



Sherwood Park, April 18, 2005

CONFIDENTIAL

Mr. Scott Stringer
MIRAMAR CON MINE
Box 2000
Yellowknife, NWT X1A 2M1

SUBJECT: REVISED DESIGN OF SECONDARY CONTAINMENT FOR ABOVEGROUND STORAGE TANKS – BOSTON CAMP, WINDY LAKE CAMP, AND PATCH LAKE, NUNAVUT (O/REF.: MM4206)

Dear Mr. Stringer:

Biogenie S.R.D.C. Inc. (hereinafter called “Biogenie”) is pleased to provide Miramar Mining Corporation (hereinafter called “Miramar”) with secondary containment design for aboveground storage tanks (ASTs) at Boston Camp, Windy Lake Camp, and Patch Lake, Nunavut.

Kitnuna Corporation (hereinafter called “Kitnuna”) will be the construction contractor for the projects at the three sites. Miramar will be responsible for the health and safety of workers for the duration of the project. A Biogenie representative will be present at all times during construction to monitor progress and verify final secondary containment dimensions.

This letter provides a summary of applicable regulations, the proposed location and design of the secondary containment at Boston Camp, Windy Lake Camp, and Patch Lake, Nunavut.

REGULATORY REQUIREMENTS FOR PETROLEUM STORAGE TANKS

As no guidelines currently exist for storage requirements in Nunavut, Alberta Energy and Utilities Board (EUB) *Guide 55 – Storage Requirements for the Upstream Petroleum Industry* (December 2001) was used for reference purposes.

A summary of applicable Guide 55 secondary containment measures for ASTs with an internal volume of 5 m³ or greater is as follows:

- The area around a single walled AST must have a secondary containment system designed to contain leakage and prevent it from impacting the surrounding environment.
- Secondary containment must consist of an impervious liner and a dike.
- The area within the secondary containment system must be graded to a sump or low-lying area (within the diked area) to allow for the collection of rainwater, snowmelt water, and any possible leakage from the tanks.
- The dike must be constructed of soil, steel, concrete, solid masonry, or synthetic material and designed to contain liquids within the diked area.
- The dike must be sized to have a volumetric capacity of not less than 110% of the capacity of the tank when the diked area contains one tank.
- When several tanks are within the diked area, the size must be the capacity of the largest tank, plus 10% of the largest tank or 10% of the aggregate capacity of all other tanks located in the diked area.
- The dike must have no openings in it and be maintained in good condition.

Secondary containment for the ASTs at each site was designed based upon the above conditions.

TANK FARM LOCATIONS

BOSTON CAMP

A site visit was conducted on August 18, 2004, to determine a suitable location of the proposed tank farm and, based upon data acquired during the site visit, the tank farm shall be constructed directly north of the maintenance building as illustrated on Figure 1.

Currently 1 x 70,000-L tank is located on site. This tank, along with 300 x 205-L drums of Jet-B and 150 x 205-L drums of gasoline, will be placed within the secondary containment following its construction. The total volume of fuel to be stored within the ASTs will be 162,250 L. Based upon G-55 regulations, the required containment volume of the dikes is 70,000 L.

The length and height of the containment dikes to be constructed is shown in Figure 2. The dikes will be constructed from waste rock piles (identified to Kitnuna by Miramar)

to a minimum height of 1.1 m. The tank farm will be constructed upon an existing rock pad and lined with 30 mil Enviroliner® supplied and recommended by Layfield Plastics (Layfield) of Edmonton, Alberta. The pad will be graded slightly towards one corner (to be determined at time of construction) to allow for the collection of rainwater, snowmelt, and any possible leakage. Once the liner has been placed, a 0.3-m-thick layer of backfill (waste rock) will be placed over the liner to protect it from damage and degradation.

The total surface area and volume of the vacant secondary containment at Boston Camp will be 396 m² and 316,800 L, respectively.

An area of 156.25 m² is to be used for drum storage. The total surficial area and volume of the operating secondary containment at Boston Camp will be 239.75 m² and 191,800 L.

In the event of a maximum volume, one tank discharge (70,000 L) into the operating secondary containment area, the fluid height will be 0.51 m below the top of the berm (design freeboard).

WINDY LAKE CAMP

A site visit was conducted on August 17, 2004, to determine a suitable location of the proposed tank farm and, based upon data acquired during the site visit, the tank farm shall be constructed in the location of the current ASTs as illustrated in Figure 3.

Currently 1 x 50,000-L tank and 2 x 70,000 L tanks are located on site. Two (2) additional 70,000-L tanks are scheduled for installation in winter 2004/2005. The 50,000-L and 1 x 70,000-L tanks will be removed. The remaining 70,000-L tank as well as 600 x 205-L drums of Jet-B, 200 x 205-L drums of gasoline and 1 x 1,000-L tank will be placed within the secondary containment following its construction. The total volume of fuel to be stored within the ASTs will be 235,000 L. Based upon G-55 regulations, the required containment volume of the dikes is 70,000 L.

The length and height of the containment dikes to be constructed is shown in Figure 4. The dikes will be constructed, to a minimum height of 1.1 m, from native sand by excavating the footprint of the tank farm for the required material. Once the dike heights have been achieved, the area within will be lined with 30 mil Enviroliner®. The pad will be graded slightly towards one corner (to be determined at time of construction) to allow for the collection of rainwater, snowmelt, and any possible leakage. Once the liner has been placed, a 0.3-m-thick layer of backfill (sand) will be placed over the liner to protect it from damage and degradation.

The total surface area and volume of the vacant secondary containment at Windy Lake Camp will be 549 m² and 439,200 L, respectively.

An area of 262.5 m² is to be used for drum storage. The total surficial area and volume of the operating secondary containment at Windy Lake Camp will be 286.5 m² and 229,200 L.

In the event of a maximum volume, one tank discharge (70,000 L) into the operating secondary containment area, the fluid height will be 0.56 m below the top of the berm (design freeboard).

PATCH LAKE

A site visit has not yet been completed. A final location, within the work area footprint, will be determined prior to construction.

Currently, 2 x 70,000-L tanks are located on site. Miramar plans to install 1 x 35,000-L tank, 3 x 70,000-L tanks, and 2 x 75,000-L tanks within the next year. All 8 tanks will be placed within the secondary containment. The total volume of fuel to be stored within the ASTs will be 535,000 L. Based upon G-55 regulations, the required containment volume of the dikes is 121,000 L.

The length and height of the containment dikes to be constructed is shown in Figure 5. The dikes will be constructed, to a minimum height of 1.1 m, from native sand by excavating the footprint of the tank farm for the required material. Once the dike heights have been achieved, the area within will be lined with 30 mil Enviroliner®. The pad will be graded slightly towards one corner (to be determined at time of construction) to allow for the collection of rainwater, snowmelt, and any possible leakage. Once the liner has been placed, a 0.3-m-thick layer of backfill (sand) will be placed over the liner to protect it from damage and degradation.

The total surface area and volume of the vacant secondary containment at Patch Lake will be 1,003 m² and 802,400 L, respectively.


Excluding the area of one 75,000 L tank, an area of 456.25 m² is to be used as storage by all other tanks. The total surficial area and volume of the operating secondary containment at Patch Lake will be 546.75 m² and 437,400 L.

In the event of a discharge volume (121,000 L), based on Guide 55 regulations, into the operating secondary containment area, the fluid height will be 0.58 m below the top of the berm (design freeboard).

We trust the above meets with your expectations. Should you have any questions or require additional information, please do not hesitate to contact us.

Regards,

Prepared by:



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Project Manager

Verified and approved by:



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General Manager, Alberta



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