

# **CORRECTIVE ACTION PLAN**

---

14<sup>th</sup> Street Parcel (Upper Zone)  
ExxonMobil Corporation Baltimore Terminal

FEBRUARY 15, 2008

Prepared for:

ExxonMobil Environmental Services  
1545 Route 22 East  
Room CCM 09D  
Annandale, NJ 08801

Prepared by:



844 West Street, Suite 100  
Annapolis, Maryland 21401  
Tel: 410-990-4607  
Fax: 410-990-4749

## TABLE OF CONTENTS

<b>1.0 INTRODUCTION</b> .....	<b>1</b>
<b>2.0 SITE CONCEPTUAL MODEL</b> .....	<b>1</b>
<b>3.0 PREVIOUS ENVIRONMENTAL ACTIVITY SUMMARY</b> .....	<b>2</b>
<b>4.0 CURRENT CONDITIONS</b> .....	<b>3</b>
<b>5.0 ENVIRONMENTAL RISK ANALYSIS</b> .....	<b>4</b>
5.1 LNAPL MOBILITY AND RECOVERABILITY .....	4
5.2 CURRENT AND FUTURE USE OF THE PARCEL.....	6
5.3 HUMAN EXPOSURE PATHWAYS.....	7
5.4 ECOLOGICAL EXPOSURE .....	7
5.5 POTENTIAL IMPACT TO UTILITIES, LNAPL MIGRATION AND VAPOR MIGRATION PATHWAYS, AND OTHER SENSITIVE RECEPTORS.....	7
<b>6.0 REMEDIAL GOAL IDENTIFICATION AND EVALUATION</b> .....	<b>8</b>
<b>7.0 PROPOSED REMEDIAL APPROACH</b> .....	<b>9</b>
7.1 METHODOLOGY.....	9
7.2 SCHEDULE.....	10

## FIGURES

Figure 1:	Project Location Map
Figure 2:	Site Map
Figure 3:	LNAPL Apparent Thickness Map
Figure 4:	Groundwater Gradient Map
Figure 5:	LNAPL Recoverability Summary Chart
Figure 6:	Proposed Remedial Approach Activities Map

## TABLES

Table 1:	LNAPL Mobility Results
Table 2:	Proposed Remedial Approach Summary

## ATTACHMENTS

Attachment I:	Historic Well Logs
Attachment II:	Historical Gauging Data
Attachment III:	LNAPL Mobility Calculations

## 1.0 INTRODUCTION

On behalf of ExxonMobil Corporation, and in accordance with the November 8, 2007 Consent Decree between ExxonMobil and the Maryland Department of the Environment (MDE), GeoTrans, Inc. presents this Correction Action Plan for the 14<sup>th</sup> Street parcel (Upper Zone) of the former ExxonMobil Baltimore Terminal. The remedial goal is to remove Light Non-Aqueous Phase Liquid (LNAPL) to the maximum extent practicable. A map depicting the location of the project area is presented as **Figure 1**.

This Corrective Action Plan:

- Documents the results of the Site Conceptual Model including site stratigraphic and hydrogeologic conditions and defining the nature and extent of LNAPL;
- Evaluates the risk posed to human health and the environment including LNAPL mobility and recoverability, current and future use of the parcel, human exposure pathways such as inhalation, ingestion, and dermal contact, ecological exposure, impact to utilities and other buried services including potential LNAPL migration pathways and vapor migration pathways, and other sensitive receptors;
- Identifies and evaluates remedial goals and alternatives to mitigate unacceptable risks including the use of engineering controls; and
- Proposes a preferred remedial alternative.

## 2.0 SITE CONCEPTUAL MODEL

The planned Corrective Action activities will be consistent with and help to evaluate the Site Conceptual Model (SCM) that has been developed by ExxonMobil. The Site Conceptual Model is site-specific and provides the basis for investigation and remediation activities.

The SCM describes the stratigraphy, lithology, groundwater flow characteristics and contaminant transport properties for stratigraphic units beneath the site. The 14<sup>th</sup> Street parcel is located in the Atlantic Coastal Plain physiographic province. The site has been mapped (Reinhardt and Crowley, 1979) as being underlain by Lower Cretaceous age sediments. Historical investigation activities on the 14<sup>th</sup> Street Parcel and the surrounding areas indicate that there are two water bearing formations at the site, the Upper Zone and the Lower Zone. These two water bearing zones are separated by a low conductivity (1E-09 centimeters per second [cm/sec]) silt and clay layer identified as the Arundel Clay. The top surface of the Arundel Clay layer is the lower confining unit for the Upper Zone.

Upper Zone sediments consist of a heterogeneous mixture of discontinuous lenses of fill, silty sand, silt, and clay to depths ranging from 20 to 30 feet BGS where the top of the Arundel formation is encountered.

Groundwater within the Upper Zone is unconfined (water table conditions) and is observed at depths ranging from 6 to 10 feet BGS. Due to the complex and discontinuous lithology, groundwater is not consistently found in one lithologic unit and “perched” water lenses have been documented within the Upper Zone sediments during previous environmental investigations.

The overall gradient is to the west, south, and southwest towards the Janney Run box culvert at approximately 0.005 feet (vertical) per foot (horizontal) (ft/ft). Historic groundwater potentiometric maps indicate numerous groundwater elevation mounds and depressions, indicative of the heterogeneous, discontinuous, and variable hydraulic interconnected nature of the sediments of the Upper Zone. The hydraulic conductivity of the sediments ranges from 1E-03 (typical of sandy sediments) to 1E-06 cm/sec (typical of silt and clayey sediments). Historic aquifer testing of select wells across the site confirm highly variable hydrogeologic conditions as well as varied hydraulic conditions adjacent to individual wells indicating sediments are poorly connected.

Light non-aqueous liquids are found in isolated pockets within sediments of the Upper Zone. Typically LNAPL is found at the air-water interface (capillary fringe) and below the current day water table. The submerged occurrences are indicative of: (1) historic releases that, due to their magnitude, are capable of displacing groundwater and driving oil deeper into the saturated zone soils, (2) water table fluctuations (normal seasonal variation or when the water table was depressed due to historic pumping or drought conditions), and (3) the heterogeneous nature of the soils. Many times the LNAPL is observed in small intervals (6 inches to 12 inches) of sandy type sediments that are underlain by silt and clay stringers/lenses. Product gravities indicate varying source materials and degrees of weathering, resulting in API gravities similar to diesel, kerosene, jet, and fuel oil distillates. Like groundwater recovery rates, LNAPL recovery rates are very low at the site, although numerous recovery methods have been employed including LNAPL skimming, water table depression with LNAPL skimming, high vacuum extraction, and total fluids. These recovery rates are also indicative of the heterogeneous nature of the soils. It has also been determined through both academic and site-specific testing and system operation that LNAPL thicknesses measured in monitoring wells are a poor indicator of recoverability.

### **3.0 PREVIOUS ENVIRONMENTAL ACTIVITY SUMMARY**

Environmental activities at the 14<sup>th</sup> Street parcel were initiated in 1973 following the detection of LNAPL in the Janney Run storm drain located along the western portion of the parcel. A recovery system was installed and operated until remedial action was phased out in the late 1970's. The volume of LNAPL recovered by this system and the location and number of recovery wells and observation wells is unknown. In 1985, approximately 19 observation wells were installed (Handex) and 4 of these wells were converted to recovery wells. Between 1989 and 1994, an additional 58 observation wells, 4 recovery wells, 5 well points and 15

soil borings were installed at the parcel. In 1991, an automated LNAPL recovery system was installed (Handex) but due to chronic iron precipitation and equipment fouling the system was discontinued. LNAPL recovery from 4 wells continued during this time. In 1994, an additional LNAPL recovery system (total fluids) was installed.

Also in 1994, additional site characterization assessment activities were conducted (Handex) to confirm the presence or absence of LNAPL in certain areas and to identify any probable preferential pathways for LNAPL migration. Activities included a soil boring program, well installation when LNAPL was identified in the soil, installation of test pits, aquifer testing (pump tests and vacuum enhanced dewatering test), and the development of a corrective action plan. The plan included installation of groundwater injection and recovery trenches in select locations to intercept soil and water horizons down to a defined confining layer to prevent migration of LNAPL into the Janney Run storm drain. Corrective action implementation was completed (Handex) by March 1995 and the system operated until 1999 when it was shut down due to lack of LNAPL recovery. During the system operation approximately 7.6 million gallons of water was treated with LNAPL recovery totaling only 229 gallons. Following system shut down, the main recovery trench located along the western property boundary was utilized as a passive barrier to prevent LNAPL from migrating towards the Janney Run storm sewer. In March of 2002, due to the lack of LNAPL, the MDE approved the abandonment of select monitoring wells and the former recovery, injection, and collection portions of the trench system (the main recovery trench was to remain). These activities included the closure of 26 wells, excavation of 5 wells, and excavation of 3 recovery trenches, 3 injection trenches and 2 collection trenches. All of this work was completed in 2002/2003 (GeoTrans) with the exception of excavation of 1 recovery trench and 2 collection trenches.

Beginning in 2000 and ending in 2004, select wells with LNAPL were aggressively remediated (GeoTrans) using high-vacuum extraction (via vacuum truck). A total of 18 wells were in the program for various lengths of time and approximately 75,000 gallons (total fluids – LNAPL and water) was extracted.

All wells with LNAPL have been historically gauged and bailed since site characterization activities began in 1994.

#### **4.0 CURRENT CONDITIONS**

Currently 36 wells remain on the property to monitor Upper Zone conditions at the parcel. This does not include the 13 wells associated with the main passive barrier recovery trench located along the western property boundary and 14 monitoring wells located on the property but associated with monitoring of the Janney Run and 54-inch sewer system. A Site Map documenting the location of these wells is presented as **Figure 2**.

An LNAPL apparent thickness map and groundwater gradient map documenting current conditions are presented as **Figures 3 and 4** respectively. Available well installation logs for the remaining Upper Zone wells on the parcel are presented in **Attachment I**.

Review of the gauging data over the last year indicate 18 wells have no measurable LNAPL, 6 wells have less than 0.10 feet, 4 wells have less than 0.50 feet, and 6 wells have greater than 1 foot of LNAPL. Historical gauging data for the remaining 36 wells are presented in **Attachment II**.

## **5.0 ENVIRONMENTAL RISK ANALYSIS**

In accordance with the consent decree requirements this section evaluates the risk posed to human health and the environment including LNAPL mobility and recoverability, current and future use of the parcel, human exposure pathways such as inhalation, ingestion, and dermal contact, ecological exposure, impact to utilities and other buried services including potential LNAPL migration pathways and vapor migration pathways, and other sensitive receptors.

### **5.1 LNAPL Mobility and Recoverability**

Over the past 10 years, technical guidance on the recoverability and mobility of LNAPL has increased significantly and is now available from the United States Environmental Protection Agency (USEPA), the American Petroleum Institute (API), the Air Force Center for Environmental Excellence (AFCEE), and various environmental consulting experts and companies.

The guidance explains that remediation of LNAPL is the most important phase addressed due to regulatory requirements of protection of human health and the environment and that LNAPL can be broadly divided into two categories: (1) mobile and (2) residual. The guidance documents the following technical facts regarding LNAPL mobility and recoverability:

- Free product or LNAPL may exist as continuous, free-phase liquids and/or as residual liquids trapped by capillary forces above and below the water table;
- LNAPL thickness in a well is a poor predictor of volume, mobility, and recoverability;
- The most important factors influencing free product recovery are soil heterogeneity and anisotropy, product viscosity, soil intrinsic permeability, the level of saturation or % of LNAPL in the soil pores, and the depth to water table; and,
- Under best efforts, a significant portion of LNAPL typically remains trapped and difficult to recover.

Basic tools to help determine the potential for LNAPL mobility and recovery were developed as part of the API's "Interactive LNAPL Guide" (August 2004). These tools include (1) numeric models to calculate LNAPL mobility and plume velocity based on site specific data inputs and (2) LNAPL recoverability "screening charts".

The mobility tool calculates the vertically averaged pore scale or local area inherent LNAPL mobility and seepage velocity. The term "inherent mobility" refers to the ability or potential for LNAPL to move in the soil pores. This potential alone however is not enough to cause LNAPL to move; a gradient is also required. When both inherent mobility and gradient are moderate to high, LNAPL in the center of the plume can redistribute towards the outer edges. If sufficient oil is present (either from a recent or ongoing release) and it is mobile enough to redistribute, sufficient pressure can build up to force entry of the oil into new pores and cause the plume to expand or migrate. However, once the source of the LNAPL is stopped, first the edges of the LNAPL plume will stop advancing and become stable. After that, the oil within the plume will stop flattening out or redistributing to the edges. The LNAPL recovery "screening charts" are based on numerical modeling, which evaluates recoverability for different product types under various aquifer soil conditions. The tool is used to differentiate the general conditions where "LNAPL may not be recoverable" from those where "LNAPL may be recoverable." Recovery was considered to be primarily by total fluid recovery from a single operating extraction well and secondarily by vacuum-enhanced recovery. Product recoverability was defined with respect to percent oil recovered relative to the total initial oil volume. Specifically, oil recovery was conservatively considered "not likely to be recoverable" as a liquid when less than 10 percent of the total initial amount of product within the radius of influence of the extraction well was recovered.

Both of these tools (API model to calculate LNAPL mobility and plume velocity, and LNAPL recoverability screening charts) were utilized to meet the Consent Decree requirements for the 14<sup>th</sup> Street Upper Zone parcel. A summary of the data inputs include:

- Wells utilized in the LNAPL mobility analysis (LNAPL > 1 foot) included: 3025 (1.29 ft LNAPL), 3049 (2.42 ft LNAPL), 3059 (1.28 ft LNAPL), 3071 (2.56 ft LNAPL), and 3066 (3.3 ft LNAPL). LNAPL thickness represents the maximum observed over the past 12 months.
- Well-specific historical LNAPL characterization data (specific gravity measurements -Handex 1994) were utilized in the analysis when available.
- Hydraulic conductivities were estimated from the boring log stratigraphy at the water table/LNAPL contact for each well.
- Site-specific LNAPL characterization data collected during the Janney Run investigation (borings #67 and #32) were utilized to provide data inputs for product viscosity for wells 3059 and 3071 which were installed in the vicinity of the main recovery trench along the 14<sup>th</sup> street western property boundary. Product viscosities for wells 3049, 3025 and 3066 were estimated based on historic specific gravities and product types. Oil/water interfacial tension numbers were estimated at 25 dynes/cm.
- The criteria for minimum LNAPL mobility used was 0.55 ft/day.

The LNAPL mobility and plume velocity results are presented in **Attachment III** and summarized in **Table 1**.

Well Number	Inherent Mobility (ft/day)	Plume Velocity (ft/day)	Petroleum Type	Oil/Water Interfacial Tension (dynes/cm)	Specific Gravity (gm/cc)	Viscosity (cp)	Soil Type
3025	1.5E-02	7.49E-05	Diesel	25	0.824	2.7	Clayey Silt
3059	7.65E-04	3.83E-06	Crude	25	0.908	45	Clayey Silt
3049	1.62E-02	8.11E-05	Crude	25	0.958	45	Silty Sand
3071	1.72E-02	8.50E-05	Crude	25	0.939	45	Silty Sand
3066	6.7E-01	3.35E-03	Diesel	25	0.83	2.7	Silty Sand

Results of inherent mobility and plume velocity calculations indicate very low mobility and velocity rates and in general represent stable LNAPL conditions in which LNAPL is not redistributing through the formation.

Based on the type of petroleum, their corresponding viscosities, and the range of hydraulic conductivities of the soils in the vicinity of the LNAPL/water interface, the LNAPL in the vicinity of all the wells with >1 ft were determined to “not likely to be recoverable”. An API Interactive Guide LNAPL recoverability chart documenting the recoverability of LNAPL in wells 3025, 3059, 3049, and 3071 is presented in **Figure 5**.

## **5.2 Current and Future Use of the Parcel**

The parcel is currently not in use and all historic tanks, pumps, piping have been removed with the exception of the former storm water management system and associated oil/water separator. Future use of the property is unknown, however ExxonMobil will maintain deed restrictions including a Special Warranty Deed that:

1. Specifies no part of the property could be used for:
  - a. Any residential use;
  - b. Commercial use involving children, the elderly or other potentially sensitive populations (i.e., no child care facility, hospital, nursing home); or
  - c. Recreational use.
2. Prohibits the installation of any wells for drinking water or irrigation and supply;
3. Prohibits the construction of basements; and,
4. Requires the use of engineering controls to prevent the potential migration of vapors and/or liquids containing Hazardous Materials into any buildings, underground utilities or storm water retention/detention ponds including vapor installation systems, vapor barriers, sealed sumps and storm pond liners.

The above conditions apply to any future owner of the property and will also apply to the owner’s successors and permitted assigns. Similar restrictive covenants shall be inserted in any deed, lease, or other instrument

of conveying or demising of the property. Given these circumstances, land use for the facility is commercial/industrial (i.e., non-residential) under both current and future land use.

### **5.3 Human Exposure Pathways**

Potential human exposure pathways evaluated include ingestion of soil and soil-derived dust, dermal contact, inhalation of vapors, and inhalation of soil-derived dusts. These pathways were evaluated for current and future use.

There are no current human exposure pathways as the former industrial use property has been demolished and all tanks, pumps, and piping removed and security fencing is in place. These conditions would continue until the parcel is leased or sold. Due to the Special Warranty Deed which prevents residential and recreational use all future human exposure pathways would be limited with appropriate engineering controls. Future use of the parcel is unknown however, certain engineering controls would be required in any future use scenario including but not limited to the use of an asphalt cover (for parking), installation of a vapor control system in any buildings, and the use of appropriate personal protective equipment during any construction/excavation activities on the property.

### **5.4 Ecological Exposure**

There are no signs of stressed vegetation on the property. Review of the USGS Wetlands website <http://wetlandsfws.er.usgs.gov> indicates there are no designated wetlands on the property or in the immediate vicinity.

### **5.5 Potential Impact to Utilities, LNAPL Migration and Vapor Migration Pathways, and other Sensitive Receptors**

There are no known active subsurface utilities on the property as the former tank field has been demolished. A review for potential subsurface migration pathways indicates the subsurface piping associated with the former storm water management system and the former oil/water separator (located near the southern property boundary) are the only known subsurface piping systems. It is unknown if additional former petroleum piping is present on the property, although it is likely to be limited, due historical tank demolition activities. There are no known vapor migration pathways on the property, other than the former subsurface storm water management system piping. As previously stated any future real estate activities will have deed required engineering controls.

Other sensitive receptors in the vicinity of the property include the Janney Run Storm culvert and 54-inch storm sewer location on the western property boundary. A passive barrier wall will remain in place to prevent the potential migration of LNAPL beyond property boundaries along the western property boundary,

however based on the results of the LNAPL mobility analysis, LNAPL on the property is stable will not migrate.

## 6.0 REMEDIAL GOAL IDENTIFICATION AND EVALUATION

The remedial goal identified in the Consent Decree is to remove LNAPL to the maximum extent practicable. This goal includes mitigating any potential unacceptable risks by the use of engineering controls. Evaluation of historical remedial activities associated with removal of LNAPL to the maximum extent practicable at this parcel indicates:

- An unknown amount of LNAPL was removed during historic recovery activities completed in the 1970's as part of the initial response activities to LNAPL in the Janney Run. These wells likely operated until asymptotic conditions were reached and removed as much LNAPL as practicable in the vicinity of the wells.
- A significant amount of LNAPL saturated soils were removed during trench installations completed during the corrective action activities in the mid 1990's. A total of 5,000 cubic yards of soils were excavated and over 4,000 cubic yards were disposed.
- Operation of the LNAPL recovery trench recovered approximately 229 gallons and was shut down due to a lack of LNAPL recovery.
- Wells with LNAPL have been gauged and bailed for approximately 15 years and only 725 gallons of LNAPL has been recovered.
- Due to the lack of LNAPL in wells, ExxonMobil (with MDE approval) has completed the closure of 26 wells, excavation of 5 wells, and excavation of 1 recovery trench, and 3 injection trenches.
- To further determine if any additional LNAPL could be recovered from the property, an aggressive LNAPL recovery approach was utilized (high vacuum extraction via vacuum truck) for several years to remove larger thicknesses of LNAPL in monitoring wells. This approach was continued until well thicknesses indicated future events would not be practical.
- Results of the LNAPL mobility and recoverability analysis indicate the remaining LNAPL is not mobile and recoverable per API modeling calculations.

## 7.0 PROPOSED REMEDIAL APPROACH

Based on the LNAPL recovery efforts to date and the results of the environmental risk analysis, ExxonMobil proposes to complete the following activities to meet the remedial goal of removal of LNAPL to the maximum extent practicable:

- Excavation of the former remedial trenches that remain on the property (1 recovery and 2 collection trenches). A site map with the location of the remaining trenches is presented as **Figure 6**.
- Excavation of wells with LNAPL greater than 1 foot (**Figure 6**) and the corresponding LNAPL saturated soils in the immediate vicinity of the wells.
- Permanent closure of the remaining wells on the property.

**Table 2** presents a summary of the proposed remedial approach activities.

### 7.1 Methodology

Excavation of the former remedial trenches and wells with greater than 1 foot of LNAPL on the property will be completed by trained personnel with LNAPL excavation experience. Prior to excavation activities, ExxonMobil subsurface clearance protocols will be completed which include calling "Miss Utility" and utilizing an "air knife" to install pilot test holes in the area of the proposed excavations. A Health and Safety Plan will be completed and site specific Job-Safety Analysis will be developed for the activities. Mobilization of the excavation team and construction back hoe will be completed. Soils will be segregated by a GeoTrans, Inc. geologist into two piles based on the visual presence of LNAPL saturated soils (product pooling observed in the backhoe bucket). LNAPL saturated soils will be stockpiled in the vicinity of the excavation on 6 mil plastic and surrounded by hay-bails and non LNAPL saturated soils will be stockpiled and used for subsequent on-site backfill. LNAPL saturated soils will be removed vertically to a maximum depth of the water table (estimated at 5 to 7 feet BGS). LNAPL saturated soils will be removed horizontally to the maximum extent practical. If NAPL is encountered in the excavation, a vacuum truck will be utilized to remove free liquids to the maximum extent practicable and the excavation will remain open for a period of 24 hours. If after 24 hours the excavation contains additional LNAPL, a vacuum truck will be utilized to remove the remaining LNAPL within the excavation. The LNAPL saturated soil stockpile will be sampled, characterized, and disposed at an ExxonMobil approved recycling facility. Field notes with photo documentation and disposal information will be provided in a letter format report to the Maryland Department of the Environment.

Permanent closure of former monitoring wells will be completed by a licensed well driller. The driller will attempt to pull the casing and remove the well from the subsurface. If successful, the driller will then tremie

grout the remaining portion of the hole to the surface. If the well casing cannot be removed, the well will be tremie grouted to the surface and any protective covering will be removed.

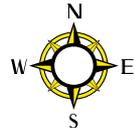
## **7.2 Schedule**

Planned schedule of activities is to complete the proposed remedial approach activities during the 1<sup>st</sup> and 2<sup>nd</sup> quarter 2008.

## **FIGURES/TABLES**

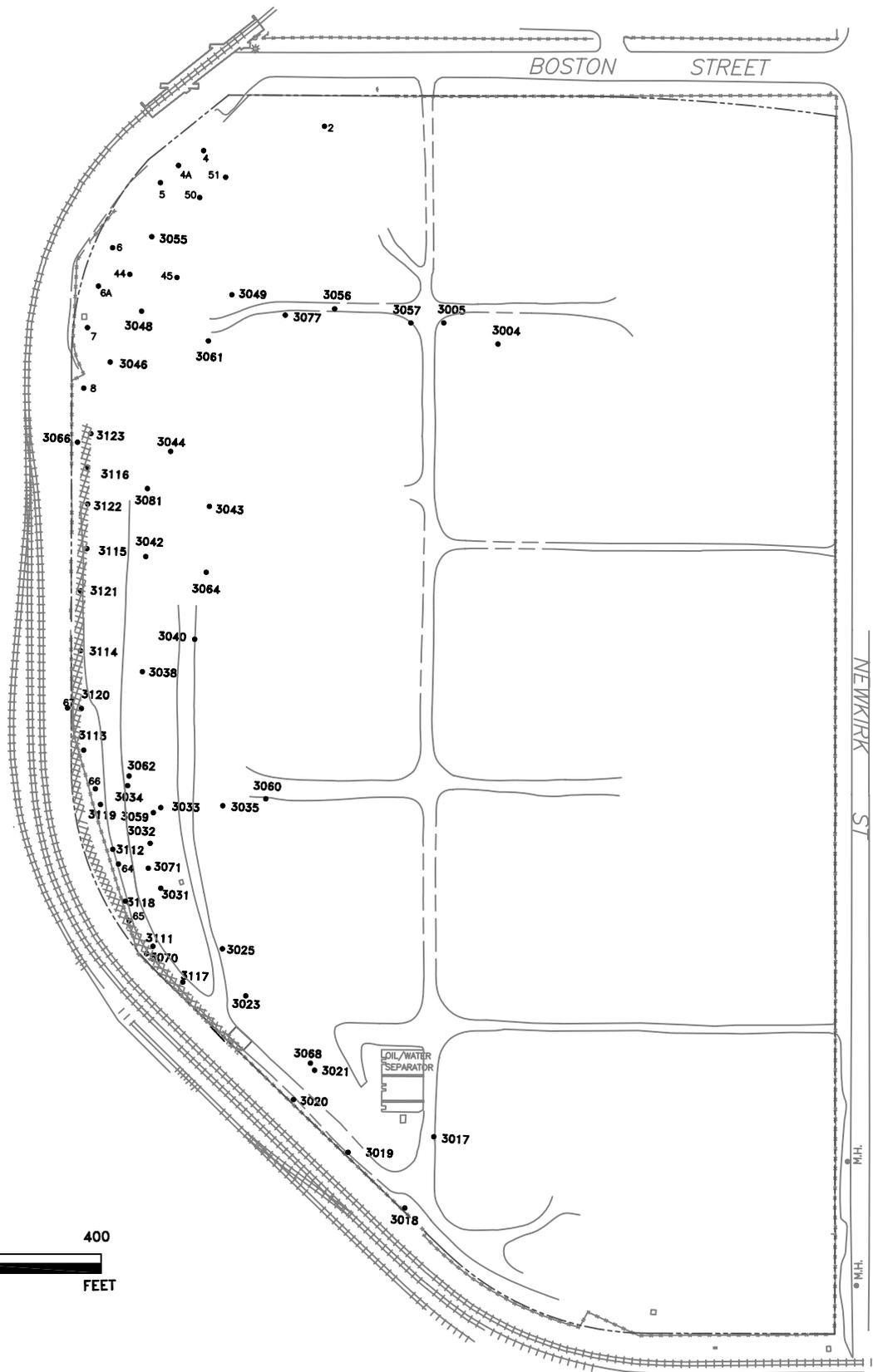


Project Area



0 500  
Scale (ft)

**Figure 1**  
Project Area Location Map  
14<sup>th</sup> Street CAP  
Former ExxonMobil Baltimore



LEGEND

⊙ GROUNDWATER MONITORING WELL

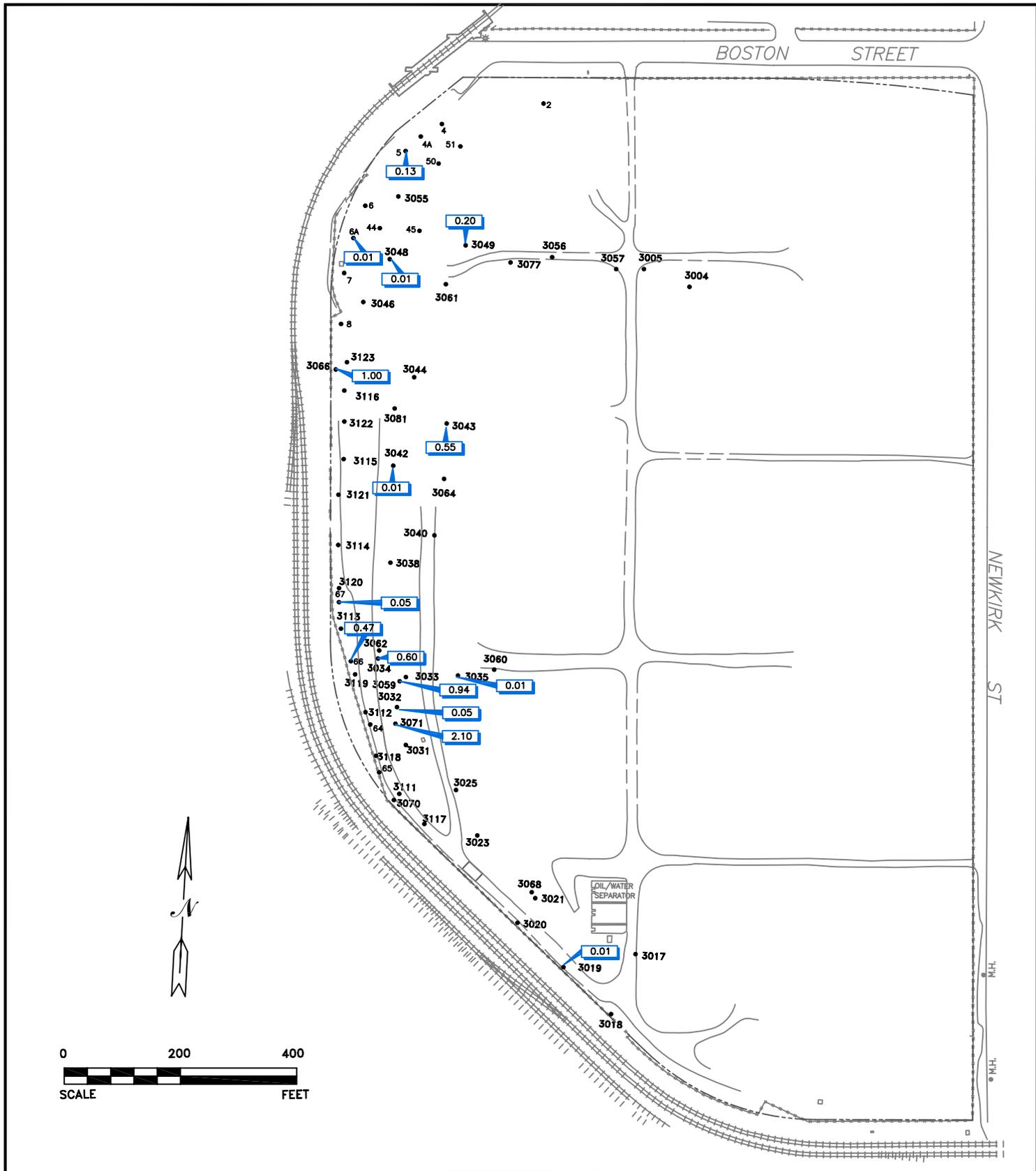
===== EXISTING R.R. TRACKS

NOTE: WELL LOCATIONS ARE APPROXIMATE



FIGURE 2  
SITE MAP

EXXONMOBIL CORPORATION BALTIMORE TERMINAL  
14TH STREET AREA  
BALTIMORE, MD 21224



LEGEND

- ⊙ GROUNDWATER MONITORING WELL
- ===== EXISTING R.R. TRACKS
-  APPARENT LNAPL THICKNESS IN THE FORMATION (FEET)

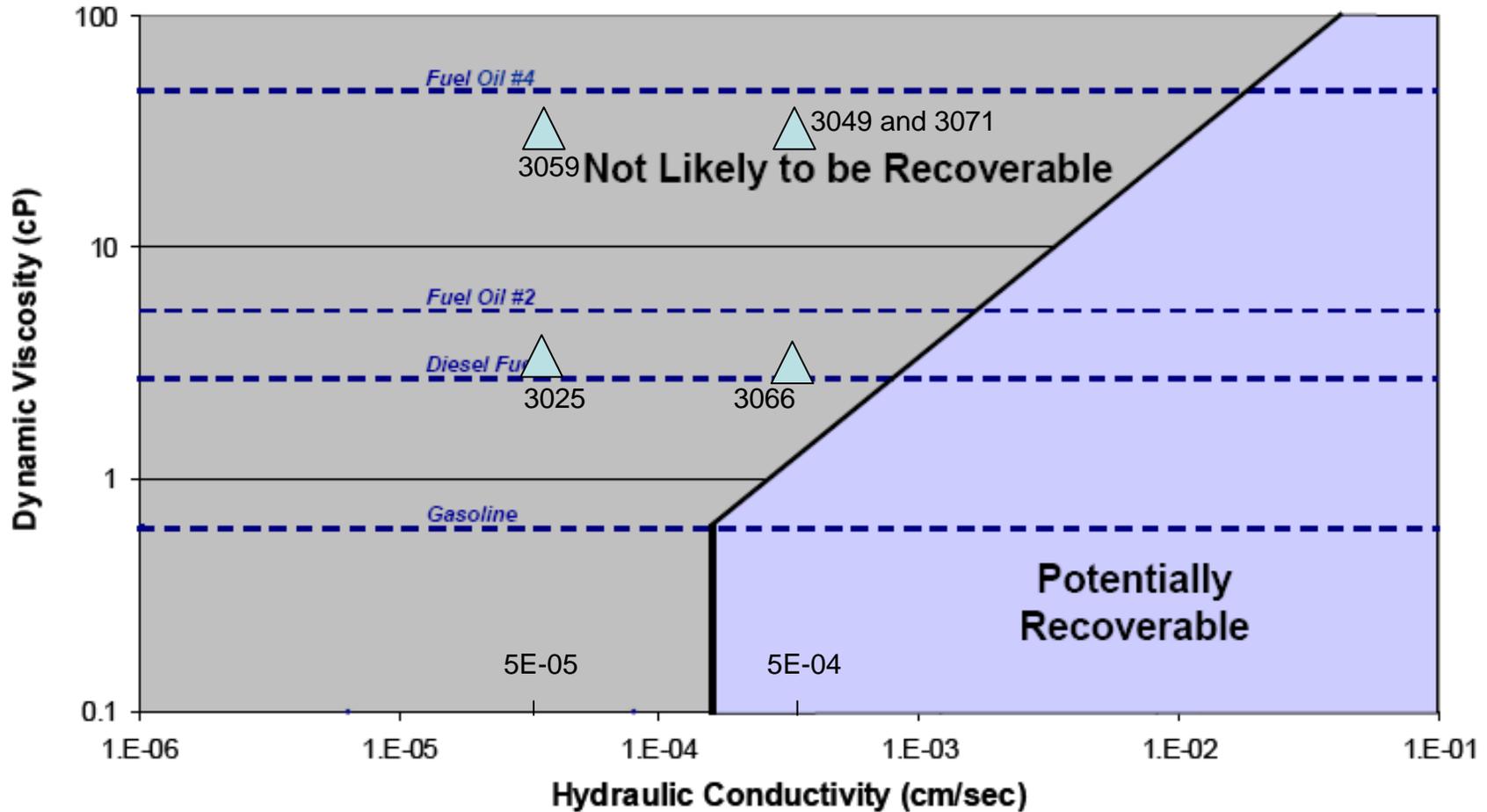
NOTE: WELL LOCATIONS ARE APPROXIMATE



FIGURE 3  
 LNAPL APPARENT THICKNESS MAP (12/07)  
 EXXONMOBIL CORPORATION BALTIMORE TERMINAL  
 14TH STREET AREA  
 BALTIMORE, MD 21224



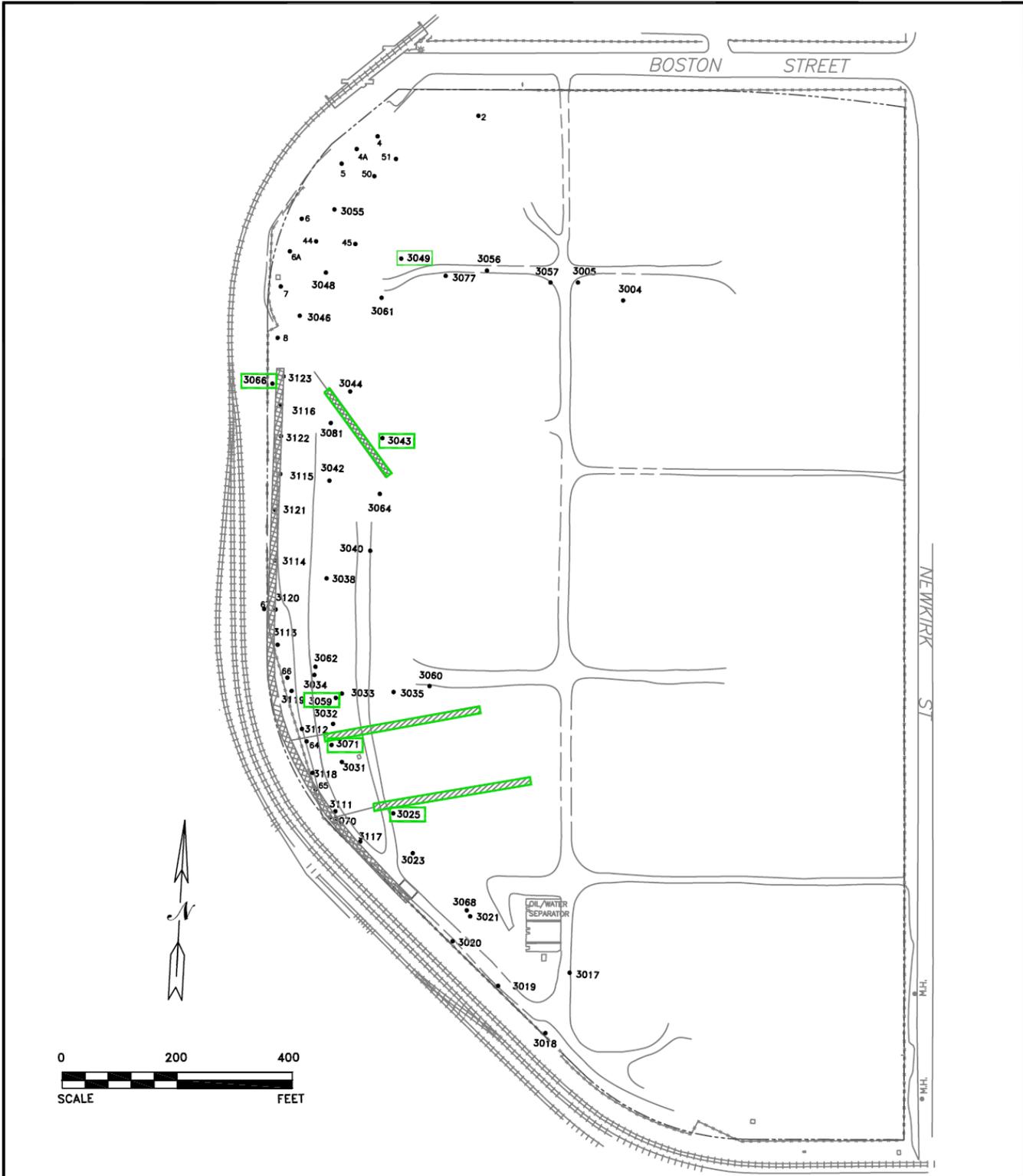
Potential Oil Recoverability for Apparent Well Product Thickness of 2.5 Feet



△ Wells with > 1 ft LNAPL (does not include well 3043 due to lack of well-specific data)

Figure 5

LNAPL Recoverability Chart  
14<sup>th</sup> Street CAP  
Former ExxonMobil Baltimore



LEGEND

- ⊙ GROUNDWATER MONITORING WELL
- ===== EXISTING R.R. TRACKS
- ////// TRENCH TO BE EXCAVATED
- 3043 MONITORING WELL TO BE EXCAVATED (>1 APPARENT IN LAST YEAR)

NOTE: WELL LOCATIONS ARE APPROXIMATE



FIGURE 6  
 PROPOSED REMEDIAL ACTIVITIES MAP  
 EXXONMOBIL CORPORATION BALTIMORE TERMINAL  
 14TH STREET AREA  
 BALTIMORE, MD 21224

**Table 2**  
**Proposed Corrective Action Plan Activities**  
**14th Street Parcel**  
**ExxonMobil Corporation Baltimore Terminal**

Well Number	Proposed Activities	Justification
3004	Remove Well	Records indicate this is a 2-inch monitoring pipe which was destroyed. Will attempt to locate and remove.
3005	Remove Well	Maximum LNAPL since 12/15/06 is 0.45 ft
3017	Remove Well	No LNAPL detected over last year of monitoring
3018	Remove Well	No LNAPL detected over last year of monitoring
3019	Remove Well	Maximum LNAPL since 12/15/06 is 0.01 ft
3020	Remove Well	No LNAPL detected over last year of monitoring
3021	Remove Well	No LNAPL detected over last year of monitoring
3023	Remove Well	Maximum LNAPL since 12/15/06 is 0.28 ft
3025	Closure by Excavation	Maximum LNAPL since 12/15/06 is 1.29 ft
3031	Remove Well	No LNAPL detected over last year of monitoring
3032	Remove Well	Maximum LNAPL since 12/15/06 is 0.05 ft
3033	Remove Well	Maximum LNAPL since 12/15/06 is 0.39 ft
3034	Remove Well	Maximum LNAPL since 12/15/06 is 0.60 ft
3035	Remove Well	Maximum LNAPL since 12/15/06 is 0.08 ft
3038	Remove Well	No LNAPL detected over last year of monitoring
3040	Remove Well	No LNAPL detected over last year of monitoring
3042	Remove Well	Maximum LNAPL since 12/15/06 is 0.08 ft
3043	Closure by Excavation	Maximum LNAPL since 12/15/06 is 1.08 ft
3044	Remove Well	No LNAPL detected over last year of monitoring
3046	Remove Well	No LNAPL detected over last year of monitoring
3048	Remove Well	Maximum LNAPL since 12/15/06 is 0.10 ft
3049	Closure by Excavation	Maximum LNAPL since 12/15/06 is 2.42 ft
3055	Remove Well	No LNAPL detected over last year of monitoring
3056	Remove Well	Records indicate this is a 4-inch well covered over during parcel grading. Will attempt to locate and remove.
3057	Remove Well	No LNAPL detected over last year of monitoring
3059	Closure by Excavation	Maximum LNAPL since 12/15/06 is 1.28 ft
3060	Remove Well	No LNAPL detected over last year of monitoring
3061	Remove Well	No LNAPL detected over last year of monitoring
3062	Remove Well	Maximum LNAPL since 12/15/06 is 0.02 ft
3064	Remove Well	No LNAPL detected over last year of monitoring
3066	Closure by Excavation	Maximum LNAPL since 12/15/06 is 3.3 ft
3068	Remove Well	No LNAPL detected over last year of monitoring
3070	Remove Well	No LNAPL detected over last year of monitoring
3071	Closure by Excavation	Maximum LNAPL since 12/15/06 is 2.56 ft
3077	Remove Well	No LNAPL detected over last year of monitoring
3081	Remove Well	No LNAPL detected over last year of monitoring