includes both concurrent reclamations, focused on immediate stabilization measures during and immediately following construction, and final reclamation, to be performed at such time that the road is no longer needed for exploration access. The 2.1 km (1.3 mile) portion of the road located within the Haines State Forest is expected to remain open indefinitely, providing long term access for timber harvest, mineral resources, and recreation purposes, and therefore only subject to concurrent reclamation.

Table 10. Summary of disturbance calculations for Glacier Creek Road (excluding cleared areas and pullouts). Calculations are for sections of road on BLM lands only.

Agency	Phase	Feature	Length (m)	Calculated Acreage of Disturbance	Acres Reclaimed	Current Disturbance Acreage (*unchanged from 2019*)
BLM	Phase 1	4.3 m wide nominal road width	1274	1.35		1.35
BLM	Phase 1	Road shoulders + cut slopes		1.16	1.16	0
BLM	Phase 2	4.3 m wide nominal road width	644	0.68		0.68
BLM	Phase2	Road shoulders + cut slopes		0.59		0.59
BLM	Phase 3	4.3 m wide nominal road width	1272	1.35		1.35
BLM	Phase 3	Road shoulders + cut slopes		1.16		1.16
BLM	Phase 4a	4.3 m wide nominal road width	329	0.35		0.35
BLM	Phase4a	Road shoulders + cut slopes		0.3		0.3
Total (BLM only)			**3519**	**6.94**	**1.16**	**5.78**

Table 11. Summary of disturbances of additional cleared land and pullouts associated with Glacier Creek Road. Calculations are for sections of road on BLM lands only.

Agency	Phase	Pullouts	Acreage of Disturbance for Pullouts	Acreage of Disturbance for Cleared Areas	Current Disturbance Acreage (*unchanged from 2019*)
BLM	Phase 1	3	0.1	1.48	1.58
BLM	Phase 2	1	0.03	0	0.03
BLM	Phase 3	3	0.1	3.45	3.55
BLM	Phase 4a	1	0.03	0.16	0.19
Total (BLM only)			**0.26**	**5.09**	**5.35**

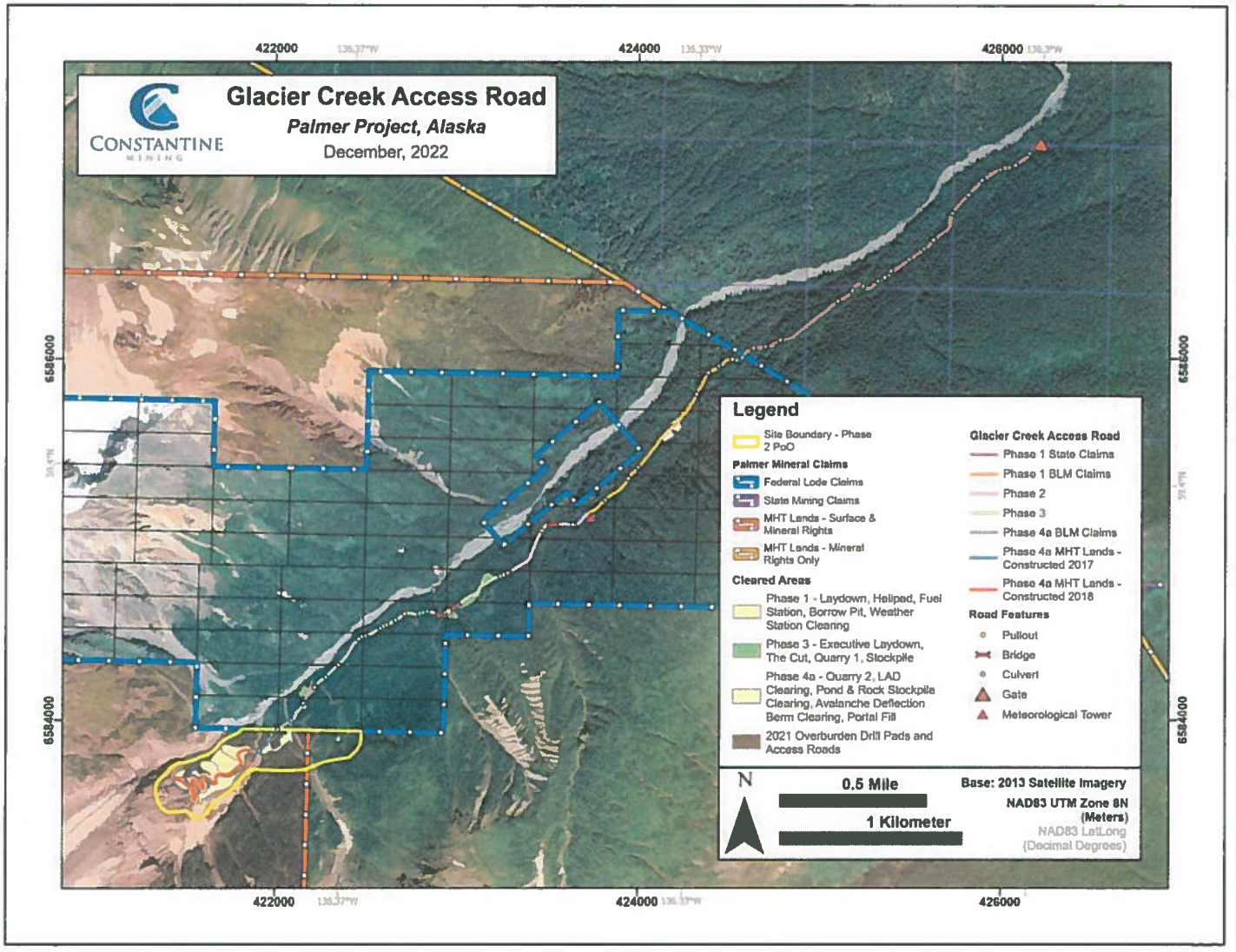


Figure 6. Glacier Creek Road and associated disturbed areas. Note that the Phase 2 Plan of Operations Site Boundary outlined in yellow is discussed in a separate reclamation report (ADNR Reclamation Plan Approval J201985690RPA).

PHOTOGRAPHS
2022 Annual Reclamation Report

Palmer Project
Surface Exploration
Porcupine Mining District, Alaska

Glacier Creek Laydown

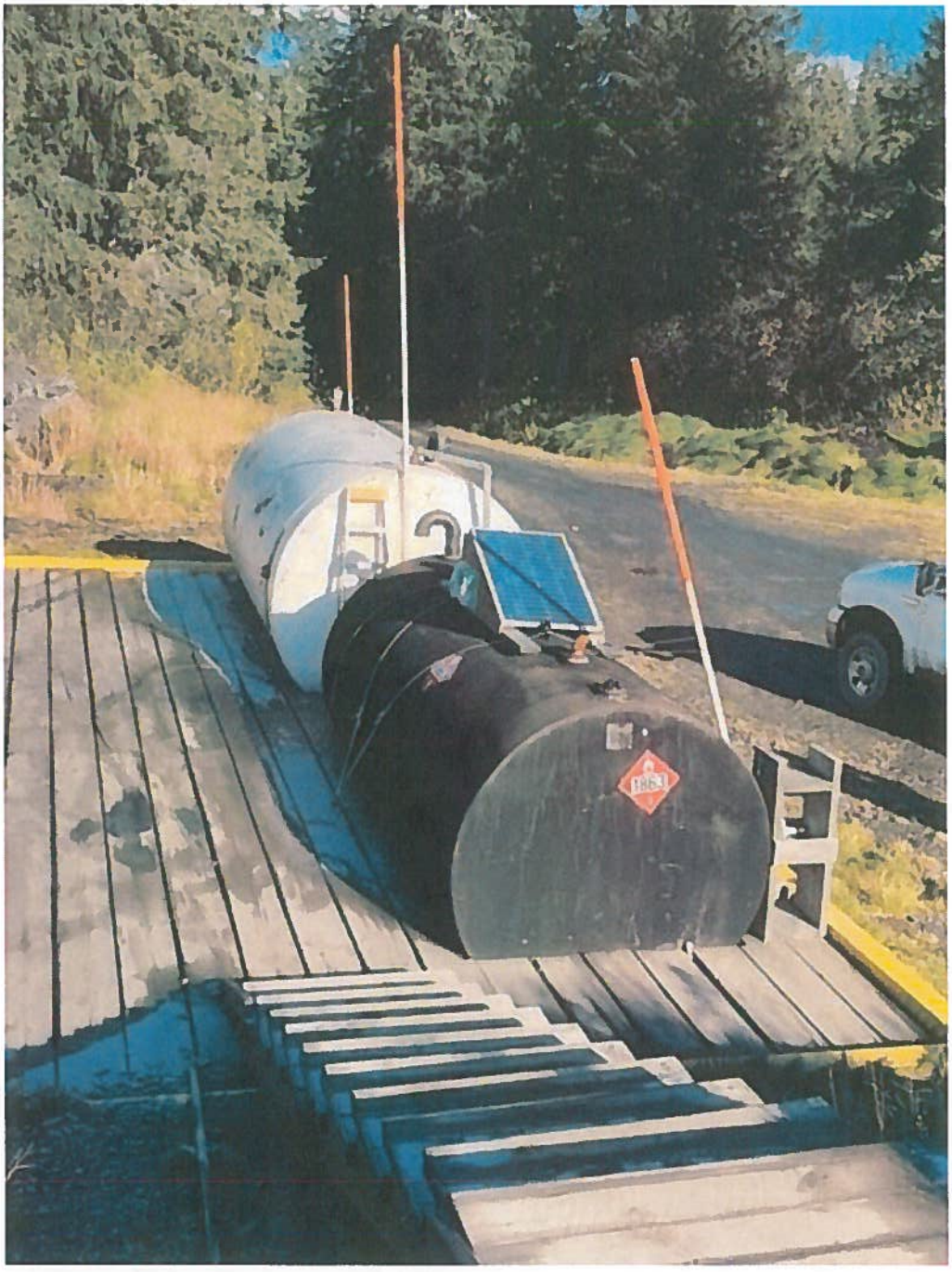


Photo 1. Fuel Station at the Glacier Creek Laydown. Tanks were emptied and winterized in October of 2022 (Photo: Oct 2021).

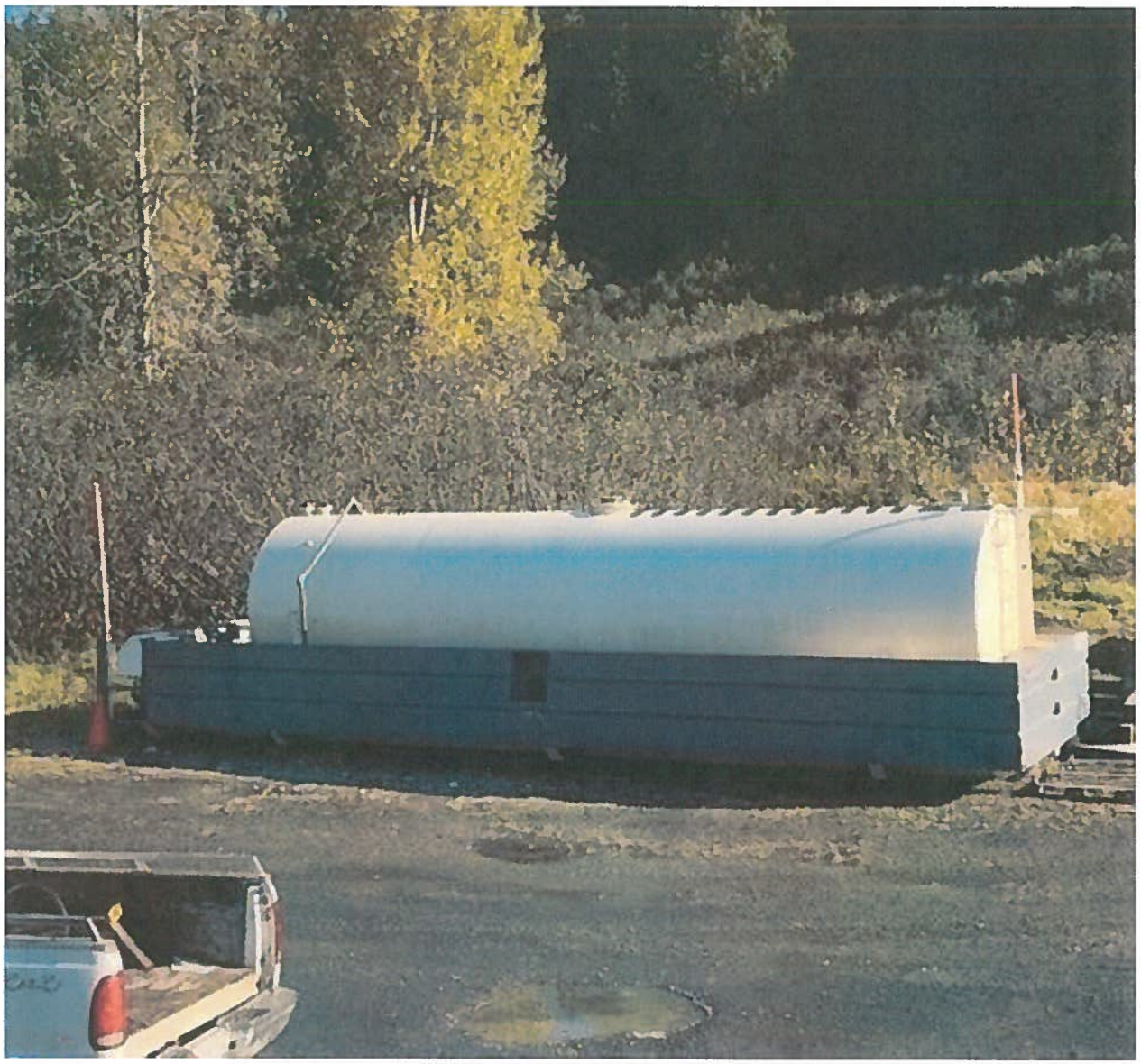


Photo 2: 10,000-gallon fuel tank at Glacier Creek Laydown (added in 2018). Note that this tank is currently not in use and is staged for Phase 2 Plan of Operation (Photo: Oct 2021).

Photo 3. Glacier Creek Laydown. Six shipping containers, pallets of core boxes, some lumber, and drilling equipment (drill rods, fuel, mud tanks) are temporarily stored at the laydown (Photo: Oct 2022).

Diamond Drillholes

Photo 4: Paradise City Pad diamond drill hole CMR22-145 is capped. Mixed slotted and unslotted PVC was installed to support potential future geophysical surveys.

Photo 5: B-Lo Pad diamond drill hole CMR22-146 is capped. Slotted PVC was installed to support potential future tracer studies and geophysical surveys.

Photo 6: B-Lo Pad diamond drill hole CMR22-147 is capped. Mixed slotted and unslotted PVC was installed to support potential future geophysical surveys.

Photo 7: Paradise City Pad diamond drill hole CMR22-148/148B/148C is capped for future re-entrance.

Photo 8: B-Lo Pad diamond drill hole CMR22-149 is capped. Hole drilled as a water well with 80 m of HQ drill rod left in the casing adapter to source future drilling.

Photo 9: Hari Pad diamond drill hole CMR22-150 is capped for future re-entrance.

Photo 10: Wormhole Pad diamond drill hole GT22-019 is capped using a standpipe with valve.

Drill Pads & Heli Access Pads

Paradise City

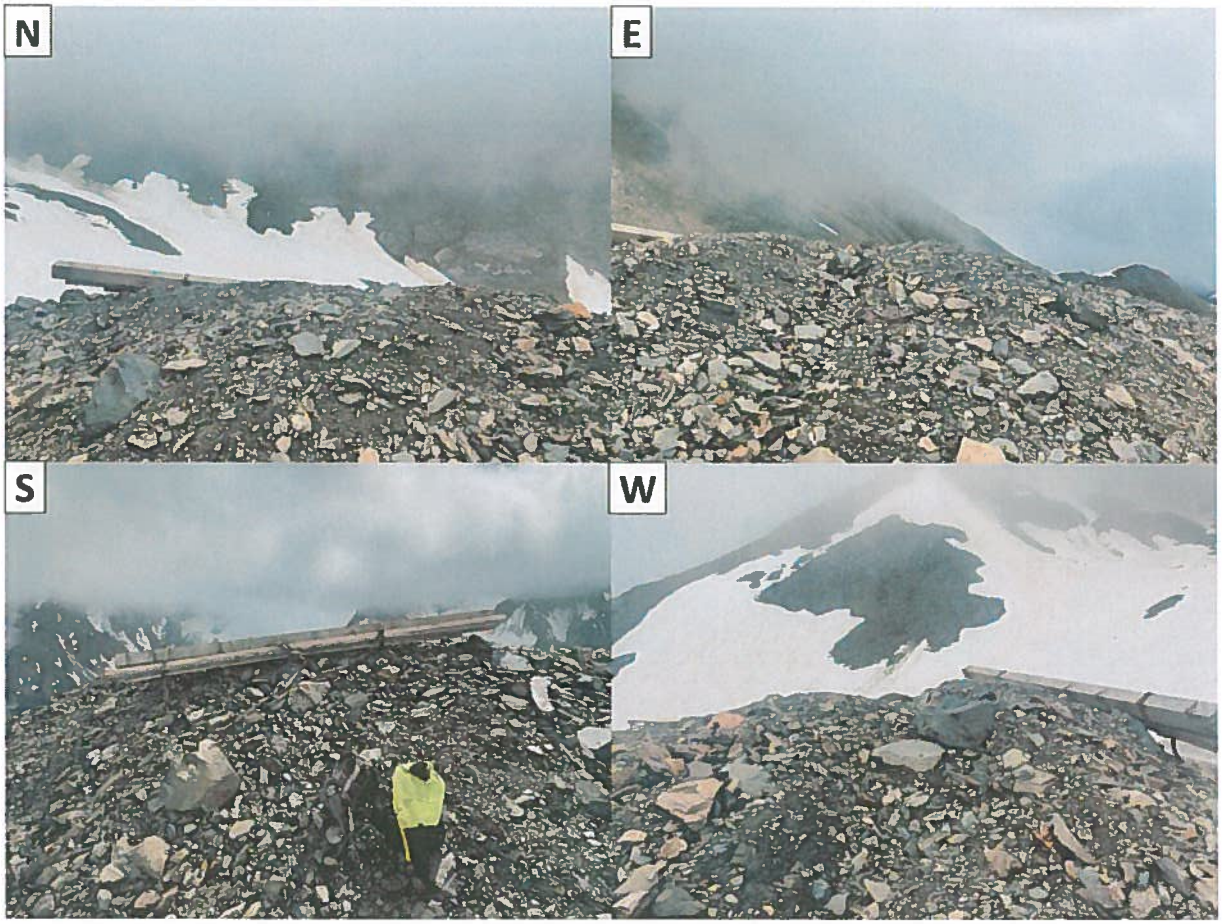


Photo 11: Paradise City Drill Pad site pre-build.

Photo 12: Paradise City Drill Pad pre-drill, built in 2022.

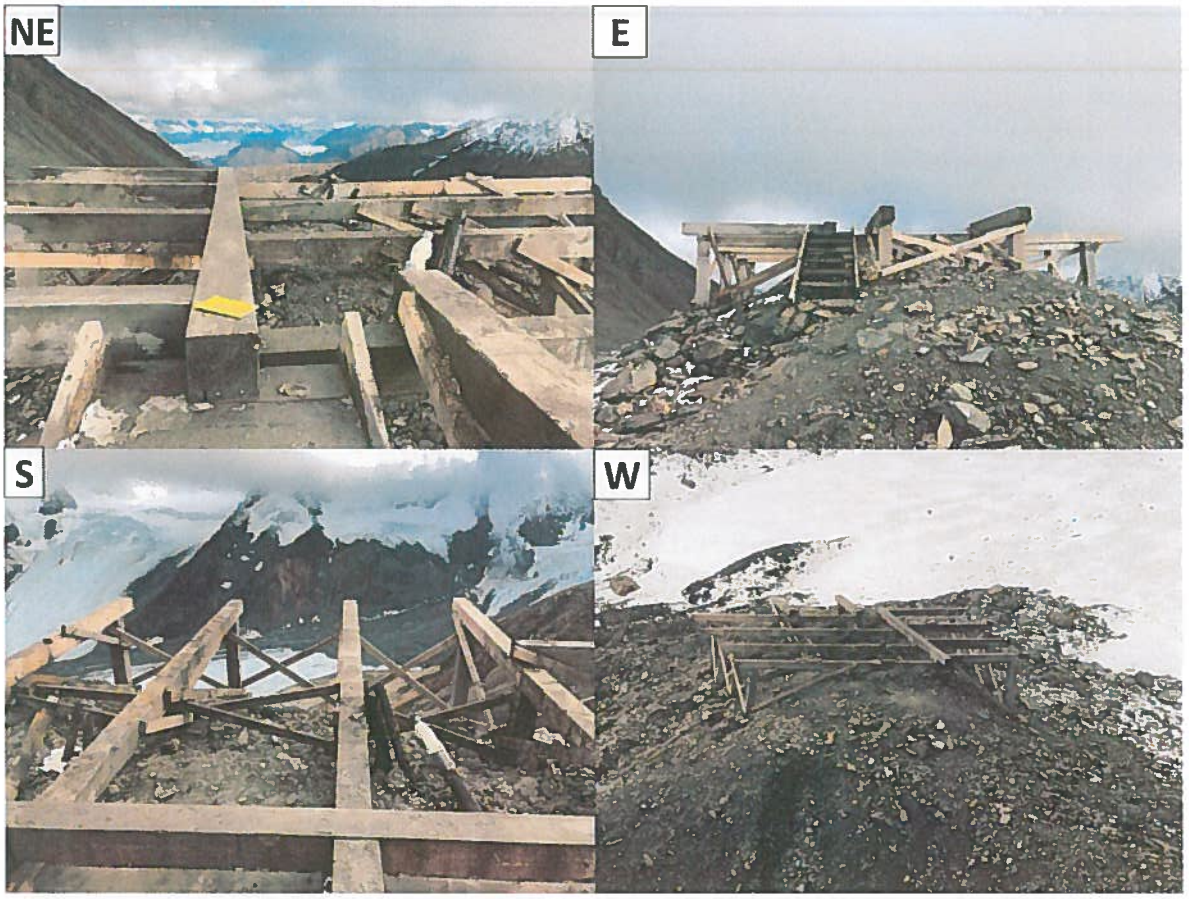


Photo 13: Paradise City Drill Pad post-drill. Decking has been bundled and pad winterized for potential future use.

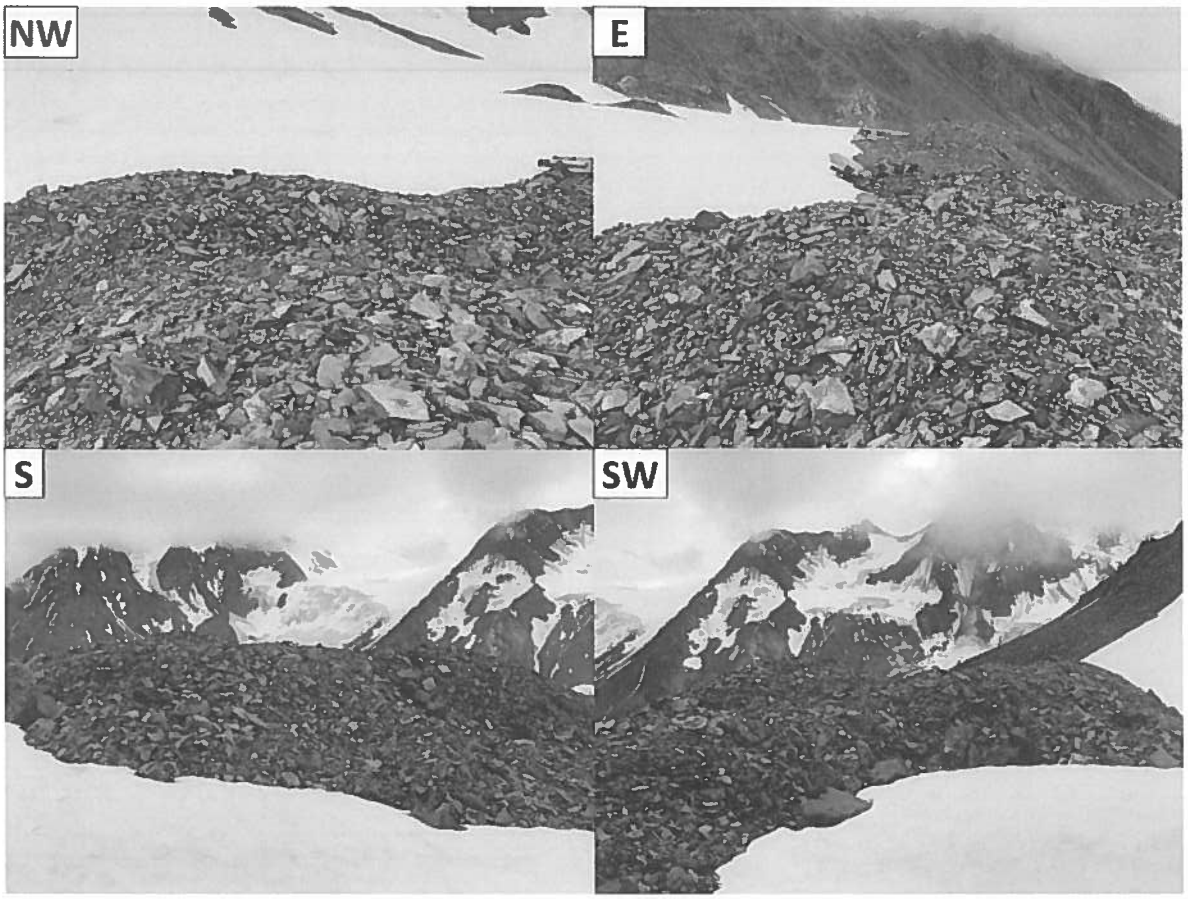


Photo 14: Paradise City Heli Pad site pre-build.

Photo 15: Paradise City Heli Pad unreclaimed (top) and reclaimed (bottom). Heli pad was both built and fully reclaimed in 2022.

B-Lo

Photo 16: B-Lo Drill Pad pre-drill 2022, built in 2021.

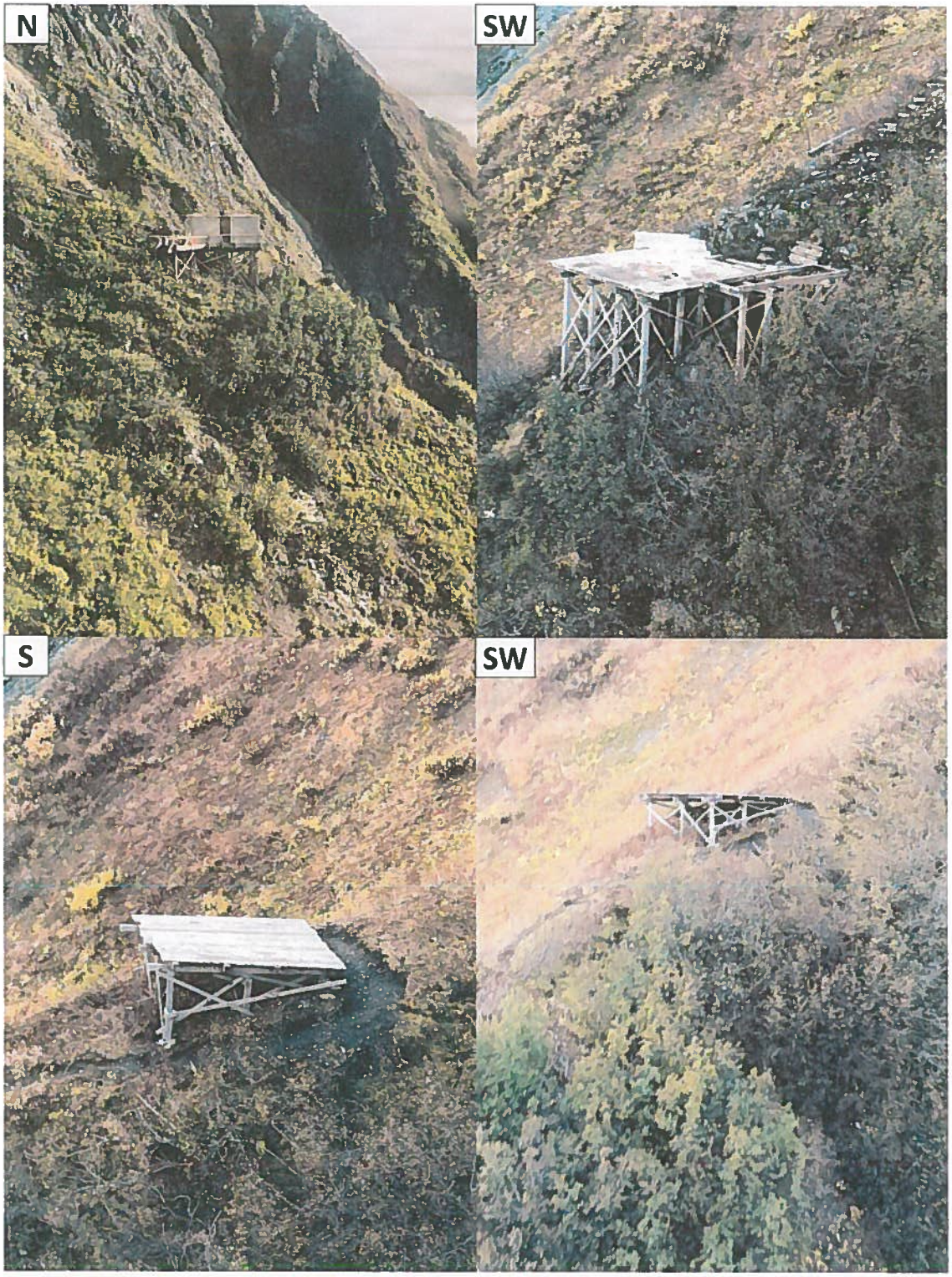


Photo 17: Aerial views of B-Lo Drill Pad during active drilling (top left), post-drill (top right) and B-Lo Heli Pad (bottom left and right). Pads retain full decking and remain unreclaimed for potential future use.

Hari

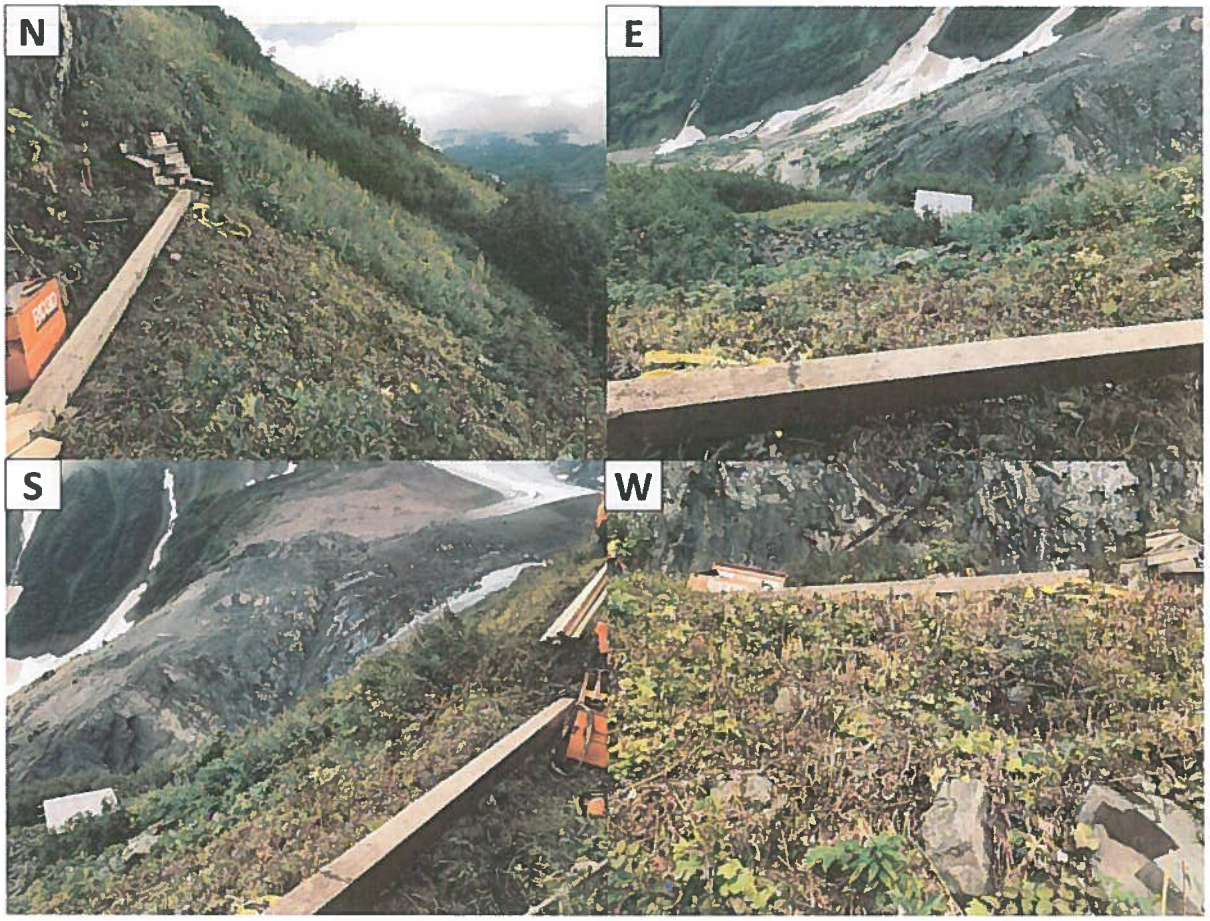


Photo 18: Hari Drill Pad site pre-build. Pad was originally reclaimed in 2017 and re-built for the 2022 field season.

Photo 19: Aerial views of Hari Drill and Heli Pads (left and right) post-drill. Pads both retain full decking and remain unreclaimed for potential future use.

Wormhole

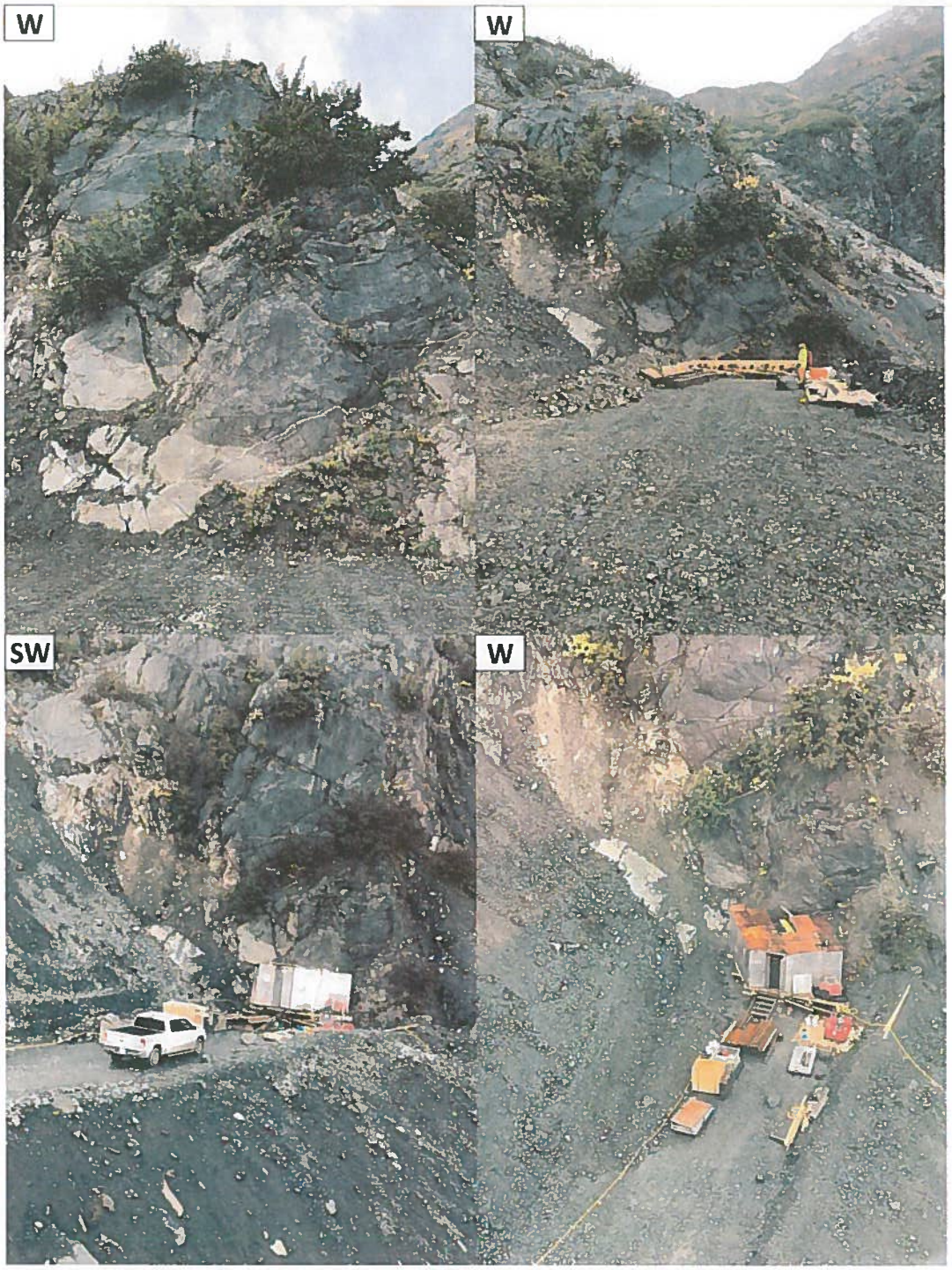


Photo 20: Wormhole Drill Pad site pre-build (top) and aerial views of Wormhole Drill Pad during active drilling (bottom). Pad built in 2022. The Wormhole pad was road accessible and did not require an associated Heli Pad.

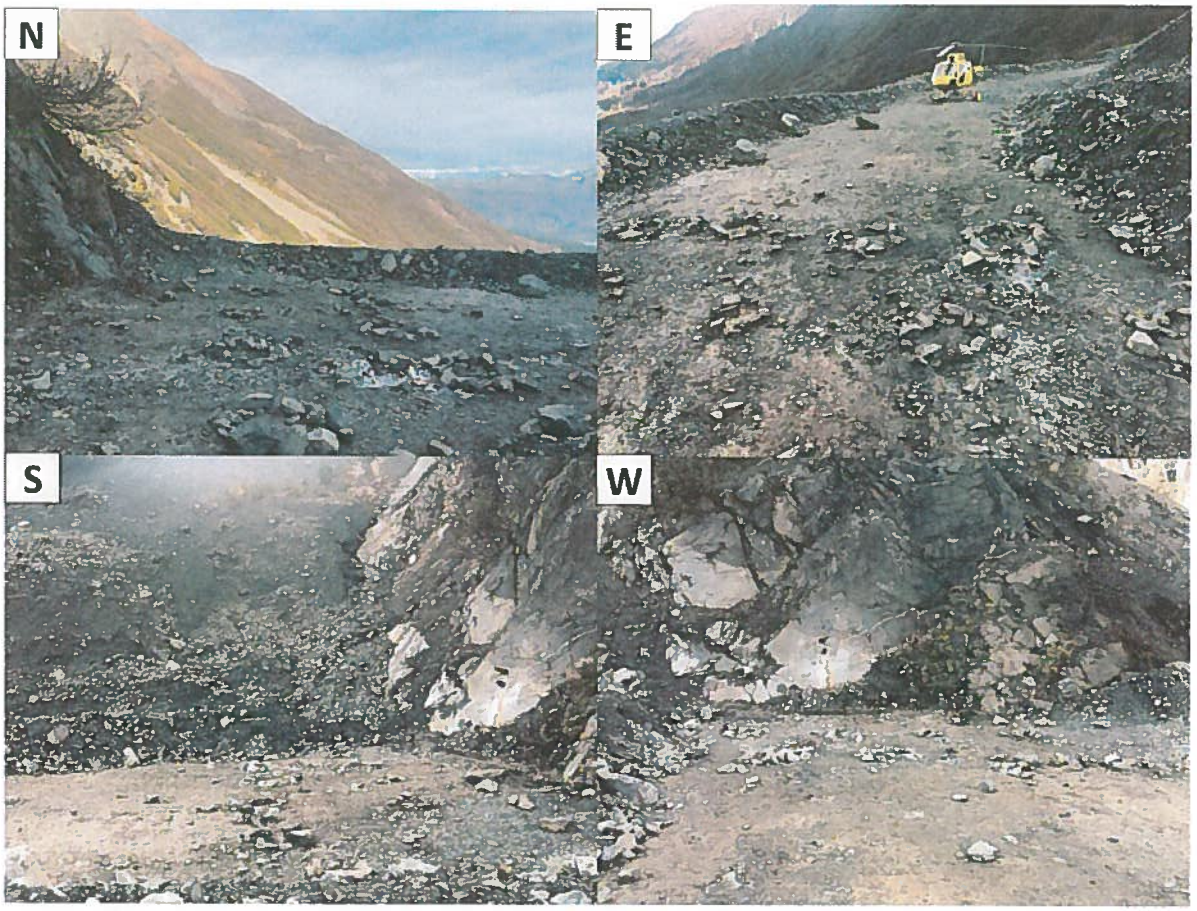


Photo 21: Wormhole Drill Pad post-drill reclaimed. Drill pad was both built and fully reclaimed in 2022.

Pump Pads

Cantankerous Pump (CAP SE)

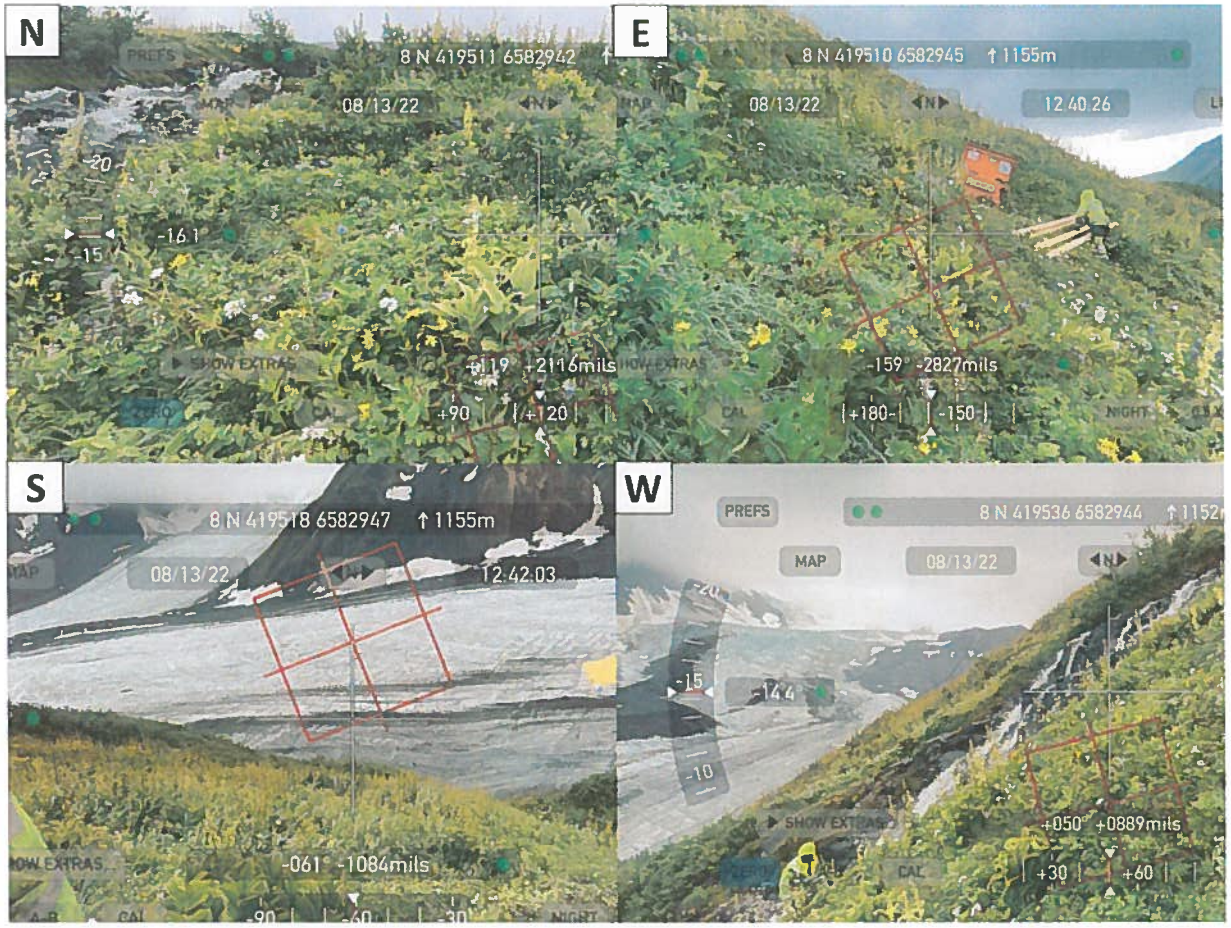


Photo 22: Cantankerous Pump (CAP SE) Pad site pre-build. Pad was previously reclaimed in 2021, re-built in 2022.

Photo 23: Cantankerous Pump (CAP SE) Pad post-build. Cantankerous Pump was used to source water for 2022 Paradise City drill pad holes. Pad retains full decking and remains unreclaimed for potential future use.

U6 Pump

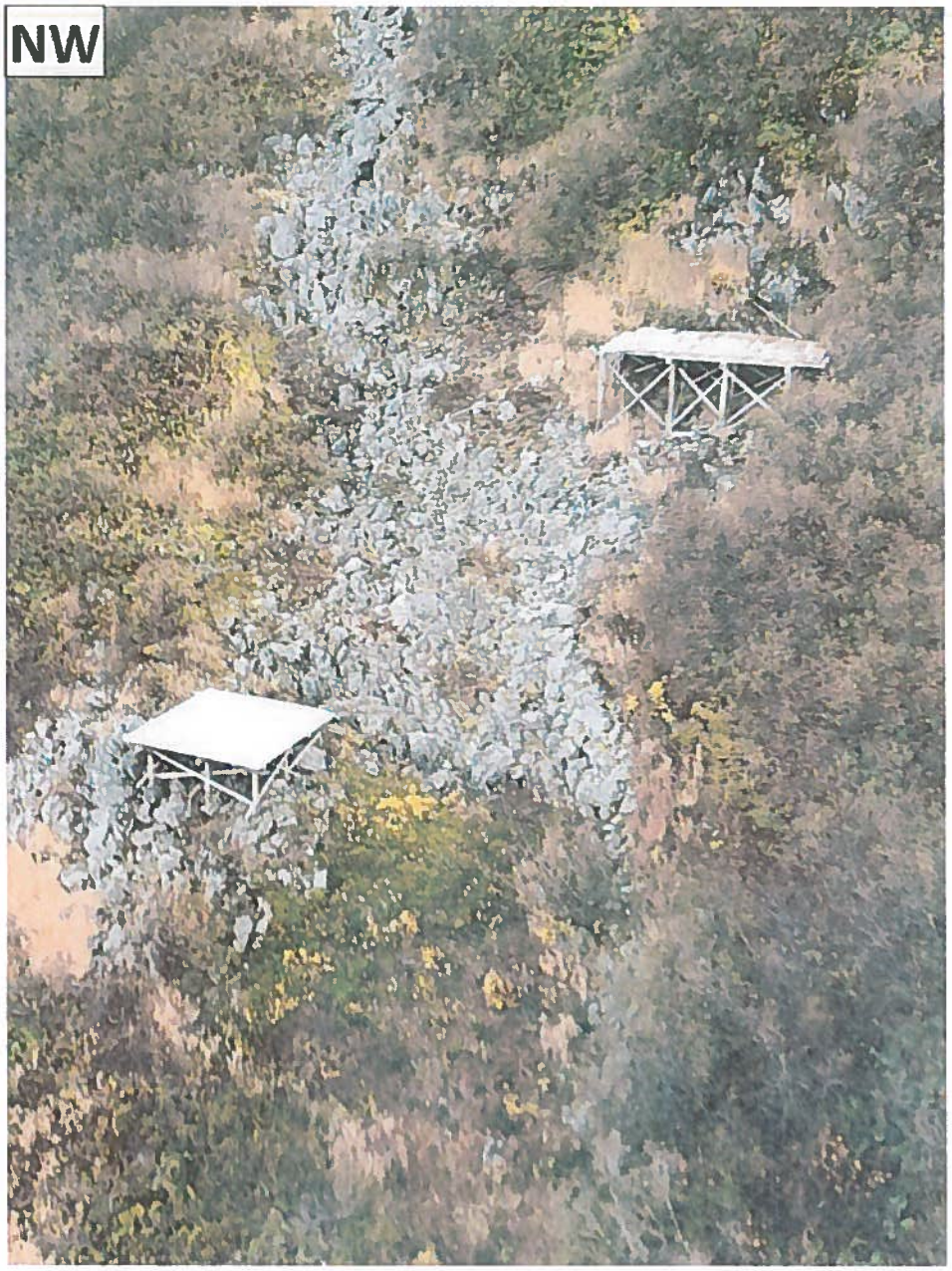


Photo 24: Aerial view of U6 Drill/Pump Pad (upper), built in 2014. U6 Pump was used to source water for 2022 B-Lo drill pad holes. Pad retains decking and remains unreclaimed for potential future use.

HG Pump

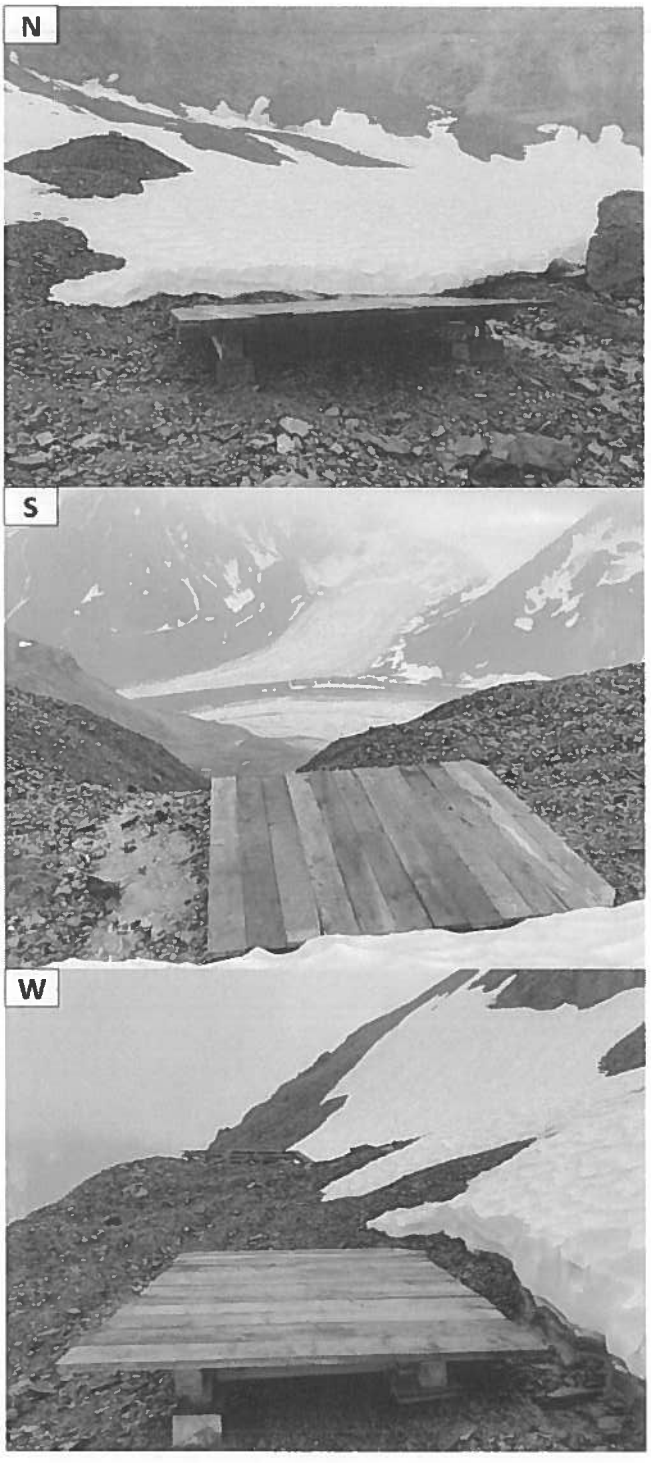


Photo 25: HG Pump Pad, rebuilt in 2022. HG Pump was used to source water for 2022 Paradise City drill pad holes.

Photo 26: HG Pump Pad site fully reclaimed in 2022.

Waterfall Pump

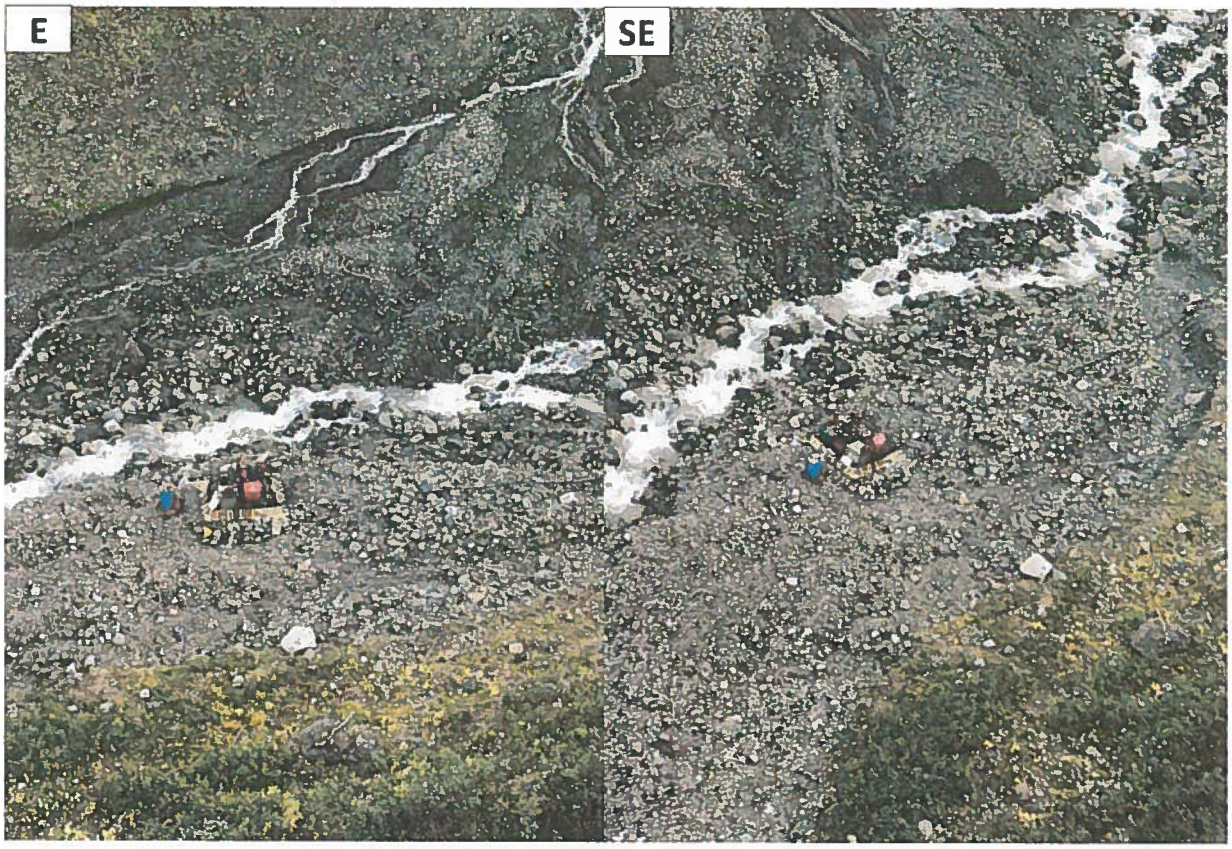


Photo 27: Waterfall Pump Pad, built in 2022. Waterfall Pump used to source water for 2022 Hari and Wormhole drill pads.

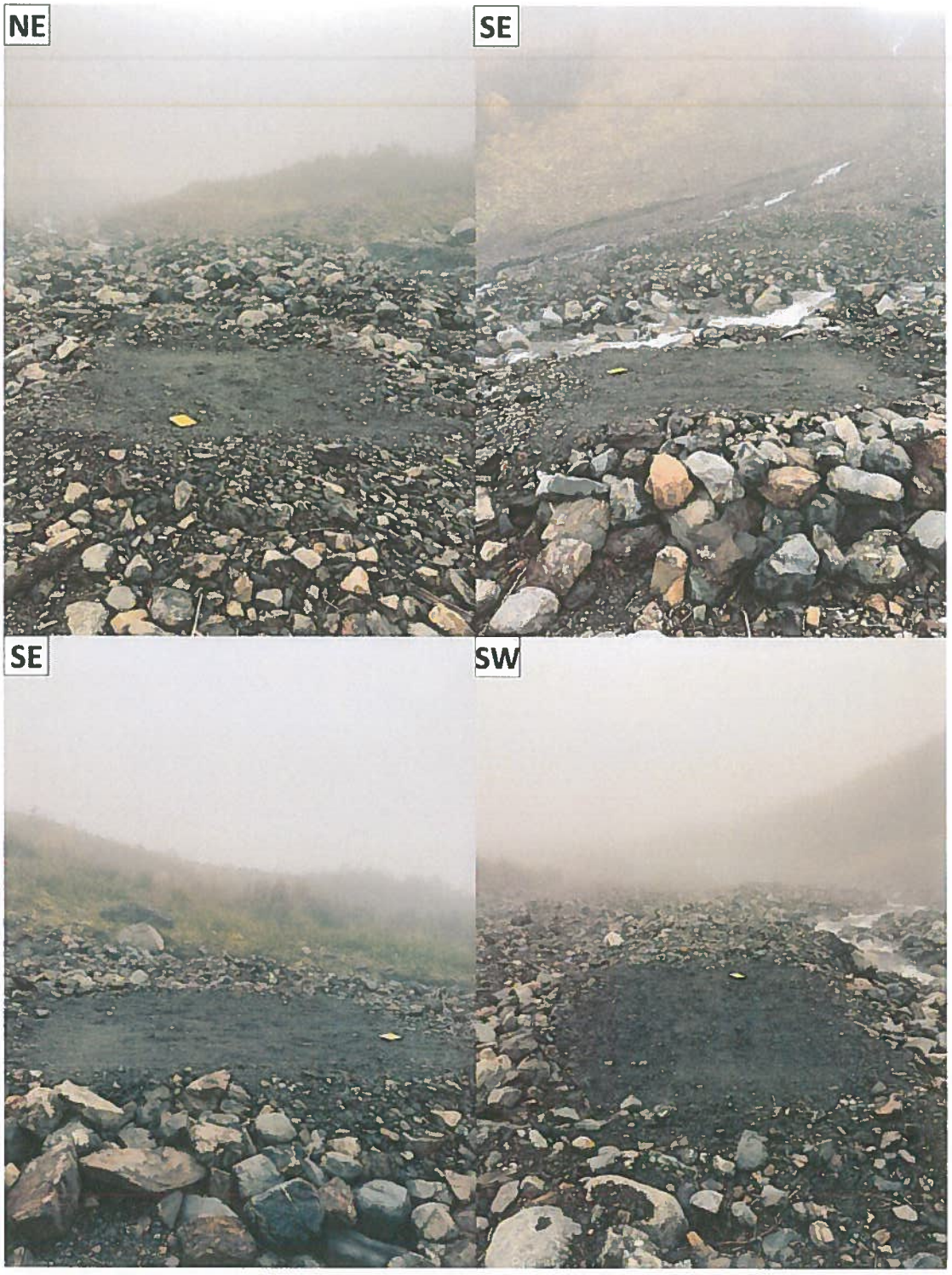


Photo 28: Waterfall Pump Pad site fully reclaimed in 2022.

Water Sources

Photo 29: Cantankerous water source (above) at Cantankerous Pump Pad under TWUA authorization number F2019-049 (August 13th, 2022).

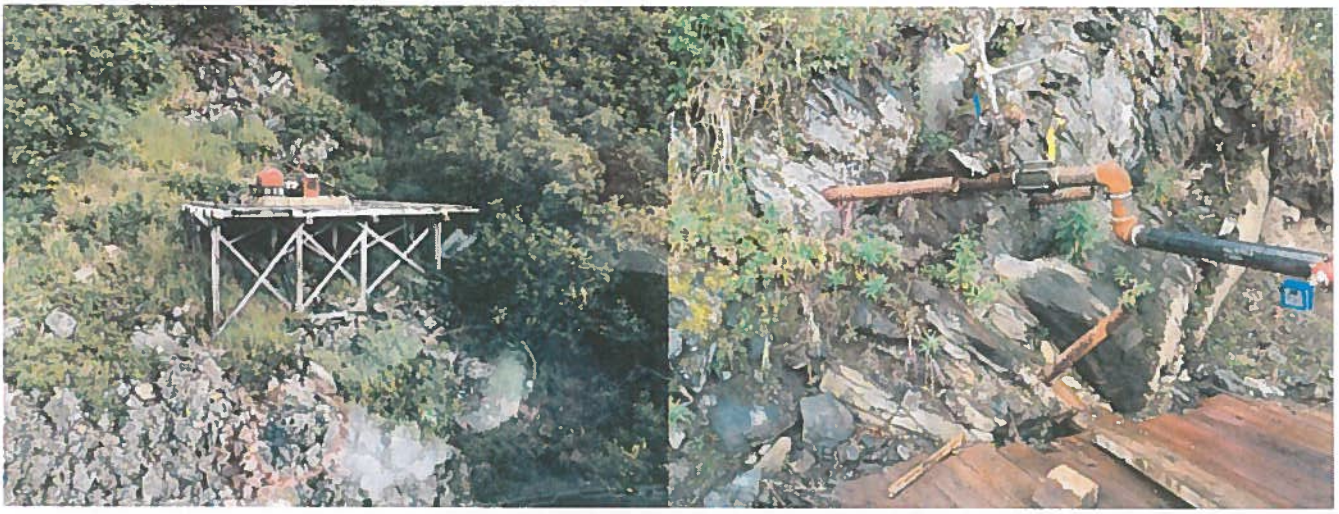


Photo 30: GT14-01 water source pump (above) at U6 Pad under TWUA authorization number F2021-024 Amendment #1 (left, August 18th 2022) and GT14-01 water source (right, 2017).

Photo 31: HG water source at HG Pump Pad under TWUA authorization number F2019-049 (August 7th, 2022).

Photo 32: Waterfall Creek water source under TWUA authorization number F2019-048 Amendment #2 (October 1st, 2022).

Note: No photos of Marble Creek water source are available.

Water Source #	Latitude (ddd.mmmm)	Longitude (-ddd.mmmm)	Datum (NAD83)	Associated TWUP	Associated APMA	Mining Claim ADL, BLM # or USMS	Water Source Type	Intake Size	Mesh Size	Submerged	Start Date	Stop Date	Avg GPM	Engine Size
Plateau	59.4170	-136.328255	NAD 83	F2019-048	5690	JARVIS 19, 20, 22 & 2	Glacial Melt/Creek/Stream							
Bear Creek	59.42260023	-136.2379585	NAD 83	F2019-048	5690	N/A	Glacial Melt/Creek/Stream							
Glacier Creel	59.41756821	-136.3013001	NAD 83	F2019-048	5690	GE2	Glacial Melt/Creek/Stream							
TUWA Amendment to be submitted seperatly														

TUWA F2019-048 Proposed Amendment Narrative

APMA #5690

Submitted to ADNR, April 26, 2023

Constantine is requesting to amend TWUA F2019-048 (Amendment #2; issued on August 16, 2022; expires December 31, 2023). The amendment is a request to drop water sources "MHC", "Hangover", "Glacier Creek", and "Waterfall Creek/Starbucks" (glacial melt/creeks/streams currently permitted for water withdrawal under F2019-048 Amendment #2 as sources #1, #3, #4, and #5, respectively) and add four surface water sources: a) unnamed creek ("Plateau Creek"), b) the informally named "Bear Creek", c) a reach of "Glacier Creek" downstream from the previously permitted withdrawal location, and d) an unnamed alpine creek ("Little Jarvis").

Request to drop the following sources from F2019-048 Amendment #2:

F2019-048 name	Source Name	Lat	Long	Meridian	Township	Range	Section	Quarter section
1	MHC	59.392238	-136.465241	C	029S	053E	3	NE 1/4
3	Hangover	59.384661	-136.368937	C	029S	054E	5	SW 1/4
4	Glacier Creek	59.391668	-136.366314	C	029S	054E	5	NW 1/4
5	Waterfall Creek/ Starbucks	59.380556	-136.386137	C	029S	054E	6	SW 1/4

Request to add the following sources to F2019-048 Amendment #2:

(Refer to attached excel spreadsheet for detail on location, well specifications, and requested water use)

F2019-048 name	Source Name	Lat	Long	Meridian	Township	Range	Section	Quarter section
-	Plateau Creek	59.417000	-136.328255	C	028S	053E	25; 26	SW 1/4 & NE 1/4; SE 1/4
-	Bear Creek	59.420360	-136.251007	C	028S	054E	29	NE 1/4
-	Glacier Creek	59.417568	-136.301300	C	028S	054E	30	NW 1/4
-	Little Jarvis	59.405653	-136.408612	C	028S	053E	33	NW 1/4

Details on Plateau Creek (New water source)

This is an unnamed creek, referred to by Constantine as "Plateau Creek". Plateau Creek is a tributary of Glacier Creek and its lower reaches are mapped as anadromous fish habitat by Alaska Department of Fish and Game (ADFG). ADFG surveyed the lower portions of this creek in 2019 and 2021 and indicated that portions of the creek are dry during drought conditions. Limited instantaneous discharge data is available for this site, only collected within 30 meters of the confluence with Glacier Creek. Little is known about the creek conditions in the mid to upper portion of the applied for reach, this is why a reach of 6,450 feet is requested.

Details on Bear Creek (New water source)

Bear Creek is a tributary of the Klehini River. A bridge crosses the creek along Porcupine Road. The proposed water withdrawal point is approximately 2,000 feet upstream of the bridge. The water is slow moving and pooling in this area, due to down gradient blockage. Bear Creek is mapped as anadromous fish habitat by ADFG.

Details on Glacier Creek (New water withdrawal point)

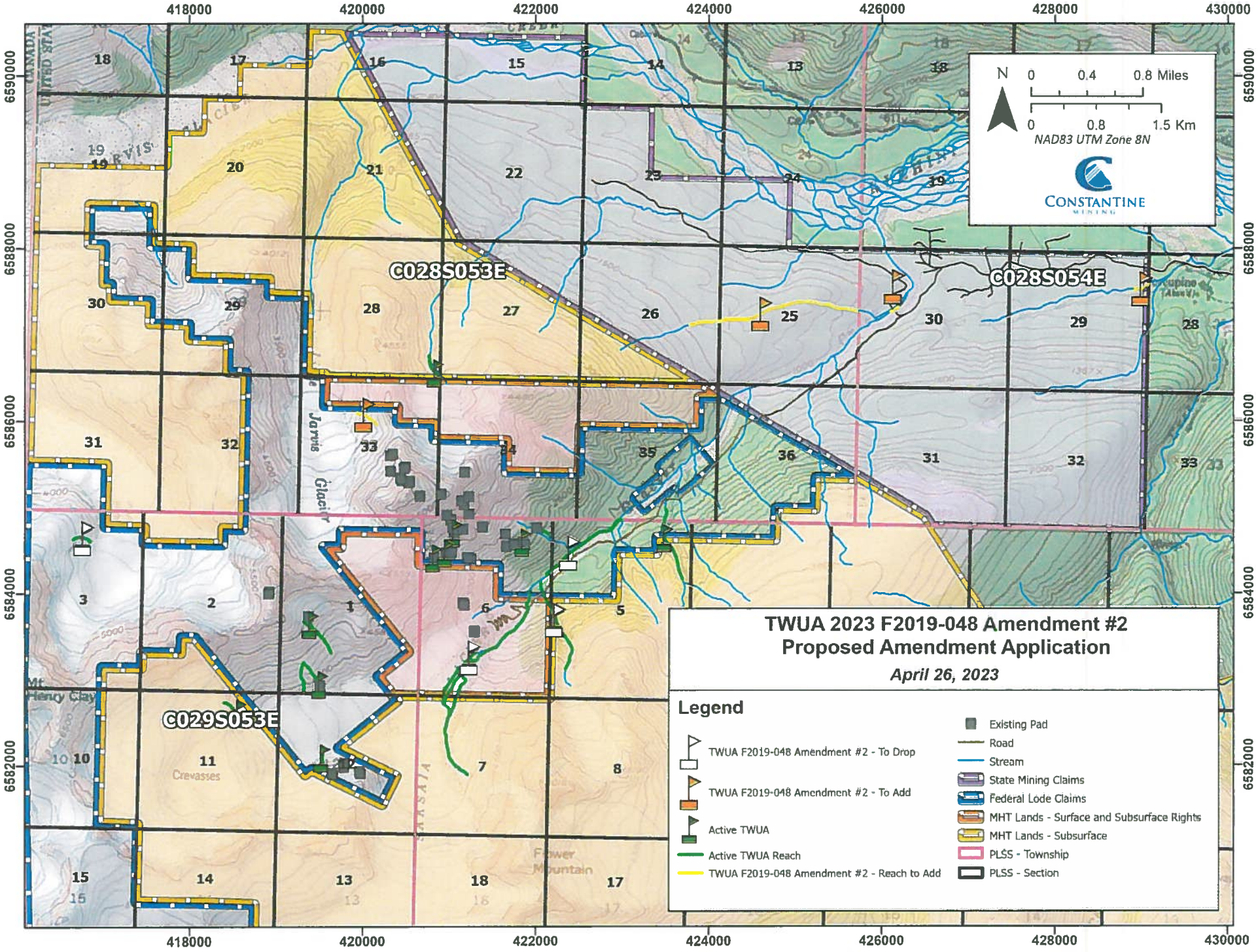
The requested water withdrawal point for Glacier Creek is at the old bridge crossing above the confluence with the Klehini River. At this point, Glacier Creek is mapped for resident fish only and does not have anadromous fish (last investigated by ADFG in 2021).

Description / use:
Water from Plateau, Bear and Glacier creeks will support an overburden drilling program described in an amendment to APMA 5690 submitted to ADNR on April 3rd, 2023. The overburden drilling requires roughly 2,000 gallons of water per 12-hour shift (for a maximum of 4,000 gallons/day). The overburden drilling and associated water use will run from July to October. Water will be pumped directly to the drill or to a 1,000-gallon tank on a tracked crawler transport. The pump intake will be screened to protect fish. **Requested use is seasonal (June 01 to October 31).**

Details on Little Jarvis Creek (New water withdrawal point)
Little Jarvis Creek was previously authorized for water withdrawal in TWUA-F2019-048 (and dropped from this permit in when amended in 2021). Little Jarvis Creek is an alpine creek that feeds into Jarvis Glacier and has no fish.

Description / use:

The water withdrawn from Little Jarvis Creek will be used to support the diamond drilling exploration program. High-pressure steel-braided flexible hose-line is used to move water from source pumps to heli-supported diamond core drills. Holding tanks may be used to provided buffering capacity. Water is used in drilling to cool and wash away cuttings from the drill bit. All pump-related material are removed at the end of each exploration season and any pads built will be fully reclaimed once the site is no longer in use. See the 2019 APMA multi-agency permit application for more details (APMA 5690). **Requested use is seasonal (June 01 to October 31).**


418000
420000
422000
424000
426000
428000
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6590000
6588000
6586000
6584000
6582000
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NAD83 UTM Zone 8N
CONSTANTINE
MINING
C028S053E
C028S054E
C029S053E
Jarvis Glacier
Crevasses
Flower Mountain
TWUA 2023 F2019-048 Amendment #2
Proposed Amendment Application
April 26, 2023
Legend
TWUA F2019-048 Amendment #2 - To Drop
TWUA F2019-048 Amendment #2 - To Add
Active TWUA
Active TWUA Reach
TWUA F2019-048 Amendment #2 - Reach to Add
Existing Pad
Road
Stream
State Mining Claims
Federal Lode Claims
MHT Lands - Surface and Subsurface Rights
MHT Lands - Subsurface
PLSS - Township
PLSS - Section

Remove from F2019-048 Amendment #2:

Source_name	TWUA_Application	Source_Typ	Site Name	Comment	DrillHole_	Lat	Long	East_NAD83	Nort_NAD83	Elevation	Meridian	Township	Range	Section	Quarter_se	Claim	Group	BLM_Numb	Length (m)	Note
MHC	F2019-048 Amendment #2	Glacial Melt/Creek/Stream	MHC	MHC	N/A	59.392238	-136.465241	416782.2855	6584645.187	1307	C	029S	053E	3	NE 1/4	KIC 13	KIC	AA 51570	222	
Hangover	F2019-048 Amendment #2	Glacial Melt/Creek/Stream	Hangover	Glacier Creek	N/A	59.384661	-136.368937	422233.9617	6583685.104	657	C	029S	054E	5	SW 1/4	Mental Health Tru		N/A	1164	
Glacier Creek	F2019-048 Amendment #2	Glacial Melt/Creek/Stream	Glacier Creek	Glacier Creek	N/A	59.391668	-136.366314	422398.9348	6584462.158	466	C	029S	054E	5	NW 1/4	MARMOT #119	MARMOT	AA 27231	1169	
Waterfall Creek/Starbucks	F2019-048 Amendment #2	Glacial Melt/Creek/Stream	Waterfall Creek/Starbucks	Terminus	N/A	59.380556	-136.386137	421247.4309	6583248.246	865	C	029S	054E	6	SW 1/4	Mental Health Trust		C70451	N/A	

Amendment (add to F2019-048 Amendment #2):

Source_name	TWUA_Application	Source_Typ	Site Name	Comment	DrillHole_	Lat	Long	East_NAD83	Nort_NAD83	Elevation	Meridian	Township	Range	Section	Quarter_se	Claim	Group	BLM_Numb	Length (m)	
Plateau		Glacial Melt/Creek/Stream	Plateau	Plateau Site	N/A	59.4170	-136.328255	424616.67	6587238.92	399	C	028S	053E	25; 26	SW 1/4 & NE 1/4; SE 1/4	JARVIS 19, 20, 22	JARVIS	N/A	1996	
Bear Creek		Glacial Melt/Creek/Stream	Bear Creek	Bear Creek	N/A	59.42036057	-136.2510071	429007.6875	6587528	165	C	028S	054E	29	NE 1/4	GE5	N/A	N/A	162	
Glacier Creek		Glacial Melt/Creek/Stream	Glacier Creek	Glacier Creek	N/A	59.41756821	-136.3013001	426147.4688	6587272	240	C	028S	054E	30	NW 1/4	GE2	N/A	N/A	100	
Little Jarvis		Glacial Melt/Creek/Stream	Little Jarvis	Little Jarvis	N/A	59.405653	-136.408612	420029.7959	6586069.393	1257	C	028S	053E	33	NW1/4	RAT DAWG #53	RATDAWG	AA 29577	279	