Enbridge Line 6B MP 608
Marshall, Michigan Pipeline Release
Frac Tank Secondary Containment Plan

August 6, 2010

This Frac Tank Secondary Containment Plan (Plan) has been prepared for Enbridge Energy, Limited Partnership (Company) for frac tanks staged at the crude oil release site in Marshall, Michigan. This Plan is supplemental to the August 2nd, Waste Treatment, Transportation, and Disposal Plan previously approved with modifications by the United States Environmental Protection Agency (U.S. EPA). Although primarily prepared for "Frac Tank City", procedures identified in this Plan are applicable to other frac tank staging areas.

1.1 OBJECTIVES

The Plan's objectives are to establish best management practices (BMPs) and administrative controls for secondary containment at frac tank staging areas. Currently, frac tanks are staged in two main areas: 1) the frac tank farm (" Frac Tank City") located south of Division Drive adjacent to I-69, and 2) at the release source area (Division A). As of August 3, 2010, approximately 90 frac tanks were located at Frac Tank City and 11 tanks were staged at the source area. Frac tank staging areas are temporary and evolving. BMPs and administrative controls must be flexible enough to accommodate additional tanks and truck access.

1.2 DESCRIPTION

Frac Tank City is staged near the release area (Division A), on the south side of Division Drive and east side of I-69 (**Figure 1**). The frac tanks are located within an elongate, north to south oriented parcel adjacent to the Company's Marshall Pump Station. Frac tanks staged on-site are predominantly 21,000-gallons in volume. The largest single tank currently on-site has a capacity of 21,875 gallons. As of August 2, 2010, the total tank capacity was 1,791,333 gallons.

The topography of the Frac Tank City area is rolling with high ground north and south of a large depression within the approximate center of the area. Currently tanks are staged both north and south of the central depression. Topographic low points are present in the northwest and southeast corners of the area. The northwest area of the tank farm has a low point that drains toward the I-69 right-of-way (ROW). The southern portion of the existing Frac Tank City drains to a wetland area adjacent to two small lakes. Attached aerial photographs of Frac Tank City, collected on August 4, 2010, show the current configuration of Frac Tank City.

1.3 SURFACE WATER FEATURES AND PATHWAYS

Surface water features near Frac Tank City include two small lakes located southeast of Frac Tank City: Crystal Lake and a second unnamed lake. Wetlands surround both lakes. Talmadge Creek is located approximately 2,000 feet east of Frac Tank City and drains northeast toward the Kalamazoo River. No stormwater drains have been identified in the vicinity of Frac Tank City.

1.4 BACKGROUND

One tank leak has occurred in the southeast portion of the tank farm. Fluid flowed southeast into the wetland adjacent to Crystal Lake. The Company responded to the leak by installing timber mats into the wetland and recovering product with a vacuum truck. Sorbent booms and pads were also deployed into the wetland and impacted soil was excavated. This area requires secondary containment if tanks are to remain within the southern portion of the tank farm. The cause of the leak was reportedly an improperly closed hatch or a bad hatch gasket. As a result of the leak, a standard procedure has been established to check all valves and ports on frac tanks upon delivery to Frac Tank City. All frac tanks are sign-posted to indicate that the tank has been inspected for integrity by the Company.

1.5 FLUID MANAGEMENT PROCESSES

Currently, fluids are transferred from vacuum trucks to frac tanks and from frac tanks to tanker trucks via pumping through hoses. Other processes at Frac Tank City include staging of industrial waste dumpsters and future operation of a carbon filtration treatment system. A bermed containment system is currently being constructed for the carbon filtration system.

1.6 MANAGEMENT PROCEDURES

Current management practices in place at Frac Tank City include procedures for frac tank inspection, fluid transfer and emergency spill response. Following is a discussion of each management area.

A. Frac Tank Inspection Procedures

The overall purpose of frac tank inspections is to ensure that integrity of the tank, valving, seals, gaskets and hatchways is not compromised. These inspections are to be completed such that each tank is inspected twice per shift. Following are the tank inspection procedures:

1. Tanks are to be inspected by Tank Farm personnel prior to being placed in service. Results of the inspection are to be posted/written on the left side of the tank approximately five (5') feet off grade to include date and time, inspector's initials, and tank status. Tanks that pass inspection are identified as "OK".
2. Ensure that all gaskets and seals on entryways are clear of debris, that entryways can be properly closed and that the latches are secured properly.
3. Ensure that all ports are either plugged or capped as appropriate unless the tank is in actual transfer operation.
4. Ensure that the top man-way is closed when the tank is not in actual transfer operations. The top man-way should NOT be secured as pressure build-up can cause oil to be evacuated from the tank as pressure builds.
5. Ensure that the local number is placed in a visible location and is legible. Illegible or missing numbers must be corrected immediately.
6. Ensure that the tank designation sign is placed on the front of the tank and is visible and legible. The sign should be weather resistant. Ensure that the sign designates the contents of the tank properly;
   - "Full" – The tank is filled to capacity
   - "Empty" – The tank is not full
   - "Oil Only" – Only oil product that has been dewatered is placed here and is staged for outbound shipment
   - "Water Only" – Only the water that is pulled from the bottom of the mix tanks is placed here and is staged for on-site treatment or outbound transport
   - "Mix Use" – Materials that are brought in from the various collections sites
   - "Clean Water" – Water that has been processed through the on-site treatment system and is staged for outbound transportation.
7. Visibly inspect all berms to ensure structural integrity.
8. Ensure that all absorbents are in place and serviceable. Immediately replace those that are not serviceable.
9. The Tank Farm Shift Supervisor is to randomly check on the tank inspection forms to ensure that the minimum level of inspections is being completed. His/her initials are to be placed on the inspection form when this is completed.

B. Fluid Transfer Procedures

Two Attendants will be present during all fluid transfer operations. The purpose of the Attendants is to verify that tanks are acceptable for fluid transfer and to monitor transfer operations to ensure that tanks are not over-filled. Following are procedure related to fluid transfer operations:

1. All trucks must be grounded and bonded prior to starting any transfers.
2. The driver must stay within five (5) feet of the shut-off valve during transfers.
3. Attendants are not allowed to operate trucks, work any valving, or attach/detach hoses.
4. No trucks are to be unloaded unless directed to do so by an Attendant.
5. Drivers will ensure that no free liquids are dripping from transfer ports or hoses prior to transport.
6. Trucks with maintenance issues that adversely affect transfer of the oil will be repaired prior to fluid transfer.

C. Emergency Spill Response

Following are procedures in place at Frac Tank City in the event of a leak:

1. An industrial vacuum truck capable of soil excavation and another capable of liquid vacuuming are to be stationed at the Tank Farm at all times that it is in transfer operations.
2. Temporary containment structures are to be constructed beneath connection points and maintained during any and all transfers.
3. Absorbent booms and pads are staged around the tank farm in case of a release.
4. All spills are to be immediately cleaned up and/or remediated.
5. All spills are to be immediately reported to the Enbridge Tank Farm Supervisor.
6. An incident report is to be completed by the end of the shift and properly submitted.

1.7 PLANNED ADMINISTRATIVE CONTROLS

Additional administrative controls will be instituted as a result of Plan development. If a tank is not serviceable it will be either removed from the site or refurbished and made serviceable. Unserviceable tanks on-site will be locked out/tagged out such that they cannot be inadvertently filled.

1.8 PLANNED ENGINEERING CONTROLS

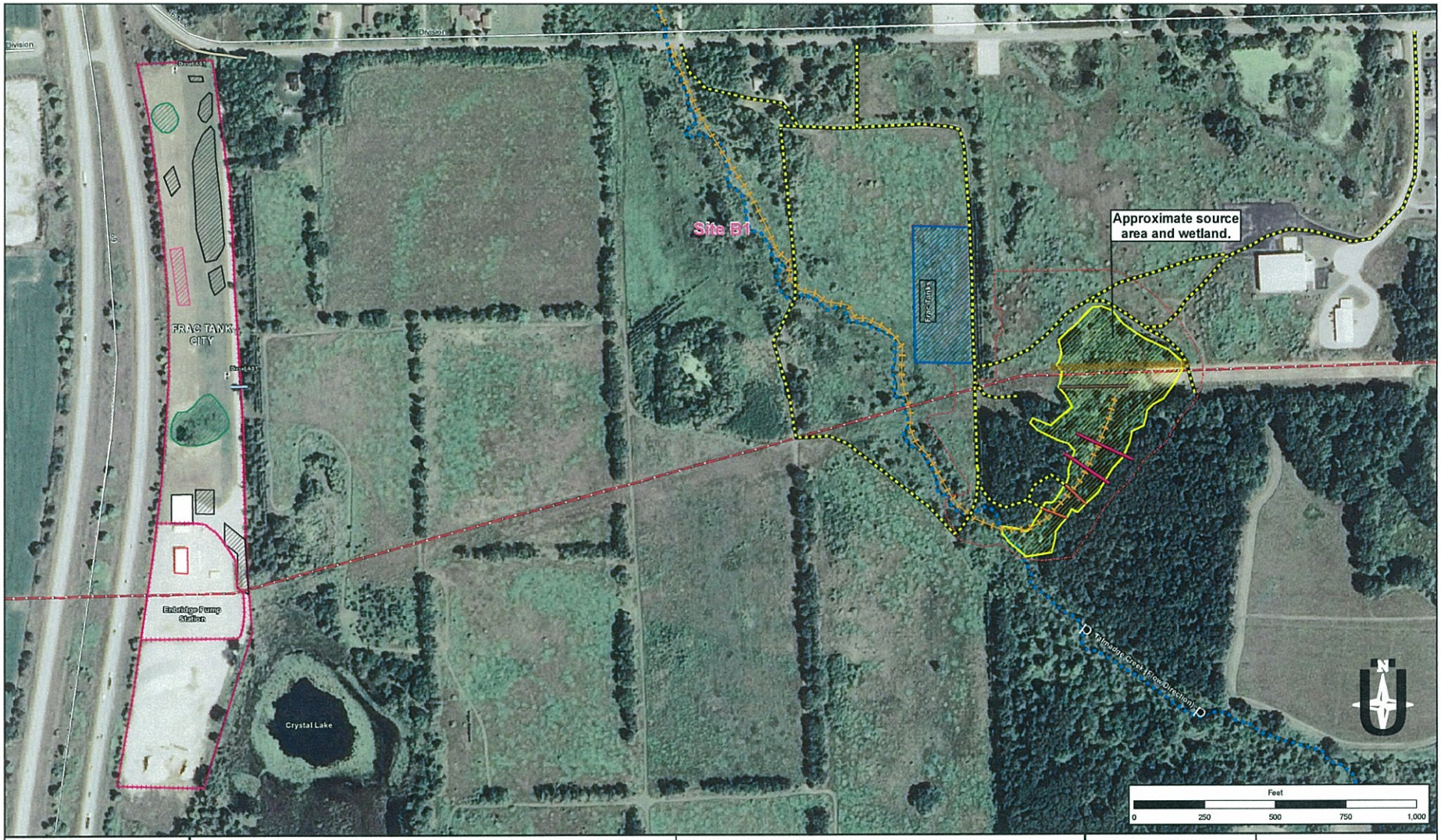
Protection of the wetland area around Crystal Lake can be achieved through a combination of selectively decommissioning and relocating frac tanks currently staged within the southern portion of Frac Tank City. As fluid generation decreases and the rate of wastewater disposal increases, less storage capacity will be required to contain fluids. Daily transportation of hazardous wastewater and Recoverable Petroleum Product (RPP) is occurring at this time. A carbon filtration treatment system is currently being installed at Frac Tank City to treat water to non-hazardous concentrations, facilitating additional disposal options. The Company proposes to empty tanks within the southern tank area through disposal processes and selectively fill tanks within the northern tank area only. No additional tanks would be permitted within the southern area without first constructing a suitable berm for containment. Under this strategy, frac tanks in the southern tank area will be incrementally decommissioned or relocated. Retained tanks will be relocated to the northern tank area. This proposed plan eliminates the necessity of constructing a berm and sump in the southern tank area while protecting the wetland and Crystal Lake from potential releases.

The northern tank farm area will require construction of a berm system to contain any leaks in this area. Installation of berms around collections of tanks is not feasible for fluid transfer operations. The Company will evaluate the Tank Farm area and design a suitable secondary containment system that protects surface waters and does not hinder operations. In general, berms will be constructed of low-permeability materials. If local soil materials are not sufficiently impermeable, berms will either be constructed with a suitable impermeable liner or with imported clayey materials. Lost fluids will be recovered by a vacuum truck or pump and transferred to on-site frac tanks as appropriate.

Administrative controls outlined in this Plan will be implemented by the Company immediately. A lined staging pad is currently being prepared in the northern Tank Farm area for relocation of tanks from the southern tank area. A design for containment berms within the northern Tank Farm area will be submitted within 5 days of U.S. EPA approval of this Plan.

As conditions change at frac tank staging areas, BMPs and administrative controls will be adjusted as necessary to protect water ways.

Figures



ENBRIDGE™

LEGEND

- Trench
- Berm
- Matts
- Road
- Culvert
- Ditch
- Wooden Roadway
- Enbridge Pipeline
- Construction Mat
- Talmadge Creek
- Parcel Boundary
- Access Road
- Diesel AST
- – Release
- Depression
- Frac. Tanks
- Staging
- Treatment System
- Work Zone
- Sub. Station
- Enb. Sub Station

Enbridge Energy, Limited Partnership
MP 608 - Marshall, MI
Figure 1
Frac Tank Staging Areas

DATE ISSUED:	Aug 5, 2010
DATE REVISED:	
SCALE:	1:2,000
DRAWN BY:	NMS/JPM
SERIES:	1 of 1

Natural Resources Engineering Co.
715-395-5680

Attachments

ENBRIDGE LINE 6B MP 608		
Enbridge Energy, Limited Partnership	Marshall, Michigan	**Frac Tank City**

Photo No. 01	Date: 08/04/10

Description:

Aerial view to southwest of northern portion of Frac Tank City. Depression with visible standing water in northeast area. I-69 in background.

Photo No. 02	Date: 08/04/10

Description:

Aerial view to west of northern portion of Frac Tank City. I-69 in background. Grassed depression on left side of frame.

ENBRIDGE LINE 6B MP 608		
Enbridge Energy, Limited Partnership	Marshall, Michigan	**Frac Tank City**

Photo No. 03	Date: 08/04/10

Description:

Aerial view of the central depression within Frac Tank City. Note standing water on the left side of the image.

Photo No. 04	Date: 08/04/10

Description:

Aerial view of southern portion of Frac Tank City. Marshall Pump Station and substation adjacent.

Enbridge Line 6B MP 608
Marshall, Michigan Pipeline Release
Supplemental 2 Dated August 11, 2010: Frac Tank Secondary Containment Plan

1.1 OBJECTIVES

This document describes the containment plan for the northern frac tank farm located at Frac Tank City (Figure 1), as referenced in the "Frac Tank Secondary Containment Plan" dated August 6, 2010 (Containment Plan). The Containment Plan and security measures described in this plan, when used in conjunction with the frac tank management practices detailed in the Containment Plan, provide sufficient protection of surface waters of the State in the event of a failure of at least one frac tank. The conceptual plan was discussed with field staff to ensure constructability and to minimize hindrances to current operations.

Background

As of August 3, 2010, approximately 90 frac tanks were located at Frac Tank City (See Figures, Photo 1-4). Frac tank staging areas are temporary and evolving. Frac tanks located in Tank Farm 1 (TF1) located on the southeast side of the site, Pod 3, and Pod 4 will be either moved to the northern frac tank farm or removed from the site after decontamination.

Surface water features near Frac Tank City include two small lakes located southeast of Frac Tank City: Crystal Lake and a second unnamed lake. Wetlands surround both lakes. Talmadge Creek is located approximately 2,000 feet east of Frac Tank City and drains northeast toward the Kalamazoo River. No storm water drains have been identified in the vicinity of Frac Tank City. A depression (low spot) is located in the center of Frac Tank City.

Security

The frac tank farm is manned by the Company 24-hours a day, 7 days a week. Temporary lighting has been installed around the facility and is adequate to identify a spill or release from a frac tank. Security officers are stationed along Division Road and at the entrance and exit to the Frac Tank City.

Containment System

The northern tank farm area will require construction of a berm system to contain any leaks in this area. Installation of berms around or in the vicinity of the frac tanks is not feasible for fluid transfer operations. The details provided in this section are illustrated in Figure 1.

A 36-inch earthen containment berm will be constructed as soon as feasible along the northwest side of the site extending from the southeast corner of the parking lot, located near the facility entrance and exit, to the earthen embankment along the west side of Pod 4. The berm will

capture runoff and a spill from the northern third or one-half (approximate) of the northern frac tank farm.

The existing earthen embankment along the east side of the access road located on the east side of the northern frac tank farm will prevent a release in this area from migrating off-site. The majority of runoff from the access road will flow along the earthen embankment towards the south to the existing culvert which drains to the depression in the center of Frac Tank City. This culvert also receives from a portion of the facility south of the culvert; however, the TF1 area will be taken out of service as soon as feasible. Spill response materials, including booms, are available if a release were to occur near the northeastern corner of the facility where the grade is relatively flat or flows towards Division Road.

A 12- to 18-inch (approximate) earthen containment berm has been constructed around on the west and south sides of the carbon filtration system that routes spills towards the decontamination area, which is situated immediately south and several feet below grade of the northern frac tank farm.

A 36-inch earthen berm will be constructed as soon as feasible along the south edge of the decontamination area extending the entire width of the decontamination from the east access road to the earthen embankment along the highway. Water from the southern half (approximate) of the northern tank farm and the decontamination area will flow in a southerly direction and be directed towards the east edge of the decontamination area towards the new culvert. A gate valve will be installed in the culvert and will be normally closed. The normally closed gate valve would allow a spill to be contained along the edge of the berm for easier cleanup, instead of discharging to the depression.

In general, berms will be constructed of low-permeability materials. If local soil materials are not sufficiently impermeable, berms will either be constructed with a suitable impermeable liner (plastic liner anchored at base of containment area) or with imported clayey materials, with silt fence installed on the outside edge of the containment berm, see Figure 1.

Figures

Attachments

ENBRIDGE LINE 6B MP 608		
Enbridge Energy, Limited Partnership	Marshall, Michigan	**Frac Tank City**

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Aerial view to west of northern portion of Frac Tank City. I-69 in background. Grassed depression on left side of frame.

ENBRIDGE LINE 6B MP 608		
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Photo No. 03	Date: 08/04/10

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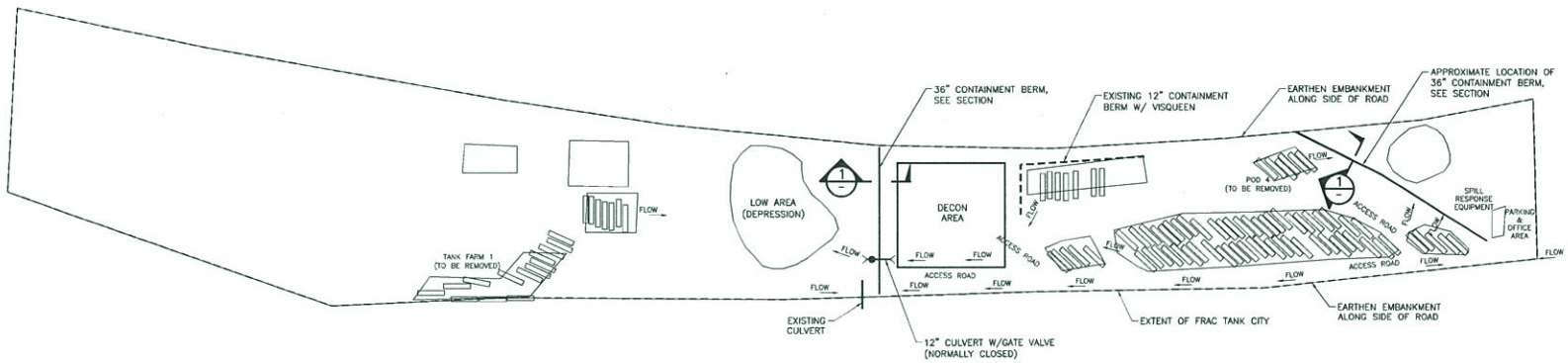
Aerial view of the central depression within Frac Tank City. Note standing water on the left side of the image.

Photo No. 04	Date: 08/04/10

Description:

Aerial view of southern portion of Frac Tank City. Marshall Pump Station and substation adjacent.



1 PLAN: CONTAINMENT AREA

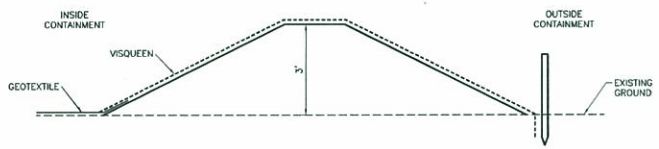
0 100 200

SCALE IN FEET

NOTE:

LOCATIONS OF CONTAINMENT BERMS AND OTHER FEATURES ARE APPROXIMATE. THESE FEATURES TO BE FIELD-CONSTRUCTED.

FLOW DIRECTIONS ARE APPROXIMATE.



1 SECTION: TYPICAL EARTHEN CONTAINMENT BERM

0 1 2 3 4

SCALE IN FEET

PRELIMINARY DRAFT
2010-08-08

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

CLIENT
BID
CONSTRUCTION
RELEASED TO/FOR

A B C 0 1 2 3

DATE RELEASED

BARR

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Scale	AS SHOWN
Date	2010-08-08
Drawn	BJH
Checked	
Designed	SJK
Approved	

ENBRIDGE ENERGY

LINE 6B
MARSHALL, MI

DRAFT CONTAINMENT PLAN
NORTHERN FRAC TANK FARM

BARR PROJECT No. 22/13-1003
CLIENT PROJECT No.
DWG. No. FIGURE 1
REV. No.

CADD USER: Brian Hughes FILE: 22131003-CONTAINMENT PLAN (DRAFT).DWG PLOT SCALE: 1:1 PLOT DATE: 8/6/2010 4:17 PM
X-REFS
IMAGES
DATE