MELIADINE GOLD PROJECT

WASTE MANAGEMENT PLAN

August 2010

DOCUMENT CONTROL

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1	10/08/25			Changes made to reflect comments from INAC, ENV – Nunavut, and Environment Canada

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APPENDICES

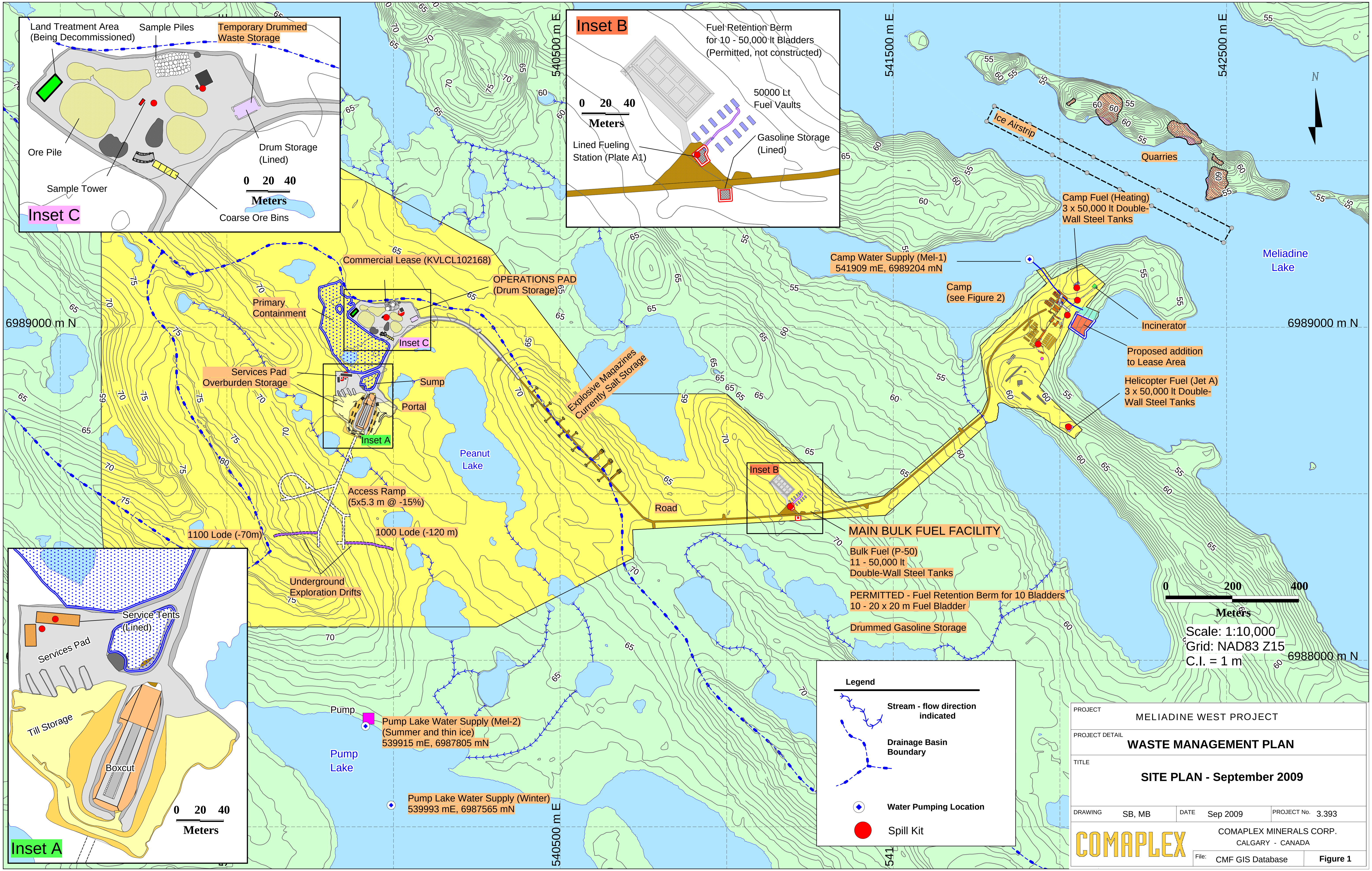
1.0 Introduction

This Waste Management Plan is designed to reduce adverse impacts on the environment at the Agnico-Eagle Mines Limited (AEM), Meliadine Gold Project's exploration camp on Meliadine Lake, Nunavut. It is designed to comply with the terms and conditions for water use and waste management outlined in Nunavut Water Board License 2BB-MEL0914 issued to Comaplex July 31, 2009. This update is in response to a July 8, 2010 letter from the Nunavut Water Board.

The plan is divided into two sections. Chapter 2 describes the commissioning of the BIODISK, a rotating biological contactor wastewater treatment plant, to handle waste water at the Meliadine West exploration camp. The installation of the unit is described and the operation of the treatment plant is summarized. Ongoing care and maintenance is described as is sludge disposal.

Chapter 3 discusses other aspects of waste management at the camp including the operation of the on-site incinerator and the segregation of wastes designated for disposal off-site.

A site plan showing the general layout of the Meliadine Gold Project's exploration camp and associated infrastructure is given in Figure 1.


Land Treatment Area
(Being Decommissioned)
Sample Piles
Temporary Drummed
Waste Storage
Ore Pile
Drum Storage
(Lined)
Sample Tower
Coarse Ore Bins
0 20 40
Meters
Inset C
Inset B
Fuel Retention Berm
for 10 - 50,000 lt Bladders
(Permitted, not constructed)
50000 Lt
Fuel Vaults
Gasoline Storage
(Lined)
Lined Fueling
Station (Plate A1)
540500 m E
541500 m E
542500 m E
Ice Airstrip
Quarries
Camp Fuel (Heating)
3 x 50,000 lt Double-
Wall Steel Tanks
Meliadine
Lake
Camp Water Supply (Mel-1)
541909 mE, 6989204 mN
Camp
(see Figure 2)
Incinerator
Proposed addition
to Lease Area
Helicopter Fuel (Jet A)
3 x 50,000 lt Double-
Wall Steel Tanks
6989000 m N
Commercial Lease (KVLCL102168)
OPERATIONS PAD
(Drum Storage)
Primary
Containment
Services Pad
Overburden Storage
Sump
Portal
Inset A
Explosive Magazines
Currently Salt Storage
Peanut
Lake
Road
Access Ramp
(5x5.3 m @ -15%)
1100 Lode (-70m)
1000 Lode (-120 m)
Underground
Exploration Drifts
MAIN BULK FUEL FACILITY
Bulk Fuel (P-50)
11 - 50,000 lt
Double-Wall Steel Tanks
PERMITTED - Fuel Retention Berm for 10 Bladders
10 - 20 x 20 m Fuel Bladder
Drummed Gasoline Storage
0 200 400
Meters
Scale: 1:10,000
Grid: NAD83 Z15
C.I. = 1 m
6988000 m N
Service Tents
(Lined)
Services Pad
Till Storage
Boxcut
Pump
Pump Lake Water Supply (Mel-2)
(Summer and thin ice)
539915 mE, 6987805 mN
Pump
Lake
Pump Lake Water Supply (Winter)
539993 mE, 6987565 mN
Legend
Stream - flow direction indicated
Drainage Basin Boundary
Water Pumping Location
Spill Kit
PROJECT
MELIADINE WEST PROJECT
PROJECT DETAIL
WASTE MANAGEMENT PLAN
TITLE
SITE PLAN - September 2009
DRAWING SB, MB
DATE Sep 2009
PROJECT No. 3.393
COMAPLEX
COMAPLEX MINERALS CORP.
CALGARY - CANADA
File: CMF GIS Database
Figure 1

2.0 BIODISK Rotating Biological Contactor

2.1 Introduction

AEM is presently commissioning a BIODISK rotating biological contactor wastewater treatment system designed to handle both black and grey water and produce effluent in compliance with NWB water license 2BB-MEL0914. Sewage wastes at the Meliadine Gold Project exploration camp were previously incinerated but this practice is coming to an end with the BIODISK coming on line. Also, grey water from the dry and kitchen facilities used to pass through a sump and wetland system before reaching Meliadine Lake. This grey water is also being redirected to the BIODISK.

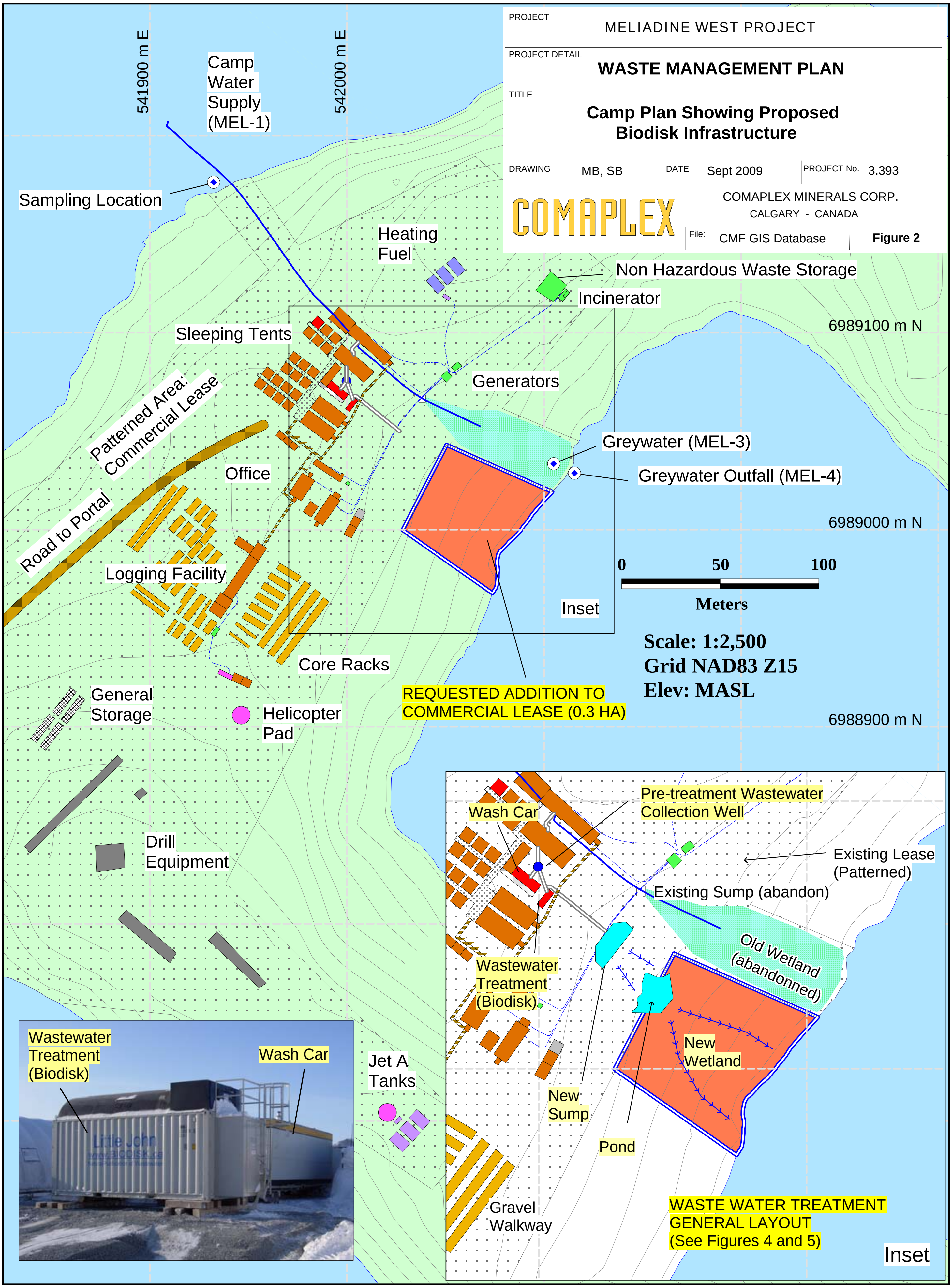
The commissioning of the system is in accordance with conditions detailed in water license 2BB-MEL0914, plans described in this document, the manufacturer's manuals, and recommendations from Birchwood Industries who are commissioning the system. The existing system of incineration of black water, and sump and wetland treatment of grey water will remain in place as a backup system for periods of low flow (mostly winter care and maintenance) and in the event the BIODISK experiences operating problems.

2.2 Location and Construction

Figure 2 is a plan of the camp area showing the locations of elements described in this document. The BIODISK has been positioned on the southeast side of the camp in a position amenable to the plumbing of influent piping from the wash car, the kitchen and the dry, which contains showers and clothes washers. Figure 3 is a schematic giving details of the plumbing and elements of the water supply and waste water system installed at the camp. Freshwater is drawn from Meliadine Lake at location MEL-1 and pumped to four 1400 litre and one 2500 litre plastic storage tanks, which are located in the dry and wash car, respectively.

The water system is constructed to circulate water between the camp and the lakeshore pump to prevent freezing. A water meter is positioned between the intake and the tanks to measure camp water usage (Figure 3). A pressure pump draws water from the storage tanks and delivers water to either the dry for showers, sinks and washers, to the kitchen, or to sinks and flush toilets located in the wash car. Discharge plumbing delivers used water from these facilities to a storage tank (collection well) adjacent to the BIODISK treatment plant. A grinder pump within the collection well delivers a sewage/greywater slurry to the BIODISK and is operated by a system of floats. The plumbing that delivers waste water to the BIODISK was completed during the summer of 2009 and improved in 2010 to better serve the treatment system.

Figure 4 shows the results of a detailed topographic plan completed during the summer of 2009. The survey was conducted to assist in the design and construction of a post-treatment sump and wetland system to receive effluent from the BIODISK unit. The plan shown on Figure 4 is presently scheduled for final design and construction in early 2011. The plan takes advantage of natural topography in the retention of effluent in a sump and downstream storage pond that will assist in ensuring the delivery of acceptable discharge to Meliadine Lake. Execution of this plan will also entail the abandonment of the existing sump and wetland area thereby allowing its natural reclamation.


PROJECT
MELIADINE WEST PROJECT
PROJECT DETAIL
WASTE MANAGEMENT PLAN
TITLE
Camp Plan Showing Proposed Biodisk Infrastructure
DRAWING MB, SB
DATE Sept 2009
PROJECT No. 3.393
COMAPLEX
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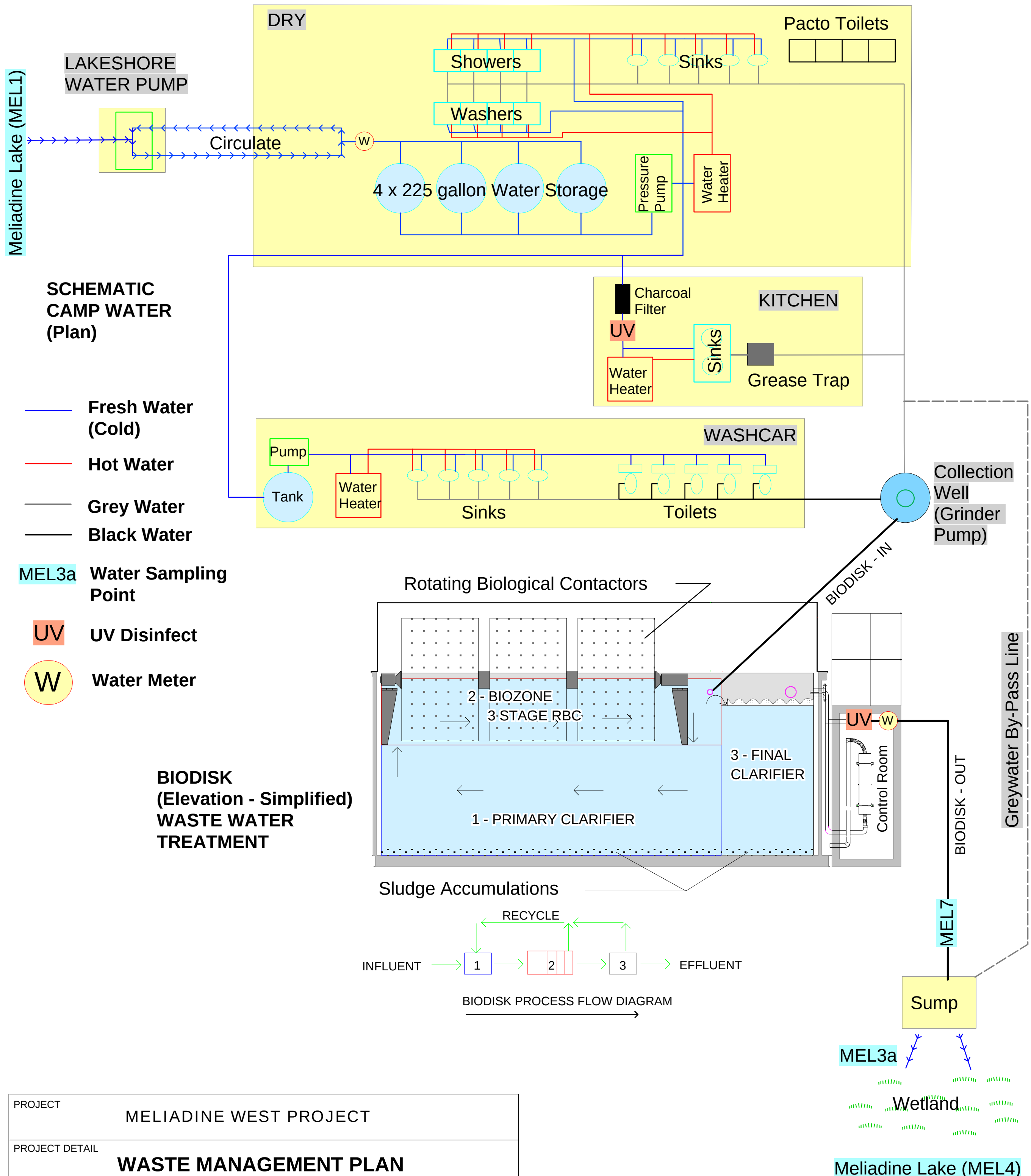
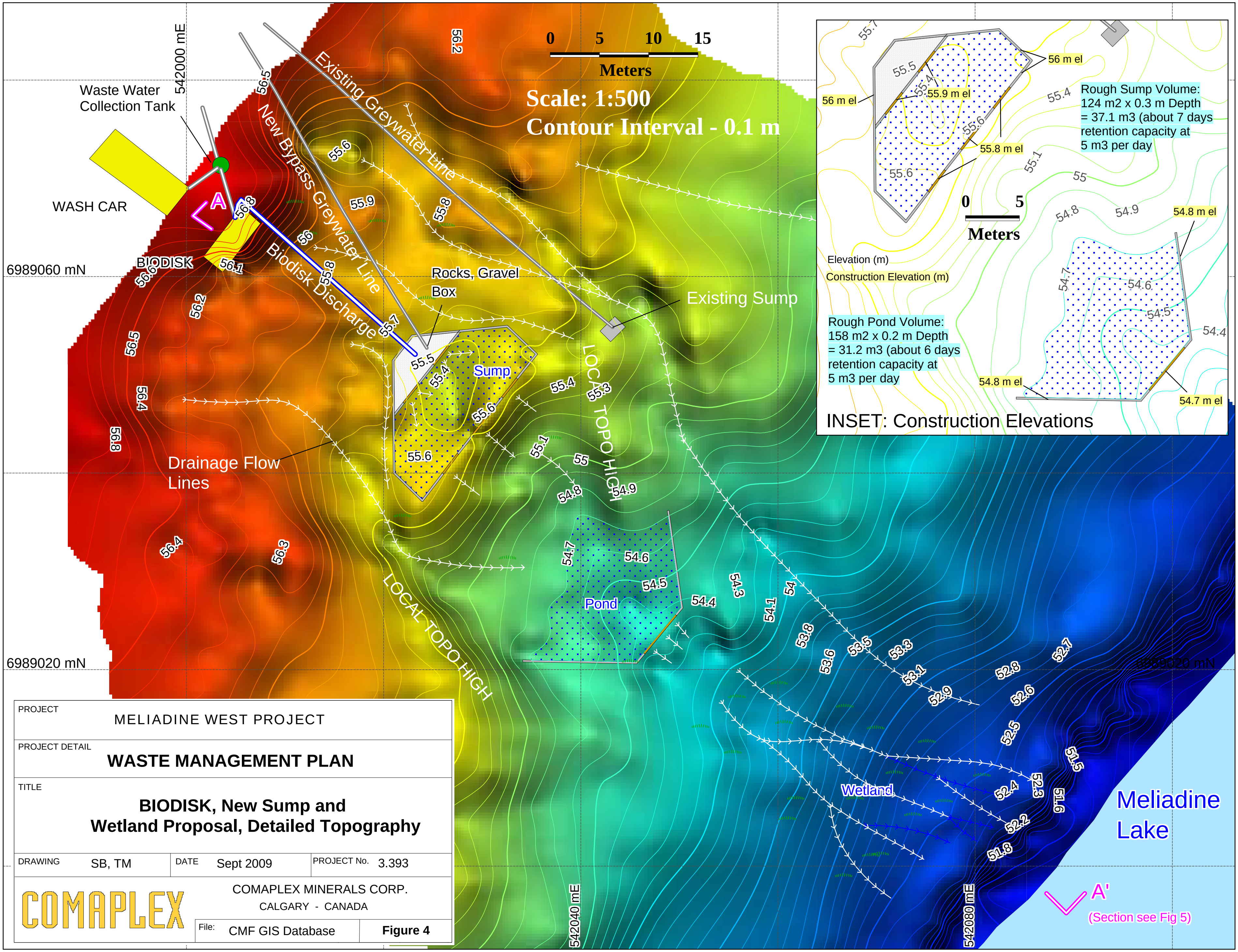
File: CMF GIS Database
Figure 2
541900 m E
542000 m E
Camp Water Supply (MEL-1)
Sampling Location
Heating Fuel
Non Hazardous Waste Storage
Incinerator
6989100 m N
Sleeping Tents
Generators
Patterned Area: Commercial Lease
Greywater (MEL-3)
Greywater Outfall (MEL-4)
Office
Road to Portal
6989000 m N
0
50
100
Meters
Logging Facility
Inset
Scale: 1:2,500
Grid NAD83 Z15
Elev: MASL
Core Racks
REQUESTED ADDITION TO COMMERCIAL LEASE (0.3 HA)
General Storage
Helicopter Pad
6988900 m N
Drill Equipment
Wash Car
Pre-treatment Wastewater Collection Well
Existing Lease (Patterned)
Existing Sump (abandon)
Old Wetland (abandonned)
Wastewater Treatment (Biodisk)
New Wetland
New Sump
Pond
Gravel Walkway
WASTE WATER TREATMENT GENERAL LAYOUT (See Figures 4 and 5)
Inset
Wastewater Treatment (Biodisk)
Wash Car
Jet A Tanks



PROJECT	MELIADINE WEST PROJECT
PROJECT DETAIL	**WASTE MANAGEMENT PLAN**
TITLE	**Schematic of Camp Water System** **Schematic of Biodisk Waste Water Treatment**
DRAWING: MB, SB	DATE: Sept 2009 — PROJECT No. 3.393
COMAPLEX	COMAPLEX MINERALS CORP. CALGARY - CANADA
File: CMF GIS Database	**Figure 3**

NOT TO SCALE



PROJECT	MELIADINE WEST PROJECT
PROJECT DETAIL	**WASTE MANAGEMENT PLAN**
TITLE	**BIODISK, New Sump and Wetland Proposal, Detailed Topography**

DRAWING	DATE	PROJECT No.
SB, TM	Sept 2009	3.393

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File: CMF GIS Database

Figure 4

The BIODISK discharge line will flow from a point at about elevation 59 metres through a 5 centimetre discharge line for about 20 metres to the proposed sump shown on figure 4 above. The end of the pipe is the final point of control and is designated MEL-7 as set out in the water license. Here the discharge will exit into cribbing filled with rocks and gravel. This feature is designed to control erosion from the discharge point of the BIODISK. The cribbing will be constructed using available wood found on site that is surplus to camp and underground needs. A schematic of construction details of the rock cribbing and balance of the sump walls is given on the elevation cross section on figure 5. The walls of the sump and cribbing will be constructed to 56.0 metres above sea level (MASL) and will be notched into the tundra surface. The maximum water elevation within the cribbed area will be 55.9 metres and the maximum water elevation within the sump will be 55.8 metres. This configuration will result in a sump capacity of about 37 cubic metres or roughly 5 days of water retention assuming an average 7 cubic metres per day of camp water usage.

The SE downstream wall of the sump is dug into a natural topographic rise that forms a natural ponding barrier. A similar low relief barrier occurs about halfway to Meliadine Lake and is the site chosen for a second barrier that will be built to elevation 54.8 metres and designed to retain flow until water elevation reaches 54.7 metres (Figure 5). This artificial pond will have a natural tundra floor and a capacity of about 31 cubic metres or about 4 days of retention capacity assuming 7 cubic metres per day water usage.

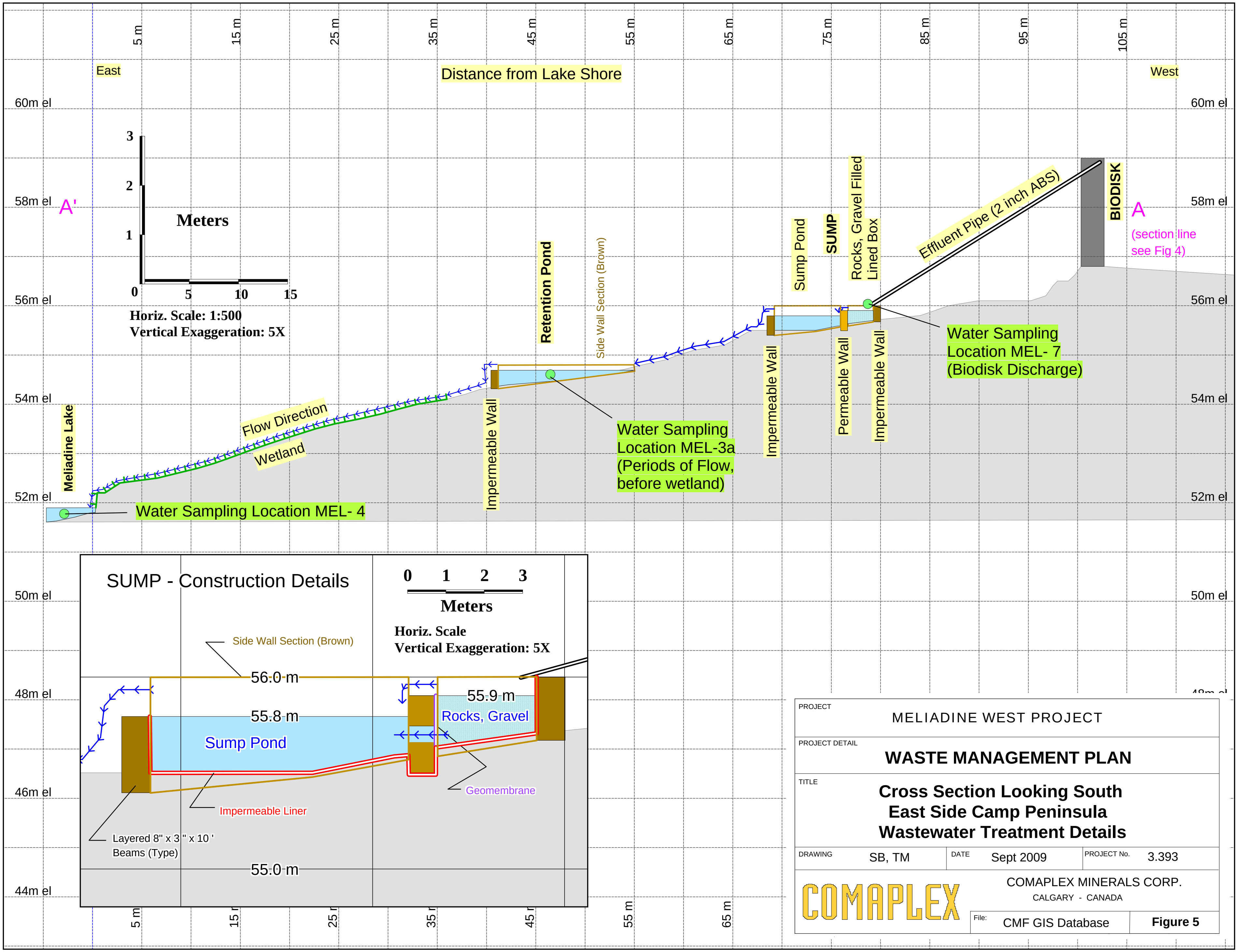
After exiting the pond, the effluent will pass through a meandering wetland system before discharging into Meliadine Lake. The entire sump, pond and wetland system has a length of about 80 metres and an elevation drop of about 4.0 metres as shown on figure 5.

2.3 BIODISK Operation and Maintenance

2.3.1 General Description of Operation (BIODISK Operations Manual)

The following discussion is modified from the manual provided by BIODISK Corporation. Important operational components of the manual are reproduced in Appendix A. The waste water treatment facility at the Meliadine Lake exploration camp is a tertiary treatment aerobic sewage treatment plant. The unit is designed to remove phosphorus, and destroy nitrogenous products and organic material. It is comprised of the primary clarifier, the BIODISK tank and the final clarifier (Figure 3, 6).

Raw sewage and grey water is pumped from the collection well into the primary clarifier (1 – Figure 3, 6). Fats, oils and greases (**FOG**) will float to the top of the primary clarifier. The Bio-zone location (2 – Figure 6) concentrates the scum in the area along the side walls of the tank. Settling separates the heavy solids. The clarified water enters the aeration section through the inlet slot located at the bottom of the non-drive end section of the bio-zone. This is the first section of three equal stages in the BIODISK aeration process. This process utilizes a fixed growth bacteria process, whereby bacteria are grown on a disc shaped media surface mounted on a shaft that is rotated into and out of the wastewater. The treated wastewater flows through three zones, each with a progressively higher standard of treatment. The discs are all mounted on a common shaft as shown on figure 6. The first section is where most of the biological oxygen demand (BOD) reduction occurs.



PROJECT
MELIADINE WEST PROJECT

PROJECT DETAIL
WASTE MANAGEMENT PLAN

TITLE
Cross Section Looking South
East Side Camp Peninsula
Wastewater Treatment Details

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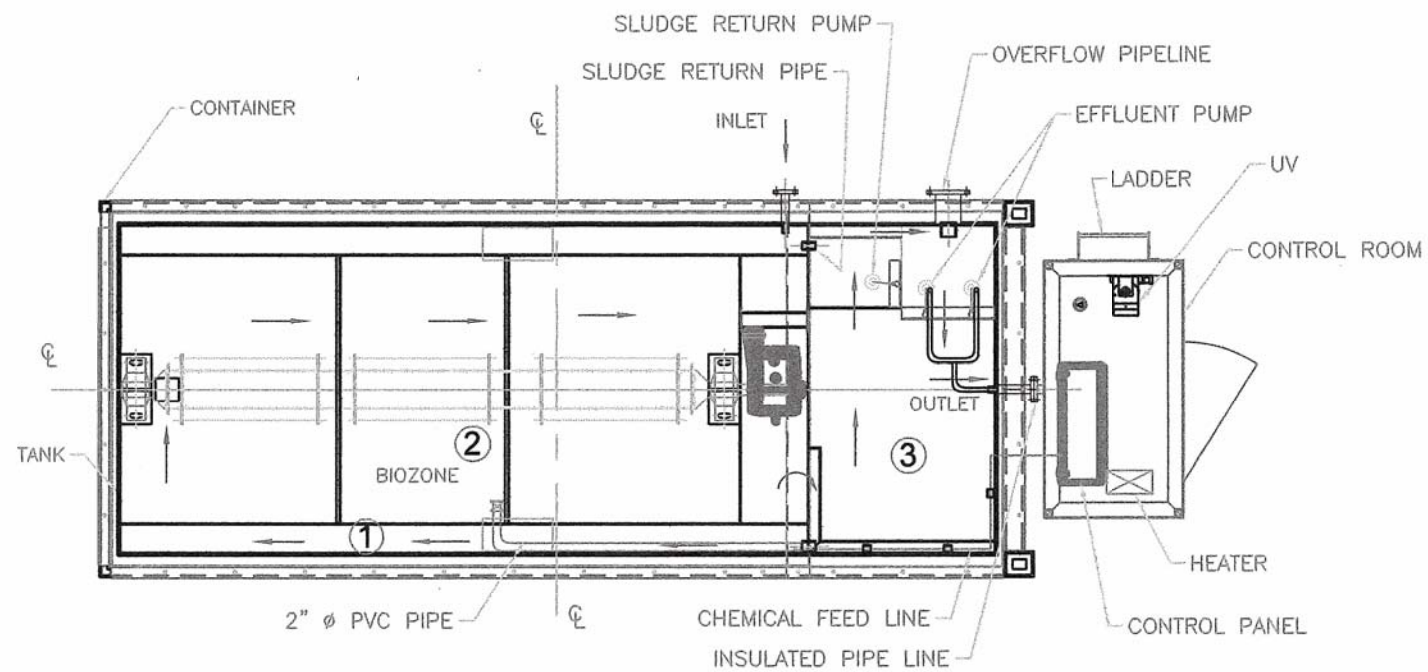
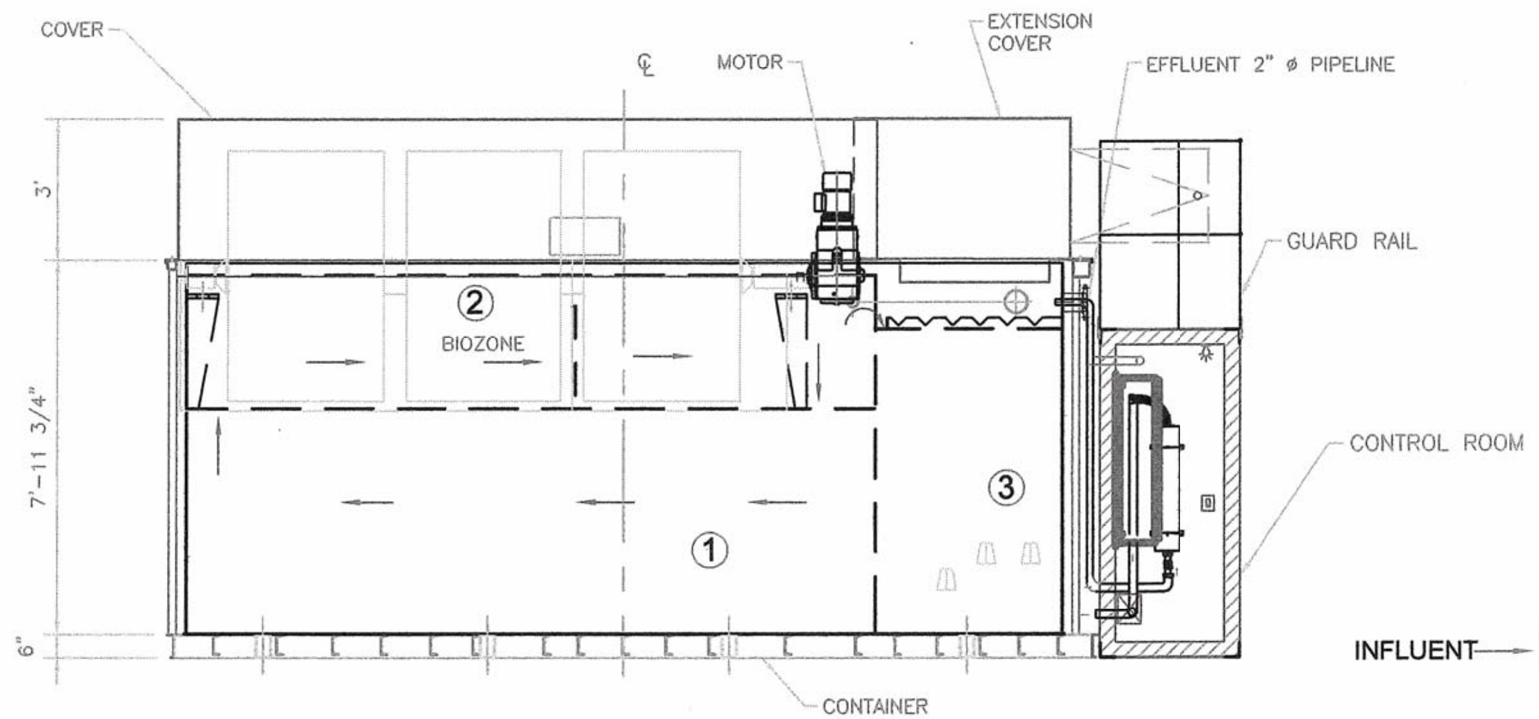
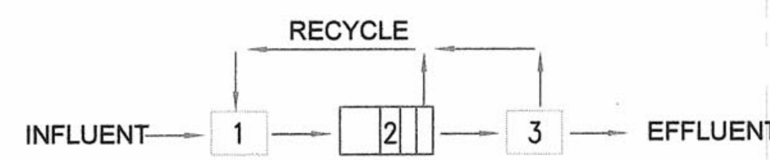
Figure 5



PLAN VIEW



SIDE VIEW



PROCESS FLOW DIAGRAM

PROCESS DETAILS		LITTLE JOHN
HYDRAULIC LOADING	(USGPD) (L/DAY)	12,500 47,100
BIO SUPPORT MEDIA AREA	(SQ.FT) (SQ.M)	7,000 650.65
BIO SUPPORT MEDIA DIAMETER	(FT) (M)	5'-4" 1.63
PRIMARY CLARIFIER CAPACITY	(CU.FT) (CU.M)	682 19.33
FINAL CLARIFIER CAPACITY	(CU.FT) (CU.M)	156 4.42
BIOZONE CAPACITY	(CU.FT) (CU.M)	68 1.93
SLUDGE STORAGE IN PRIMARY CLARIFIER	(CU.FT) (CU.M)	533 15.09
SLUDGE STORAGE IN FINAL CLARIFIER	(CU.FT) (CU.M)	21 0.59
T.W.L IN PRIMARY CLARIFIER	(FT) (M)	6'-9" 2.06
T.W.L IN FINAL CLARIFIER	(FT) (M)	6'-8" 2.03

SHIPPING DETAILS		LITTLE JOHN
OVERALL LENGTH		20'-0"
OVERALL WIDTH		8'-0"
OVERALL HEIGHT		11'-6"
SHIPPING WEIGHT	(LBS)	25,000
OPERATING WEIGHT	(LBS)	100,000

	PROCESS
1	PRIMARY CLARIFIER
2	THREE STAGES RBC
3	FINAL CLARIFIER

NOTES

1. TRACING HEAT IS ARRANGED ALL ROUND TANK.
2. PIPE BETWEEN CONTAINER AND CONTROOL ROOM SHALL BE INSULATED.

NOTES

REV.		BY

PROPRIETARY INFORMATION MA REPRODUCED OR DIVULGED WITH WRITTEN CONSENT OF BIODISK CO DO NOT SCALE. IF DOUBT, PLEA

DRAWN	A. W.
CHECKED	T. S.
DATE	2008-08-2
SCALE	N.T.S

PROJECT: MELIADINE WEST PROJECT

PROJECT DETAIL: **WASTE MANAGEMENT PLAN**

TITLE: **BIODISK**
Detail of General Arrangement
Courtesy of BIODISK Corporation

DRAWING	DATE	PROJECT No.
TS - BIODISK	Sept 2009	3.393

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File: CMF GIS Database | **Figure 6**

The third section has recycle buckets allowing recycling of the clarified water back into the primary clarifier.

Normally, it is unnecessary to add anything to the process. The biomass is naturally occurring and attaches itself to the discs which are 40% submerged in the waste water and have 60% exposure to air. As the discs rotate, the biomass is exposed to oxygen in the air, and consumes pollutants when submerged. The discs revolve 3 times per minute. Two basic classes of organisms are represented. The early stages of the process are dominated by *carbonaceous consuming microbes* that eat organic material. Later stages are dominated by *nitrification bacteria* that convert ammonia to nitrate. The early stage *carbonaceous consuming microbes* are typically dark brown and coat the disc to a thickness of about 1/16th of an inch. *Nitrificiation bacteria* is lighter in colour and creates a thinner coating on the discs. Experienced operators can monitor the condition of the system by monitoring the colour and odour of the biomass. A secondary circuit has been added to the system in place at Meliadine to allow for addition of alum to remove phosphorus from the effluent stream.

Partially treated water from the BIODISK now enters the final clarifier (3 – Figure 6). Spent biomass settles in this chamber and no sludge is returned to the primary clarifier. Water levels in the final clarifier are controlled by a system of floats and pumps. There are two active and one spare 70 litres per minute pumps in the final clarifier that deliver effluent at a rate compatible with the capacity of the ultraviolet (UV) disinfectors. After passing the UV disinfectors, the effluent should meet design specifications.

The unit will be operating in an Arctic environment where the unit and the bacteria have to be protected from the cold. The inflow of warm effluent will add a degree of warmth to the BIODISK but this will be supplemented by an electric heater that is part of the plant. The intent is to operate the BIODISK over the 2010 – 2011 winter to ensure it is ready for the start-up of drilling in February 2011. Waste water entering the BIODISK will continue to be treated and discharge to the new sump area. However, the effluent is expected to freeze upon exiting the pipe and not reach Meliadine Lake until after the onset of warm weather.

2.3.2 General Process Inspection Guideline

The process efficiency of the BIODISK system can be checked by monitoring common elements of the process. The **amount of scum** in the primary clarifier is proportional to the sludge on the bottom. Fats, oils and greases (**FOG**) need to be removed from the wastewater before it enters the BIODISK. At Meliadine, a grease removal trap is installed after the kitchen drain. Additional removal is possible in the primary clarifier. The scum blanket can be left unattended for 6 to 9 months in most cases. When the scum blanket completely covers the primary tank and has a depth of about 8 inches the primary tank may need pumping.

The **thickness and distribution of the biomass** is an indicator of plant capacity. When the flow is close to design maximium, the biomass will be approximately 32 mm in the first stage and progressively less on the following stages. When the treatment is at capacity, biomass will be evident on the last stage. As flow is reduced, the amount of biomass on the disks will be proportional to the loading. At 50% of design, the organic removal biomass will occupy 50% of the length of the shaft. Light brown nitrification bacteria in the lag stages are a good sign. This does not occur until the BOD is less than 30 mg/L. If the last stage is without biomass, this is a good indication that complete nitrification has been accomplished.

Biomass colour is a good process indicator. In the lead stages, the biomass colour should be medium brown in colour. In the latter stages, the disks will be lighter brown when the system is lightly loaded. The appearance of black or grey patches of biomass is not good. **Black and grey biomass** is an indicator of organic overload and or excessive FOG. This will appear first on the lead stage and may indicate the need to pump the system out.

Odour is evident when the dissolved oxygen (DO) levels are low in the BIODISK. Low DO in the first stage is an indicator of organic over load. If the problem causes black, grey and gelatinous biomass and if not addressed, it will lead to more odour and process break down. The problem will appear first in the first stage and will progress down the shaft as it gets worse. Generally, the BIODISK produces a rich loamy odour that is not offensive when operating correctly. If it is producing abnormal odour it is an indication of poor effluent, organic overload or excessive FOG.

Small amounts of **scum in the final clarifier** are an indication that nitrogen gas is being released. Nitrogen gas is released in an anoxic environment when a carbon source and nitrates are present. This indicates that de-nitrification is taking place. When the final clarifier is more than 50% covered with scum, the BIODISK may need to have the bio-solids and scum removed.

2.3.3 Electrical Controls

A control panel connecting all electrical circuits occurs within the control room of the BIODISK unit (Figure 6). Pumps and heaters are normally left in the auto position and the BIODISK runs 24 hours per day, 365 days per year. The effluent pumps are controlled with switches for manual or auto operation and are also hooked up to a high water alarm. The floats in the final clarifier provide the switches for the pumps. At very high flows, a float is rigged to start both pumps and also the backup pump if the primary pump fails.

There is an exterior red light outside of the control room. An **exterior flashing red** is activated by one of the following conditions:

- Drive motor amps too high or too low
- High water
- Effluent pump malfunction

The exact problem will be indicated by control panel lights within the control room

2.3.4 Biosolids Removal

It is not necessary to empty the tank to remove all the sludge and scum if the BIODISK is to be run continuously. There will be instances when sludge has to be removed. Generally, the first step is to remove the scum blanket and then remove the sludge. Sludge is distributed all over the primary clarified tank bottom (Figure 6). Solids will also be found near the inlet and under the first stage. The primary clarifier has a sludge storage capacity of about 15 cubic metres and the final clarifier has a capacity of about 0.6 cubic metres.

The sludge blanket and the biological activity on the disks are sources of heat. Removal of sludge is best accomplished in the spring if the plant is operated continuously. In the winter heat from biological activity can help maintain system temperature. The inflow of warm effluent will also add a degree of warmth to the BIODISK but this can be supplemented by an electric heater that is part of the plant.

The intent is to keep the BIODISK running over the 2010 – 2011 winter to ensure it is ready for the start-up of drilling in February or early March 2011.

Should the BIODISK be shut-down for winter, it would be drained and the sludge removed using the following detailed procedure:

- During the shut-down the site crew starts washing down the BIODISK units three days in advance of the final shutdown to wash the grey water and sewage through the four sections of the plant;
- Once this three days of flushing are complete then all waste water sources are shut down to facilitate the clean out process;
- The liquid content of the treatment plant is withdrawn by pumping out the liquid to expose the sludge. This process starts by pumping out the supernatant from the primary settlement tank until the sludge begins to show up. The supernatant is pumped into section one of the BIODISK. The pumping of supernatant is then halted;
- The sludge is then pumped into 205 litre drums which are set on pallets for later ease of movement by mobile equipment. The sludge pumping suction hose should be placed down at a multiple number of points to help ensure complete removal of accumulated sludge deposits;
- Once the primary settlement tank is emptied the pumping of sludge is halted;
- The liquid content of section one of the BIODISK is withdrawn by pumping out the liquid to expose the sludge. The supernatant from section 1 is pumped into section 2 of the BIODISK until the sludge is exposed. The pumping of supernatant is then halted;
- The sludge is then pumped from section 1 into 205 litre drums. Once the section 1 tank is emptied the pumping of sludge is halted;
- The process is then repeated for sections 2, 3 and 4 and for the final settlement chamber.

Typically this sludge clean out occurs at the end of the exploration season (October) which then facilitates shut down and winterization of the plant until the start of the next years exploration season (typically February or early March).

If sludge clean out is occurring outside of the end of season shutdown of the camp, it should be noted that the biological growth on the disks should not be washed off, but left in place. The exception to this is if the disks have accumulated excess biomass due to sludge pump out being delayed past the indicated intervals.

2.3.5 General Operating Considerations

Good kitchen techniques can help keep the BIODISK unit operating correctly. A grease trap has been installed after the drain in the kitchen at the Meliadine Camp and needs to be maintained. **The largest source of problem fats, oils and greases (FOG) is the kitchen sink.** Poor kitchen techniques can double the BOD loading. All plates and pots should have food scraps removed before rinsing.

Antibacterial soaps are designed to kill bacteria and should be avoided. Once the laundry and kitchen area are added to the treated flows, expected by end of August, the use of harsh cleaners and strong detergents will be limited and controlled in order to protect the growth of bacteria within the sewage treatment plant. Biodegradable cleaners and detergents will replace the existing cleaners and detergents.

Specific components of the unit require some routine maintenance. **The bearings of the BIODISK shaft should be lubricated every 3 months.** Look for lubricant leaks around the gear box and motor. The **UV light has an alarm** that indicates low transmission and may indicate that it requires cleaning.

2.4 Sludge Disposal

The aerobic processes within the BIODISK treatment plant will result in the accumulation of biosolids (sewage sludge). These aerobic processes should result in the destruction of disease-causing microorganisms and parasites to a level sufficient to allow the resulting solids to be safely applied to land as a soil amendment material. In addition to having properties similar to peat, the sludge will have nutrients that will promote plant growth, i.e. act as a fertilizer.

The sludge will be removed from the BIODISK treatment plant as required during its operation and prior to the closure of the exploration camp. The quantity of sludge removed will be dependent on the number of persons in camp over the field season and the frequency of sludge removal. The sludge will be placed in 205 litre drums and removed for application to drill sites needing reclamation. These drill sites will be at least 31 metres from any water body or stream, and will be relatively flat so that the sludge does not move after being applied. Drill sites receiving the sludge will be posted to keep people away and also to allow one to anecdotally note the re-establishment of vegetation over time.

The use of sewage sludge in reclaiming drill sites is a sustainable practice that conserves organic matter and completes nutrient cycles. It removes the need to reclaim drill sites by applying peat and fertilizer.

2.5 Performance and Monitoring

The final point of control is the end of the pipe from the BIODISK and is noted in the water license as MEL-7. This station was established to monitor the performance of the BIODISK treatment plant. The parameters monitored include BOD_5, faecal coliforms, TSS, pH, and oil and grease. Monthly samples will be collected at the end of the pipe to document the performance of the plant against the effluent requirements set in the water license, with the results submitted to the Water Board in the monthly reports.

At times that the camp is on care and maintenance, or during fall shut down and winter or spring startup, the BIODISK will be brought online slowly and checked for performance during the establishment of the biomass. During this time, the existing waste water treatment procedure using the pacto toilet system entailing the incineration of black water, and the sump and wetland treatment of grey water may be employed.

One of the advantages of keeping the BIODISK operational over the winter is that the use of the back-up pacto toilet system can be avoided.

3.0 Management of Other Wastes

3.1 General Waste

All inert nonhazardous combustibles are incinerated on a daily basis. This includes food scraps, and most office and room waste. The waste management policy is designed to remove materials with the potential to create problematic pollutants upon incineration. These wastes will be treated in accordance with government guidelines and either landfilled in Rankin Inlet or shipped to southern facilities with the capability to treat them in an environmentally responsible manner. The waste management policy stipulates that materials are segregated at the source to minimize the potential for inadvertent loading of the incinerator with problematic materials.

The main thrusts of the policy are;

- The minimization of the creation of dioxin and furan compounds that are a byproduct of the incineration of some wastes. This is principally accomplished through the segregation and elimination of plastics from the incinerated wastes;
- The elimination of potential mercury sources from the incinerated wastes;
- The segregation and elimination of waste oils and oil stained materials from the incinerated waste; and
- The segregation and elimination of industrial and household hazardous wastes from the incinerated waste.

Wastes that are deemed not combustible in camp will be treated in the following manner.

- Non-hazardous, solid “inert” waste (i.e. scrap metal, pipe, wood, plastics, liners, styrofoam) will be disposed of in approved landfills;
- All hazardous wastes and waste items that cannot be incinerated are securely packaged, and removed from site (either transported to Rankin Inlet by winter road or flown out on aircraft backhauls), and are either recycled at or disposed of in a licensed landfill;

- Prior to disposal, the hazardous waste will be properly packaged, labeled, and stored and manifested in a Transportation of Dangerous Goods (TDG) approved shipping container;

- The container will have the appropriate hazardous waste labels; and

- All Federal, Provincial and Territorial regulations will be adhered to.

3.2 Used Container Disposal

It is important to ensure the proper disposal of used containers that have contacted, collected or contained a hazardous or regulated substance (e.g. paint cans, oil cans, acid containers, aerosol cans). Generally residual liquids will be collected in 205 litre metal drums, manifested as hazardous waste and shipped to a licensed hazardous waste treatment facility. The original containers will be allowed to dry and disposed of locally in a landfill.

Metal containers can be disposed as scrap metal in the approved landfill after being allowed to dry and are typically crushed.

3.3 Hazardous Waste Generation and Disposal

AEM expects to ship about 4 drums of oil filters, oily rags and glycol south by barge in 2011 under AEM's hazardous waste generator number[1] NUG 100031, and following training in the transport of dangerous goods. These waste drums and their labeling will be inspected by an accredited TDG person in Rankin Inlet and appropriate paperwork will be kept on file in camp. Details of the types, amounts, documentation and destination of hazardous wastes will be documented in the annual report delivered to the NWB.

3.4 Used Drum Disposal

The majority of used fuel drums for Jet-B fuel and diesel (205 litre or 45 gallon drums) can be returned to the supplier for refund or reused locally. Generally, AEM uses bulk fuels and only keeps a limited number of used drums on-site. However, during operations drums may be used for storage of other "used" products (i.e. used glycol, used oil, water contaminated fuel, materials from spill cleanups, etc). These drums will have to be properly labeled and stored prior to acceptable removal and disposal usually off-site at an approved facility.

3.5 Used Tire Recycle and Disposal

[1] Agnico-Eagle Mines Ltd has a single hazardous waste generator number for Nunavut. This covers both the Meadowbank Mine and the Meliadine Gold Project.

Used tires must be recycled or disposed of on-site if recycling is not possible. In general, all tires smaller than 24.5 inches (wheel rim size) must be recycled with an approved tire recycler.

No commercial recycling options exist for tires larger than 24.5 inches in diameter, so these tires may be disposed of in the approved landfill and or designated area within the waste rock pile, once mining has commenced. Generally, larger tires are in demand at mine sites for the construction of safety barriers along roads and thus these spent tires will be kept for such purposes.

APPENDIX A

Excerpts from BIODISK Operating Manual

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BIODISK
Natural Purification of Wastewater

LITTLE JOHN

OPERATION

MANUAL

BIODISK Corporation

August 2008

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1.0 SUMMARY OF OPERATION

We recommend that daily inspection be done for the first month followed by weekly inspections. It is often the testing requirement that governs the frequency of visits. Whenever the operators are at the Little John, they need to look at the process and listen to the equipment. Please read section 2.0 – VISUAL AND AUDIBLE INSPECTION.

A) The Little John wastewater treatment plant supplied by BIODISK Corporation is a secondary treatment plant designed to remove phosphorous and organic material. It is comprised of the primary clarifier, the RBC tank and the final clarifier.

B) Raw sewage is pumped into the primary clarifier. Fats, oils and greases (FOG) will float to the top of the primary clarifier. The Bio-zone location concentrates the scum in the area along the side walls of the tank. Settling separates the heavy solids. The clarified water enters the aeration section through the inlet slot located at the bottom of the non-drive end section of the bio-zone. This is the first section of three equal stages in the rotating biological contactor (RBC) aeration process.

The normal color of the bacteria in the 1st stage is dark brown. This is the stage where most of the BOD reduction occurs. The succeeding 2nd and 3rd stages are mounted on the same shaft. The 3rd disk bank has recycle buckets. Recycled water has many operational benefits. See www.Biodisk.ca for additional information.

C) Partially treated water from the RBC now enters the final clarifier. Spent biomass settles in this chamber. No sludge is returned to the primary clarifier.

D) There are two effluent pumps and one spare. The rated capacity of each pump is limited to 15 gpd to ensure adequate UV disinfection. The two effluent pumps and floats are installed under the hatch in the cover extension. There are four floats in the final clarifier called stop, start, high water (alarm) and override floats. It is suggested that the high water alarm float be set as the third high's float. The highest is override float that starts the standby pump and allows both pumps to operate. The lowest is the stop float. The stop float is set 60" below the top of the tank, start float 21", the alarm float 19" and the override float switch 17" below the top of the tank, respectively.

Putting the alarm float between the start float and the override float will tell the operator that there has been a higher pumping requirement than normal or that only one pump is working. Both conditions are important and can be addressed.

Each effluent pump has a check valve on the pump. The UV is designed to treat 15 gpm. This flow rate is maintained by adjusting the valve located in the control room.

E) The UV light is rated for 15 gpm. Please see the manufactures instruction for cleaning requirements.

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F) A flow meter is provided.

2.0 VISUAL AND AUDIBLE INSPECTION

The Biodisk does not have any noisy components. Check valves are the part of the noise component. The splash of the disk going through the water is a constant as is the hum of the motor. Noises should be low level and constant. There are three sources of noise to listen from the drive, the bearings and the rotating assembly.

The drive motor is a constant hum. High speed noises are generally associated with motor bearings or reducer input bearings. Low speed noises are reducer output noises. The drive is selected for the occasional start up condition. While in continuous operation, the drive is under loaded and draws 60% of the hp provided. Many years of operation are expected before drive noises become an issue

Bearing noises are often cyclonical. The rotation speed of the shaft is 4.8 rpm. Bearing can also squeak continuously. This type of noise needs to be addressed ASAP.

The rotating assembly consists of the shaft and the disk banks. The disk banks are bolted to the shaft. Lock Tight is used on the disk collar bolts. Movement in the collar bolts will loosen the disk bank and allow it to move. This movement will be evident on every revolution and may be accompanied by a thud. If left unattended, the loose components will eventual break down. Tighten all components that have any movement.

An experienced operator can tell if the Biodisk is working properly by looking at the process. The amount of scum, biomass thickness, coverage, texture, color, odor, final clarifier scum and time are visual indicators of process efficiency.

Scum will float in the primary clarifier is in proportion to the sludge on the bottom. If left unattended, the scum can lift the floor grating. Scum formation is normal. Fats, oils and grease (FOG) are not beneficial to biological growth and needs to be removed from the wastewater flow before the RBC process. The removal happens in the primary clarifier of the Biodisk The scum blanket can be left unattended for 6 to 9 months at design flows and longer for lightly loaded systems. The depth of scum is an indicator to the operator. The thickest scum blanket will be at the non-drive end of the primary tank. This is also the location of the bio-zone inlet. When the scum blanket completely covers the primary tank and has a depth of about 8" the primary tank may need pumping.

The thickness and distribution of the biomass is an indicator of plant capacity. When the flow is close to or at design, the biomass will be 1/8" in the first stage and progressively less on the following stages. When the treatment is at capacity, biomass will be evident on the last stage. As the flow is reduced, the amount of biomass on the disks will be proportional to the loading. At 50% of design, the organic removal biomass will occupy 50% of the length of the shaft. Light brown

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nitrification bacteria on the lag stage is a good sign. Nitrification does not occur in the Biodisk until the BOD is less than 30 mg/l. If the last stage is without obvious biomass it is a good indicator that complete nitrification has been accomplished

Biomass color is a process indicator to the operator. The biomass in the lead stages will be a medium brown in color. In the lag stages, the disks will be lighter brown when the system is lightly loaded and heavier color shows when designed for nitrification. Colorless or no biomass is a sign of an under loaded system. The appearance of black and grey patches of biomass is not good. Black and grey biomass is an indicator of organic overload and or excessive FOG. This will appear first on the lead stage. It may be time to have the system pumped out.

Often black and grey spots are accompanied by gelatinous material. This unhealthy bacteria hangs of the ends of the tie rods. This is also a sign of organic over load, FOG and excessive use of detergents or cleaners.

Odour is evident when dissolved oxygen (DO) levels are low in the RBC. Low DO in the first stage is an indicator of organic over load. If the problem causing the black, grey and gelatinous biomass is not addressed, it will lead to increased odour and process break down. The indicators will appear on the first stage and eventually progress down the full shaft.

Odour under the RBC cover is not offensive. A healthy biomass smells like rich earth or loam. In some application, the RBC has been used as an odour eater. If the RBC is producing odour, it is an indicator of poor effluent, organic over load or excessive FOG.

The amount of scum in the final clarifier is an indicator. A small amount of scum is an indicator that nitrogen gas has being released. Nitrogen gas is liberated in anoxic environments when a carbon source and nitrates are present. This process is called de-nitrification. When more than 50% of the final clarifier is covered with scum, it is an indicator that the Biodisk may need to have the bio-solids and scum removed.

The Biodisk is designed to store sludge for 6 to 9 months or longer. Sludge storage time is directly related to the organic load per day. Lightly loaded systems have long term sludge storage. Scum, biomass thickness, coverage, texture, color, odour and time are all indicators to tell the thickness of the sludge. The removal of bio-solids needs to be addressed. A pump-out truck normally does the sludge removal. A particular point to emphasize is that the biological growth (biomass) on the disks should not be washed off. The sludge can be disposed of at municipal environmental friendly locations.

Looking and listening can tell the operator the health status of the Biodisk. We expect that Little John # 261 will have 20 years life and we need your help to achieve this.

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3.0 ELECTRICAL CONTROLS

The detailed wiring diagram has been provided on the inside of the panel and in this binder. Little John #284 has a control panel designed specifically for your requirements. All of the electrical power requirements pass through the panel. The panel has been designed for a 120, 3 hp, 60 HZ and a neutral wire power supply. The panel has a 200 watt forced air panel heater.

Breaker protection with 10 or 15 amp have been provide for all components including duplex outlets, base board heater, lights, RBC drive, duplex effluent pumps, heaters and heat trace terminals.

The panel lights will show what equipment is running. Pumps, heaters are normally left in the auto position and the RBC runs 24h/365d in the on position.

Duplex alternating effluent pump controls are provided with hand-off-auto switches and high water alarm. The floats in the final clarifier start and stop the pumps. The fourth and highest float allows two pumps to operate at the same time for high flows. This feature will also start the stand by pump when the primary pump has failed. The third float is for a high water level alarm.

An exterior flashing red will be activated by the RBC drive motor when the motor amps are too high or too low, high water and effluent pump malfunction. The control panel lights will indicate the component that triggered the alarm.

One or two extra heat trace contacts have been provided for your use.

4.0 BIOSOLIDS REMOVAL OR PUMP OUT

It is not necessary to remove all the tank contents or all the sludge and scum. Be sure to remove the scum blanket first and then remove the sludge.

Sludge is distributed over all of the primary clarified tank bottom. More solids will be near the inlet and under the first stage. The nozzle of the hose must be moved around the tank bottom. Sludge can funnel at 60 degrees if the suction hose is stationary. Your Little John has a primary tank sludge storage volume of 15 cu m (533 cu ft/3,300 gallons). The final clarifier has 0.6 cu m (21 cu ft/130 gallons).

The sludge blanket and the biological activity on the disk are both a source of heat. Removal of biosolids can be done in the spring if possible. Winter removal of all bio-solids will reduce the heat generated from biological activity. If required, partial removal of bio-solids in the winter is recommended.

Removing sludge is like vacuuming under the bed. If you do not move the nozzle all around at different points, you will not get all the dust

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5.0 KITCHEN WASTE

The kitchen wastewater needs to have a well maintained grease trap. The biggest source of FOG and BOD is from the pot sink in the kitchen. All food scraps need to be removed before the plates and pots are rinsed. All domestic wastewater has some kitchen wastewater or a grey water component. Camp food preparation methods can double the BOD loading. Good kitchen techniques will save money and time.

6.0 ANTIBACTERIAL SOAPS

The Biodisk uses naturally accruing micro-organisms to consume pollutants. Antibacterial soaps and detergents are designed to kill all bacteria. Normal cleaning chemicals are part of the wastewater characteristics. Excessive use of detergents and antibacterial soaps will cause operational problems with any biological process. Try to avoid using this type of products.

7.0 ROUTINE MAINTANENCE

Please see the detailed information provided for each component.

The item that requires attention is the bearings. **Lubricating the bearings every three months is essential.** Bearing grease turns white and losses its beneficial qualities in the presence of water. Re-grease the bearing after any flooding has occurred.

The bearings, gear box and motor have been lubricated with long life synthetic lubricants. Look for leaks.

The UV light has an alarm that indicates low transmission. The UV light may need cleaning.

Sludge removal frequency is 6 to 9 months. Remove scum before vacuuming the tank bottom. It is not necessary to remove all the water or all the sludge.

A sample tap has been provided in the control room for grab sampling.

Biodisk will provide technical support for any process concerns or malfunction for the life of the equipment. **We can be reached at 416 503-4100, rbcguy@biodisk.ca and at www.biodisk.ca**

8.0 SPARE PARTS

There are no spare parts required or recommended for the Little John.