

GIS REGISTRY
Cover Sheet

July, 2008
(RR 5367)

Source Property Information

CLOSURE DATE: Jul 17, 2008
FID #: 241879330
DATCP #:
COMM #:

BRRTS #: 02-41-100075
ACTIVITY NAME: Port of Milwaukee - Former Duchow Yacht Co.
PROPERTY ADDRESS: 1431 South Carferry Drive
MUNICIPALITY: Milwaukee
PARCEL ID #: 463-9997-118-7

*WTM COORDINATES:

X: 691084 Y: 284828

*Coordinates are in
WTM83, NAD83 (1991)

WTM COORDINATES REPRESENT:

- Approximate Center Of Contaminant Source
- Approximate Source Parcel Center

Please check as appropriate: (BRRTS Action Code)

Contaminated Media:

- Groundwater Contamination > ES (236)
 - Contamination in ROW
 - Off-Source Contamination
(note: for list of off-source properties see "Impacted Off-Source Property")
- Soil Contamination > *RCL or **SSRCL (232)
 - Contamination in ROW
 - Off-Source Contamination
(note: for list of off-source properties see "Impacted Off-Source Property")

Land Use Controls:

- Soil: maintain industrial zoning (220)
(note: soil contamination concentrations between residential and industrial levels)
- Structural Impediment (224)
- Site Specific Condition (228)
- Cover or Barrier (222)
(note: maintenance plan for groundwater or direct contact)
- Vapor Mitigation (226)
- Maintain Liability Exemption (230)
(note: local government or economic development corporation)

Monitoring wells properly abandoned? (234)

- Yes
- No
- N/A

* Residual Contaminant Level
**Site Specific Residual Contaminant Level



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Matthew J. Frank, Secretary
Gloria L. McCutcheon, Regional Director

Southeast Region Headquarters
2300 N. Dr. Martin Luther King, Jr. Drive
Milwaukee, Wisconsin 53212-3128
FAX 414-263-8606
Telephone 414-263-8500
TTY Access via relay - 711

July 17, 2008

Mr. Larry Sullivan
Port of Milwaukee
2323 S. Lincoln Drive
Milwaukee, WI 53207

SUBJECT: Final Case Closure with Land Use Limitations or Conditions
Port of Milwaukee – Former Duchow Yacht Company, 1431 South Carferry Drive, Milwaukee, WI
WDNR BRRTS Activity #: 02-41-100075 FID#241879330

Dear Mr. Sullivan:

The Wisconsin Department of Natural Resources (the Department) has reviewed a request for closure for the above-referenced site. Based on the correspondence and data provided, it appears that your case meets the requirements of ch. NR 726, Wisconsin Administrative Code. The Department considers this case closed and no further investigation or remediation is required at this time.

GIS Registry

The conditions of case closure set out below in this letter require that your site be listed on the Remediation and Redevelopment Program's GIS Registry. The specific reasons are summarized below:

- Residual soil contamination exists that must be properly managed should it be excavated or removed
- Pavement, an engineered cover or a soil barrier must be maintained over contaminated soil and the state must approve any changes to this barrier

Information that was submitted with your closure request application will be included on the GIS Registry. To review the sites on the GIS Registry web page, visit the RR Sites Map page at <http://dnr.wi.gov/org/aw/rr/gis/index.htm>. If your property is listed on the GIS Registry because of remaining contamination and you intend to construct or reconstruct a well, you will need prior Department approval in accordance with s. NR 812.09(4)(w), Wis. Adm. Code. To obtain approval, Form 3300-254 needs to be completed and submitted to the DNR Drinking and Groundwater program's regional water supply specialist. This form can be obtained on-line <http://dnr.wi.gov/org/water/dwg/3300254.pdf> or at the web address listed above for the GIS Registry.

Closure Conditions

Please be aware that pursuant to s. 292.12 Wisconsin Statutes, compliance with the requirements of this letter is a responsibility to which the current property owner and any subsequent property owners

must adhere. If these requirements are not followed or if additional information regarding site conditions indicates that contamination on or from the site poses a threat to public health, safety, welfare, or the environment, the Department may take enforcement action under s. 292.11 Wisconsin Statutes to ensure compliance with the specified requirements, limitations or other conditions related to the property or this case may be reopened pursuant to s. NR 726.09, Wis. Adm. Code. It is the Department's intent to conduct inspections in the future to ensure that the conditions cited in this letter, including compliance with referenced maintenance plans, are met.

Cover or Barrier

Pursuant to s. 292.12(2)(a), Wis. Stats., the asphalt pavement that currently exists in the location shown on the attached map shall be maintained in compliance with the **attached maintenance plan** in order to minimize the infiltration of water and prevent additional groundwater contamination that would violate the groundwater quality standards in ch. NR 140, Wis. Adm. Code, and to prevent direct contact with residual soil contamination that might otherwise pose a threat to human health. If soil in the specific locations described above is excavated in the future, the property owner at the time of excavation must sample and analyze the excavated soil to determine if residual contamination remains. If sampling confirms that contamination is present, the property owner at the time of excavation will need to determine whether the material would be considered solid or hazardous waste and ensure that any storage, treatment or disposal is in compliance with applicable statutes and rules. In addition, all current and future owners and occupants of the property need to be aware that excavation of the contaminated soil may pose an inhalation or other direct contact hazard and as a result, special precautions may need to be taken during excavation activities to prevent a health threat to humans.

The attached maintenance plan and inspection log are to be kept up-to-date and on-site. The inspection log need only be submitted to the Department upon request.

Prohibited Activities

The following activities are prohibited on any portion of the property where pavement is required as shown on the attached map, unless prior written approval has been obtained from the Wisconsin Department of Natural Resources: 1) removal of the existing barrier; 2) replacement with another barrier; 3) excavating or grading of the land surface; 4) filling on capped or paved areas; 5) plowing for agricultural cultivation; or 6) construction or placement of a building or other structure.

Chapter NR 140, Wis. Adm. Code Exemption

Groundwater monitoring data at this site indicates exceedances of the NR 140 preventive action limit (PAL) for benzo (a) pyrene, benzo (b) fluoranthene and chrysene at monitoring point MW-1, but compliance with the NR 140 enforcement standard. The Department may grant an exemption to a PAL for a substance of public health concern, other than nitrate, pursuant to s. NR 140.28(2)(b), Wis. Adm. Code, if all of the following criteria are met:

1. The measured or anticipated increase in the concentration of the substance will be minimized to the extent technically and economically feasible.
2. Compliance with the PAL is either not technically or economically feasible.

3. The enforcement standard for the substance will not be attained or exceeded at the point of standards application.
4. Any existing or projected increase in the concentration of the substance above the background concentration does not present a threat to public health or welfare.

Based on the information you provided, the Department believes that the above criteria have been or will be met because of the actions that have occurred at this site. Therefore, pursuant to s. NR 140.28(2)(b), Wis. Adm. Code, an exemption to the PAL is granted for benzo (a) pyrene, benzo (b) fluoranthene and chrysene at monitoring well MW-1. This letter serves as your exemption.

The Department appreciates the efforts you have taken to restore the environment at this site. If you have any questions regarding this closure decision or anything outlined in this letter, please contact Nancy Ryan at (414) 263-8533.

Sincerely,



Frances Koonce
Southeast Region Remediation & Redevelopment Sub-Team Supervisor

Attachment

cc: SER site file
Erika Biemann, Giles Engineering Associates, Inc.
Bill Phelps, DG/2

**CAP MAINTENANCE PLAN
MAY 29, 2008**

**1431 South Carferry Drive
Milwaukee, Wisconsin**

**FID No. 241879330
BRRTS No. 02-41-100075**

The Port of Milwaukee (Owner) and its Successors will maintain the existing asphalt pavement depicted as the Asphalt Cap Maintenance Area on the attached "Figure 3. Soil Analytical Results" to prevent direct contact with residual soil contamination that might otherwise pose a threat to human health. The asphalt pavement will serve as an institutional control as required for case close out under s. NR 726.05 (8)(b)3 and 4, Wis. Admin. Code.

Annually (following seasonal snowmelt in the spring), the asphalt pavement surface will be visually inspected for cracks, settlement, and deterioration. Repairs/maintenance of the cap will be completed as necessary to minimize exposure to contaminated soil. Repairs/maintenance would include seal coating the asphalt surface (approximately every three to five years), filling cracks with tar, and replacement of the asphalt cap (approximately every 20 years).

More specifically:

- Upon completion of the inspection by the Owner, or their representative, a brief report shall be prepared which identifies the date of inspection, the individuals conducting the inspection, any observed disturbances of the cap, and any significant fissures or cracks.
- If, during the annual inspection, the cap is observed to have been disturbed, or if significant fissures or cracks are observed, the Owner shall arrange to have repairs made to such areas, in a manner consistent with this Cap Maintenance Plan. Such repairs shall be carried out within a reasonable period of time, not to exceed 120 days (subject to weather and seasonal considerations).
- All contaminated soils that are stored, treated, excavated, removed, or transported off site shall be managed per procedures and reporting requirements set forth in ch. NR 718, Wis. Admin. Code.
- All inspections and maintenance records are to be maintained on file by the Owner, at the property, and be accessible to the Wisconsin Department of Natural Resources (WDNR). A Barrier Inspection Log is included as Exhibit A.



S. CARFERRY DRIVE

3' DEPTH	7' DEPTH
PID = BDL	PID = BDL
DETECTED PAHs	DETECTED PAHs
AN = 28.9j	AN = 13.4j
AT = 17.1j	AT = 6.64j
B(a) = 34.6j	B(a) = 9.34j
B(a)P = 28.7j	B(a)P = 11.9j
B(b) = 23.6j	B(b) = 8.99j
B(ghi) = 18.2j	B(k) = 5.42j
B(k) = 14.5j	C = 0.69j
C = 31.2j	F = 16.1j
DIBA = 2.04j	IP = 19.6j
F = 78.2j	1-MN = 9.32j
FL = 7.26j	PA = 5.09j
IP = 25.6j	P = 10.0j
PA = 65.1j	
P = 50.9	

3' DEPTH
PID = BDL
DRO = 45.9
DETECTED PAHs
AN = 6,960
ACP = <u>1,400</u>
AT = 1,220
B(a) = <u>\$4,380</u>
B(a)P = <u>\$2,620</u>
B(b) = 3,310
B(ghi) = 2,160
B(k) = 2,010
C = 4,400
DIBA = <u>\$424</u>
F = 14,000
FL = 819
IP = 2,550
1-MN = 608
2-MN = 461
Napht = 169
PA = <u>8,159</u>
P = 12,800

3' DEPTH
PID = BDL
DRO = 30.8
DETECTED PAHs
AN = 73.0j
ACP = 70.6j
AT = 28.9j
B(a) = 157
B(a)P = 87.6
B(b) = 121
B(ghi) = 91.6j
B(k) = 78.4j
C = 163
DIBA = 21.2
F = 502
FL = 25.2j
IP = 174
1-MN = 15.7j
2-MN = 28.4j
Napht = 11.5j
PA = 195
P = 449

3' DEPTH	7' DEPTH
PID = BDL	PID = BDL
DETECTED PAHs	DETECTED PAHs
ACP = 16.6j	AN = 272
AT = 9.16j	AT = 120j
B(a) = 6.06j	AT = 108j
B(a)P = 9.08	B(a) = 257
B(b) = 9.28j	B(a)P = 244
B(ghi) = 15.6j	B(b) = 239
B(k) = 3.54j	B(ghi) = 194
C = 9.28j	B(k) = 141
F = 31.1j	C = 244
IP = 17.3j	DIBA = 27.3
1-MN = 83.4j	F = 475
2-MN = 61.5j	FL = 13.0j
Napht = 21.6j	IP = 298
PA = 26.6j	1-MN = 376
P = 14.2j	2-MN = 171
	Napht = 92.9j
	PA = 276
	P = 338

3' DEPTH
PID = BDL
DRO = <u>819</u>
DETECTED PAHs
AN = 17,900
ACP = <u>3,780</u>
AT = 4,280
B(a) = <u>\$18,400</u>
B(a)P = <u>\$11,000</u>
B(b) = <u>\$12,500</u>
B(ghi) = 6,630
B(k) = 7,270
C = 15,200
DIBA = <u>\$1,650</u>
F = 54,800
FL = 2,900
IP = <u>\$8,040</u>
1-MN = 1,890
2-MN = 833
Napht = 125
PA = <u>21,100</u>
P = 49,200

- CHEMICAL KEY:**
- ACP: ACENAPHTHYLENE
 - AN: ACENAPHTHENE
 - AT: ANTHRACENE
 - B(a): BENZO (a) ANTHRACENE
 - B(a)P: BENZO (a) PYRENE
 - B(b): BENZO (b) FLUORANTHENE
 - B(g,h,i): BENZO (g,h,i) PERYLENE
 - B(k): BENZO (k) FLUORANTHENE
 - C: CHRYSENE
 - DIBA: di BENZO (a,h) ANTHRACENE
 - F: FLUORANTHENE
 - FL: FLUORENE
 - IP: INDENO (1,2,3-ed) PYRENE
 - MN: METHYLNAPHTHALENE
 - Napht: NAPHTHALENE
 - P: PYRENE
 - PA: PHENANTHRENE

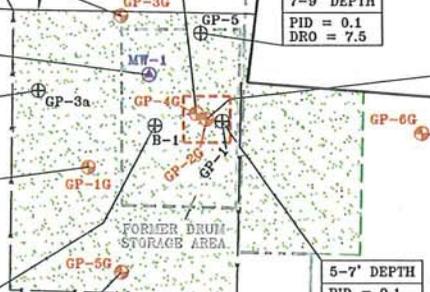
- ABBREVIATIONS:**
- BDL: BELOW DETECTION LIMIT
 - DRO: DIESEL RANGE ORGANIC
 - LOD: LIMIT OF DETECTION
 - GRO: GASOLINE RANGE ORGANIC
 - NR: NATURAL RESOURCES
 - PAH: POLYNUCLEAR AROMATIC HYDROCARBON
 - PID: PHOTOIONIZATION DETECTOR (FIELD)
 - PID: PHOTOIONIZATION DETECTOR (FIELD)
 - VOC: VOLATILE ORGANIC COMPOUND
 - WAC: WISCONSIN ADMINISTRATIVE CODE
 - WDNR: WISCONSIN DEPARTMENT OF NATURAL RESOURCES

- NOTES:**
- FIELD PID RESULTS EXPRESSED IN INSTRUMENT UNITS
- DRO AND GRO RESULTS EXPRESSED IN MILLIGRAMS PER KILOGRAM (mg/kg) EQUIVALENT TO PARTS PER MILLION (ppm)
- PAH AND VOC RESULTS EXPRESSED IN MICROGRAMS PER KILOGRAM (ug/kg) EQUIVALENT TO PARTS PER BILLION (ppb)
- DRO RESULTS INDICATED IN RED/UNDERLINED EXCEED THE WAC NR 720.09 GENERIC RESIDUAL CONTAMINANT LEVELS BASED ON GROUNDWATER PROTECTION.**
- PAH RESULTS INDICATED IN BROWN/# EXCEED THE WDNR SUGGESTED GENERIC RESIDUAL CONTAMINANT LEVELS (DIRECT CONTACT, INDUSTRIAL PATHWAY) FOR SOILS SHALLOWER THAN 4 FEET**
- PAH RESULTS INDICATED IN RED/UNDERLINED EXCEED THE WDNR SUGGESTED GENERIC RESIDUAL CONTAMINANT LEVELS BASED ON GROUNDWATER PROTECTION.**
- j: CONCENTRATION BETWEEN LABORATORY LIMIT OF DETECTION AND QUANTITATION LIMIT.

3' DEPTH
PID = BDL
DRO < 1.60
DETECTED PAHs
AN = 19.7j
ACP = 53.3j
B(a) = 43.1j
B(a)P = 24.6
B(b) = 41.9j
B(ghi) = 28.7j
B(k) = 30.8j
C = 45.0j
DIBA = 13.3
F = 153
IP = 44.8j
2-MN = 7.84j
PA = 31.8j
P = 73.3j

0-2' DEPTH	4-6' DEPTH
PID = 0.7	PID = 0.6
VOCs < LOD	VOCs < LOD
GRO < LOD	GRO < LOD
DRO < LOD	DRO = 443

3' DEPTH	7' DEPTH
PID = BDL	PID = BDL
DRO = <u>201</u>	DETECTED PAHs
AN = 285	AN = 316
ACP = 106j	ACP = 98.0j
AT = 85.9j	AT = 141
B(a) = 184	B(a) = 198
B(a)P = 202	B(a)P = 190
B(b) = 158	B(b) = 152
B(ghi) = 145	B(ghi) = 128
B(k) = 95.7j	B(k) = 93.9j
C = 174	C = 179
DIBA = 17.6	DIBA = 13.5
F = 300	F = 454
FL = 8.72j	FL = 40.5j
IP = 196	IP = 190
1-MN = 75.4j	1-MN = 99.0j
2-MN = 57.2j	2-MN = 60.1j
PA = 147	Napht = 16.4j
P = 253	PA = 330
	P = 282



- LEGEND:**
- ASPHALT CAP MAINTENANCE AREA
 - APPROXIMATE EXTENT OF SOIL EXCAVATION FOR DIRECT CONTACT PATHWAY (0-4 FEET)
 - FORMER PROPERTY LINE
 - FENCE
 - GP-1G GEOPROBE SOIL BORING (INSTALLED BY GILES)
 - MW-1 GROUNDWATER MONITORING WELL (INSTALLED BY GILES)
 - GP-3a GEOPROBE SOIL BORING (INSTALLED BY HSI)
 - ELECTRIC POLE

LEGEND:
BASE MAP DERIVED FROM A SITE PLAN PREPARED BY HYDRO-SEARCH, INC. (DATED JAN. 1997)

GILES ENGINEERING ASSOCIATES, INC.
N8 W22350 JOHNSON DRIVE, SUITE A1
WAUKESHA, WI 53186 (262)-544-0118

FIGURE 3
SOIL ANALYTICAL RESULTS
PORT OF MILWAUKEE - FORMER DUCHOW YACHT COMPANY
1431 SOUTH CARFERRY DRIVE
MILWAUKEE, WISCONSIN

DESIGNED	DRAWN	SCALE	DATE	REVISED
ELB	JSZ	1"=30'	01-26-05	05-29-08
PROJECT NO.: 1E-0409021			CAD No. E409021B3	

PROPERTY ASSESSMENT RESULTS
TAX ACCOUNT BALANCE

GENERAL INFORMATION

ADDRESS	1225 THRU 1225 S CARFERRY DR
TAXKEY	463-9997-118-7
OWNER	CITY OF MILWAUKEE C/O CITY REAL ESTATE
OWNER ADDRESS	809 N BROADWAY MILWAUKEE, WI 532020000

ASSESSMENT

	2008	2007
LAND	N/A	\$0
IMPROVEMENTS	N/A	\$0
TOTAL	N/A	\$0
CURRENT CLASS	EXEMPT	

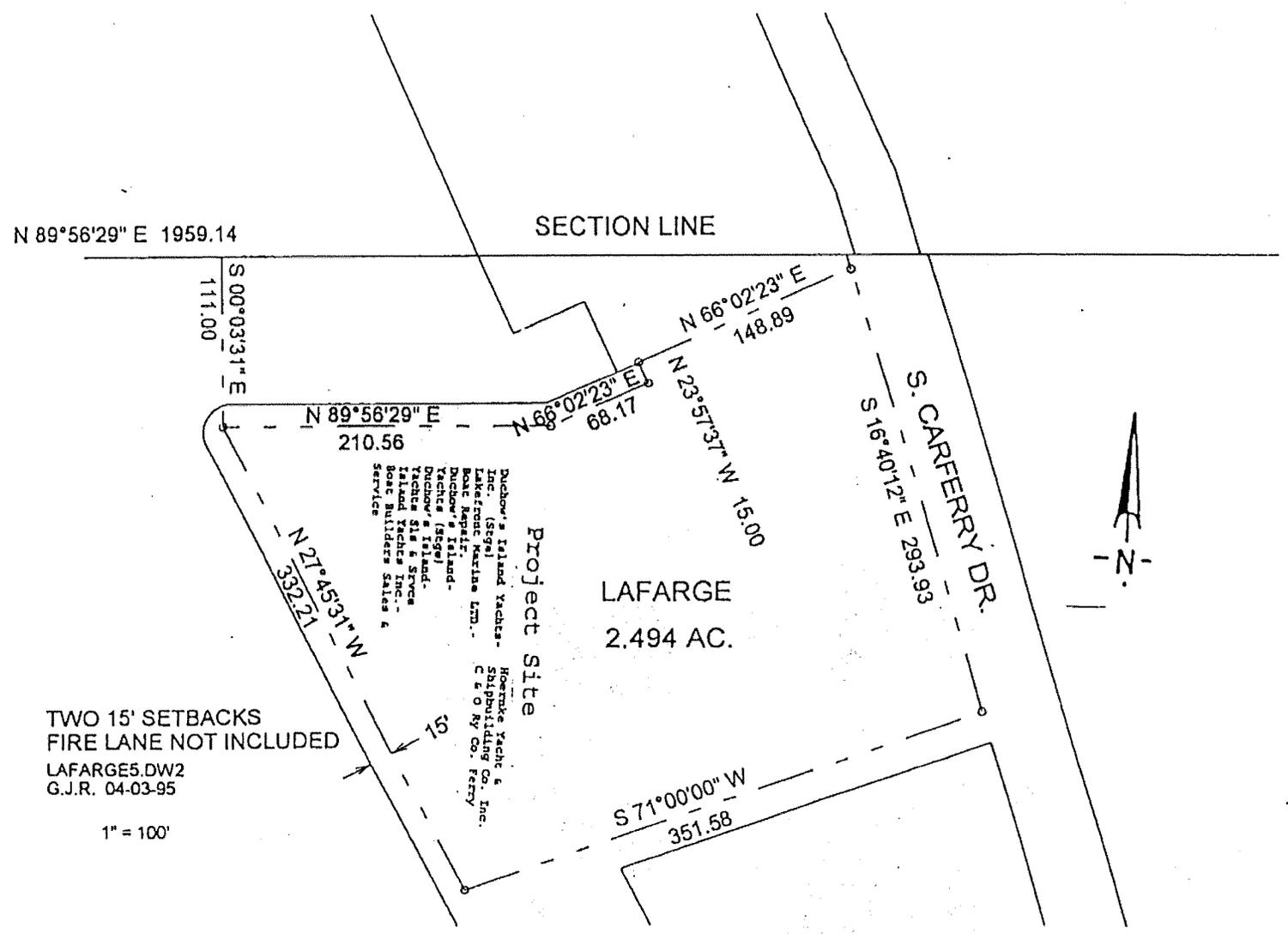
Assessments reflect the estimated value on January 1st .of the indicated year.
 The current assessment will be available after April 29.

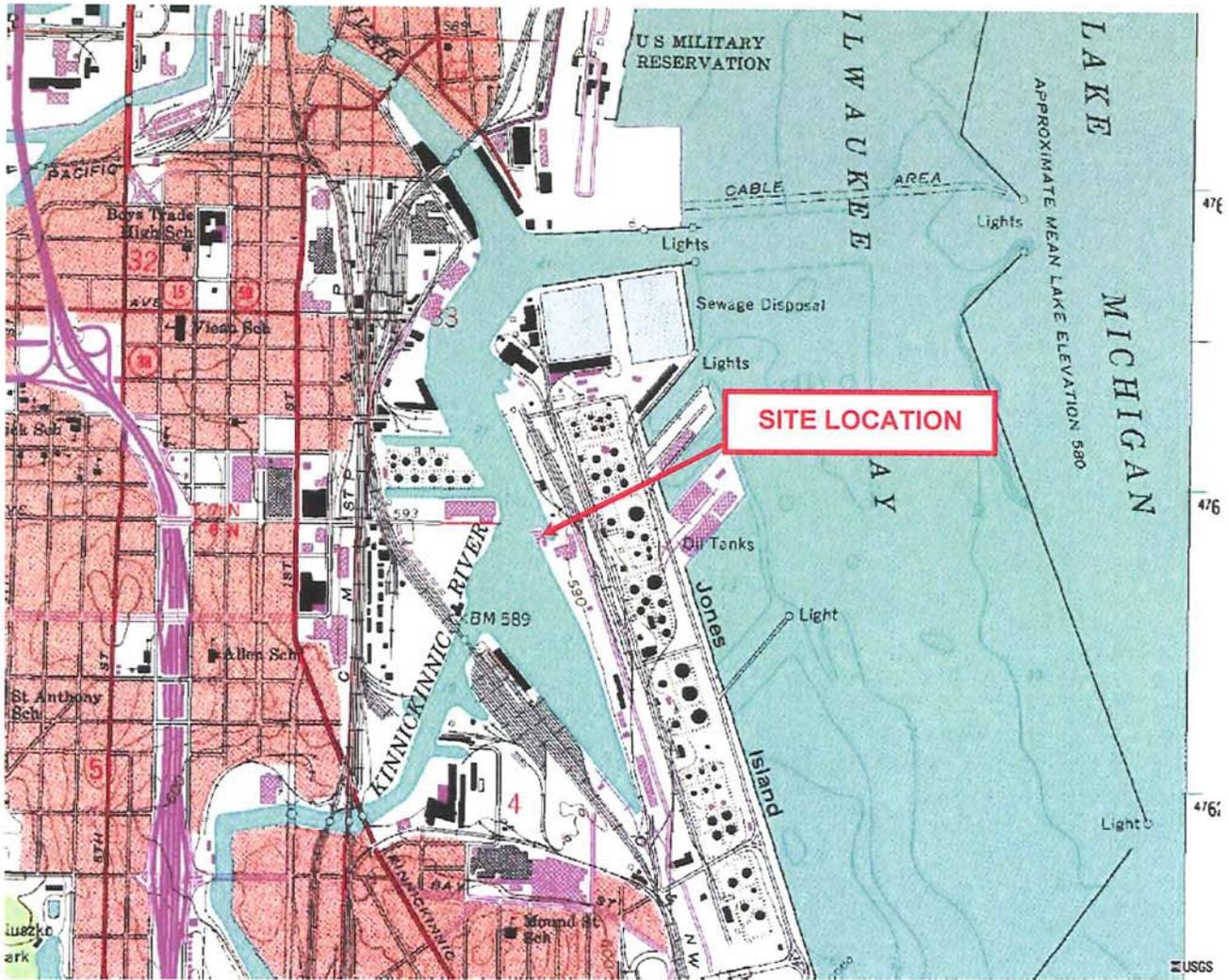
OTHER PROPERTY INFORMATION

- LAST CONVEYANCE:
 - DATE: 00/00
 - TRANSFER FEE: \$0.00 ([CLICK HERE FOR FEE EXPLANATION](#))
- STORIES: 0.0
- RESIDENTIAL BUILDING STYLE:
- EXTERIOR WALL TYPE:
- YEAR BUILT: 0000
- DWELLING UNITS: 1 ([CLICK HERE FOR DWELLING UNITS EXPLANATION](#))
- TOTAL SQUARE FEET FLOOR AREA: 0
 - FIRST FLOOR AREA:
 - SECOND FLOOR AREA:
 - THIRD FLOOR AREA:
 - FINISHED ATTIC AREA:
 - FINISHED HALF STORY AREA:
 - BASEMENT LIVING AREA:
- ROOM-COUNTS
 - TOTAL ROOMS: 0
 - BEDROOMS: 0
 - BATHS: 0
 - HALF BATHS: 0
- CENTRAL AIR CONDITIONING: NO
- BASEMENT: NONE
- FIRE PLACE:
- GARAGE TYPE: NONE
- LOT SIZE: 0
- PLAT PAGE: 43005
- ZONING: IH ([CLICK HERE FOR ZONING EXPLANATION](#))
 (For zoning information contact Milwaukee Development Center at 286-8211.)

- ASSESSMENT NEIGHBORHOOD 6279
- ALDERMANIC DISTRICT: 14
- CENSUS TRACT: 154
- LEGAL DESCRIPTION:
LEGALS PARTITION LOTS IN SE 1/4 SEC 4-6-22
DESCRIPTION PART (PARTITION LOTS & FILLED LANDS IN SW & SE 1/4 SECS
33-7-22 & NW & NE 1/4 SECS 4-6-22 & VAC STS) BETW LAKE
MICHIGAN-E LINCOLN AV-C & NW RR ROW-MUNI MOORING BASIN-KK
RIVER & HARBOR ENTERANCE EXC STS & THOSE PARTS CONVEYED TO
MILWAUKEE METROPOLITAN SEWERAGE DISTRICT

For more information contact the Assessor's office at 414-286-3651





Source: USGS Milwaukee, Wisconsin (1958, photorevised 1971) 7.5-minute series (topographic) quadrangle map

Scale: 1:24,000

Contour Interval: 10 Feet



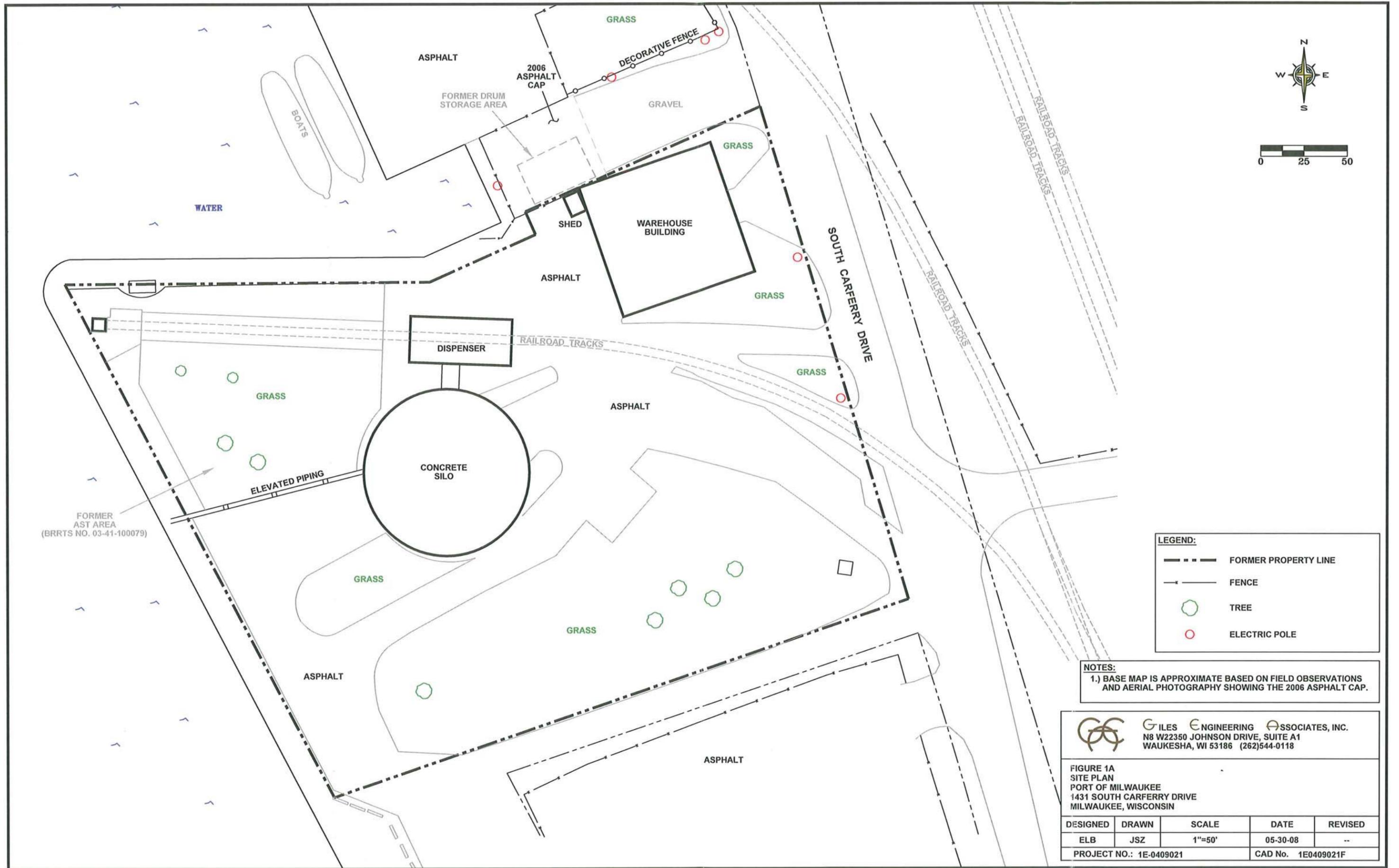
FIGURE 1

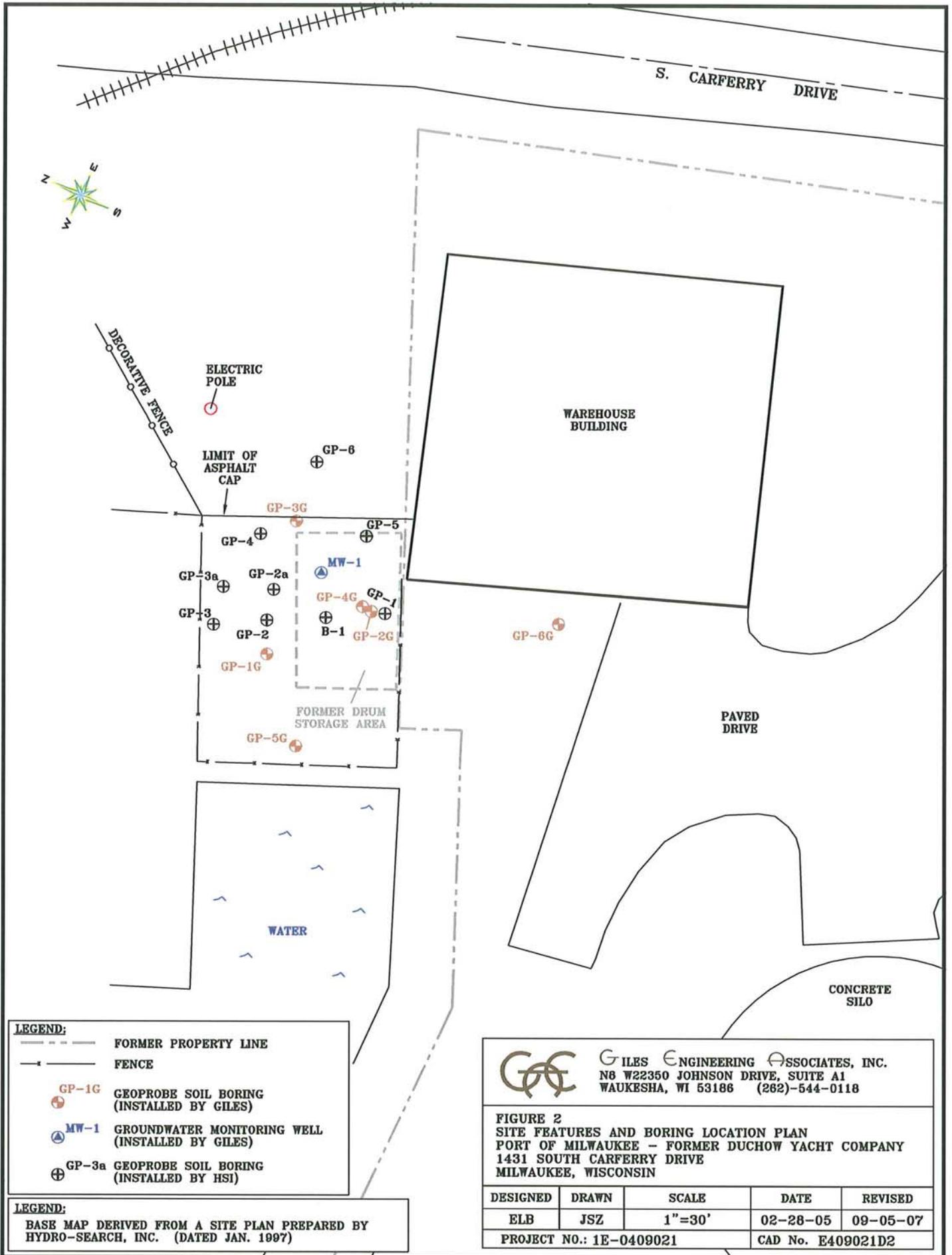
SITE LOCATION MAP

Port of Milwaukee – Former Duchow Yacht Company
 1431 South Car ferry Drive
 Milwaukee, Wisconsin
 Project No. 1E-0409021



GILES
 ENGINEERING ASSOCIATES, INC.





LEGEND:

--- FORMER PROPERTY LINE
 --- FENCE

GP-1G GEOPROBE SOIL BORING (INSTALLED BY GILES)
 MW-1 GROUNDWATER MONITORING WELL (INSTALLED BY GILES)
 GP-3a GEOPROBE SOIL BORING (INSTALLED BY HSI)

LEGEND:

BASE MAP DERIVED FROM A SITE PLAN PREPARED BY HYDRO-SEARCH, INC. (DATED JAN. 1997)

GILES ENGINEERING ASSOCIATES, INC.
 N8 W22350 JOHNSON DRIVE, SUITE A1
 WAUKESHA, WI 53186 (262)-544-0118

FIGURE 2
 SITE FEATURES AND BORING LOCATION PLAN
 PORT OF MILWAUKEE - FORMER DUCHOW YACHT COMPANY
 1431 SOUTH CARFERRY DRIVE
 MILWAUKEE, WISCONSIN

DESIGNED	DRAWN	SCALE	DATE	REVISED
ELB	JSZ	1"=30'	02-28-05	09-05-07
PROJECT NO.: 1E-0409021			CAD No. E409021D2	



S. CARFERRY DRIVE

- CHEMICAL KEY:**
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 - AN: ACENAPHTHENE
 - AT: ANTHRACENE
 - B(a): BENZO (a) ANTHRACENE
 - B(a)P: BENZO (a) PYRENE
 - B(b): BENZO (b) FLUORANTHENE
 - B(g,h,i): BENZO (g,h,i) PERYLENE
 - B(k): BENZO (k) FLUORANTHENE
 - C: CHRYSENE
 - DiBA: di BENZO (a,h) ANTHRACENE
 - F: FLUORANTHENE
 - FL: FLUORENE
 - IP: INDENO (1,2,3-cd) PYRENE
 - MN: METHYLNAPHTHALENE
 - Napht: NAPHTHALENE
 - P: PYRENE
 - PA: PHENANTHRENE

- ABBREVIATIONS:**
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 - LOD: LIMIT OF DETECTION
 - GRO: GASOLINE RANGE ORGANIC
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 - PID: PHOTOIONIZATION DETECTOR (FIELD)
 - VOC: VOLATILE ORGANIC COMPOUND
 - WAC: WISCONSIN ADMINISTRATIVE CODE
 - WDNR: WISCONSIN DEPARTMENT OF NATURAL RESOURCES

NOTES:

FIELD PID RESULTS EXPRESSED IN INSTRUMENT UNITS

DRO AND GRO RESULTS EXPRESSED IN MILLIGRAMS PER KILOGRAM (mg/kg) EQUIVALENT TO PARTS PER MILLION (ppm)

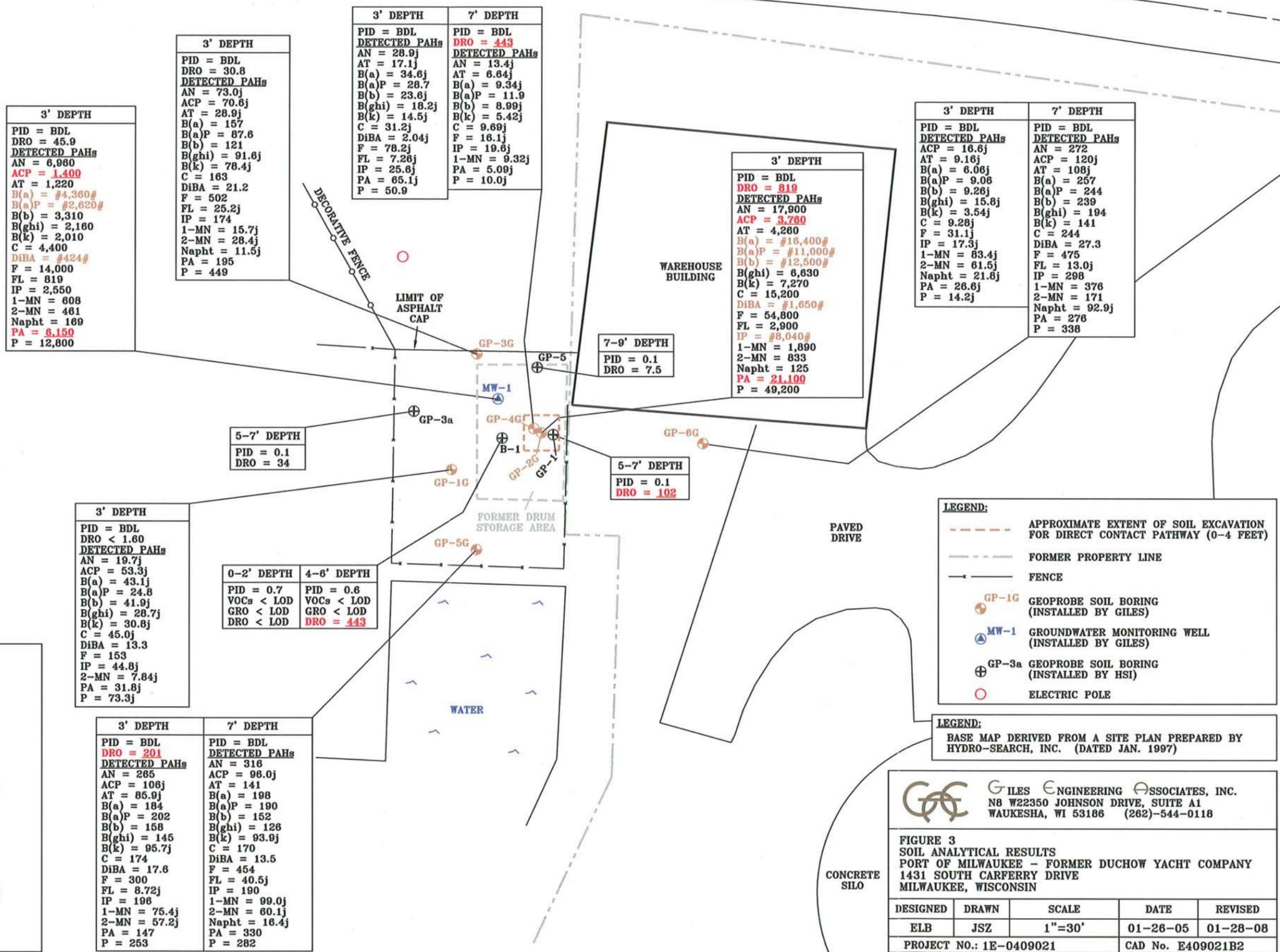
PAH AND VOC RESULTS EXPRESSED IN MICROGRAMS PER KILOGRAM (ug/kg) EQUIVALENT TO PARTS PER BILLION (ppb)

DRO RESULTS INDICATED IN RED/UNDERLINED EXCEED THE WAC NR 720.09 GENERIC RESIDUAL CONTAMINANT LEVELS BASED ON GROUNDWATER PROTECTION.

PAH RESULTS INDICATED IN BROWN/# EXCEED THE WDNR SUGGESTED GENERIC RESIDUAL CONTAMINANT LEVELS (DIRECT CONTACT, INDUSTRIAL PATHWAY) FOR SOILS SHALLOWER THAN 4 FEET

PAH RESULTS INDICATED IN RED/UNDERLINED EXCEED THE WDNR SUGGESTED GENERIC RESIDUAL CONTAMINANT LEVELS BASED ON GROUNDWATER PROTECTION.

-j: CONCENTRATION BETWEEN LABORATORY LIMIT OF DETECTION AND QUANTITATION LIMIT.





DECORATIVE FENCE
LIMIT OF ASPHALT CAP

3' DEPTH
PID = BDL
DRO = 45.9
DETECTED PAHs
AN = 6,960
ACP = 1,400
AT = 1,220
B(a) = #4,360#
B(a)P = #2,820#
B(b) = 3,310
B(ghi) = 2,160
B(k) = 2,010
C = 4,400
DiBA = #424#
F = 14,000
FL = 819
IP = 2,550
1-MN = 608
2-MN = 461
Napht = 169
PA = 6,150
P = 12,800

2' DEPTH
PID = BDL
DETECTED PAHs
AT = 74
B(a) = 1,000
B(a)P = #900#
B(b) = 680
B(ghi) = 900
B(k) = 530
C = 970
DiBA = 150
F = 1,900
IP = 760
PA = 480
P = 1,800

2' DEPTH
PID = BDL
DETECTED PAHs
AN = 2,400
AT = 2,500
B(a) = #15,000#
B(a)P = #12,000#
B(b) = #9,300#
B(ghi) = 7,300
B(k) = 6,200
C = 13,000
DiBA = #1,500#
F = 34,000
FL = 1,600
IP = #7,700#
2-MN = 9,000
PA = 12,000
P = 31,000

2' DEPTH
DETECTED PAHs
AN = 2,350
AT = 12,000
B(a) = #28,800#
B(a)P = #21,900#
B(b) = #25,900#
B(ghi) = 9,090
B(k) = 11,400
C = 28,600
F = 64,200
FL = 3,640
IP = #9,210#
Napht = 3,070
PA = 33,500
P = 42,000

3' DEPTH	7' DEPTH
PID = BDL DETECTED PAHs AN = 28.9j AT = 17.1j B(a) = 34.6j B(a)P = 28.7 B(b) = 23.6j B(ghi) = 18.2j B(k) = 14.5j C = 31.2j DiBA = 2.04j F = 78.2j FL = 7.26j IP = 25.6j PA = 65.1j	PID = BDL DRO = 443 DETECTED PAHs AN = 13.4j AT = 6.64j B(a) = 9.34j B(a)P = 11.9 B(b) = 8.99j B(k) = 5.42j C = 9.69j F = 16.1j IP = 19.6j 1-MN = 9.32j PA = 5.09j P = 10.0j

2' DEPTH
PID = BDL
DETECTED PAHs
AT = 66
B(a) = 550
B(a)P = 380
B(b) = 300
B(ghi) = 360
B(k) = 250
C = 450
F = 1,000
IP = 300
PA = 420
P = 770

5-7' DEPTH
PID = 0.1
DRO = 102

3' DEPTH
PID = BDL
DRO = 819
DETECTED PAHs
AN = 17,900
ACP = 3,760
AT = 4,260 011
B(a) = #16,400#
B(a)P = #11,000#
B(b) = #12,500#
B(ghi) = 6,630
B(k) = 7,270
C = 15,200
DiBA = #1,850#
F = 54,800
FL = 2,900
IP = #8,040#
1-MN = 1,890
2-MN = 833
Napht = 125
PA = 21,100
P = 49,200

0-2' DEPTH	4-8' DEPTH
PID = 0.7 VOCs < LOD GRO < LOD DRO < LOD	PID = 0.6 VOCs < LOD GRO < LOD DRO = 443

2' DEPTH
DETECTED PAHs
AT = 159
B(a) = 893
B(a)P = #872#
B(b) = 1,070
B(ghi) = 447
B(k) = 435
C = 1,080
F = 1,810
IP = 448
Napht = 1,860
PA = 465
P = 1,280

2' DEPTH
PID = BDL
DETECTED PAHs
AT = 1,200
B(a) = #8,200#
B(a)P = #7,000#
B(b) = #5,500#
B(ghi) = 5,700
B(k) = 3,700
C = 7,200
DiBA = #1,000#
F = 16,000
FL = 430
IP = #4,700#
PA = 5,700
P = 16,000

2' DEPTH
DETECTED PAHs
B(a) = 268
B(a)P = 240
B(b) = 297
C = 330
F = 624
Napht = 2,300
PA = 191
P = 389

CHEMICAL KEY:

- ACP: ACENAPHTHYLENE
- AN: ACENAPHTHENE
- AT: ANTHRACENE
- B(a): BENZO (a) ANTHRACENE
- B(a)P: BENZO (a) PYRENE
- B(b): BENZO (b) FLUORANTHENE
- B(g,h,i): BENZO (g,h,i) PERYLENE
- B(k): BENZO (k) FLUORANTHENE
- C: CHRYSENE
- DiBA: di BENZO (a,h) ANTHRACENE
- F: FLUORANTHENE
- FL: FLUORENE
- IP: INDENO (1,2,3-cd) PYRENE
- MN: METHYLNAPHTHALENE
- Napht: NAPHTHALENE
- P: PYRENE
- PA: PHENANTHRENE

ABBREVIATIONS:

- BDL: BELOW DETECTION LIMIT
- DRO: DIESEL RANGE ORGANIC
- LOD: LIMIT OF DETECTION
- GRO: GASOLINE RANGE ORGANIC
- NR: NATURAL RESOURCES
- PAH: POLYNUCLEAR AROMATIC HYDROCARBON
- PID: PHOTOIONIZATION DETECTOR (FIELD)
- VOC: VOLATILE ORGANIC COMPOUND
- WAC: WISCONSIN ADMINISTRATIVE CODE
- WDNR: WISCONSIN DEPARTMENT OF NATURAL RESOURCES

NOTES:

FIELD PID RESULTS EXPRESSED IN INSTRUMENT UNITS
DRO AND GRO RESULTS EXPRESSED IN MILLIGRAMS PER KILOGRAM (mg/kg) EQUIVALENT TO PARTS PER MILLION (ppm)
PAH AND VOC RESULTS EXPRESSED IN MICROGRAMS PER KILOGRAM (ug/kg) EQUIVALENT TO PARTS PER BILLION (ppb)

DRO RESULTS INDICATED IN RED/UNDERLINED EXCEED THE WAC NR 720.09 GENERIC RESIDUAL CONTAMINANT LEVELS BASED ON GROUNDWATER PROTECTION.

PAH RESULTS INDICATED IN BROWN/# EXCEED THE WDNR SUGGESTED GENERIC RESIDUAL CONTAMINANT LEVELS (DIRECT CONTACT, INDUSTRIAL PATHWAY) FOR SOILS SHALLOWER THAN 4 FEET

PAH RESULTS INDICATED IN RED/UNDERLINED EXCEED THE WDNR SUGGESTED GENERIC RESIDUAL CONTAMINANT LEVELS BASED ON GROUNDWATER PROTECTION.

-j: CONCENTRATION BETWEEN LABORATORY LIMIT OF DETECTION AND QUANTITATION LIMIT.

LEGEND:

- - - - - APPROXIMATE EXTENT OF SOIL EXCAVATION FOR DIRECT CONTACT PATHWAY (0-4 FEET)
- - - - - FORMER PROPERTY LINE
- - - - - FENCE
- ⊕ H-1 HAND AUGER BORING
- ⊕ CS-1N CONFIRMATION SOIL SAMPLE
- ⊕ GP-1G GEOPROBE SOIL BORING (INSTALLED BY GILES)
- ⊕ MW-1 GROUNDWATER MONITORING WELL (INSTALLED BY GILES)
- ⊕ GP-3a GEOPROBE SOIL BORING (INSTALLED BY HSI)

LEGEND:
BASE MAP DERIVED FROM A SITE PLAN PREPARED BY HYDRO-SEARCH, INC. (DATED JAN. 1997)

GILES ENGINEERING ASSOCIATES, INC.
N8 W22350 JOHNSON DRIVE, SUITE A1
WAUKESHA, WI 53186 (262)-544-0118

FIGURE 4
SOIL ANALYTICAL RESULTS (EXCAVATION AREA)
PORT OF MILWAUKEE - FORMER DUCHOW YACHT COMPANY
1431 SOUTH CARFERRY DRIVE
MILWAUKEE, WISCONSIN

DESIGNED	DRAWN	SCALE	DATE	REVISED
ELB	JSZ	1"=10'	05-25-05	09-05-07
PROJECT NO.: 1E-0409021			CAD No. E409021E2	

Table 1

Soil Analytical Results (DRO and PAHs)
Port of Milwaukee - Former Duchow Yacht Company

1431 Carferry Drive
Milwaukee, Wisconsin
Project No. 1E-0409021

Analyte	Sample Location										NR 720.09 RCLs	WDNR Soil Cleanup Levels for PAHs Interim Guidance	
	MW-1	GP-1G	GP-2G	GP-3G	GP-4G		GP-5G		GP-6G			Groundwater Pathway	Direct Contact, Industrial Pathway
Sample Depth (feet)	3	3	3	3	3	7	3	7	3	7			
Sample Date	11/4/2004	11/4/2004	11/4/2004	11/4/2004	2/25/2005	2/25/2005	2/25/2005	2/25/2005	2/25/2005	2/25/2005			
PID	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL			
DRO (mg/kg)	45.9	<1.60	<u>819</u>	30.8	NA	<u>443</u>	<u>102</u>	NA	NA	NA	100	NS	NS
PAHs (ug/kg)													
Acenaphthene	6,960	19.7j	17,900	73.0j	28.9j	13.4j	265	316	<6.98	272	NS	38,000	60,000,000
Acenaphthylene	<u>1,400</u>	53.3j	<u>3,760</u>	70.6j	<13.1	<11.8	106j	96.0j	16.6j	120j	NS	700	360,000
Anthracene	1,220	<5.66	4,260	28.9j	17.1j	6.64j	85.9j	141	9.16j	108j	NS	3,000,000	300,000,000
Benzo (a) anthracene	<u>#4,360#</u>	43.1j	<u>#16,400#</u>	157	34.6j	9.34j	184	198	6.06j	257	NS	17,000	3,900
Benzo (a) pyrene	<u>#2,620#</u>	24.8	<u>#11,000#</u>	87.6	28.7	11.9	202	190	9.06	244	NS	48,000	390
Benzo (b) fluoranthene	3,310	41.9j	<u>#12,500#</u>	121	23.6j	8.99j	158	152	9.26j	239	NS	360,000	3,900
Benzo (g,h,i) perylene	2,160	28.7j	6,630	91.6j	18.2j	<10.4	145	126	15.8j	194	NS	6,800,000	39,000
Benzo (k) fluoranthene	2,010	30.8j	7,270	78.4j	14.5j	5.42j	95.7j	93.9j	3.54j	141	NS	870,000	39,000
Chrysene	4,400	45.0j	15,200	163	31.2j	9.69j	174	170	9.28j	244	NS	37,000	390,000
Dibenzo (a,h) anthracene	<u>#424#</u>	13.3	<u>#1,650#</u>	21.2	2.04j	<1.70	17.6	13.5	<1.71	27.3	NS	38,000	390
Fluoranthene	14,000	153	54,800	502	78.2j	16.1j	300	454	31.1j	475	NS	500,000	40,000,000
Fluorene	819	<5.37	2,900	25.2j	7.26j	<1.31	8.72j	40.5j	<1.32	13.0j	NS	100,000	40,000,000
Indeno (1,2,3-cd) pyrene	2,550	44.8j	<u>#8,040#</u>	174	25.6j	19.6j	196	190	17.3j	298	NS	680,000	3,900
1-Methylnaphthalene	608	<5.55	1,890	15.7j	<9.72	9.32j	75.4j	99.0j	83.4j	376	NS	23,000	70,000,000
2-Methylnaphthalene	461	7.84j	833	28.4j	<9.32	<8.39	57.2j	60.1j	61.5j	171	NS	20,000	40,000,000
Napthalene	169	<5.46	125	11.5j	<16.5	<14.9	<16.5	16.4j	21.8j	92.9j	NS	400	110,000
Phenanthrene	<u>6,150</u>	31.8j	<u>21,100</u>	195	65.1j	5.09j	147	330	26.6j	276	NS	1,800	390,000
Pyrene	12,800	73.3j	49,200	449	50.9j	10.0j	253	282	14.2j	338	NS	8,700,000	30,000,000

NOTES:

PID: Photoionization Detector

BDL: Below Detection Limit

DRO: Diesel Range Organics

PAHs: Polynuclear Aromatic Hydrocarbons

mg/kg: Milligrams per kilogram; equivalent to parts per million (ppm)

ug/kg: Micrograms per kilogram; equivalent to parts per billion (ppb)

NR: Natural Resources Chapter of the Wisconsin Administrative Code (WAC)

RCL: Residual Contaminant Level

WDNR: Wisconsin Department of Natural Resources

NS: No Established Standard

NA: Not Analyzed

j: The reported concentration for this analyte is an estimated value. The reported concentration is above the method detection limit, but below the limit of quantification.

Results indicated in red/underlined exceed the WAC NR 720.09 generic RCL (DRO) or the WDNR suggested generic RCL (PAHs) based on groundwater protection

Results indicated in brown/# exceed the WDNR suggested generic RCL (Direct Contact, Industrial Pathway) for soils shallower than four feet

Table 3

Soil Analytical Results (PAHs)
Excavation and Hand-Probe Samples
Port of Milwaukee - Former Duchow Yacht Company
1431 Carferry Drive
Milwaukee, Wisconsin
Project No. 1E-0409021

Analyte	Sample Location							WDNR Soil Cleanup Levels for PAHs Interim Guidance	
	CS-1N	CS-2E	CS-3S	CS-4W	H-1	H-2	H-3	Groundwater Pathway	Direct Contact, Industrial Pathway
Sample Depth (feet)	2	2	2	2	2	2	2		
Sample Date	5/10/2005	5/10/2005	5/10/2005	5/10/2005	5/26/2005	5/26/2005	5/26/2005		
PID	BDL	BDL	BDL	BDL	NA	NA	NA		
PAHs (ug/kg)									
Acenaphthene	<330	<300	2,400	<1,600	<43	2,350	<33	38,000	60,000,000
Acenaphthylene	<570	<510	<2,500	<2,800	<54	<47	<41	700	360,000
Anthracene	66	74	2,500	1,200	<32	12,000	159	3,000,000	300,000,000
Benzo (a) anthracene	550	1,000	#15,000#	#8,200#	268	#28,800#	893	17,000	3,900
Benzo (a) pyrene	380	#900#	#12,000#	#7,000#	240	#21,900#	#872#	48,000	390
Benzo (b) fluoranthene	300	680	#9,300#	#5,500#	297	#25,900#	1,070	360,000	3,900
Benzo (g,h,i) perylene	360	900	7,300	5,700	<42	9,090	447	6,800,000	39,000
Benzo (k) fluoranthene	250	530	6,200	3,700	<20	11,400	435	870,000	39,000
Chrysene	450	970	13,000	7,200	330	28,600	1,080	37,000	390,000
Dibenzo (a,h) anthracene	<50	150	#1,500#	#1,000#	<43	<38	<33	38,000	390
Fluoranthene	1,000	1,900	34,000	16,000	624	64,200	1,610	500,000	40,000,000
Fluorene	<67	<60	1,600	430	<52	3,640	<40	100,000	40,000,000
Indeno (1,2,3-cd) pyrene	300	760	#7,700#	#4,700#	<41	#9,210#	448	680,000	3,900
1-Methylnaphthalene	<200	<180	<870	<980	<64	<56	<49	23,000	70,000,000
2-Methylnaphthalene	<170	<150	9,000	<810	<65	<56	<50	20,000	40,000,000
Napthalene	<200	<180	<870	<980	<u>2,300</u>	<u>3,070</u>	<u>1,860</u>	400	110,000
Phenanthrene	420	480	<u>12,000</u>	<u>5,700</u>	191	<u>33,500</u>	465	1,800	390,000
Pyrene	770	1,800	31,000	16,000	389	42,000	1,280	8,700,000	30,000,000

NOTES:

PID: Photoionization Detector

BDL: Below Detection Limit

PAHs: Polynuclear Aromatic Hydrocarbons

ug/kg: Micrograms per kilogram; equivalent to parts per billion (ppb)

RCL: Residual Contaminant Level

WDNR: Wisconsin Department of Natural Resources

NA: Not Analyzed

j: The reported concentration for this analyte is an estimated value. The reported concentration is above the method detection limit, but below the limit of quantification.

Results indicated in red/underlined exceed the WDNR suggested generic RCL based on groundwater protection

Results indicated in brown/# exceed the WDNR suggested generic RCL (Direct Contact, Industrial Pathway) for soils shallower than four feet

The Port Authority of the City of Milwaukee, as the party responsible for the polynuclear aromatic hydrocarbon (PAH) impact originating at 1431 South Car ferry Drive, Milwaukee, Wisconsin, believes that information within this packet has been attached for each property that is within the contaminated site boundary. That information is for 1431 South Car ferry Drive. 1431 South Car ferry Drive has no legal description. The property is now part of a several-block-long, Port of Milwaukee parcel known as 1226 South Car ferry Drive.

By: *Tom Schuler*

Title: HARBOR ENGINEER

Date: 1/29/2008