

### **3. DESCRIPTION OF THE EXISTING ENVIRONMENT**

#### **3.1. SITE DESCRIPTION**

The proposed site for the Bennett facility is in the Kirkland Lake Industrial Park, approximately 5km southwest of downtown Kirkland Lake (Town Hall), and approximately 1km southeast of Chaput Hughes. The 44 acre site is currently owned by the Town of Kirkland Lake, is zoned Heavy Industrial and is part of mining claim L1354, L16589, L6730 and L1355 located in the Town of Kirkland Lake in the Township of Teck in the District of Timiskaming.

Kirkland Lake is located approximately 100km south of Timmins, 300 km north of North Bay, and 40 km west of the Quebec/Ontario provincial border (refer to Figure 3-1). North Bay is approximately 350 km north of Toronto.

The northern portion of the proposed site is on top of Mining Lease #328, owned equally by Queenston Mining Inc. and Franco-Nevada Mining Corporation Limited. The lease was issued in 1991 and covers the Amalgamated Kirkland gold deposit (“AK Deposit”), which contains an inferred resource of 2,755,564 tonnes grading 4.33 grams per tonne, including a higher-grade portion measuring 1,716,025 tonnes grading 5.59 grams per tonne. The original facility design saw the Bennett facility overlying a large portion of the AK Deposit. However, based on correspondence with Queenston Mining Inc., the Ministry of Northern Development and Mines, and A&A Environmental Services Inc. it has been agreed to locate the facility building to the south and west of its original location (refer to Figure 2-2). It was important for the facility location to remain north of the property water divide. North of the water divide, there is a more gradual slope towards the ditchline, whereas south of the water divide, there is a steep slope 3-1 towards Murdock Creek. By keeping north of the water divide, this gives us more control over surface water runoff. Further information on the water divide can be found under Section 7.2 Water Quality.

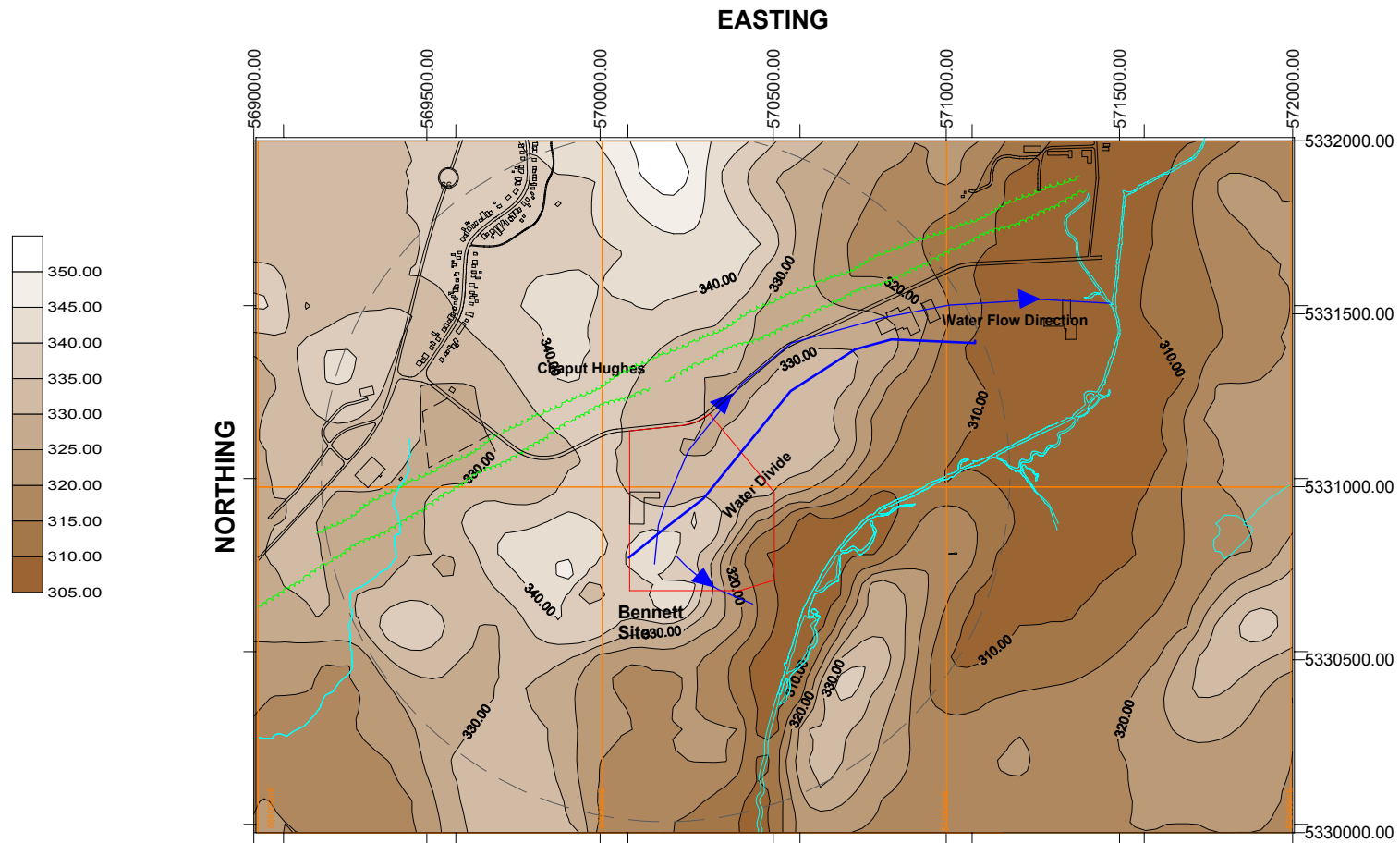
The proposed site is located on the south side of Archer Drive. The general topographic features of the area include a valley running from the northeast corner of the map to the central southern area. This valley is occupied by Murdock Creek, which flows out of Gull Lake in a southerly direction and past the southern boundary of the Bennett site. The southern portion of the site consists of a relatively steep slope from a high elevation of 340m to a low elevation of about 305m near Murdock Creek. The northern portion of the site has a much gentler slope that decreases to the northeast from a high elevation of 340m to a low elevation of 330m.

Figure 3-2 shows that the steep slope to the south and gentler slope to the northeast form a water divide that runs to the northeast from southwest corner of the property. This divides the site into two portions with water in the northern area flowing to the northeast and water in the southern area flowing south or southeast to Murdock Creek.

Figure 3-1 Map of Kirkland Lake in relation to North Bay



Figure 3-2 Regional Topography



### **3.2. SURFACE FEATURES**

The surface features are described as one moves from the northern boundary of the site along Archer Drive to the southern boundary near Murdock Creek. All of the described features are posted on the map of Figure 3-3.

The swamp in the northern area begins to the south of Archer Drive and extends for about 60m to the south until the ground starts to rise. The extent of the swamp is determined by elevation of the ground and is confined to the lower elevations in the northeast corner of the site. The western edge of the swamp is about 140m from the eastern boundary of the site. The swamp continues to the east of the site.

South of the swamp the ground gently rises and an east-west trending band of outcrop appears. Small ponds with bull rushes are located on and near some outcrops.

Continuing to the south, the ground continues to rise until it reaches its maximum elevation and then starts to slope more steeply to the south. The vegetation on the south slope is predominantly birch and poplar. The excavate near the test pit consisted of boulders, gravel, fine sand and clay which is representative of the sand boulder till of the overburden. The water in the excavation, appearing at 50cm below ground level, is due to ponding within the excavation.

The east-west trail that crosses the southern area of the site marks the approximate location of the base of the southern slope. South of the trail, the ground slopes less steeply toward Murdock Creek. Surface water accumulates in a small topographic low at the turn of the trail. The presence of bull rushes indicated that this area is generally wet. Further to the east, two small springs were encountered on or near the trail. The first spring, Spring 1 in Figure 3-4, was found to be flowing at about 0.35 L/min and a couple of bull rushes were nearby. A second even smaller spring was found to the south of the first.

Between the trail and Murdock Creek, the slope of the ground decreases further and the vegetation changes from deciduous trees to water loving species such as alder. This swampy area begins near the southern boundary of the site and continues for another 100m to meet Murdock Creek.

In the western portion of the site where the process building is to be located, the bedrock is often at the surface and forms a hill that rises about 9m from the low lying northern portion of the site. However, in the vicinity of the northwest corner of the process building a 1.1m thick layer of clay is present on top of the bedrock.

**Figure 3-3 Map of site showing mapped features such as surface water locations, springs, bedrock outcrop, boreholes**

