

# Field Monitoring Report

## -- Pebble Copper/Gold Exploration Project --

Personnel: William Ashton (ADEC)

Mike Daigneault (ADF&G)

Scott Maclean (ADF&G)

Inspection Date: September 23 & 24, 2008

Site Contact: Gary Deschutter

APMA #: A086118

### ■ Inspection Type:

- Complete: Drill rigs 2,3,5,6,9 were visited, several abandoned drill sites, piezometer GH08-115, and Big Wiggly Lake fuel storage facility.

- Partial: Observed drill rigs 1,4,8 and 10 from the air.

- Follow-up:

- Response to Public Complaint:

### ■ Weather Conditions:

- Temperature: 40 – 50 degrees F

- Wind: light to moderate (e.g., <20 knots)

- Precipitation: Rain (heavy at times)

- Visibility: one half mile to greater than 10 miles

- Sky Conditions: low clouds and lifting

- Ground Conditions: wet

### ■ Wildlife Observed:

- Bear: Sow and two cubs approx. 5 miles east of USGS gage on Upper Talarik Creek

- Caribou: Anecdotal reports of small numbers (fewer than 12/group) in general area during past several weeks.

- Moose: Reports of multiple sightings in general area during past several weeks. Bull sighted in lake near headwaters of Pete Andrews Creek 9/23.

- Waterfowl: Pair of swans on Frying Pan Lake, two unidentified flocks on ponds upstream of Frying Pan Lake.

- Fish: None observed, reports of coho salmon spawning throughout drainages.

- Other: One fox observed between drill rigs 5 and 4. One raven near drill rig 5.

### ■ Water level at Frying Pan Lake:

- Observed inflow: high, bank full

- Observed outflow: high, bank full

**Comments:** Overall the drill rigs were clean and orderly. Fuel spill containment measures were in place. Containment basins were clean and contained minimal amounts of rain water (< 1 inch). All drilling operations appeared to be in compliance with associated water use and withdrawal permits. Inspected improved tertiary fuel containment structure at Big Wiggly Lake facility, soft sided liners were replaced with aluminum box.

**Recommendations:** Continue to provide staff with updated operations map and inform staff of any new developments or changes in operational plans prior to site visits. Consider skirting fuel containers to shed precipitation away from tertiary containment structures. Consider moving upland discharge points frequently or dispersing discharge over a larger area to avoid impacting ground cover vegetation and potentially altering water quality in kettle ponds adjacent to discharge locations. Replace pressure relieving (leaking) water lines with newer high pressure hoses to avoid potential soil surface erosion.

**Actions Needed:** Inspect and repair water intake screens prior to use in fish bearing waters. Observed two screened intake boxes, one with holes larger than the mesh size, stored near rig 6.

Drill Hole/Site No.: 8423

Rig No.: 2

Activity: Operational

Date: September 23, 2008

■ Condition of Drilling Site:

- Distance from waterbody: >100 feet
- Location of fuel storage: next to rig, on pad
- Sorbent pads present: yes
- Tundra mat: yes
- Pipe off tundra: yes
- Litter: none
- Trash containment: yes
- Sanitary facilities: yes
- Any spills or staining: thin sheen observed next to fuel containment with sorbent pads in place.
- General impression: clean and orderly.

■ Drilling Activity:

- Drill additives in use: EZ-Mud Plus, Penetrol
- Water recirculation: no
- Water discharged: yes, upland
- Artesian zone encountered: no

■ Sump Pit:

- Location: adjacent to rig
- Discharge trench: yes
- Dimensions of pit: series of three pits all about 10 x 10 feet wide
- In use: yes

■ Sump Pit (continued):

- Location and extent of discharged material: >500 feet upslope on ridge.
- Topsoil, muck, tundra stockpiled: yes
- Location of secondary sump pit: adjacent to pad.
- Hose color: black and white sections

■ Drill Water Supply:

- Stream, lake, kettle pond: stream
- Location: about 500 feet from rig
- Adequate water flow and depth for fish passage in streams: n/a
- Evidence of significant impacts to riparian vegetation or stream banks: none
- Relative water level: high
- General impression of water body, i.e. clear, turbid, tannic: clear
- Intake structure: present
- Structure clear of debris: yes
- Mesh size: ¼ inch, inner mesh 1/8 inch
- Submerged: yes, 5 inches
- Pump location to source: >100 feet
- Catch basin for fuel supply: yes, clean with some rain water.
- Sorbent pads: present
- Hose color: yellow with black insulation

Drill Hole/Site No.: 8428	Rig No.: 3
Activity: operational	Date: September 23, 2008
■ Condition of Drilling Site:	■ Sump Pit (continued):
○ Distance from waterbody: >100 feet	○ Location and extent of discharged material: n/a
○ Location of fuel storage: next to rig, on pad	○ Topsoil, muck, tundra stockpiled: yes
○ Sorbent pads present: yes	○ Location of secondary sump pit: n/a
○ Tundra mat: yes	○ Hose color: n/a
○ Pipe off tundra: yes	
○ Litter: none	■ Drill Water Supply:
○ Trash containment: yes	○ Stream, lake, kettle pond: kettle pond
○ Sanitary facilities: yes	○ Location: > 100 feet uphill from rig
○ Any spills or staining: none	○ Adequate water flow and depth for fish passage in streams: n/a
○ General impression: clean and orderly.	○ Evidence of significant impacts to riparian vegetation or stream banks: none
	○ Relative water level: high
■ Drilling Activity:	○ General impression of water body, i.e. clear, turbid, tannic: clear
○ Drill additives in use: EZ-Mud Plus, Penetrol, Linseed Soap, Extreme No. 1 polymer.	○ Intake structure: present
○ Water recirculation: no	○ Structure clear of debris: yes
○ Water discharged: yes, trench and pit only	○ Mesh size: ¼ inch, inner mesh 1/8 inch
○ Artesian zone encountered: no	○ Submerged: yes, 6 inches
	○ Pump location to source: >100 feet
■ Sump Pit:	○ Catch basin for fuel supply: yes, clean with some rain water.
○ Location: adjacent to rig	○ Sorbent pads: present
○ Discharge trench: yes	○ Hose color: yellow with black insulation
○ Dimensions of pit: 8 x 8 feet wide	
○ In use: yes	

Drill Hole/Site No.: 8420

Rig No.: 5

Activity: shutdown

Date: September 24, 2008

■ Condition of Drilling Site:

- Distance from waterbody: >100 feet
- Location of fuel storage: next to rig, on pad
- Sorbent pads present: yes
- Tundra mat: yes
- Pipe off tundra: yes
- Litter: none
- Trash containment: yes, garbage bag and cans
- Sanitary facilities: yes
- Any spills or staining: none
- General impression: clean and orderly

■ Drilling Activity:

- Drill additives in use: yes
- Water recirculation: no
- Water discharged: yes
- Artesian zone encountered: unknown

■ Sump Pit:

- Location: adjacent, downslope
- Discharge trench: yes
- Dimensions of pit: series of three pits about 10 x 10, 10 x 8, and 10 x 12 feet wide
- In use: yes, during drilling

■ Sump Pit (continued):

- Location and extent of discharged material: >500 feet upslope on hillside
- Topsoil, muck, tundra stockpiled: yes
- Location of secondary sump pit: adjacent and downslope of pad
- Hose color: white

■ Drill Water Supply:

- Stream, lake, kettle pond: kettle pond
- Location: >500 feet
- Adequate water flow and depth for fish passage in streams: n/a
- Evidence of significant impacts to riparian vegetation or stream banks: none
- Relative water level: normal
- General impression of water body, i.e. clear, turbid, tannic: clear
- Intake structure: perforated
- Structure clear of debris: yes
- Mesh size: n/a
- Submerged: yes, completely
- Pump location to source: >100 feet
- Catch basin for fuel supply: yes
- Sorbent pads: yes
- Hose color: yellow, partly insulated

Drill Hole/Site No.: 8418

Rig No.: 6

Activity: finishing, plugging entire hole with bentonite grout (Volclay), total depth 4,460 feet, leaving 100 feet of casing near top.

Date: September 24, 2008

■ Condition of Drilling Site:

- Distance from waterbody: >100 feet
- Location of fuel storage: next to rig, on pad
- Sorbent pads present: yes
- Tundra mat: yes
- Pipe off tundra: yes
- Litter: none
- Trash containment: yes
- Sanitary facilities: yes
- Any spills or staining: none
- General impression: clean and orderly, onsite for about 1.5 months, low impact.

■ Drilling Activity:

- Drill additives in use: yes, same as rig 3
- Water recirculation: no
- Water discharged: yes, upland
- Artesian zone encountered: no

■ Sump Pit:

- Location: adjacent, downslope
- Discharge trench: yes
- Dimensions of pit: series of three pits about 6 x 18, 10 x 10, and 10 x 10 feet wide
- In use: yes

■ Sump Pit (continued):

- Location and extent of discharged material: 400 feet upslope
- Topsoil, muck, tundra stockpiled: yes
- Location of secondary sump pit: adjacent to pad
- Hose color: white

■ Drill Water Supply:

- Stream, lake, kettle pond: lake
- Location: 300 feet
- Adequate water flow and depth for fish passage in streams: n/a
- Evidence of significant impacts to riparian vegetation or stream banks: none
- Relative water level: normal
- General impression of water body, i.e. clear, turbid, tannic: clear
- Intake structure: yes, cylinder style
- Structure clear of debris: yes
- Mesh size: ¼ inch, inner n/a
- Submerged: yes
- Pump location to source: >200 feet
- Catch basin for fuel supply: yes on pad
- Sorbent pads: yes
- Hose color: yellow (insulated) and white sections with leaks



Drill Hole/Site No.: n/a

Activity: Geotechnical Drill finishing 237 foot hole, adding chips to plug artesian flow.

Rig No.: 9

Date: September 24, 2008

■ Condition of Drilling Site:

- Distance from waterbody: >100 feet
- Location of fuel storage: on pad
- Sorbent pads present: yes
- Tundra mat: yes
- Pipe off tundra: yes
- Litter: collected two pieces near rig
- Trash containment: yes
- Sanitary facilities: yes
- Any spills or staining: none
- General impression: clean and orderly, completed in four days.

■ Drilling Activity:

- Drill additives in use: n/a
- Water recirculation: no
- Water discharged: no
- Artesian zone encountered: yes, encountered at 47 and 87 feet, sealing with chips and cement.

■ Sump Pit:

- Location: adjacent to pad
- Discharge trench: yes
- Dimensions of pit: 6 x 6 feet wide
- In use: yes

■ Sump Pit (continued):

- Location and extent of discharged material: n/a
- Topsoil, muck, tundra stockpiled: yes
- Location of secondary sump pit: n/a
- Hose color: n/a

■ Drill Water Supply:

- Stream, lake, kettle pond: kettle pond
- Location: >500 feet downslope
- Adequate water flow and depth for fish passage in streams: n/a
- Evidence of significant impacts to riparian vegetation or stream banks: none
- Relative water level: normal
- General impression of water body, i.e. clear, turbid, tannic: clear
- Intake structure: yes
- Structure clear of debris: yes
- Mesh size: n/a
- Submerged: n/a
- Pump location to source: >100 feet
- Catch basin for fuel supply: yes
- Sorbent pads: yes
- Hose color: red

Abandoned Drill Hole/Site No.: 8415

Date: September 24, 2008

- Plugged: yes
- Cemented: unknown
- Standing pipe: yes
- Sump pit filled in: yes
- Water discharge trench filled in: yes
- Site revegetated: yes, straw onsite, one inch high blades of grass showing
- Artesian water present: no
- Any spills or staining: none
- Comments/General impression: reclaimed within the past month and a half

(no photo)



- Plugged: yes
- Cemented: unknown
- Standing pipe: none
- Sump pit filled in: yes
- Water discharge trench filled in: yes
- Site revegetated: no
- Artesian water present: no
- Any spills or staining: none
- Comments/General impression: Appears to have been leveled recently, exposed soil needs to be stabilized and seeded.





Figure 1. Fuel storage facility, former site on right side of picture.



Figure 2. Fuel transport brought in via Beaver on floats, 200 gallons/trip.



Figure 3. Drill rig 2 with series of three sump pits.



Figure 4. Series of three sump pits with Godwin pump and discharge to uplands.



Figure 5. Water intake pump and screen.



Figure 6. Drill rig 9, geotechnical drill hole.





Figure 7. Riparian vegetation of a kettle pond impacted by previously elevated water levels. Located southeast of Rig 5.



Figure 8. Discharge water pooling in swales. Located southeast of Rig 5, near foothill.