ARCADIS BBL
Infrastructure, environment, facilities

Imagine the result

Chevron Environmental Management Company

Pre-Design Soil Investigation Work Plan

Former Tappan Terminal Site
Uhlich Color Company Property

November 2007

Table of Contents

1. Introduction

The following *Pre-Design Soil Investigation Work Plan* (work plan) has been developed to define the extent of the grossly contaminated soil (including tentatively identified compounds [TICs]) on the Uhlich Color Property (Uhlich Site), as defined in the Record of Decision (ROD) for the Tappan Terminal Site, Village of Hastings-on-Hudson, Westchester County, New York (3-60-015), September 2006. Although the Tappan Terminal Site (site), as defined by the ROD, includes both the property owned by ExxonMobil, formerly operated as the Tappan Terminal, and the property owned and formerly operated by Uhlich Color, the scope of this work plan is limited to the contaminated soil on the Uhlich property.

1.1 Site Description

The Uhlich Color Company property is located on an approximate 7.2-acre tract of land near the Hudson River waterfront in the Village of Hasting-on-Hudson, Westchester County, New York (Figure 1). The Uhlich property is bordered by railroad tracks to the east, the ExxonMobil property (former Tappan Terminal) to the west, the former Anaconda Wire Company property to the north and the Hudson River to the south.

The Uhlich Site has been used for manufacturing and chemical use by several owners and occupants from 1897 to 2002. The property was created by placement of fill into the Hudson River between the late 19th century and 1923. The uses of the property have included manufactured dye, pigments, and photographic chemicals; storage of trucks and materials; and the first floor of Building 50 has been used as a laboratory from 1962 to 1972. Further details regarding the site history are included in the ROD.

1.2 Grossly Contaminated Soil Areas

Consistent with the preliminary identification of approximate hot spot soil excavation areas identified on Figure 6 of the ROD (Appendix A), a review of the available soil characterization data indicate that the areas around soil sampling locations SS-16 and SS-17 are identified as requiring remedial action based on the elevated semivolatile organic compound (SVOC) TICs (Figure 2).

The estimated concentrations of SVOC TICs in surface soil sample SS-16 were approximately 199 parts per million (ppm), and in surface soil sample SS-17, the SVOC TICs were approximately 1,561 ppm. The SVOC TICs associated with dye manufacturing are discussed in the next section.

Subsurface soil samples collected from SB-5 (approximately 10 feet from SS-16 at a depth of 2 to 5 feet below ground surface) had concentrations of relevant SVOC TICs of less than 1 ppm. Subsurface soil samples collected from nearby soil boring SB-7 (approximately 10 feet from SS-17 at a depth of 2 to 5 feet) had concentrations of relevant SVOC TICs of less than 4 ppm. In both cases, the subsurface soil samples collected in the area of the surface soil samples indicate that the source area from both SS-16 and SS-17 are relatively close to the ground surface.

1.3 Constituents of Concern

The constituents of concern relative to the soil hot spot areas requiring excavation are primarily SVOCs, including aniline, chlorinated aniline, toluidines and anthraquinones. As a significant number of the compounds detected during the previous investigations are TICs, they are not definitively quantified through standard laboratory analytical methods. Consistent with the agency's expectation that TICs be considered when defining the extent of the soil that exceeds the 500 ppm remedial objective established under the ROD, 9,10-anthracenedione, 1,4-dihydroxy-9,10-anthracenedione, 1-hydroxy-9,10-anthracenedione, 0-chloroaniline, (z)-9-octadecenamide, 2-methyl-benzenamine and p-aminotoluene are the selected TICs that will be analyzed for during the supplemental soil investigation because of the following reasons:

- 9,10-Anthracenedione ,1,4-dihydroxy-9,10-anthracenedione, 1-hydroxy-9,10-anthracenedione, anthraquinone, 2-methyl-benzenamino and p-aminotoluene are toluidines. Anthraquinones, toluidines, (z)-9-octadecenamide and o-chloroaniline are associated with the manufacturing of dyes and are anticipated to be found on the Uhlich Site based on historic site use.

- These compounds were tentatively identified with some of the highest estimated concentrations in the historic samples collected (SS-16 and SS-17) with the highest estimated total concentrations of TICs.

- None of the compounds identified as TICs have promulgated cleanup criteria under New York Code of Rules and Regulations Subpart 375-6.

The analytical methods to be used during the pre-design investigation will be able to quantify these compounds, such that the total SVOCs inclusive of these selected former TICs can be considered when establishing the extent of soil areas to be excavated, consistent with the 500 ppm cleanup goal in the ROD.

1.4 Remedial Objectives

The remedial objective, as defined in the ROD, is the "excavation of grossly contaminated soil, particularly soil that contains visible dye or petroleum contamination, and soil containing greater than 500 ppm of SVOCs [including TICs]."

2. Soil Investigation

The purpose of the pre-design soil investigation is to define the extent of the grossly contaminated soils on the Uhlich Site. The soil investigation will focus on the two areas previously observed to contain concentrations of SVOCs above 500 ppm and/or were observed to have visible staining, as identified in the ROD (Figure 2) and described below:

- Area 1: The area between the northern ends of Buildings 54 and 57S where soil samples SS-16 and SB-5 were collected.

- Area 2: The area between the northern ends of Buildings 57N and 62 where soil samples SS-17 and SB-7 were collected.

All field work will be completed in accordance with the *Health and Safety Plan* (Appendix B)

2.1 Soil Investigation Program

To adequately delineate the extent of the hot spot soils requiring excavation, a series of test trenches will be excavated. For each area, two crossing test trenches will be excavated (Figure 2). It is anticipated that the trenches will be approximately 15 feet long. The trenches will be extended until the extent of grossly contaminated soils has been defined based on visible observation of mobile dye or to the building foundations or the property line. In the event that the delineation in any direction using the test trenching method is limited by the presence of a building foundation, the extent of soil contamination beneath the foundation will be delineated using appropriately located soil borings drilled through the building formations. Confirmatory soil samples will be collected and submitted for laboratory analysis.

A total of nine soil samples are anticipated to be collected from each area to demonstrate the limited horizontal and vertical extent of the soil contamination. These samples will be submitted for analysis of SVOCs by Method 8270, as modified to allow quantification of 9,10-anthracenedione, 1,4-dihydroxy-9,10-anthracenedione, 1-hydroxy-9,10-anthracenedione, 0-chloroaniline, (z)-9-octadecenamide, 2-methyl-benzenamine and p-aminotoluene.

One soil sample will be collected from the center of each area (adjacent to the original SS-16 and SS-17 locations), and eight soil samples will be collected from the trench

sidewalls and floor to confirm that the extent of the impacted area has been defined. One quality control/quality assurance sample set will be collected for every 20 field samples, as discussed in the *Quality Assurance Project Plan* (Appendix C).

The soil excavated during the test trenching will be staged on site pending the review of the analytical results. After receipt of the analytical results demonstrating the limits of contamination have been defined, the excavated soil will be backfilled into the trenches.

If the extent of the impacted soils is determined to be very limited, Chevron Environmental Management Company may consider completing the excavation of the entire extent of the grossly contaminated soil during this mobilization. Post-excavation samples would be collected and analyzed from the excavation bottom and sidewalls to demonstrate the adequacy of the excavation extent. The contaminated soils would be disposed of at an appropriate facility and excavations would be backfilled with clean fill.

3. Remedial Action Work Plan Preparation

The pre-design investigation results relevant to the delineation of the grossly contaminated soil, as defined by the ROD, will be summarized in a Remedial Action Work Plan (RAWP) for the soil contamination on the Uhlich Site. The RAWP will present the analytical data in summary tables, a map illustrating the extent of the grossly contaminated soil and logs documenting the conditions observed in each of the test trenches and soil borings.

4. Schedule

ARCADIS BBL anticipates mobilization of the field activities within 30 days of receipt of the New York State Department of Environmental Conservation's approval of this work plan. The field investigation activities are anticipated to be completed in 5 days with delineation samples submitted to TestAmerica's Resource Conservation and Recovery Act's Buffalo facility for analyses. The laboratory results are anticipated to be available within 60 days of submission, and a draft of the RAWP will be submitted 45 days after receipt of the laboratory analytical data.

5. References

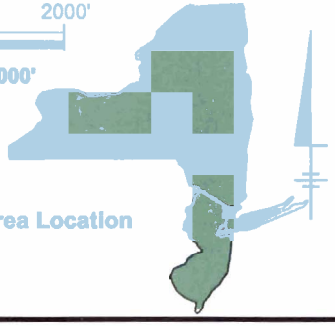
Record of Decision for the Tappan Terminal Site, Village of Hastings-on-Hudson, Westchester County, New York (3-60-015), New York State Department of Environmental Conservation, September 2006

FIGURES

REFERENCE: BASE MAP USGS 7.5 MIN. QUAD., YONKERS, N.Y. - N.J., 1966, PHOTOREVISED 1979

2000' 0 2000'

Approximate Scale: 1" = 2000'



TAPPAN TERMINAL SITE
HASTINGS-ON-HUDSON, NEW YORK

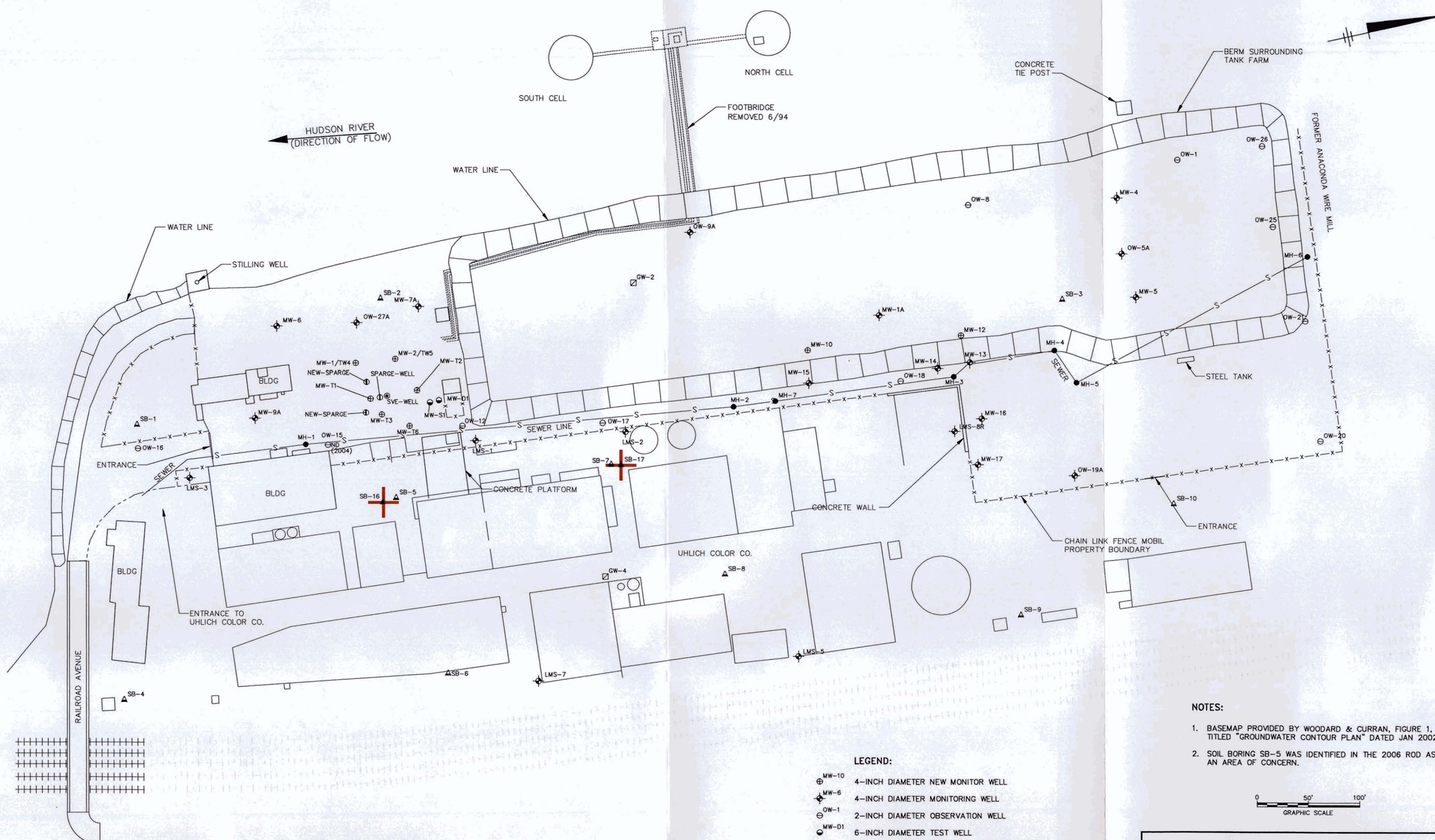
SITE LOCATION MAP

ARCADIS BBL
Infrastructure, environment, facilities

FIGURE 1

8/09/07-SYR-KLS
45347001/45347N01.CDR

SYR-85-GMS AMS LAYER: ON=*, OFF=REF
G:\CAD\ACTIVE\-DWG\ACT\45867001\45347P02.DWG SAVED:11/21/2007 3:46 PM LAYOUT:2 PAGESETUP:---- PENTABLE:PLTFULL.CTB PRINTED:11/21/2007 3:51 PM BY:ASCHILLING
PROJECTNAME:----
XREFS: IMAGES:



LEGEND:

MW-10	4-INCH DIAMETER NEW MONITOR WELL
MW-6	4-INCH DIAMETER MONITORING WELL
OW-1	2-INCH DIAMETER OBSERVATION WELL
MW-D1	6-INCH DIAMETER TEST WELL
SB-1	SUBSURFACE SOIL BORING
GW-4	GROUNDWATER SAMPLE
MH-7	SANITARY SEWER MANHOLE
—S—	SANITARY SEWER
▲	SOIL SAMLING LOCATION COMPLETED IN 1998 BY DVIRKA AND BARTILUCCI
+	PROPOSED TEST PIT LOCATION

NOTES:

1. BASEMAP PROVIDED BY WOODARD & CURRAN, FIGURE 1, TITLED "GROUNDWATER CONTOUR PLAN" DATED JAN 2002.
2. SOIL BORING SB-5 WAS IDENTIFIED IN THE 2006 ROD AS AN AREA OF CONCERN.

0 50' 100'
GRAPHIC SCALE

FORMER TAPPAN TERMINAL SITE
HASTING ON THE HUDSON, NEW YORK

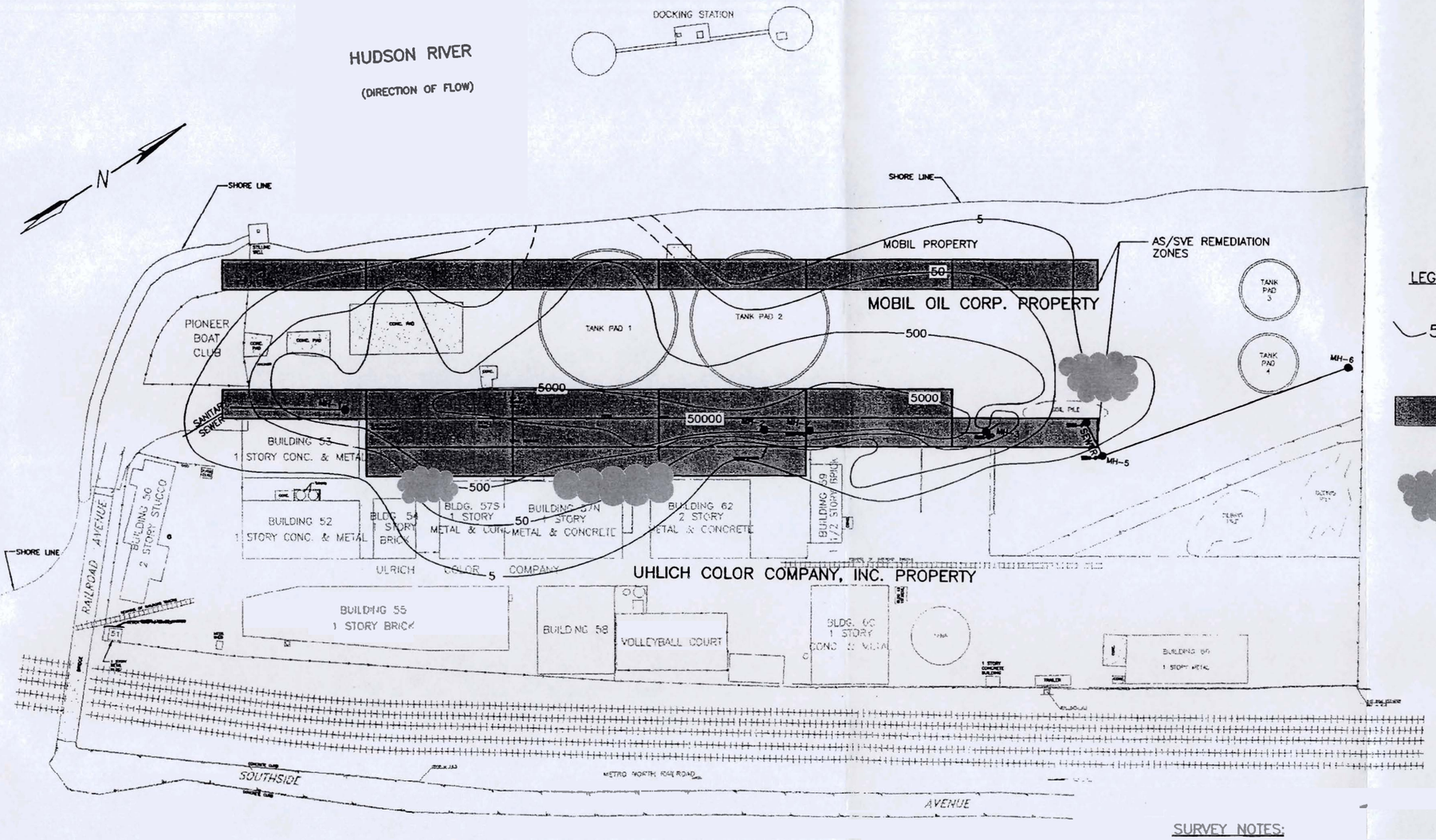
PROPOSED TEST PIT LOCATIONS

ARCADIS BBL
infrastructure, environment, facilities

FIGURE
2

Appendix A

Figure 6 from ROD Showing
Excavation Areas



SURVEY NOTES:

1. DATE OF FIELD SURVEY: DECEMBER 29, 1998
2. HORIZONTAL DATUM: MAGNETIC NORTH DECEMBER 1998
3. VERTICAL DATUM: NGVD FROM N.G.S. BENCHMARK

0 100
SCALE IN FEET

DIR: 1570 FILE: 1570-28 (T.McC/5-29-00)

TAPPAN TERMINAL SITE
HASTINGS-ON-HUDSON, NEW YORK

APPROXIMATE LOCATION OF AS/SVE REMEDIATION ZONES

FIGURE 6

Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.