BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

BP PRODUCTS NORTH AMERICA INC.,	)	
Petitioner,	)	PCB 26-001
	)	Agency Decision Appeal
v.	)	1191155009—Madison County
	)	ILD980503106
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	Log No. B-145R-CA-78 and CA-133
	)	RCRA Permit - 24A
Respondent.	)	

NOTICE OF FILING

TO: Division of Legal Counsel
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield IL 62794-9276
epa.dlc@illinois.gov
Melanie.Jarvis@Illinois.gov

Clerk
Illinois Pollution Control Board
100 West Randolph Street, Suite 11-500
Chicago, Illinois 60601-3218

PLEASE TAKE NOTICE that I have today filed with the Office of the Clerk of the Pollution Control Board BP Products North America Inc.'s Petition to Appeal Illinois EPA's Determination, a copy of which is herewith served upon you.

Dated: October 6, 2025

Respectfully submitted,

BP PRODUCTS NORTH AMERICA INC.

By: /s/ Alexander J. Bandza

BARNES & THORNBURG LLP
One N. Wacker Drive, Suite 4400
Chicago, IL 60606-2833
(312) 357-1313
abandza@btlaw.com

Attorney for BP Products North America Inc.

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

BP PRODUCTS NORTH AMERICA INC.,	)	
Petitioner,	)	PCB 26-001
	)	Agency Decision Appeal
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Respondent.	)	

BP PRODUCTS NORTH AMERICA INC.'s PETITION TO APPEAL ILLINOIS EPA's DETERMINATION

NOW COMES the Petitioner, BP Products North America Inc. ("**BPPNA**"), by its undersigned attorney, and, pursuant to the Illinois Environmental Protection Act ("**Act**") (415 ILCS 5/40(a)(1)) and 35 Ill. Adm. Code §§ 105.208, 702.107, 705.212, hereby petitions the Illinois Pollution Control Board ("**Board**") to appeal the Illinois Environmental Protection Agency's ("**Illinois EPA**" and "**Agency**") letter decision on submittals associated with corrective action under a Resource Conservation and Recovery Act ("**RCRA**") permit to BPPNA ("**Letter**") as it relates to the remedial activities at the Wood River, Illinois, property ("**Property**").[1]

In support of this Petition, BPPNA respectfully states as follows:[2]

I. RECORD OF APPEAL

1. On or about August 18, 2016, BPPNA wrote to Illinois EPA concerning "IEPA Letter Dated May 20, 2016 – Response to Conditions 3 and 4." (**Ex. A**.)

2. On or about May 25, 2023, BPPNA wrote to Illinois EPA concerning "Corrective

[1] BPPNA and Illinois EPA are individually a "Party" and, collectively, the "Parties."

[2] BPPNA reserves its rights to further amend this Petition based on subsequent filings in this matter.

Action Modification Request – Light Oils Dock Area." (**Ex. B**.)

3. On or about May 21, 2025, Illinois EPA issued the Letter to BPPNA. (**Ex. C**.)

II. THIS APPEAL IS TIMELY FILED

4. On July 1, 2025, the Parties timely filed a notice to extend the 35-day period within which BPPNA may appeal the Letter. *See* 415 ILCS 5/40(a)(1); 35 Ill. Adm. Code §§ 101.300(b), 105.206(c), 105.208(a), (c).

5. By its Order dated July 10, 2025, the Board granted this extension request so as to allow BPPNA up to and until October 6, 2025, to timely file an appeal. (*See* PCB 26-01 Order (July 10, 2025).) This appeal is timely filed.

III. BACKGROUND

6. BPPNA submitted to the Illinois EPA a Corrective Action Modification Request for the Light Oils Dock ("**LOD**") Area located within Parcel B of the former petroleum refinery Riverfront facility located on the Property. (Ex. B at 1.) A Riverfront Facility Parcel Map is provided with Exhibit B as Figure 1. (*See id.* at Fig. 1.)

7. We divide this Background into three parts: (A) an overview of the background to BPPNA's proposal; (B) BPPNA's proposal; and (C) Illinois EPA's response (*i.e.*, the Letter).

A. Background to BPPNA's Proposal

8. The Riverfront facility Groundwater Corrective Action Program requires hydraulic control of Uppermost Aquifer ("**UMA**") groundwater in the Riverfront Groundwater Management Zone ("**GMZ**") via the Cone of Depression ("**COD**") well system located on the BP Wood River Main Plant facility. (*Id.* at 1.) The flow control of the COD well system is intended to prevent contaminant migration beyond the boundaries of the Riverfront facility for groundwater above Class 1 Groundwater Quality Standards ("**GQS**") for volatile organic compounds ("**VOCs**") and is the basis for the GMZ. (*Id.*) The current corrective action (*i.e.*, hydraulic control) is measured

through quarterly groundwater gauging and contouring. (*Id.*) Compliance is verified by monitoring contaminants in groundwater in GMZ boundary wells. (*Id.*)

9. Groundwater monitoring is currently completed at 13 monitoring wells located in the LOD Area in accordance with the Illinois EPA letter dated May 11, 2009. (*Id.* at 2.) Of the 13 LOD monitoring program wells, 5 are also Riverfront Observation Monitoring Wells ("**RFOWs**") and designated GMZ boundary wells monitored under the RCRA Permit. (*Id.*) One additional monitoring well located within the LOD Area, Riverfront Gradient Control ("**RF GC**") monitoring well G102, is also monitored under the current RCRA Permit. (*Id.*)

B. BPPNA's Proposal to Modify the Corrective Action

10. BPPNA proposed a Corrective Action Modification ("**CA-Modification**"), which included implementing a biological treatment program for impacted UMA groundwater within the LOD Area in lieu of hydraulic flow control. (*See id.* & Fig. 2.) The biological treatment program would consist of biosparging followed by natural attenuation mechanisms enhanced by passive bioventing. (*Id.* at 1.) In lieu of measuring hydraulic control in in the LOD Area, the biological treatment program would provide contaminant control. (*Id.*) Compliance would be verified by monitoring contaminants in groundwater in GMZ boundary wells. (*Id.*) Put another way, the proposed CA-Modification would replace the current hydraulic control requirements with contaminant control via the proposed remedy—*i.e.*, groundwater protection will be achieved through implementation of the remedy and associated groundwater monitoring. (*Id.* at 6.)

11. The proposed CA-Modification would apply to 14 monitoring wells located within the LOD Area as depicted on Figure 2 of Exhibit B. (*See id.* at 7.) The proposed biosparge treatment area is shown on Figure 7 of Exhibit B. (*See id.*) Under the current Groundwater Corrective Action Program, 6 of the 14 monitoring wells in the LOD Area are included in the quarterly hydraulic control gauging and contouring program: RFOWs LOD-1, LOD-2, LOD-5,

LOD-7, RL-17B, and RF GC well G102. (*Id.*) RFOWs LOD-1, LOD-2, LOD-5, LOD-7, and RL-17B are also designated GMZ boundary wells. (*Id.*) Additionally, LOD monitoring program wells LOD-6 and LOD-9 are designated RFOWs under the optimized groundwater monitoring program approved by Illinois EPA in a letter dated January 19, 2023. (*Id.*)

12. Under the proposed CA-Modification:

a. RFOWs LOD-1, LOD-2, LOD-5, LOD-7, and RL-17B in the LOD Area would no longer be part of the quarterly hydraulic control gauging and contouring program or LOD monitoring program but would continue to be sampled under the RCRA permit;

b. LOD-6 and LOD-9, which are designated RFOWs to be sampled annually under the optimized groundwater monitoring program, would no longer be monitored under the LOD monitoring program;

c. LOD monitoring program wells LOD-3, LOD-3B, LOD-4, LOD-8, RL-17, and RL-18 would continue to be monitored in accordance with the Illinois EPA letter dated May 11, 2009; and

d. RF GC monitoring well G102 would no longer be part of the quarterly hydraulic control gauging and contouring program. (*Id.*)

C. Illinois EPA's Response to BPPNA's Proposal (*i.e.*, the Letter)

13. On or about May 21, 2025, Illinois EPA issued the Letter to BPPNA. (*See* Ex. C.) Illinois EPA approved the CA-Modification with the following four conditions. (*Id.* at 2.)

14. **<u>First</u>**, Condition 5 of the May 11, 2009 Illinois EPA letter (Log No. B-145-CA-63), which outlined requirements for 14 wells to be sampled in the LOD Area, would continue to apply. (*Id.*) Reporting dates in the current permit (Log No. B-145R2) would continue to apply. (*Id.*)

15. **<u>Second</u>**, Illinois EPA rejected BPPNA's request to remove gauging requirements

for well G102. (*Id.*) Illinois EPA's rationale for such a rejection was that hydraulic control continues to be required for the remainder of the GMZ, and BPPNA purportedly did not provide adequate justification to remove this requirement from Section IV of the RCRA permit. (*See id.*)

16. **Third**, Illinois EPA rejected BPPNA's request to remove monitoring wells LOD-1, LOD-2, LOD-5, LOD-6, LOD-7, LOD-9, and RL-17B from the LOD Area monitoring program. (Id.) Illinois EPA's rational for such a rejection is that because these wells are required to be monitored by the site-wide groundwater corrective action program (Section IV) of the RCRA permit, "gauging and monitoring for constituents of concern (COCs) for the LOD Area (benzene, toluene, ethylbenzene, total xylenes (BETX), and total and dissolved arsenic and lead) is readily available and will further support [BPPNA's] ongoing demonstrations of the effectiveness of the corrective measures." (*See id.*)

17. **Fourth**, Illinois EPA approved, with comments, BPPNA's request for biosparging to reduce concentrations of contaminants in groundwater and create aerobic conditions. (*Id.* at 3.)

IV. GROUNDS FOR APPEAL

18. The Board is a statutorily created entity. 415 ILCS 5/5(a). The Board is authorized to conduct proceedings, including petitions for review of Illinois EPA final determinations, pursuant to the Act and Board regulations. *See id.* 5/5(d); 35 Ill. Adm. Code § 105.204(f).

19. "[A]ll actions taken by the [Illinois EPA] pursuant to 35 Ill. Adm. Code 702 through 704, 721 through 728, 730, 733, 738, or 739 are to be done as part of an original permit application or a proceeding for modification of an issued permit. Such actions are subject to the procedural requirements of 35 Ill. Adm. Code 705." 35 Ill. Adm. Code § 702.107. "Any final Agency action on an original permit application, a proceeding for modification of an issued permit, or any action for review of a final Agency determination required by these regulations may be appealed to the Board pursuant to Title X of the [Act] and 35 Ill. Adm. Code 105 and 705.212." *Id.* § 702.107(a).

20. This Petition identifies three conditions of the Letter that are not necessary to accomplish the purposes of the Act and/or Board regulations and are thus arbitrary and capricious ("**Challenged Conditions**"). Each Challenged Condition is set forth below.

A. Condition No. 1

21. Illinois EPA provided the following Condition No. 1 in the Letter:

> The May 11, 2009 Illinois EPA letter (Log No. B-145-CA-63) outlined requirements for 14 wells to be sampled at the LOD Area. Requirements of Condition 5 of the letter continue to apply, with the exception of the due dates for reporting. Reporting dates in the current permit (Log No. B-145R2) shall be followed:
>
> *The uppermost aquifer groundwater monitoring at the LOD Area must continue in accordance with the requirements found in the RCRA Permit and all previous Illinois EPA letters addressing the LOD Area, which includes:*
>
> *a. Semi-annual sampling of uppermost aquifer wells LOD-1, LOD-2, LOD-3, LOD-3B, LOD-4, LOD-5, LOD-6, LOD-7, LOD-8, LOD-9, RL-17, RL-17B, and RL-18, for benzene, ethylbenzene, toluene, and xylenes (BETX), and total and dissolved arsenic and lead;*
>
> *b. Collection of quarterly fluid level measurements; and*
>
> *c. Reporting within the Riverfront Groundwater Corrective Action Semi-annual Reports.*

(Letter at 2 (emphasis in original).)

22. As to Condition No. 1(a), BPPNA believes that annual sampling of wells LOD-5, LOD-6, and LOD-9 is adequate to monitor progress of the proposed CA-Modification and is protective of human health and the environment. BPPNA denies that the balance of well sampling under Condition No. 1(a) is technically justified or is necessary to accomplish the purposes of the Act or Board regulations.

23. As to Condition No. 1(b), BPPNA believes that quarterly fluid level measurements of wells LOD-1, LOD-2, LOD-5, LOD-7, RL-17B, LOD-6, and LOD-9 are not necessary because,

as outlined in the proposed CA Modification, the transition to contaminant control will serve to determine compliance with Class 1 groundwater standards at the GMZ boundary for the LOD. Accordingly, Condition No. 1(b) is not technically justified nor necessary to accomplish the purposes of the Act or Board regulations.

B. Condition No. 2

24. Illinois EPA provided the following Condition No. 2 in the Letter:

> The request to remove gauging requirements for well G 102 cannot be approved. Hydraulic control continues to be required for the remainder of the groundwater management zone (GMZ) and the facility has not provided adequate justification to remove this requirement for the Groundwater Corrective Action Program in Section IV of the permit.

(Letter at 2.)

25. As to Condition No. 2, BPPNA believes that quarterly fluid level measurements of well G102 is not necessary because, as outlined in the proposed CA Modification, the transition to contaminant control will serve to determine compliance with Class 1 groundwater standards at the GMZ boundary for the LOD. Accordingly, Condition No. 2 is not technically justified nor necessary to accomplish the purposes of the Act or Board regulations.

C. Condition No. 3

26. Illinois EPA provided the following Condition No. 2 in the Letter:

> The Illinois EPA cannot approve the request to remove monitoring wells LOD-1, LOD-2, LOD-5, LOD-6, LOD-7, LOD-9, and RL-17B from the LOD Area monitoring program. The Illinois EPA acknowledges these wells are required to be monitored by the site-wide groundwater corrective action program (Section IV) of the permit; therefore, gauging and monitoring for constituents of concern (COCs) for the LOD Area (benzene, toluene, ethylbenzene, total xylenes (BETX), and total and dissolved arsenic and lead) is readily available and will further support BP's ongoing demonstrations of the effectiveness of the corrective measures. Continue to use data collected at these wells to evaluate the LOD Area conditions and effectiveness of corrective action.

(Letter at 2.)

27. As to Condition No. 3, BPPNA agrees that a groundwater sampling program is necessary to determine compliance with the RCRA permit at the GMZ boundary. However, BPPNA disagrees with Illinois EPA's requested sampling frequency for LOD-5, LOD-6, and LOD-9. BPPNA believes that annual sampling is sufficient to monitor progress of the proposed CA-Modification and ensure that it is protective of human health and the environment. BPPNA believes that quarterly fluid level measurements of wells LOD-1, LOD-2, LOD-5, LOD-7, RL-17B, LOD-6, and LOD-9 are not necessary because, as outlined in the proposed CA Modification, contaminant control will serve to demonstrate compliance with Class 1 groundwater standards at the GMZ boundary for the LOD. Accordingly, these specific requirements of Condition No. 3 are not technically justified nor necessary to accomplish the purposes of the Act or Board regulations.

28. BPPNA does not object to the balance of Condition No. 3, including the constituents proposed and the sampling frequency of the other wells identified in Condition No. 3.

* * * * *

29. BPPNA's proposed CA-Modification involves the installation of an active remedy specifically designed to target contaminants of concern in the LOD. Accordingly, hydraulic control is no longer needed to achieve compliance with the RCRA permit at the GMZ boundary. Illinois EPA's Challenged Conditions—*i.e.*, obligating BPPNA to continue gauging for the purposes of measuring hydraulic control at the LOD—are counterproductive and unnecessary, and do not contribute to the protection of human health and the environment. Additionally, the sampling frequency outlined in BPPNA's proposed CA-Modification is adequate for the purposes of determining compliance with Class 1 groundwater standards at the GMZ boundary.

30. BPPNA's proposed CA-Modification, and the installation of the proposed biosparge system at the LOD contemplated therein, proactively reduces risk. Accordingly,

BPPNA should not be bound to the Challenged Conditions identified above, which fundamentally are outdated and duplicative requirements that do not align with the shared goals of risk reduction.

31. For these reasons, and others that may be further developed in this proceeding, BPPNA requests that the Board remand the Letter for Illinois EPA to address the Challenged Conditions and re-issue approval of BPPNA's proposed CA-Modification without the same.

WHEREFORE, for the reasons stated above, BPPNA requests that the Board: (1) grant review of Illinois EPA's issuance of the Letter and remand the Letter to Illinois EPA for re-issuance consistent with the Act, Board regulations, and BPPNA's requests above, which includes addressing the Challenged Conditions; and (2) order any other relief that is just and proper.

Dated: October 6, 2025

Respectfully submitted,

BP PRODUCTS NORTH AMERICA INC.

By: /s/ Alexander J. Bandza

Alexander J. Bandza, Esq.
BARNES & THORNBURG LLP
One N. Wacker Drive, Suite 4400
Chicago, IL 60606-2833
(312) 357-1313
abandza@btlaw.com

Attorney for BP Products North America Inc.

CERTIFICATE OF E-MAIL SERVICE

I, the undersigned, certify the following:

- That I have served the attached BP Products North America Inc.'s Petition to Appeal Illinois EPA's Determination, by e-mail upon the Illinois Environmental Protection Agency at the e-mail address of epa.dlc@illinois.gov and Melanie.Jarvis@Illinois.gov.
- That my e-mail address is abandza@btlaw.com.
- That the number of pages in the e-mail transmission is 10.
- That the e-mail transmission took place before 5:00 p.m. on the date of Oct. 6, 2025.

/s/ Alexander J. Bandza
An Attorney for BP Products North America Inc.

EXHIBIT A

Electronic Filing: Received, Clerk's Office 10/06/2025 **PCB 2026-001**

Illinois Environmental Protection Agency

Bureau of Land • 1021 North Grand Avenue East • P.O. Box 19276 • Springfield • Illinois • 62794-9276

ILLINOIS EPA RCRA CORRECTIVE ACTION CERTIFICATION

This certification must accompany any document submitted to Illinois EPA in accordance with the corrective action requirements set forth in a facility's RCRA permit. The original and two copies of all documents submitted must be provided.

1.0 Facility Identification

Name BP Wood River Riverfront Property--Parcel B&C
County Madison
Street Address 301 Evans Avenue
Site No. (IEPA) 1191155009
City Wood River
Site No. (USEPA) ILD980503106

2.0 Owner Information

Name BP Products North America, Inc.
Mail Address 301 Evans Avenue
City Wood River
State IL Zip Code 62095
Contact Name Lori Littrell
Contact Title Operations Project Manager
Phone 312.809.3395

3.0 Operator Information

Name BP Products North America, Inc.
Mail Address 301 Evans Avenue
City Wood River
State IL Zip Code 62095
Contact Name Lori Littrell
Contact Title Operations Project Manager
Phone 312.809.3395

4.0

(check applicable item and provide requested information, as applicable)

☐ RFI Phase I Workplan/Report
☐ RFI Phase II Workplan/Report
☐ CMP Report;
☑ Other (describe):

IEPA Permit Log No. B-145R
Date of Last IEPA Letter on Project 6/15/2016
Log No. of Last IEPA Letter on Project B-145R-M-8 & M-9

Does this submittal include groundwater information: ☑ Yes ☐ No

Response to Conditions 3 & 4 of IEPA 5.20.16 Letter

Date of Submittal 8/18/2016

5.0

(briefly describe what is being submitted and its purpose)

Response to Conditions 3 & 4 of IEPA Letter Dated 05/20/2016 (Condition 2 addressed under separate cover)

6.0

(identify all documents in submittal, including cover letter; give dates of all documents)

Response to Conditions 3 & 4 of IEPA Letter Dated 05/20/2016 (Condition 2 addressed under separate cover)

7.0 Certification Statement

(This statement is part of the overall certification being provided by the owner/operator, professional and laboratory in Items 7.1, 7.2 and 7.3 below). The activities described in the subject submittals have been carried out in accordance with procedures approved by Illinois EPA. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

For: Parcel B&C-IEPA 5.20.16 Cond 3&4

Date of Submission: 8/18/2016

7.1 Owner/Operator Certification

(Must be completed for all submittals. Certification and signature requirements are set forth in 35 IAC 702.126.) All submittals pertaining to the corrective action requirements set forth in a RCRA Permit must be signed by the person designated below (or by a duly authorized representative of that person):

1. For a Corporation, by a principal executive officer of at least the level of vice president.
2. For a Partnership or Sole Proprietorship, by a general partner or the proprietor, respectively.
3. For a Governmental Entity, by either a principal executive officer or a ranking elected official.

A person is a duly authorized representative only if:

1. the authorization is made in writing by a person described above; and
2.

Owner Signature: [signature] Date: 8/18/16

Title: Operations Project Manager

Operator Signature: [signature] Date: 8/18/16

Title: Operations Project Manager

7.2 (if necessary)

Work carried out in this submittal or the regulations may also be subject to other laws governing professional services, such as the Illinois Professional Land Surveyor Act of 1989, the Professional Engineering Practice Act of 1989, the Professional Geologist Licensing Act, and the Structural Engineering Licensing Act of 1989. No one is relieved from compliance with these laws and the regulations adopted pursuant to these laws. All work that falls within the scope and definitions of these laws must be performed in compliance with them. The Illinois EPA may refer any discovered violation of these laws to the appropriate regulating authority.

Any person who knowingly makes a false, fictitious, or fraudulent material statement, orally or in writing, to the Illinois EPA commits a Class 4 felony. A second or subsequent offense after conviction is a Class 3 felony. (415 ILCS 5/44 (h))

Professional's Signature: _____ Date: _____

Professional's Name _____

Address _____ Professional's Seal:

City _____

State _____ Zip Code _____

Phone _____

7.3 (if necessary)

The sample collection, handling, preservation, preparation and analysis efforts for which this laboratory was responsible were carried out in accordance with procedures approved by Illinois EPA.

Name of Laboratory _____

_____ Date: _____

Signature of Laboratory Responsible Officer

Mailing Address of Laboratory

Address _____

City _____

State _____ Zip Code _____

_____

Name and Title of Laboratory Responsible Officer

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Remediation Management Services Company

150 West Warrenville Road
Naperville, IL 60563

Office: (312)809-3395
Mobile: (630)386-1784
Lori.Littrell@bp.com

August 18, 2016

Ms. Joyce Munie, P.E.
Illinois Environmental Protection Agency
Bureau of Land – Division of Land Pollution Control, Permit Section
1021 North Grand Avenue East
Springfield, Illinois 62794-9276

Re: IEPA Letter Dated May 20, 2016
Response to Conditions 3 and 4
Log No. B-145R-CA-48 (Parcels B and C)
ILD980503106 – BP Wood River Riverfront Property
BP Products North America Inc.
1191155009 – Madison County

Dear Ms. Munie:

BP Products North America Inc. (BP) is submitting this response for Conditions 3 through 4 of the Illinois Environmental Protection Agency's (Illinois EPA) letter of May 20, 2016 (Attachment 1), for Riverfront Property Parcels B and C (Figures 1 and 2). BP concurs with general Conditions 1, 5, 6, and 7, while the response for Condition 2 (Parcel B Environmental Land Use Control) is provided under separate cover. This letter addresses Illinois EPA conditions 3 and 4 presented in bold italic.

3: Within ninety (90) days of the date of this letter, submit a work plan, for Illinois EPA review and approval, for investigation of the uppermost aquifer in the East Corridor of Parcel B.

BP believes that further investigation of the uppermost aquifer (UMA) in the East Corridor of Parcel B is not warranted for the following reasons as discussed in further detail below:

A. The network of existing UMA wells provides adequate coverage for the East Corridor.
B. There is limited impact in the UMA wells in the vicinity of the East Corridor.
C. There appears to be hydrostratigraphic separation between the perched zone and the UMA zones, and hydraulic control is maintained for the area as required under permit.

A. There are two existing UMA wells in the East Corridor (LOD-4 and R529) in the western half and central portion of the East Corridor, and UMA Groundwater Management Zone (GMZ) boundary well G113 is located in close proximity of the eastern boundary of the East Corridor. The locations of these wells, relative to soil and perched groundwater impact identified in the May 2006 Parcel B Land Reuse Investigation Report and Closure Plan, are shown in Attachment 3-1. BP believes that the spacing of these wells across the East Corridor, along with their well monitoring interval, provides an appropriate number of monitoring locations for this area.

B. Groundwater analytical results for these three wells (LOD-4, R529 and G113) for the last five years

(2012-2016) of monitoring (which is representative of post-LNAPL removal efforts) is provided in Attachment 3-2. Groundwater quality exceedances only occurred in G113 for arsenic, and in R529 for benzene and bis(2-ethylhexyl)phthalate one time each. Arsenic is a naturally-occurring compound, and bis(2-ethylhexyl)phthalate is a common field/laboratory artifact.

C. The Parcel B Land Reuse Investigation Report and Closure Plan Dated May 2006 indicates a highly plastic clay serves as an aquitard between the perched and UMA zones in the vicinity of the East Corridor. Hydrogeologic cross-sections for the East Corridor illustrating this clay zone are shown in Attachment 3-3. A comparison of fluid levels in select perched wells and the UMA wells for the western, central, and eastern portions of the East Corridor is provided in Attachment 3-4. The groundwater levels for the perched wells are distinctly elevated above those for the UMA wells. As required by permit, UMA groundwater in the East Corridor of Parcel B is captured by COD gradient control wells at the Main Plant as shown in Attachment 3-5.

Based on the historical source removal efforts (LNAPL removal from the trench area), the existing coverage of UMA wells, the favorable groundwater analytical results for the UMA wells, and the groundwater transport and fate considerations (hydrostratigraphic separation and groundwater migration control) noted above, it is BP's opinion that the UMA groundwater quality is of limited risk to human health and the environment, and that further investigation of the UMA at the East Corridor of Parcel B is not warranted.

The Illinois EPA May 20, 2016, letter contained the following paragraph with regard to LNAPL recovery operations in Parcel B and C:

> ***4: While the facility may cease operation of the western portion of the trench within Parcel B, requirements of the January 10, 2011 Illinois EPA letter (Log No. B-145R-CA-10) remain with regards to Parcel C. This determination is based on the following:***
>
> ***a. The facility continues to detect product at wells FCSA-MW-03 and FCSA-MW-05.***
>
> ***b. The facility must still address soil and groundwater at Parcel C.***
>
> ***c. The facility must operate the east portion of the FCSA recovery trench, located at Parcel C, in accordance with the requirements found in the RCRA Permit and all previous Illinois EPA letters addressing the trench.***

The January 10, 2011, Illinois EPA letter referenced in Condition 4 above is provided in Attachment 4-1, and the FCSA layout is shown in Attachment 4-2.

BP offers the following comments, which are discussed in detail below, with regard to the continued operation of the FSCA recovery trench located at Parcel C:

A. Based on the lack of recoverable LNAPL observed in the recovery trench, it is BP's opinion that active operation of the FCSA recovery trench is not warranted.
B. BP proposes quarterly inspections and gauging of the sumps.

A. BP previously informed the Illinois EPA in quarterly Riverfront Progress Reports that the recovery trench sump (RTS) pumps located in the FCSA recovery trench had been removed in the third quarter of 2014 due to the lack of routinely observable LNAPL (last record of fluid removal for the sumps was April 17, 2013).

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A summary of the LNAPL detected in recovery trench sumps (RTS-1 to RTS-7) along with LNAPL containing wells FCSA-MW03 and FCSA-MW05 and other nearby wells since the third quarter of 2014 is provided in Attachment 4-3. LNAPL was not detected in RTS-1 to RTS-7 or the wells near FCSA-MW03 and FCSA-MW05 since the third quarter of 2014. It is concluded that a majority of the LNAPL remaining is residual and non-mobile in the soil above the UMA, such that further operation of the trench sumps is not warranted.

BP proposes to quarterly monitoring and periodic LNAPL removal through 2016 and 2017, and to provide continued updates in the 90-day progress reports. Bailing, absorbent socks, or similar means of recovering LNAPL product will continue for FCSA-MW03 and FCSA-MW05. The pumps are currently stored at the BP Main Plant for future reinstallation if conditions would warrant.

B. If BP concludes that LNAPL remediation is complete following inspections through 2017, BP will comply with the requirements of the January 10, 2011, Illinois EPA letter, and will address the groundwater corrective measures in an Investigation Report and Closure Plan. The Investigation Report and Closure Plan will address Condition 5 of the November 13, 2003, IEPA letter (Log Nos. B-145-CA20, 34, and 43) regarding groundwater. In addition, BP will also further evaluate whether perched groundwater is in hydrostratigraphic connection with the uppermost aquifer in the vicinity of Parcel C within the Land Reuse Investigation Report and Closure Plan.

If you have any comments or questions, please contact me at (312) 809-3395.

Sincerely,

Lori G. Littrell

Lori G. Littrell
Operations Project Manager, BP
Remediation Management Services Company
An affiliate of BP Products NA Inc.

Figures and Attachments

cc: Frank Akers, Mayor of the City of Wood River
Michael J. Hoffman, P.E., Amec Foster Wheeler
Andrew Kirkman, Remediation Management Services Company, An affiliate of BP Products, NA Inc.
Andrew Vikman, Amec Foster Wheeler
Scott Ziegler, Remediation Management Services Company, An affiliate of BP Products, NA Inc.

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Attachment 1

IEPA May 20, 2016, Correspondence

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-2829
BRUCE RAUNER, GOVERNOR LISA BONNETT, DIRECTOR

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MAY 25 2016
ATLANTIC RICHFIELD CO.

217/524-3300

May 20, 2016

Mr. Thomas G. Tunnicliff
Environmental Business Manager
BP Products North America Inc.
301 Evans Avenue
P.O. Box 167
Wood River, Illinois 62095

Re: 1191155009--Madison County
BP Products North America Inc/Riverfront
ILD980503106
Log No. B-145R-CA-48
Received: November 12, 2013
RCRA Permit
Permit CA

Dear Mr. Tunnicliff:

This is in response to the subject submittal dated November 7, 2013 and entitled, "Response to Condition 2, March 6, 2013 Illinois EPA Letter; and Condition 1, January 10, 2011 Illinois EPA Letter", prepared and submitted by you on behalf of the above-referenced facility. The subject submittal is provided in response to the Illinois EPA letters dated March 6, 2013 (Log No. B-145R-CA-15 and 17; regarding Parcel B), and January 10, 2011 (Log No. B-145R-CA-10; regarding the Former Channel Seep Area (FCSA)), and provides a: (1) demonstration the clay barrier within the FCSA recovery trench is effective at preventing migration of product into Parcel B; (2) request to cease activities associated with the western portion of the trench, which is located in Parcel B; and (3) request a No Further Action (NFA) letter for Parcel B perched groundwater by excluding the groundwater ingestion route in accordance with 35 Ill. Adm. Code 742.925. The subject submittal was reviewed as a request to modify the Corrective Action Program with regards to the Riverfront facility RCRA Part B Permit (Permit). Based on a technical review of the subject submittal, the submittal can be approved with the following conditions and modifications:

1. The Illinois EPA can approve the request to exclude the pathway for perched groundwater at Parcel B. The facility has demonstrated that the clay barrier is effective at preventing migration of FPH west of the barrier. As a result of this demonstration, the Illinois EPA can approve the following requests:

a. Termination of pumping from the west side of the FCSA trench, which is composed of FCSA-RC-1 and FCSA trench sumps RTS-8 through RTS-14, all of which are located west of the clay barrier; and

b. Termination of quarterly fluid level gauging from FCSA-RC-1 and FCSA trench sumps RTS-8 through RTS-14, as required by the January 10, 2011 Illinois EPA letter.

2. The facility must satisfy the restriction requirements for soils outlined in the October 22, 2009 letter (Log No. B-145-CA-69) within ninety (90) days of the date of this letter. With regards to groundwater restrictions, 35 Ill. Adm. Code 742.1015 sets forth the requirements for using ordinances as institutional controls to restrict groundwater usage in an area. Such an ordinance must effectively prohibit the installation and use of potable water supply wells.

3. Within ninety (90) days of the date of this letter, submit a workplan, for Illinois EPA review and approval, for investigation of the uppermost aquifer in the East Corridor of Parcel B.

4. While the facility may cease operation of the western portion of the trench within Parcel B, requirements of the January 10, 2011 Illinois EPA letter (Log No. B-145R-CA-10) remain with regards to Parcel C. This determination is based on the following:

   a. The facility continues to detect product at wells FCSA-MW-03 and FCSA-MW-05.

   b. The facility must still address soil and groundwater at Parcel C.

   c. The facility must operate the east portion of the FCSA recovery trench, located at Parcel C, in accordance with the requirements found in the RCRA Permit and all previous Illinois EPA letters addressing the trench.

5. The uppermost aquifer groundwater monitoring at the LOD Area must continue in accordance with the requirements found in the RCRA Permit and all previous Illinois EPA letters addressing the LOD Area.

6. The facility remains subject to the monitoring and reporting requirements as defined in previous Illinois EPA letters, unless stated otherwise above. RCRA corrective action activities carried out at the facility including off-site activities as necessary, must meet the requirements of: (1) 35 Ill. Admin. Code 724.201; (2) the facility's Permit; and (3) Illinois EPA letters regarding such activities.

7. A completed RCRA Corrective Action Certification form must accompany all submittals made to the Illinois EPA regarding RCRA corrective action activities.

Work required by this letter, your modification requests or the regulations may also be subject to other laws governing professional services, such as the Illinois Professional Land Surveyor Act of 1989, the Professional Engineering Practice Act of 1989, the Professional Geologist Licensing Act, and the Structural Engineering Licensing Act of 1989. This letter does not relieve anyone from compliance with these laws and the regulations adopted pursuant to these laws. All work that falls within the scope and definitions of these laws must be performed in compliance with them. The Illinois EPA may refer any discovered violation of these laws to the appropriate regulating authority.

Should you have any questions regarding groundwater-related matters associated with this project, please contact Amy Boley at 217524- 4716; questions regarding other aspects of this project should be directed to Jim Moore at 217/524-3295.

Sincerely,

Joyce L. Munie, P.E., Manager
Permit Section
Division of Land Pollution Control
Bureau of Land

JLM:AMB:1191155009-RCRA-B145RCA48-Approval.docx
AMB JKMB

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Figures 1 and 2:

Figure 1: Land Reuse Parcels (Riverfront Property)
Figure 2: Parcel B and C Layout

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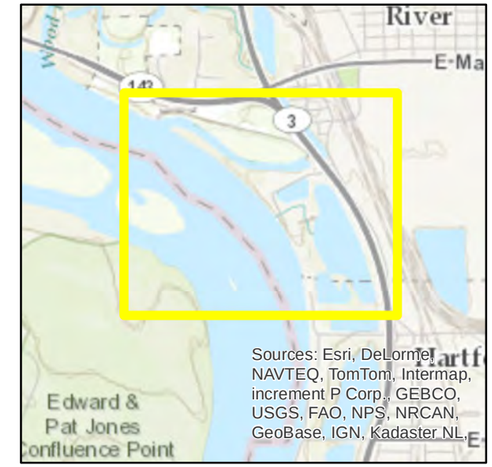

Legend

- Land Reuse Boundaries
- Parcel B
- Parcel C

Note:
Parcel ID within parentheses, i.e. (B) = Parcel B

N

500 250 0 500
Feet

FIGURE 1

LAND REUSE PARCELS
RIVERFRONT PROPERTY
BP FORMER REFINERY
WOOD RIVER, ILLINOIS

amec foster wheeler
15933 CLAYTON ROAD, SUITE 215
BALLWIN, MO 63011

bp

Job No.	242416331
Drawn By:	JLT
Reviewed By:	KDO
Date:	8/2/2016

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Path: C:\Users\jennifer.thompson\Documents\ArcGIS\Default.gdb\Transition\RF Land Reuse Parcels.mxd

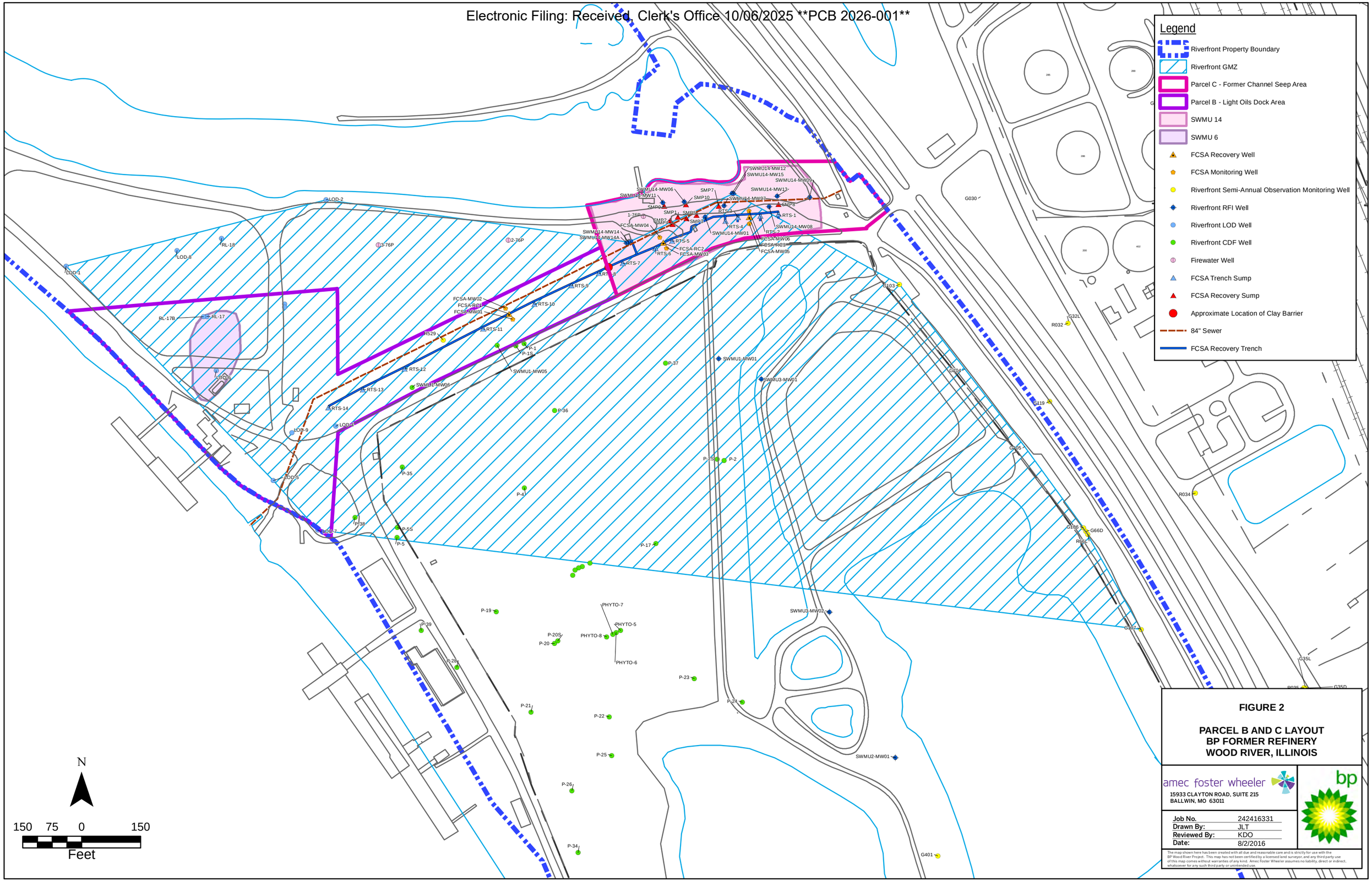

FIGURE 2

PARCEL B AND C LAYOUT
BP FORMER REFINERY
WOOD RIVER, ILLINOIS

amec foster wheeler
15933 CLAYTON ROAD, SUITE 215
BALLWIN, MO 63011

bp

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Path: C:\Users\jennifer.thompson\Documents\ArcGIS\Default.gdb\Transition\Parcel B and C Layout.mxd

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Attachment 3-1

Location of Parcel B East Corridor UMA Wells Relative to Soil and Perch Groundwater Impact Identified in the May 2006 URS Parcel B Land Reuse Investigation Report and Closure Plan

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PBBH27	4-6 ft ROs Exceeded
Benzo(a)pyrene	2.7 IC(G)

PBBH26	6-8 ft ROs Exceeded
Arsenic	22 IC(G)
Lead	1200 IC(G) CW(G)

Legend

- Uppermost Aquifer Well
- Existing Monitoring Well (With Soil Analysis)
- Biased Soil Boring (2003)
- Supplemental Soil Boring (2004)
- Previous Soil Boring with Soil Analysis
- Recovery Trench
- Sheet Pile Wall

Utility Lines

- 36" Sewer Pipe
- 4" Potable Water
- 6" Fire Water Line
- 6" Water Line
- 6" Water Line (City)
- 72" Sewer Pipe
- 84" Sewer Pipe
- Area Remediated
- Light Oils Dock Area (Parcel B)

Soil Boring	Depth (ft) ROs Exceeded
Chemical	Concentration (mg/kg)

IC: Industrial/Commercial Workers
CW: Construction Workers
G: Ingestion Route
H: Inhalation Route

Note:
Orthophotograph taken on March 8-12, 2004.
- Source: Surdex Corporation.

SOIL SAMPLES EXCEEDING TACO TIER 1 SOIL ROs FOR INDUSTRIAL/ COMMERCIAL PROPERTIES EAST CORRIDOR (PARCEL B) BP RIVERFRONT PROPERTY WOOD RIVER, ILLINOIS

amec foster wheeler
15933 CLAYTON ROAD, SUITE 215
BALLWIN, MO 63011

bp

Job No.	242416331
Drawn By:	JLT
Reviewed By:	KDO
Date:	8/4/2016

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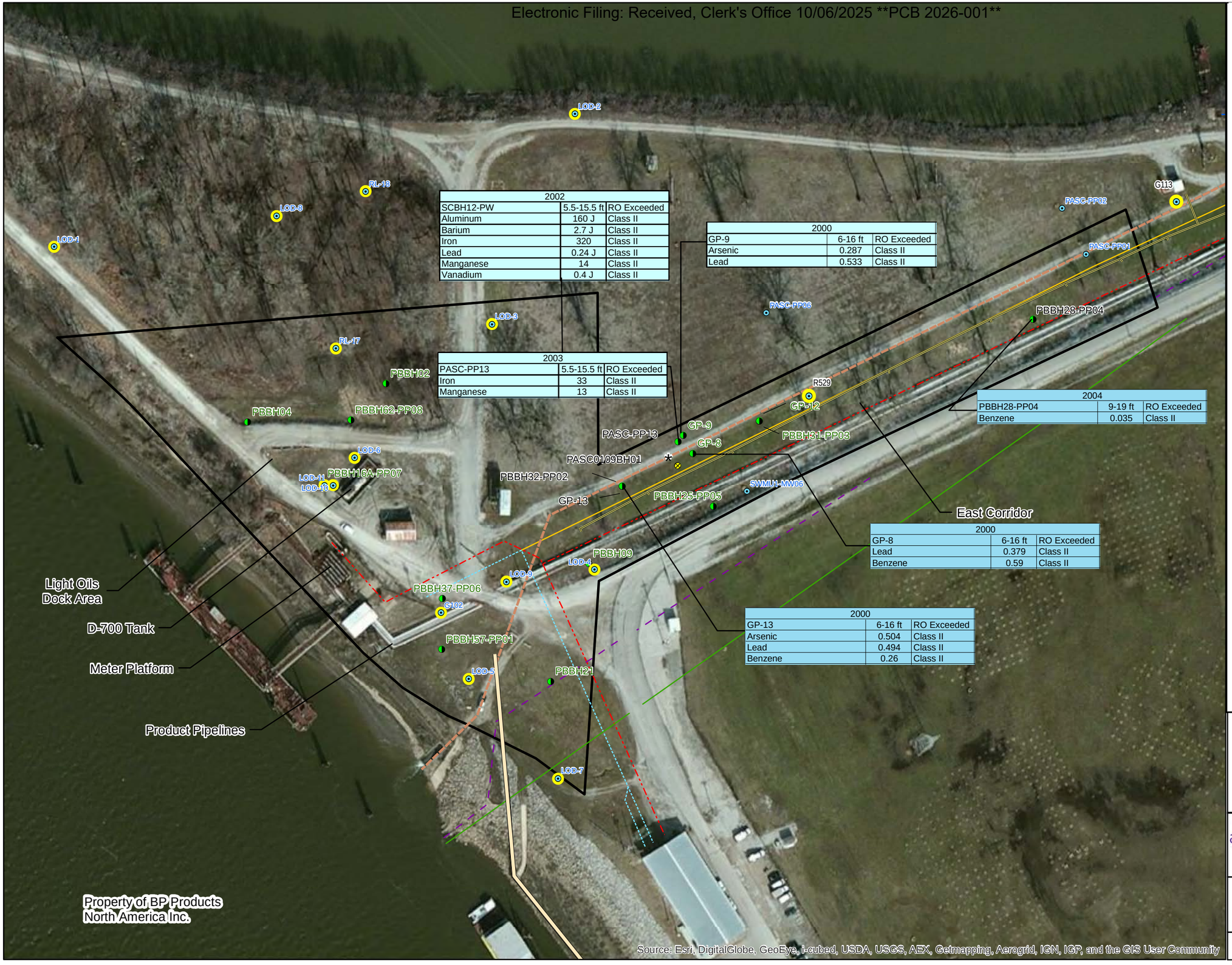

2002		
SCBH12-PW	5.5-15.5 ft	RO Exceeded
Aluminum	160 J	Class II
Barium	2.7 J	Class II
Iron	320	Class II
Lead	0.24 J	Class II
Manganese	14	Class II
Vanadium	0.4 J	Class II

2000		
GP-9	6-16 ft	RO Exceeded
Arsenic	0.287	Class II
Lead	0.533	Class II

2003		
PASC-PP13	5.5-15.5 ft	RO Exceeded
Iron	33	Class II
Manganese	13	Class II

2004		
PBBH28-PP04	9-19 ft	RO Exceeded
Benzene	0.035	Class II

2000		
GP-8	6-16 ft	RO Exceeded
Lead	0.379	Class II
Benzene	0.59	Class II

2000		
GP-13	6-16 ft	RO Exceeded
Arsenic	0.504	Class II
Lead	0.494	Class II
Benzene	0.26	Class II

Legend

- Soil Boring
- Perched Water Piezometer
- Perched Water Piezometer
- Perched Piezometer Location
- Perched Piezometer Location
- Perched Piezometer Location
- Existing Monitoring Well
- Perched Piezometer Location
- Uppermost Aquifer Well
- Recovery Trench
- Sheet Pile Wall
- 36" Sewer Pipe
- 4" Potable Water
- 6" Fire Water Line
- 6" Water Line
- 6" Water Line (City)
- 72" Sewer Pipe
- 84" Sewer Pipe
- Light Oils Dock Area (Parcel B)

YEAR SAMPLED		
LOCATION	SCREENED INTERVAL	RO EXCEEDED
CHEMICAL	RESULT	CLASS II

Note:
1. All analytical results are presented in mg/L.
2. J - Estmated concentration because the result was
* below the sample reporting limit or quality control criteria were not met.
3. - Soil boring PASC0109BH01 also identified as SCBBH01.
4. Monitoring Well SCBH12-PW was redesignated as PASC-PP13 in 2003.
5. Orthophotograph taken on March 8-12, 2004. - Source: Surdex Corporation.

PERCHED WATER EXCEEDING TIER 1 ROs FROM 2000 TO 2004 EAST CORRIDOR (PARCEL B) BP RIVERFRONT PROPERTY WOOD RIVER, ILLINOIS (REVISED MAY 2010)

amec foster wheeler
15933 CLAYTON ROAD, SUITE 215
BALLWIN, MO 63011

bp

Job No.	242416331
Drawn By:	JLT
Reviewed By:	KDO
Date:	8/4/2016

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Attachment 3-2

Groundwater Analytical Results
UMA Wells LOD-4, R529, and G113 (SWMU14-MW14A)
2012 - 2016

Parcel B (East Corridor) - UMA Well Groundwater Data (LOD-4, R529, G113) - All Results								
Location	**Date**	**Parameter**	**Flag**	**Result**	**Units**	**Fraction**	**GQS**	**Result >GQS**
G113	04/13/12	Arsenic		*0.0152*	MG/L	D	0.01	Yes
G113	04/13/12	Arsenic		*0.0159*	MG/L	T	0.01	Yes
G113	10/11/12	Arsenic		*0.0161*	MG/L	T	0.01	Yes
G113	10/11/12	Arsenic		*0.0156*	MG/L	D	0.01	Yes
G113	04/15/13	Arsenic		0.0036	MG/L	T	0.01	
G113	04/15/13	Arsenic		0.0036	MG/L	D	0.01	
G113	10/07/13	Arsenic	D9	*0.0233*	MG/L	D	0.01	Yes
G113	10/07/13	Arsenic		*0.0215*	MG/L	T	0.01	Yes
G113	04/09/14	Arsenic		*0.0147*	MG/L	D	0.01	Yes
G113	04/09/14	Arsenic		*0.0138*	MG/L	T	0.01	Yes
G113	10/21/14	Arsenic		*0.013*	MG/L	D	0.01	Yes
G113	10/21/14	Arsenic		*0.0137*	MG/L	T	0.01	Yes
G113	04/10/15	Arsenic		*0.0152*	MG/L	T	0.01	Yes
G113	04/10/15	Arsenic		*0.0142*	MG/L	D	0.01	Yes
G113	10/28/15	Arsenic	D9	*0.011*	MG/L	D	0.01	Yes
G113	10/28/15	Arsenic		*0.0102*	MG/L	T	0.01	Yes
G113	05/10/16	Arsenic		0.008	MG/L	T	0.01	
G113	05/10/16	Arsenic		0.0075	MG/L	D	0.01	
G113	04/13/12	Barium		0.545	MG/L	T	2	
G113	04/13/12	Barium		0.54	MG/L	D	2	
G113	10/11/12	Barium		0.539	MG/L	D	2	
G113	10/11/12	Barium	B	0.549	MG/L	T	2	
G113	04/15/13	Barium		0.528	MG/L	D	2	
G113	04/15/13	Barium		0.497	MG/L	T	2	
G113	10/07/13	Barium		0.154	MG/L	T	2	
G113	10/07/13	Barium	D9	0.158	MG/L	D	2	
G113	04/09/14	Barium		0.14	MG/L	T	2	
G113	04/09/14	Barium		0.145	MG/L	D	2	
G113	10/21/14	Barium		0.148	MG/L	T	2	
G113	10/21/14	Barium	D9	0.151	MG/L	D	2	
G113	04/10/15	Barium		0.141	MG/L	D	2	
G113	04/10/15	Barium		0.15	MG/L	T	2	
G113	10/28/15	Barium		0.106	MG/L	T	2	
G113	10/28/15	Barium	D9	0.107	MG/L	D	2	
G113	05/10/16	Barium		0.0827	MG/L	D	2	
G113	05/10/16	Barium		0.0901	MG/L	T	2	
G113	04/13/12	Benzene	J	0.00019	MG/L	T	0.005	
G113	10/11/12	Benzene	U	0.001	MG/L	T	0.005	
G113	04/15/13	Benzene	U	0.001	MG/L	N	0.005	
G113	10/07/13	Benzene	U	0.001	MG/L	N	0.005	
G113	04/09/14	Benzene	U	0.001	MG/L	N	0.005	
G113	10/21/14	Benzene	U	0.001	MG/L	N	0.005	
G113	04/10/15	Benzene	U	0.001	MG/L	N	0.005	
G113	10/28/15	Benzene	J	0.00012	MG/L	N	0.005	
G113	05/10/16	Benzene	U	0.001	MG/L	N	0.005	
G113	04/13/12	Benzo(b)fluoranthene	U	0.0001	MG/L	T	0.00018	
G113	10/11/12	Benzo(b)fluoranthene	U	0.0001	MG/L	T	0.00018	
G113	04/15/13	Benzo(b)fluoranthene	U	0.0001	MG/L	N	0.00018	

Parcel B (East Corridor) - UMA Well Groundwater Data (LOD-4, R529, G113) - All Results								
Location	Date	Parameter	Flag	Result	Units	Fraction	GQS	Result >GQS
G113	10/07/13	Benzo(b)fluoranthene	U	0.0001	MG/L	N	0.00018	
G113	04/09/14	Benzo(b)fluoranthene	U	0.0001	MG/L	N	0.00018	
G113	10/21/14	Benzo(b)fluoranthene	U	0.0001	MG/L	N	0.00018	
G113	04/10/15	Benzo(b)fluoranthene	U,M5	0.0001	MG/L	N	0.00018	
G113	10/28/15	Benzo(b)fluoranthene	U	0.00011	MG/L	N	0.00018	
G113	05/10/16	Benzo(b)fluoranthene	U,1e	0.0001	MG/L	N	0.00018	
G113	04/13/12	Bis(2-Ethylhexyl)phthalate	U	0.005	MG/L	T	0.006	
G113	10/11/12	Bis(2-Ethylhexyl)phthalate	U	0.005	MG/L	T	0.006	
G113	04/15/13	Bis(2-Ethylhexyl)phthalate	U	0.01	MG/L	N	0.006	Yes
G113	10/07/13	Bis(2-Ethylhexyl)phthalate	U	0.01	MG/L	N	0.006	Yes
G113	04/09/14	Bis(2-Ethylhexyl)phthalate	U	0.01	MG/L	N	0.006	Yes
G113	10/21/14	Bis(2-Ethylhexyl)phthalate	U	0.01	MG/L	N	0.006	Yes
G113	04/10/15	Bis(2-Ethylhexyl)phthalate	U	0.01	MG/L	N	0.006	Yes
G113	10/28/15	Bis(2-Ethylhexyl)phthalate	U	0.0106	MG/L	N	0.006	Yes
G113	05/10/16	Bis(2-Ethylhexyl)phthalate	U,1e	0.0103	MG/L	N	0.006	Yes
G113	04/13/12	Cadmium	U	0.0005	MG/L	D	0.005	
G113	04/13/12	Cadmium	U	0.0005	MG/L	T	0.005	
G113	10/11/12	Cadmium	U	0.0005	MG/L	T	0.005	
G113	10/11/12	Cadmium	U	0.0005	MG/L	D	0.005	
G113	04/15/13	Cadmium	U	0.0005	MG/L	T	0.005	
G113	04/15/13	Cadmium	U	0.0005	MG/L	D	0.005	
G113	10/07/13	Cadmium	U	0.0005	MG/L	D	0.005	
G113	10/07/13	Cadmium	U	0.0005	MG/L	T	0.005	
G113	04/09/14	Cadmium	U	0.0005	MG/L	D	0.005	
G113	04/09/14	Cadmium	U	0.0005	MG/L	T	0.005	
G113	10/21/14	Cadmium	U	0.0005	MG/L	D	0.005	
G113	10/21/14	Cadmium	U	0.0005	MG/L	T	0.005	
G113	04/10/15	Cadmium	U	0.0005	MG/L	T	0.005	
G113	04/10/15	Cadmium	U	0.0005	MG/L	D	0.005	
G113	10/28/15	Cadmium	U	0.0005	MG/L	D	0.005	
G113	10/28/15	Cadmium	U	0.0005	MG/L	T	0.005	
G113	05/10/16	Cadmium	U	0.0005	MG/L	T	0.005	
G113	05/10/16	Cadmium	U	0.0005	MG/L	D	0.005	
G113	04/13/12	Carbon disulfide	U	0.005	MG/L	T	0.7	
G113	10/11/12	Carbon disulfide	U	0.005	MG/L	T	0.7	
G113	04/15/13	Carbon disulfide	U	0.005	MG/L	N	0.7	
G113	10/07/13	Carbon disulfide	U	0.005	MG/L	N	0.7	
G113	04/09/14	Carbon disulfide	U	0.005	MG/L	N	0.7	
G113	10/21/14	Carbon disulfide	U	0.005	MG/L	N	0.7	
G113	04/10/15	Carbon disulfide	U	0.005	MG/L	N	0.7	
G113	10/28/15	Carbon disulfide	U	0.005	MG/L	N	0.7	
G113	05/10/16	Carbon disulfide	U	0.005	MG/L	N	0.7	
G113	04/13/12	Chrysene	U	0.0001	MG/L	T	0.012	
G113	10/11/12	Chrysene	U	0.0001	MG/L	T	0.012	
G113	04/15/13	Chrysene	U	0.0001	MG/L	N	0.012	
G113	10/07/13	Chrysene	U	0.0001	MG/L	N	0.012	
G113	04/09/14	Chrysene	U	0.0001	MG/L	N	0.012	
G113	10/21/14	Chrysene	U	0.0001	MG/L	N	0.012	

Parcel B (East Corridor) - UMA Well Groundwater Data (LOD-4, R529, G113) - All Results								
Location	Date	Parameter	Flag	Result	Units	Fraction	GQS	Result >GQS
G113	04/10/15	Chrysene	U,M5	0.0001	MG/L	N	0.012	
G113	10/28/15	Chrysene	U	0.00011	MG/L	N	0.012	
G113	05/10/16	Chrysene	U,1e	0.0001	MG/L	N	0.012	
G113	04/13/12	Ethylbenzene	JB	0.001	MG/L	T	0.7	
G113	10/11/12	Ethylbenzene	U	0.001	MG/L	T	0.7	
G113	04/15/13	Ethylbenzene	U	0.001	MG/L	N	0.7	
G113	10/07/13	Ethylbenzene	U	0.001	MG/L	N	0.7	
G113	04/09/14	Ethylbenzene	U	0.001	MG/L	N	0.7	
G113	10/21/14	Ethylbenzene	U	0.001	MG/L	N	0.7	
G113	04/10/15	Ethylbenzene	U	0.001	MG/L	N	0.7	
G113	10/28/15	Ethylbenzene	U	0.001	MG/L	N	0.7	
G113	05/10/16	Ethylbenzene	U	0.001	MG/L	N	0.7	
G113	04/13/12	Lead	J	0.00015	MG/L	T	0.0075	
G113	04/13/12	Lead	U	0.001	MG/L	D	0.0075	
G113	10/11/12	Lead	U	0.001	MG/L	D	0.0075	
G113	10/11/12	Lead	U	0.001	MG/L	T	0.0075	
G113	04/15/13	Lead	U	0.001	MG/L	T	0.0075	
G113	04/15/13	Lead	U	0.001	MG/L	D	0.0075	
G113	10/07/13	Lead	J	0.00031	MG/L	T	0.0075	
G113	10/07/13	Lead	U	0.001	MG/L	D	0.0075	
G113	04/09/14	Lead	U	0.001	MG/L	T	0.0075	
G113	04/09/14	Lead	U	0.001	MG/L	D	0.0075	
G113	10/21/14	Lead	U	0.001	MG/L	T	0.0075	
G113	10/21/14	Lead	U	0.001	MG/L	D	0.0075	
G113	04/10/15	Lead	U	0.001	MG/L	D	0.0075	
G113	04/10/15	Lead	U	0.001	MG/L	T	0.0075	
G113	10/28/15	Lead	J	0.00029	MG/L	T	0.0075	
G113	10/28/15	Lead	U	0.001	MG/L	D	0.0075	
G113	05/10/16	Lead	U	0.001	MG/L	D	0.0075	
G113	05/10/16	Lead	J,B	0.00034	MG/L	T	0.0075	
G113	04/13/12	Methyl Tertbutyl Ether		0.0169	MG/L	T	0.07	
G113	10/11/12	Methyl Tertbutyl Ether		0.0202	MG/L	T	0.07	
G113	04/15/13	Methyl Tertbutyl Ether		0.0082	MG/L	N	0.07	
G113	10/07/13	Methyl Tertbutyl Ether	J	0.0009	MG/L	N	0.07	
G113	04/09/14	Methyl Tertbutyl Ether		0.004	MG/L	N	0.07	
G113	10/21/14	Methyl Tertbutyl Ether		0.0042	MG/L	N	0.07	
G113	04/10/15	Methyl Tertbutyl Ether		0.0081	MG/L	N	0.07	
G113	10/28/15	Methyl Tertbutyl Ether		0.0027	MG/L	N	0.07	
G113	05/10/16	Methyl Tertbutyl Ether	J	0.00094	MG/L	N	0.07	
G113	04/13/12	Toluene	JB	0.001	MG/L	T	1	
G113	10/11/12	Toluene	U	0.001	MG/L	T	1	
G113	04/15/13	Toluene	U	0.001	MG/L	N	1	
G113	10/07/13	Toluene	J	0.00031	MG/L	N	1	
G113	04/09/14	Toluene	U	0.001	MG/L	N	1	
G113	10/21/14	Toluene	U	0.001	MG/L	N	1	
G113	04/10/15	Toluene	U	0.001	MG/L	N	1	
G113	10/28/15	Toluene	U	0.001	MG/L	N	1	
G113	05/10/16	Toluene	U	0.001	MG/L	N	1	

Parcel B (East Corridor) - UMA Well Groundwater Data (LOD-4, R529, G113) - All Results								
Location	Date	Parameter	Flag	Result	Units	Fraction	GQS	Result >GQS
G113	04/13/12	Xylenes, Total	U	0.003	MG/L	T	10	
G113	10/11/12	Xylenes, Total	U	0.003	MG/L	T	10	
G113	04/15/13	Xylenes, Total	U	0.003	MG/L	N	10	
G113	10/07/13	Xylenes, Total	U	0.003	MG/L	N	10	
G113	04/09/14	Xylenes, Total	U	0.003	MG/L	N	10	
G113	10/21/14	Xylenes, Total	U	0.003	MG/L	N	10	
G113	04/10/15	Xylenes, Total	U	0.003	MG/L	N	10	
G113	10/28/15	Xylenes, Total	U	0.003	MG/L	N	10	
G113	05/10/16	Xylenes, Total	U	0.003	MG/L	N	10	
LOD-4	04/27/12	Arsenic		0.0014	MG/L	T	0.01	
LOD-4	04/27/12	Arsenic	J	0.00094	MG/L	D	0.01	
LOD-4	10/23/12	Arsenic	J	0.00064	MG/L	T	0.01	
LOD-4	10/23/12	Arsenic	J	0.00057	MG/L	D	0.01	
LOD-4	04/23/14	Arsenic	J	0.00049	MG/L	D	0.01	
LOD-4	04/23/14	Arsenic	U	0.001	MG/L	T	0.01	
LOD-4	11/05/14	Arsenic	J	0.00064	MG/L	T	0.01	
LOD-4	11/05/14	Arsenic	J	0.00068	MG/L	D	0.01	
LOD-4	04/27/12	Benzene	U	0.001	MG/L	T	0.005	
LOD-4	10/23/12	Benzene	J	0.00011	MG/L	T	0.005	
LOD-4	04/23/14	Benzene	U	0.001	MG/L	N	0.005	
LOD-4	11/05/14	Benzene	J	0.00058	MG/L	N	0.005	
LOD-4	04/27/12	Ethylbenzene	U	0.001	MG/L	T	0.7	
LOD-4	10/23/12	Ethylbenzene	U	0.001	MG/L	T	0.7	
LOD-4	04/23/14	Ethylbenzene	U	0.001	MG/L	N	0.7	
LOD-4	11/05/14	Ethylbenzene	U	0.001	MG/L	N	0.7	
LOD-4	04/27/12	Lead	JB	0.001	MG/L	D	0.0075	
LOD-4	04/27/12	Lead	JB	0.001	MG/L	T	0.0075	
LOD-4	10/23/12	Lead	JB	0.00018	MG/L	D	0.0075	
LOD-4	10/23/12	Lead	U	0.001	MG/L	T	0.0075	
LOD-4	04/23/14	Lead	U	0.001	MG/L	T	0.0075	
LOD-4	04/23/14	Lead	U	0.001	MG/L	D	0.0075	
LOD-4	11/05/14	Lead	U	0.001	MG/L	T	0.0075	
LOD-4	11/05/14	Lead	U	0.001	MG/L	D	0.0075	
LOD-4	04/27/12	Methyl Tertbutyl Ether		0.0052	MG/L	T	0.07	
LOD-4	10/23/12	Methyl Tertbutyl Ether		0.0022	MG/L	T	0.07	
LOD-4	04/23/14	Methyl Tertbutyl Ether		0.001	MG/L	N	0.07	
LOD-4	11/05/14	Methyl Tertbutyl Ether		0.0014	MG/L	N	0.07	
LOD-4	04/27/12	Toluene	U	0.001	MG/L	T	1	
LOD-4	10/23/12	Toluene	U	0.001	MG/L	T	1	
LOD-4	04/23/14	Toluene	U	0.001	MG/L	N	1	
LOD-4	11/05/14	Toluene	U	0.001	MG/L	N	1	
LOD-4	04/27/12	Xylenes, Total	U	0.003	MG/L	T	10	
LOD-4	10/23/12	Xylenes, Total	U	0.003	MG/L	T	10	
LOD-4	04/23/14	Xylenes, Total	U	0.003	MG/L	N	10	
LOD-4	11/05/14	Xylenes, Total	U	0.003	MG/L	N	10	
R529	04/13/12	Arsenic		0.0042	MG/L	D	0.01	
R529	04/13/12	Arsenic		0.0042	MG/L	T	0.01	
R529	04/13/12	Arsenic		0.0041	MG/L	D	0.01	

Parcel B (East Corridor) - UMA Well Groundwater Data (LOD-4, R529, G113) - All Results								
Location	**Date**	**Parameter**	**Flag**	**Result**	**Units**	**Fraction**	**GQS**	**Result >GQS**
R529	04/13/12	Arsenic		0.0041	MG/L	T	0.01	
R529	10/10/12	Arsenic		0.0048	MG/L	T	0.01	
R529	10/10/12	Arsenic		0.0045	MG/L	D	0.01	
R529	10/10/12	Arsenic		0.0046	MG/L	T	0.01	
R529	10/10/12	Arsenic		0.0044	MG/L	D	0.01	
R529	04/15/13	Arsenic		0.004	MG/L	D	0.01	
R529	04/15/13	Arsenic		0.0039	MG/L	T	0.01	
R529	10/08/13	Arsenic		0.0037	MG/L	D	0.01	
R529	10/08/13	Arsenic		0.004	MG/L	T	0.01	
R529	04/14/14	Arsenic	D9	0.0047	MG/L	D	0.01	
R529	04/14/14	Arsenic		0.0044	MG/L	T	0.01	
R529	10/16/14	Arsenic		0.0046	MG/L	T	0.01	
R529	10/16/14	Arsenic		0.0042	MG/L	D	0.01	
R529	04/06/15	Arsenic		0.0048	MG/L	T	0.01	
R529	04/06/15	Arsenic	D9	0.0049	MG/L	D	0.01	
R529	10/26/15	Arsenic		0.0072	MG/L	T	0.01	
R529	10/26/15	Arsenic		0.0072	MG/L	D	0.01	
R529	05/11/16	Arsenic	D9	0.0043	MG/L	D	0.01	
R529	05/11/16	Arsenic		0.0041	MG/L	T	0.01	
R529	04/13/12	Barium		0.567	MG/L	T	2	
R529	04/13/12	Barium		0.562	MG/L	T	2	
R529	04/13/12	Barium		0.539	MG/L	D	2	
R529	04/13/12	Barium		0.549	MG/L	D	2	
R529	10/10/12	Barium		0.577	MG/L	D	2	
R529	10/10/12	Barium	B	0.598	MG/L	T	2	
R529	10/10/12	Barium		0.6	MG/L	D	2	
R529	10/10/12	Barium	B	0.605	MG/L	T	2	
R529	04/15/13	Barium		0.547	MG/L	T	2	
R529	04/15/13	Barium		0.564	MG/L	D	2	
R529	10/08/13	Barium		0.65	MG/L	T	2	
R529	10/08/13	Barium		0.635	MG/L	D	2	
R529	04/14/14	Barium		0.846	MG/L	T	2	
R529	04/14/14	Barium		0.74	MG/L	D	2	
R529	10/16/14	Barium		0.593	MG/L	D	2	
R529	10/16/14	Barium		0.601	MG/L	T	2	
R529	04/06/15	Barium	D9	0.64	MG/L	D	2	
R529	04/06/15	Barium		0.61	MG/L	T	2	
R529	10/26/15	Barium	D9	0.217	MG/L	D	2	
R529	10/26/15	Barium		0.198	MG/L	T	2	
R529	05/11/16	Barium		0.224	MG/L	T	2	
R529	05/11/16	Barium	D9	0.228	MG/L	D	2	
R529	04/13/12	Benzene	J	0.00014	MG/L	T	0.005	
R529	04/13/12	Benzene	U	0.001	MG/L	T	0.005	
R529	10/10/12	Benzene	U	0.001	MG/L	T	0.005	
R529	10/10/12	Benzene	U	0.001	MG/L	T	0.005	
R529	04/15/13	Benzene	U	0.001	MG/L	N	0.005	
R529	10/08/13	Benzene		*0.0246*	MG/L	N	0.005	Yes
R529	04/14/14	Benzene		0.0012	MG/L	N	0.005	

Parcel B (East Corridor) - UMA Well Groundwater Data (LOD-4, R529, G113) - All Results								
Location	**Date**	**Parameter**	**Flag**	**Result**	**Units**	**Fraction**	**GQS**	**Result >GQS**
R529	10/16/14	Benzene	U	0.001	MG/L	N	0.005	
R529	04/06/15	Benzene	U	0.001	MG/L	N	0.005	
R529	10/26/15	Benzene	J	0.00014	MG/L	N	0.005	
R529	05/11/16	Benzene	U	0.001	MG/L	N	0.005	
R529	04/13/12	Benzo(b)fluoranthene	U	0.0001	MG/L	T	0.00018	
R529	04/13/12	Benzo(b)fluoranthene	U	0.0001	MG/L	T	0.00018	
R529	10/10/12	Benzo(b)fluoranthene	U	0.0001	MG/L	T	0.00018	
R529	10/10/12	Benzo(b)fluoranthene	U	0.00011	MG/L	T	0.00018	
R529	04/15/13	Benzo(b)fluoranthene	U	0.0001	MG/L	N	0.00018	
R529	10/08/13	Benzo(b)fluoranthene	U	0.0001	MG/L	N	0.00018	
R529	04/14/14	Benzo(b)fluoranthene	U	0.0001	MG/L	N	0.00018	
R529	10/16/14	Benzo(b)fluoranthene	U	0.0001	MG/L	N	0.00018	
R529	04/06/15	Benzo(b)fluoranthene	U	0.0001	MG/L	N	0.00018	
R529	10/26/15	Benzo(b)fluoranthene	J	0.000018	MG/L	N	0.00018	
R529	05/11/16	Benzo(b)fluoranthene	U	0.0001	MG/L	N	0.00018	
R529	04/13/12	Bis(2-Ethylhexyl)phthalate	U	0.005	MG/L	T	0.006	
R529	04/13/12	Bis(2-Ethylhexyl)phthalate	U	0.005	MG/L	T	0.006	
R529	10/10/12	Bis(2-Ethylhexyl)phthalate	U	0.005	MG/L	T	0.006	
R529	10/10/12	Bis(2-Ethylhexyl)phthalate	U	0.0054	MG/L	T	0.006	
R529	04/15/13	Bis(2-Ethylhexyl)phthalate	U	0.01	MG/L	N	0.006	Yes
R529	10/08/13	Bis(2-Ethylhexyl)phthalate	U	0.01	MG/L	N	0.006	Yes
R529	04/14/14	Bis(2-Ethylhexyl)phthalate	U	0.01	MG/L	N	0.006	Yes
R529	10/16/14	Bis(2-Ethylhexyl)phthalate	U	0.01	MG/L	N	0.006	Yes
R529	04/06/15	Bis(2-Ethylhexyl)phthalate	U	0.01	MG/L	N	0.006	Yes
R529	10/26/15	Bis(2-Ethylhexyl)phthalate	J	*0.0085*	MG/L	N	0.006	Yes
R529	05/11/16	Bis(2-Ethylhexyl)phthalate	J	0.0024	MG/L	N	0.006	
R529	04/13/12	Cadmium	U	0.0005	MG/L	D	0.005	
R529	04/13/12	Cadmium	U	0.0005	MG/L	D	0.005	
R529	04/13/12	Cadmium	U	0.0005	MG/L	T	0.005	
R529	04/13/12	Cadmium	U	0.0005	MG/L	T	0.005	
R529	10/10/12	Cadmium	U	0.0005	MG/L	T	0.005	
R529	10/10/12	Cadmium	U	0.0005	MG/L	D	0.005	
R529	10/10/12	Cadmium	U	0.0005	MG/L	T	0.005	
R529	10/10/12	Cadmium	U	0.0005	MG/L	D	0.005	
R529	04/15/13	Cadmium	U	0.0005	MG/L	D	0.005	
R529	04/15/13	Cadmium	U	0.0005	MG/L	T	0.005	
R529	10/08/13	Cadmium	U	0.0005	MG/L	D	0.005	
R529	10/08/13	Cadmium	U	0.0005	MG/L	T	0.005	
R529	04/14/14	Cadmium	U	0.0005	MG/L	D	0.005	
R529	04/14/14	Cadmium	U	0.0005	MG/L	T	0.005	
R529	10/16/14	Cadmium	U	0.0005	MG/L	T	0.005	
R529	10/16/14	Cadmium	U	0.0005	MG/L	D	0.005	
R529	04/06/15	Cadmium	U	0.0005	MG/L	T	0.005	
R529	04/06/15	Cadmium	U	0.0005	MG/L	D	0.005	
R529	10/26/15	Cadmium	U	0.0005	MG/L	T	0.005	
R529	10/26/15	Cadmium	J	0.00011	MG/L	D	0.005	
R529	05/11/16	Cadmium	U	0.0005	MG/L	D	0.005	
R529	05/11/16	Cadmium	U	0.0005	MG/L	T	0.005	

Parcel B (East Corridor) - UMA Well Groundwater Data (LOD-4, R529, G113) - All Results								
Location	Date	Parameter	Flag	Result	Units	Fraction	GQS	Result >GQS
R529	04/13/12	Carbon disulfide	U	0.005	MG/L	T	0.7	
R529	04/13/12	Carbon disulfide	U	0.005	MG/L	T	0.7	
R529	10/10/12	Carbon disulfide	U	0.005	MG/L	T	0.7	
R529	10/10/12	Carbon disulfide	U	0.005	MG/L	T	0.7	
R529	04/15/13	Carbon disulfide	U	0.005	MG/L	N	0.7	
R529	10/08/13	Carbon disulfide	U	0.005	MG/L	N	0.7	
R529	04/14/14	Carbon disulfide	U	0.005	MG/L	N	0.7	
R529	10/16/14	Carbon disulfide	U	0.005	MG/L	N	0.7	
R529	04/06/15	Carbon disulfide	U	0.005	MG/L	N	0.7	
R529	10/26/15	Carbon disulfide	U	0.005	MG/L	N	0.7	
R529	05/11/16	Carbon disulfide	U	0.005	MG/L	N	0.7	
R529	04/13/12	Chrysene	U	0.0001	MG/L	T	0.012	
R529	04/13/12	Chrysene	U	0.0001	MG/L	T	0.012	
R529	10/10/12	Chrysene	U	0.00011	MG/L	T	0.012	
R529	10/10/12	Chrysene	U	0.0001	MG/L	T	0.012	
R529	04/15/13	Chrysene	U	0.0001	MG/L	N	0.012	
R529	10/08/13	Chrysene	U	0.0001	MG/L	N	0.012	
R529	04/14/14	Chrysene	U	0.0001	MG/L	N	0.012	
R529	10/16/14	Chrysene	U	0.0001	MG/L	N	0.012	
R529	04/06/15	Chrysene	U	0.0001	MG/L	N	0.012	
R529	10/26/15	Chrysene	J,B	0.00002	MG/L	N	0.012	
R529	05/11/16	Chrysene	U	0.0001	MG/L	N	0.012	
R529	04/13/12	Ethylbenzene	J	0.001	MG/L	T	0.7	
R529	04/13/12	Ethylbenzene	JB	0.001	MG/L	T	0.7	
R529	10/10/12	Ethylbenzene	U	0.001	MG/L	T	0.7	
R529	10/10/12	Ethylbenzene	U	0.001	MG/L	T	0.7	
R529	04/15/13	Ethylbenzene	U	0.001	MG/L	N	0.7	
R529	10/08/13	Ethylbenzene	J	0.00039	MG/L	N	0.7	
R529	04/14/14	Ethylbenzene	U	0.001	MG/L	N	0.7	
R529	10/16/14	Ethylbenzene	U	0.001	MG/L	N	0.7	
R529	04/06/15	Ethylbenzene	U	0.001	MG/L	N	0.7	
R529	10/26/15	Ethylbenzene	U	0.001	MG/L	N	0.7	
R529	05/11/16	Ethylbenzene	U	0.001	MG/L	N	0.7	
R529	04/13/12	Lead	J	0.000077	MG/L	T	0.0075	
R529	04/13/12	Lead	U	0.001	MG/L	D	0.0075	
R529	04/13/12	Lead	J	0.000087	MG/L	T	0.0075	
R529	04/13/12	Lead	U	0.001	MG/L	D	0.0075	
R529	10/10/12	Lead	U	0.001	MG/L	D	0.0075	
R529	10/10/12	Lead	U	0.001	MG/L	T	0.0075	
R529	10/10/12	Lead	U	0.001	MG/L	D	0.0075	
R529	10/10/12	Lead	U	0.001	MG/L	T	0.0075	
R529	04/15/13	Lead	J	0.00066	MG/L	T	0.0075	
R529	04/15/13	Lead	J	0.000043	MG/L	D	0.0075	
R529	10/08/13	Lead	J	0.000041	MG/L	T	0.0075	
R529	10/08/13	Lead	U	0.001	MG/L	D	0.0075	
R529	04/14/14	Lead	U	0.001	MG/L	T	0.0075	
R529	04/14/14	Lead	U	0.001	MG/L	D	0.0075	
R529	10/16/14	Lead	U	0.001	MG/L	D	0.0075	

Parcel B (East Corridor) - UMA Well Groundwater Data (LOD-4, R529, G113) - All Results								
Location	**Date**	**Parameter**	**Flag**	**Result**	**Units**	**Fraction**	**GQS**	**Result >GQS**
R529	10/16/14	Lead	U	0.001	MG/L	T	0.0075	
R529	04/06/15	Lead	U	0.001	MG/L	D	0.0075	
R529	04/06/15	Lead	U	0.001	MG/L	T	0.0075	
R529	10/26/15	Lead	U	0.001	MG/L	D	0.0075	
R529	10/26/15	Lead	J,B	0.00058	MG/L	T	0.0075	
R529	05/11/16	Lead	J	0.00024	MG/L	T	0.0075	
R529	05/11/16	Lead	U	0.001	MG/L	D	0.0075	
R529	04/13/12	Methyl Tertbutyl Ether		0.0186	MG/L	T	0.07	
R529	04/13/12	Methyl Tertbutyl Ether		0.0206	MG/L	T	0.07	
R529	10/10/12	Methyl Tertbutyl Ether		0.0136	MG/L	T	0.07	
R529	10/10/12	Methyl Tertbutyl Ether		0.0136	MG/L	T	0.07	
R529	04/15/13	Methyl Tertbutyl Ether		0.0098	MG/L	N	0.07	
R529	10/08/13	Methyl Tertbutyl Ether		0.008	MG/L	N	0.07	
R529	04/14/14	Methyl Tertbutyl Ether		0.0155	MG/L	N	0.07	
R529	10/16/14	Methyl Tertbutyl Ether		0.0073	MG/L	N	0.07	
R529	04/06/15	Methyl Tertbutyl Ether		0.0136	MG/L	N	0.07	
R529	10/26/15	Methyl Tertbutyl Ether		0.0039	MG/L	N	0.07	
R529	05/11/16	Methyl Tertbutyl Ether		0.0052	MG/L	N	0.07	
R529	04/13/12	Toluene	JB	0.001	MG/L	T	1	
R529	04/13/12	Toluene	J	0.001	MG/L	T	1	
R529	10/10/12	Toluene	U	0.001	MG/L	T	1	
R529	10/10/12	Toluene	U	0.001	MG/L	T	1	
R529	04/15/13	Toluene	U	0.001	MG/L	N	1	
R529	10/08/13	Toluene		0.0025	MG/L	N	1	
R529	04/14/14	Toluene	J	0.00037	MG/L	N	1	
R529	10/16/14	Toluene	U	0.001	MG/L	N	1	
R529	04/06/15	Toluene	U	0.001	MG/L	N	1	
R529	10/26/15	Toluene	J	0.00024	MG/L	N	1	
R529	05/11/16	Toluene	J	0.00026	MG/L	N	1	
R529	04/13/12	Xylenes, Total	U	0.003	MG/L	T	10	
R529	04/13/12	Xylenes, Total	U	0.003	MG/L	T	10	
R529	10/10/12	Xylenes, Total	U	0.003	MG/L	T	10	
R529	10/10/12	Xylenes, Total	U	0.003	MG/L	T	10	
R529	04/15/13	Xylenes, Total	U	0.003	MG/L	N	10	
R529	10/08/13	Xylenes, Total		0.0045	MG/L	N	10	
R529	04/14/14	Xylenes, Total	U	0.003	MG/L	N	10	
R529	10/16/14	Xylenes, Total	U	0.003	MG/L	N	10	
R529	04/06/15	Xylenes, Total	U	0.003	MG/L	N	10	
R529	10/26/15	Xylenes, Total	U	0.003	MG/L	N	10	
R529	05/11/16	Xylenes, Total	U	0.003	MG/L	N	10	

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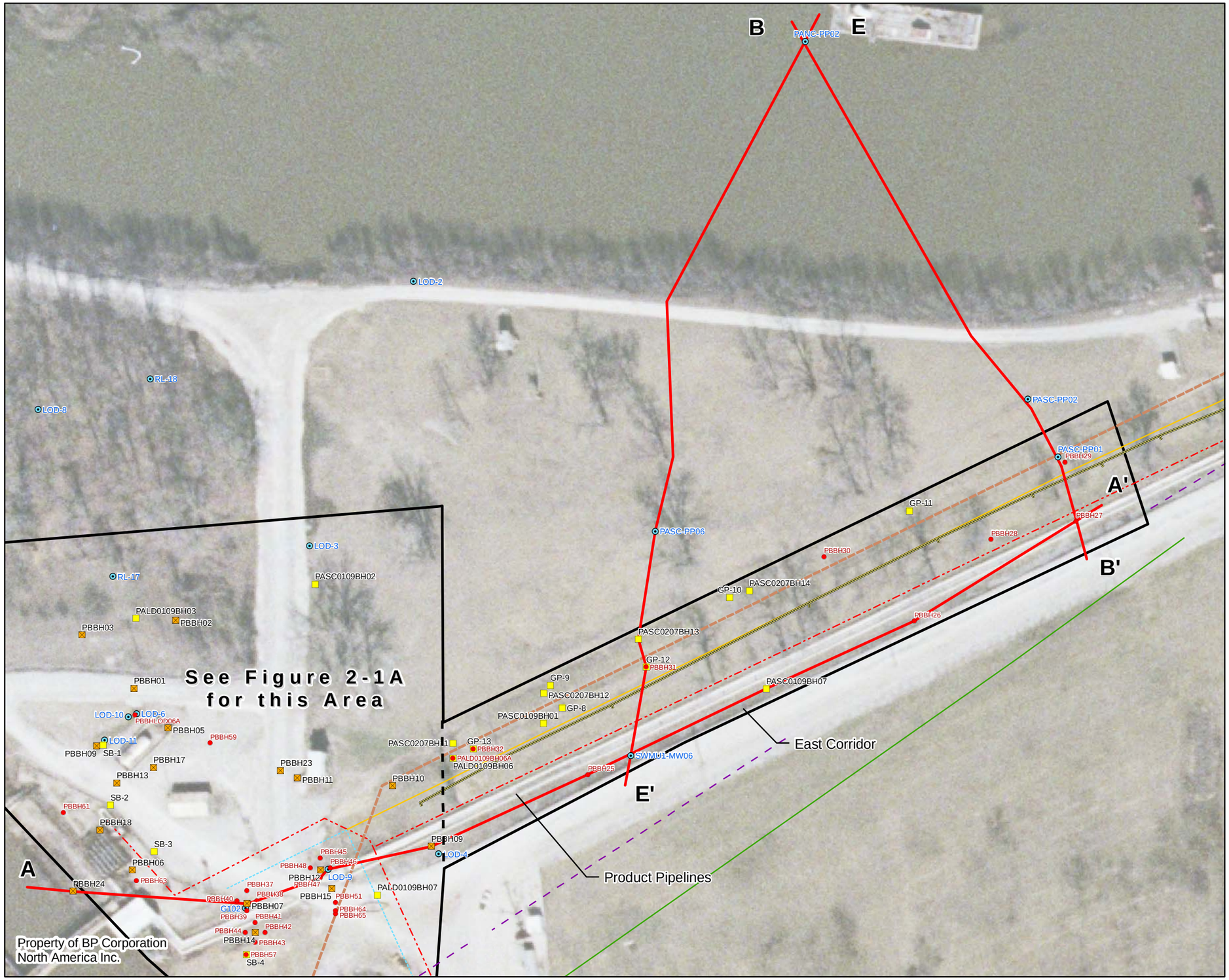
Attachment 3-3

Hydrogeologic Cross Sections for the East Corridor of Parcel B



N

50 25 0 50

Feet

1 inch equals 100 feet

Legend

- Existing Monitoring Well (With Soil Analysis)
- Biased Soil Boring (2003)
- Supplemental Soil Boring (2004)
- Previous Soil Boring with Soil Analysis
- Recovery Trench
- Sheet Pile Wall
- Cross Section Location
- Light Oils Dock Area (Parcel B)

Utility Lines

- 36" Sewer Pipe
- 4" Potable Water
- 6" Fire Water Line
- 6" Water Line
- 6" Water Line (City)
- 72" Sewer Pipe
- 84" Sewer Pipe

Note:
Orthophotograph taken on March 8-12, 2004.
- Source: Surdex Corporation.

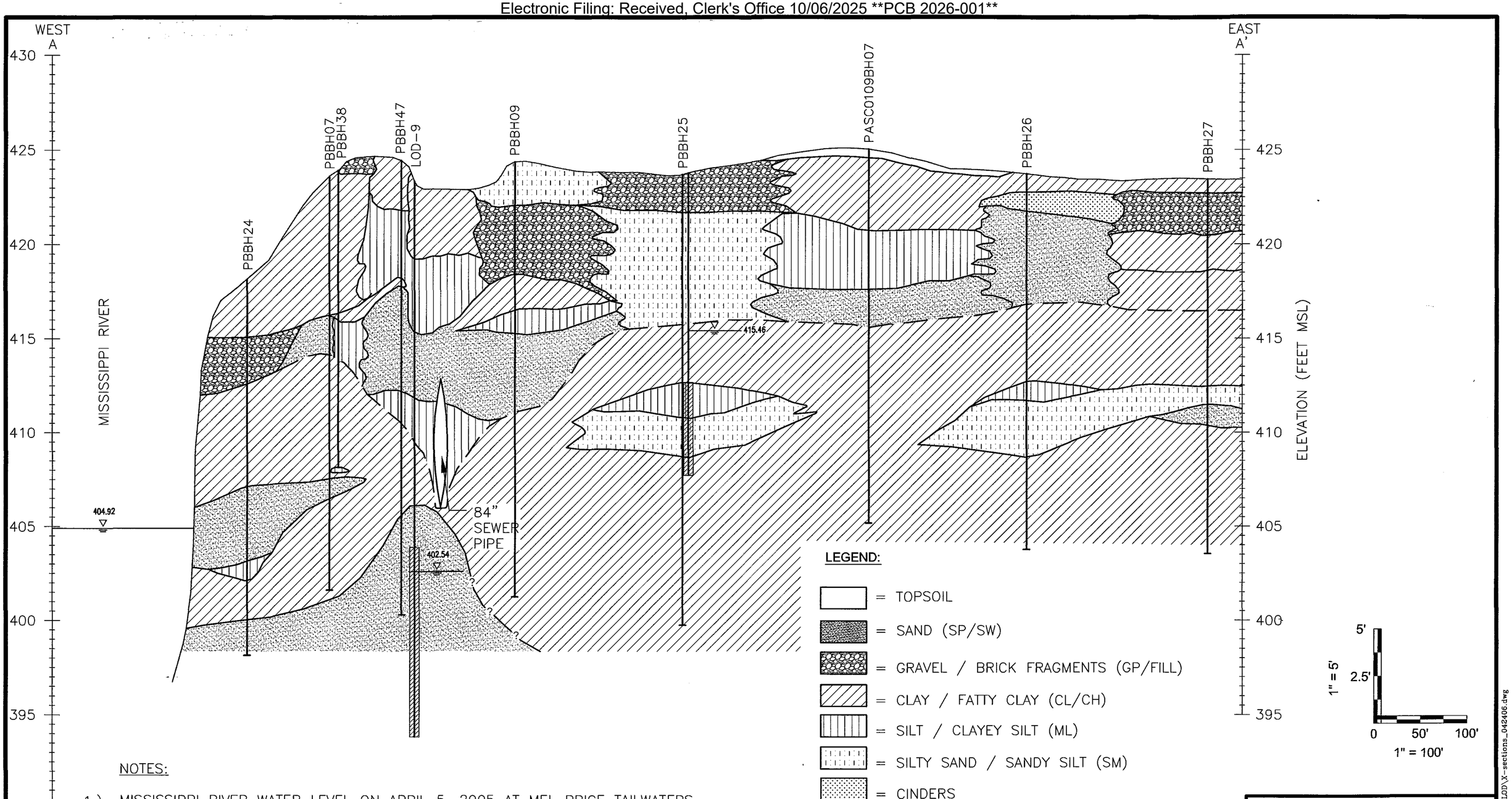
O:\DELIVERABLES_LIBRARY\BP\WOOD_RIVER\RIVERFRONT\PARCELB\REPORT\FIG4-1B.PDF

URS 100 South Wacker Drive Suite 500 Chicago, Illinois 60606

CROSS SECTION LOCATION MAP
EAST CORRIDOR (PARCEL B)
BP RIVERFRONT PROPERTY
WOOD RIVER, ILLINOIS

DESIGN: EF	CHK'D: LV	PROJECT NO.	FIG NO.
DRAWN: MDC	DATE: 5/1/06	25365030	4-1B

O:_PROJECTS_(APR-MXD)_A-F\BP\WOOD_RIVER\RIVERFRONT\PARCEL_B\RF_PARCELB_FIG4-1B.MXD



NOTES:

1.) MISSISSIPPI RIVER WATER LEVEL ON APRIL 5, 2005 AT MEL PRICE TAILWATERS PROVIDED BY THE USACE.

2.) THE EXCAVATION WIDTHS FOR ALL SEWERS ARE UNKNOWN.

3.) THE WELL DISPLAYED AT PBBH25 WAS A TEMPORARY 3/4" ID PREPACK SCREEN, INSTALLED DIRECTLY NEXT TO THE LOGGED BOREHOLE USING GEOPROBE DIRECT PUSH TECHNOLOGY.

4.) GROUNDWATER LEVELS FOR LOD-9 AND PBBH25 WERE MEASURED ON APRIL 5, 2005 AND DECEMBER 10, 2004, RESPECTIVELY.

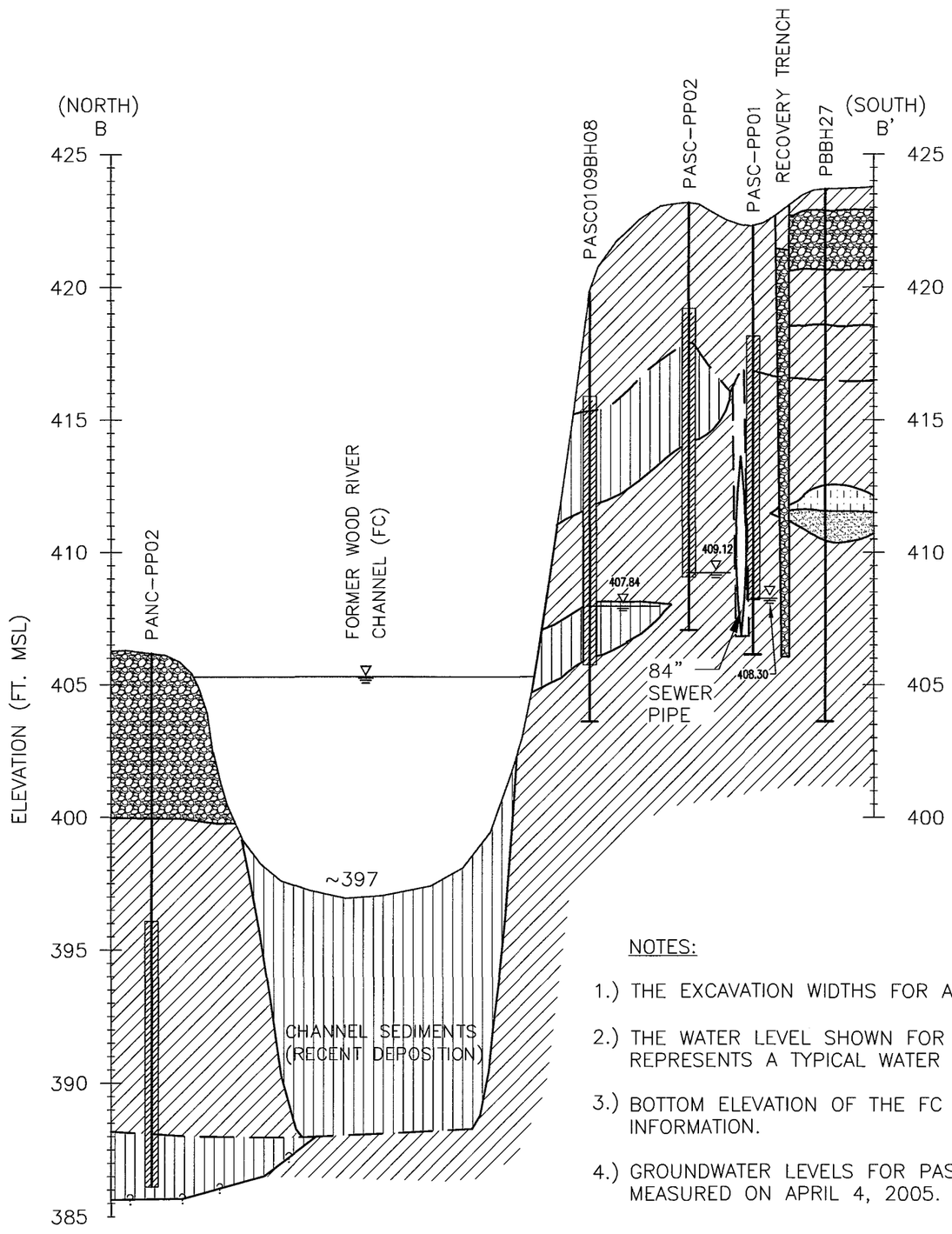
PARCEL B
BP RIVERFRONT PROPERTY
WOOD RIVER, ILLINOIS

FIGURE 4-2
CROSS-SECTION A-A'

DATE: MAY 19 2006	
JOB NO.: 25365451	
DRAWN BY: BKR	CHK'D BY: SC
SCALE: AS SHOWN	

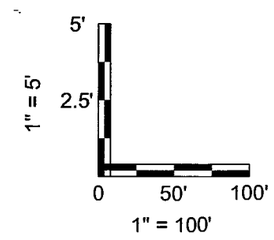
URS
100 S. WACKER DRIVE, SUITE 500
CHICAGO, ILLINOIS 60606
PHONE: 312.939.1000
FAX: 312.939.4198

I:_CAD_dwg\25365451 – BPWR Riverfront LOD\X-sections_042406.dwg



LEGEND:

- = SAND (SP/SW)
- = GRAVEL / BRICK FRAGMENTS (GP/FILL)
- = CLAY / FATTY CLAY (CL/CH)
- = SILT / CLAYEY SILT (ML)
- = SILTY SAND / SANDY SILT (SM)
- = CINDERS
- = WELL SCREEN
- 400.38 = GROUNDWATER LEVEL
- = INFERRED CONTACT – FILL/NATIVE MATERIALS
- ?—?— = GEOLOGIC CONTACT UNKNOWN



NOTES:

1.) THE EXCAVATION WIDTHS FOR ALL SEWERS ARE UNKNOWN.

2.) THE WATER LEVEL SHOWN FOR THE FORMER WOOD RIVER CHANNEL (FC) REPRESENTS A TYPICAL WATER LEVEL OF APPROXIMATLY 405 FEET MSL

3.) BOTTOM ELEVATION OF THE FC DEFINED USING STAFF GAUGE AND BORING INFORMATION.

4.) GROUNDWATER LEVELS FOR PASC-PP08, PASC-PP02, PASC-PP01 WERE MEASURED ON APRIL 4, 2005.

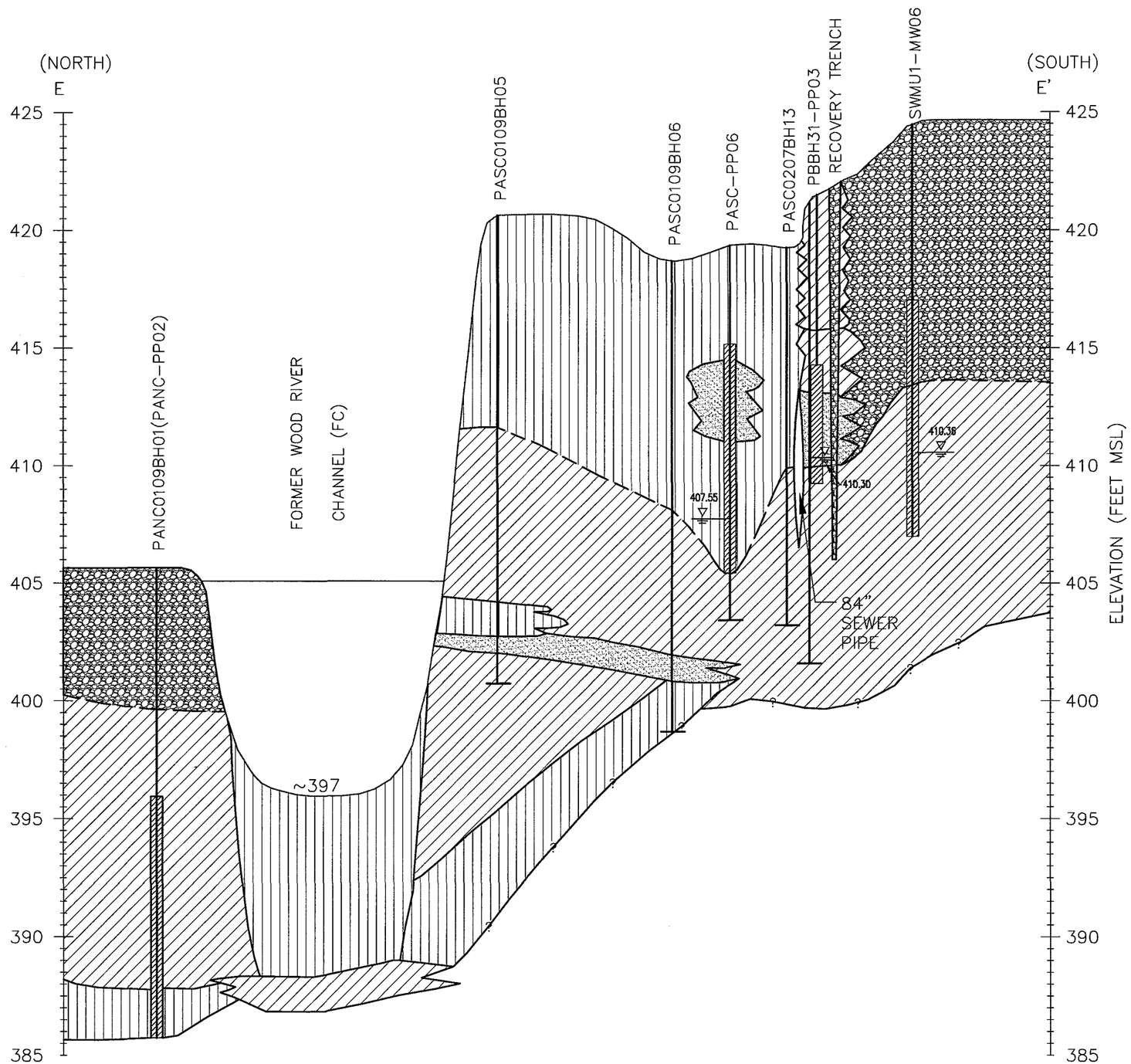
PARCEL B
BP RIVERFRONT PROPERTY
WOOD RIVER, ILLINOIS

FIGURE 4-3
CROSS-SECTION B-B'

DATE: MAY 19, 2006	
JOB NO.: 25365451	
DRAWN BY: BKR	CHK'D BY: SC
SCALE: AS SHOWN	

URS
100 S. WACKER DRIVE, SUITE 500
CHICAGO, ILLINOIS 60606
PHONE: 312.939.1000
FAX: 312.939.4198

I:_CAD_dwg\25365451 - BPWR Riverfront LOD\X-sections_042406.dwg



LEGEND:

= SAND (SP/SW)

= GRAVEL / BRICK FRAGMENTS (GP/FILL)

= CLAY / FATTY CLAY (CL/CH)

= SILT / CLAYEY-SILT (ML)

= WELL SCREEN

400.38 = GROUNDWATER LEVEL

= INFERRED CONTACT-FILL/NATIVE MATERIAL

= GEOLOGIC CONTACT UNKNOWN

NOTES:

1.) THE EXCAVATION WIDTHS FOR ALL SEWERS ARE UNKNOWN.

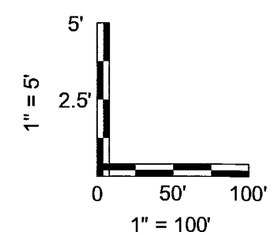
2.) THE WATER LEVEL SHOWN FOR THE FORMER WOOD RIVER CHANNEL (FC) REPRESENTS A TYPICAL WATER LEVEL OF APPROXIMATELY 405 FEET MSL.

3.) BOTTOM ELEVATION OF THE FC DEFINED USING STAFF GAUGE AND BORING INFORMATION.

4.) PIEZOMETER PANC-PP02 DESTROYED BETWEEN 4/2003 AND 6/2003.

5.) THE WELL DISPLAYED AT PBBH31 WAS A TEMPORARY 3/4" ID PREPACK SCREEN INSTALLED DIRECTLY NEXT TO THE LOGGED BOREHOLE USING GEOPROBE ® DIRECT PUSH TECHNOLOGY.

6.) GROUNDWATER LEVELS FOR PBBH31-PP03, PASC-PP06, AND SWMU1-MW06 WERE MEASURED ON DECEMBER 15, 2004, APRIL 4, 2005, AND APRIL 5, 2005, RESPECTIVELY.



PARCEL B
BP RIVERFRONT PROPERTY
WOOD RIVER, ILLINOIS

FIGURE 4-6
CROSS SECTION E-E'

DATE: APRIL 24, 2006	URS
JOB NO.: 25595495.00105	100 S. WACKER DRIVE, SUITE 500 CHICAGO, ILLINOIS 60606 PHONE: 312.939.1000 FAX: 312.939.4198
DRAWN BY: KH / CHK'D BY: SC	
SCALE: AS SHOWN	

I:_CAD_dwg\25365451 - BPWR Riverfront IOD\X-sections_042408.dwg

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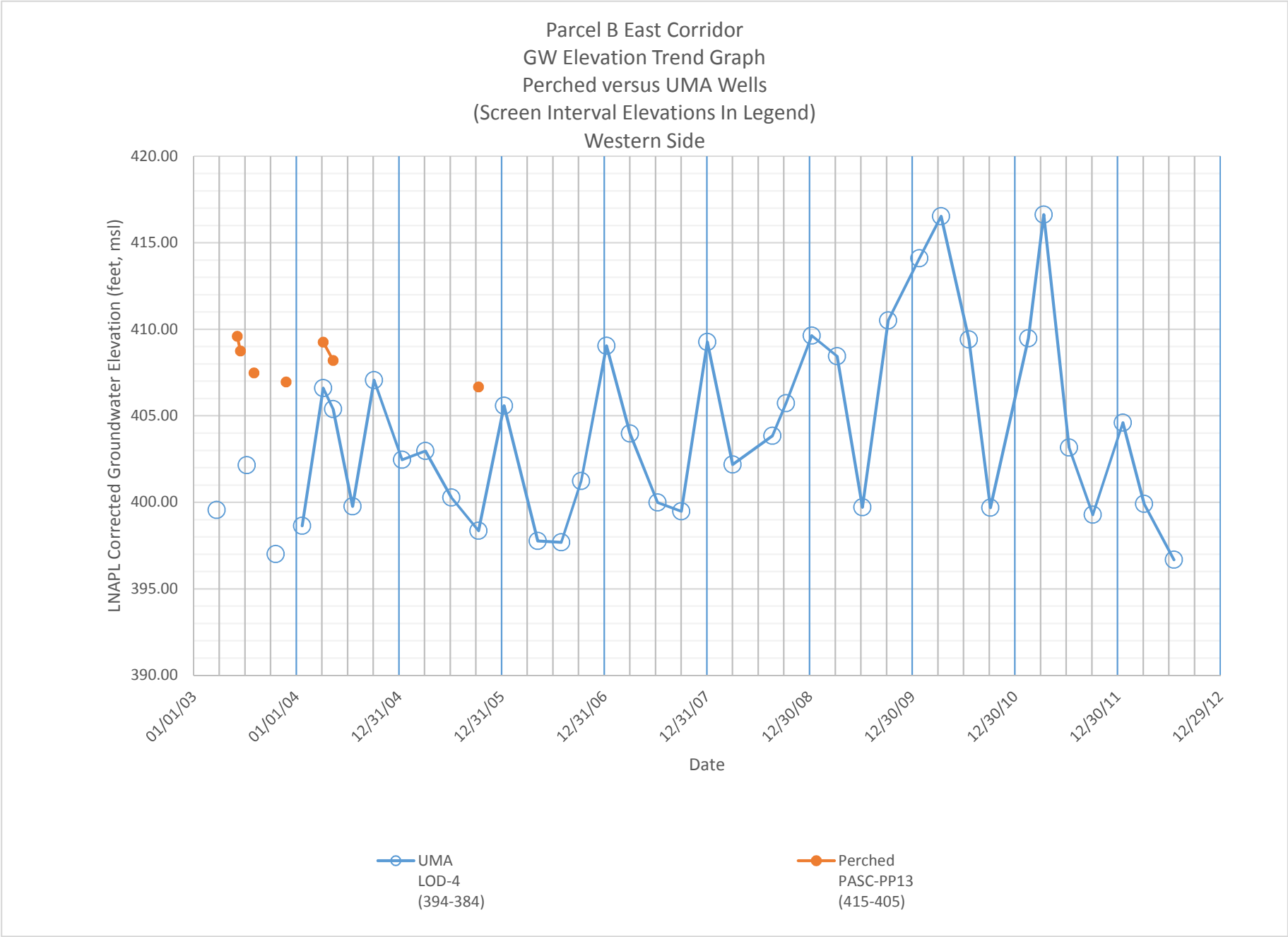
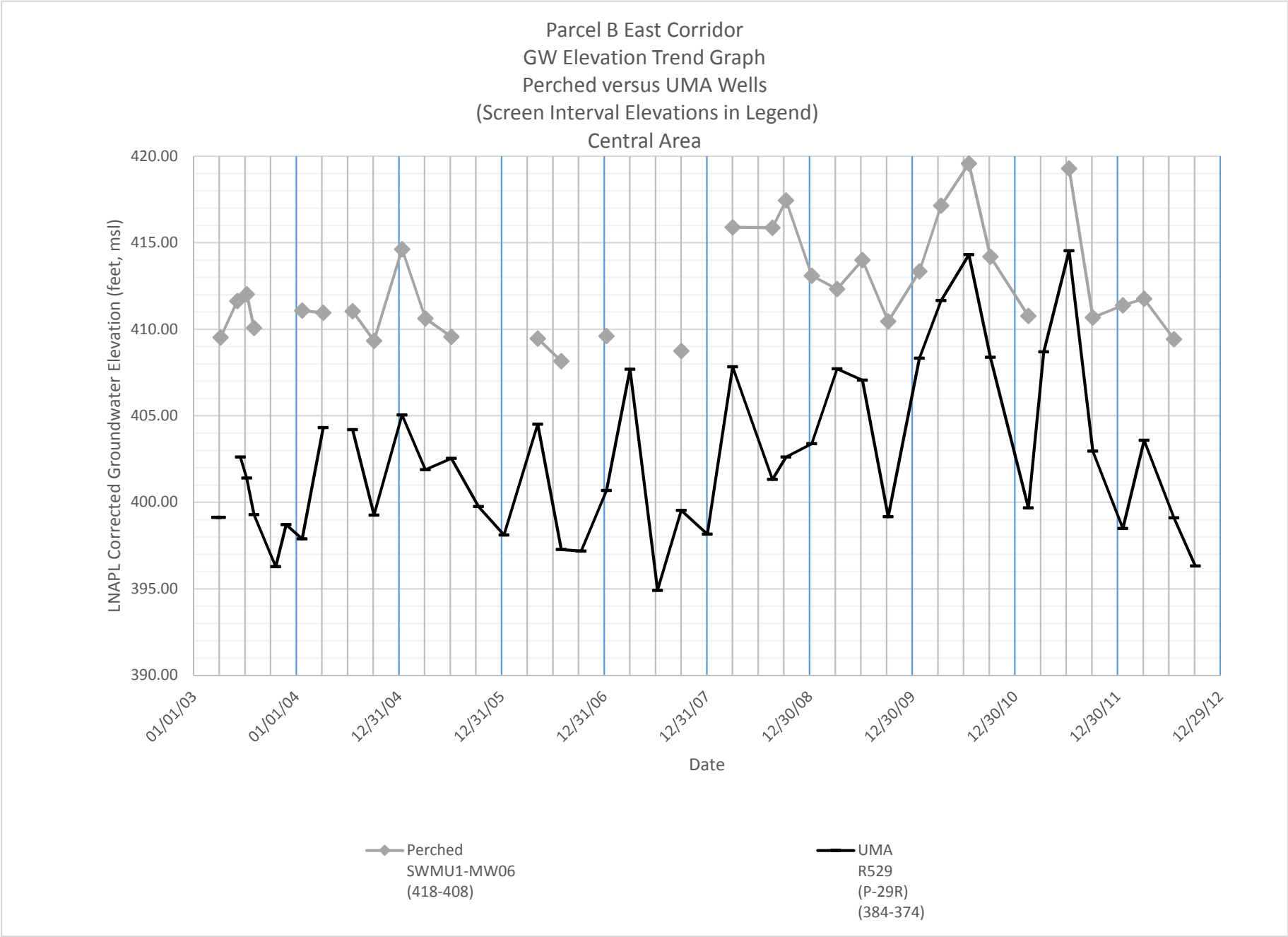
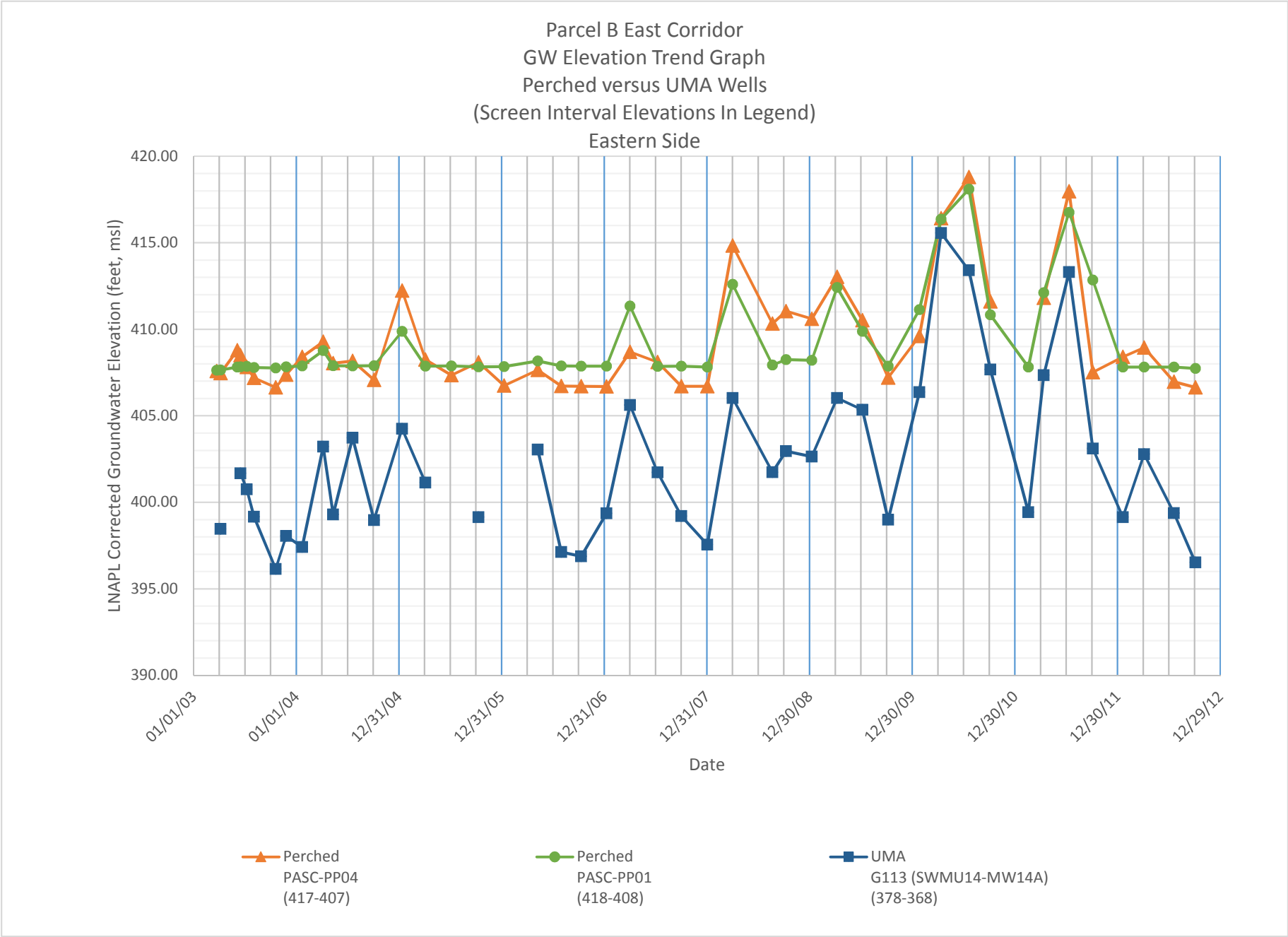
Attachment 3-4

Comparison of Fluid Levels in Select Perched Wells and UMA wells in Parcel B East Corridor

(Western Side: Perched Well PASC-PP13 and UMA Well LOD-4)
(Central Area: Perched Well SWMU1-MW06 and UMA Well R529)
(Eastern Side: Perched Wells PASC-PP01 and PASC-PP04, and UMA Well G113)


Parcel B East Corridor
GW Elevation Trend Graph
Perched versus UMA Wells
(Screen Interval Elevations In Legend)
Western Side
LNAPL Corrected Groundwater Elevation (feet, msl)
420.00
415.00
410.00
405.00
400.00
395.00
390.00
01/01/03
01/01/04
12/31/04
12/31/05
12/31/06
12/31/07
12/30/08
12/30/09
12/30/10
12/30/11
12/29/12
Date
UMA
LOD-4
(394-384)
Perched
PASC-PP13
(415-405)


Parcel B East Corridor
GW Elevation Trend Graph
Perched versus UMA Wells
(Screen Interval Elevations in Legend)
Central Area
LNAPL Corrected Groundwater Elevation (feet, msl)
420.00
415.00
410.00
405.00
400.00
395.00
390.00
01/01/03
01/01/04
12/31/04
12/31/05
12/31/06
12/31/07
12/30/08
12/30/09
12/30/10
12/30/11
12/29/12
Date
Perched
SWMU1-MW06
(418-408)
UMA
R529
(P-29R)
(384-374)


Parcel B East Corridor
GW Elevation Trend Graph
Perched versus UMA Wells
(Screen Interval Elevations In Legend)
Eastern Side
LNAPL Corrected Groundwater Elevation (feet, msl)
420.00
415.00
410.00
405.00
400.00
395.00
390.00
01/01/03
01/01/04
12/31/04
12/31/05
12/31/06
12/31/07
12/30/08
12/30/09
12/30/10
12/30/11
12/29/12
Date
Perched
PASC-PP04
(417-407)
Perched
PASC-PP01
(418-408)
UMA
G113 (SWMU14-MW14A)
(378-368)

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Attachment 3-5

Uppermost Aquifer Potentiometric Surface Map for the East Corridor of Parcel B – April 2016

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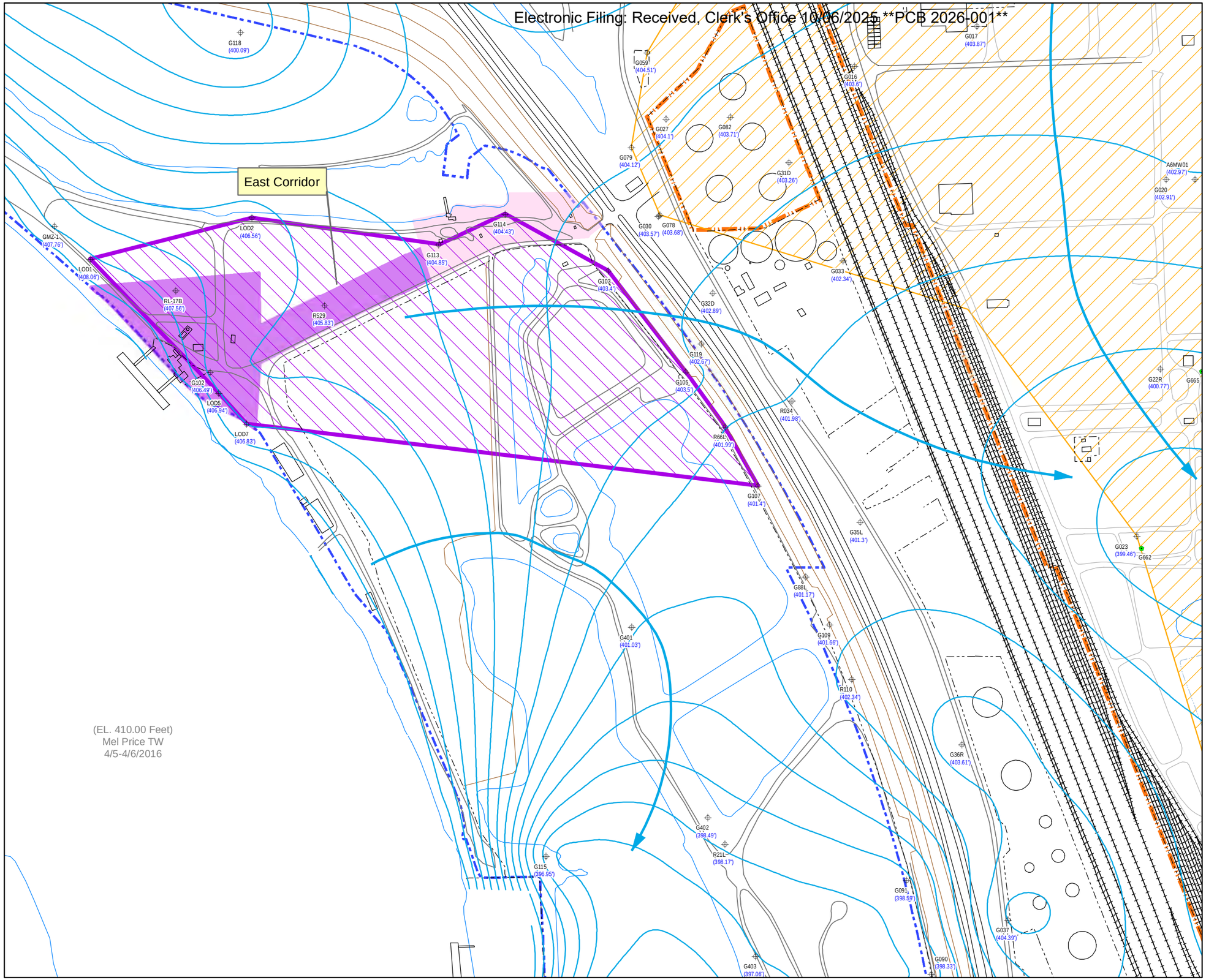

Legend

- Uppermost Aquifer Well
- Cone of Depression Well
- 2Q16 Groundwater Elevation Contours
- Groundwater Flow Direction
- Main Plant GMZ
- Riverfront GMZ
- Parcel B
- Parcel C
- Main Plant Property Boundary
- Riverfront Property Boundary

N

500 250 0 500

Feet

PARCEL B

UPPERMOST AQUIFER POTENTIOMETRIC SURFACE MAP APRIL 2016

BP WOOD RIVER

amec foster wheeler

15933 CLAYTON ROAD, SUITE 215
BALLWIN, MO 63011

bp

Job No.	242415034
Drawn By:	JLT
Reviewed By:	KDO
Date:	8/8/2016

The map shown here has been created with all due and reasonable care and is strictly for use with the BP Wood River Project. This map has not been certified by a licensed land surveyor, and any third party use of this map comes without warranties of any kind. Amec Foster Wheeler assumes no liability, direct or indirect, whatsoever for any such third party or unintended use.

Path: C:\Users\jennifer.thompson\Documents\ArcGIS\Default.gdb\Parcel B and C\Parcel B-2Q16 Pot Map.mxd

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Attachment 4-1

IEPA January 10, 2011, Correspondence

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois 62794-9276 • (217) 782-2829
James R. Thompson Center, 100 West Randolph, Suite 11-300, Chicago, IL 60601 • (312) 814-6026

PAT QUINN, GOVERNOR DOUGLAS P. SCOTT, DIRECTOR

217/524-3300

7009 3410 0002 3808 4180

JAN 1 0 2011

Mr. Thomas G. Tunnicliff
Environmental Business Manager
BP Products North America Inc.
301 Evans Avenue
P. O. Box 167
Wood River, Illinois 62095

Re: 1191155009 -- Madison County
BP Products North America (aka Riverfront Property)
ILD980503106
Log No. B-145R-CA-10
Date Received: November 30, 2009
RCRA Permit
Permit CA

Dear Mr. Tunnicliff:

This is in response to a document dated November 30, 2009, entitled, "Response to Conditional Approval of the Improvements to the FCSA Interim Measures" prepared and submitted on behalf of BP by Mr. Ryan P. Hartley, P.E., and Mr. Timothy Dull, P.E. of URS. The purpose of the submittal was to respond to the Illinois EPA's October 2, 2009 letter (Log No. 145-CA-73) which approved, with certain conditions/comments requiring additional documentation, the interim measures being performed at the Former Channel Seep Area (FCSA), one of the area being addressed by the RCRA corrective action program at the above-referenced facility; the FCSA is also referred to as Parcel C in this program.

The overall investigation/remediation effort at this facility is being carried out in accordance with Section V and VII of the RCRA post-closure permit issued to the above-referenced facility (Log No. B-145R and associated modifications). Several interim measures have already been implemented at the FCSA to address free phase hydrocarbon (FPH) at this unit including sealing of the interior joints in the 84-inch effluent outfall line which runs through the area, removal of 36-inch and 72-inch abandoned sewer lines which ran through the area, installation/operation of FPH recovery sumps, and installation/operation of a FPH recovery trench. Drawings showing the location of the FCSA within the subject facility and the layout of the FCSA, are attached.

A status report and a plan for going forward at the FCSA were submitted to Illinois EPA on January 18, 2006; this submittal was approved by Illinois EPA on January 4, 2007. The January 18, 2006 submittal described improvements completed in 2005 at the FCSA recovery trench (installation of three new recovery wells, six new monitoring wells, and a larger-capacity storage

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tank to collect FPH). A clay barrier was installed between Sumps RTS-7 and RTS-8 in the FPH recovery barrier in November 2006 and a report documenting this effort was submitted to Illinois EPA on August 23, 2007. The August 23, 2007 submittal contained information regarding the installation of two more FPH recovery sumps in the area. Illinois EPA responded to the August 23, 2007 submittal on October 2, 2990; this letter requested that additional information be submitted regarding the clay barrier.

Mr. Harley's and Mr. Dull's November 25, 2009 submittal was provided to Illinois EPA in response to the October 2, 2009 letter. This submittal was reviewed as a proposed modification to the RCRA corrective action program at the above-referenced facility and is hereby approved subject to the following conditions and modifications:

1. The additional documentation provided in Figure 2 and 3 of the November 25, 2009 submittal from URS, sent on behalf of BP, regarding Comment 2 of IEPA's October 9, 2009 letter was determined to be adequate in addressing the intent of the clay barrier, the operation of the recovery trenches and the effectiveness of the clay barrier and FCSA trench. Quarterly fluid measurements, in accordance with Condition 4 below, must be continued to be collected from RTS-7 and RTS-8 to demonstrate that effectiveness of the clay barrier until BP and Illinois EPA agree that pumping from the west trench is not necessary.

2. The additional documentation provided in Figure 4 of the November 25, 2009 submittal from URS, sent on behalf of BP, regarding Comment 3 of Illinois EPA's October 9, 2009 was determined to be adequate in providing the clarification needed on the cross-section and construction of the clay barrier in the FCSA.

3. As proposed, reports shall be submitted to the Illinois EPA documenting operation of the FCSA recovery trench on a quarterly basis. These reports should include:
   a. Time period the recovery system is in operation each day;
   b. Flow rates of the recovered water/free product;
   c. The actual amount of water and free product removed each day;
   d. The total amount of water and free product removed for that quarter;
   e. Document any maintenance and repair work to the system; and
   f. Discussion of effectiveness of the recovery system.

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4. After remediation of FPH is complete, the facility must address the groundwater corrective measures in a Land Reuse Investigation Report and Closure Plan. The Land Reuse Investigation Report and Closure Plan must satisfy Condition 5 of the November 13, 2003 Illinois EPA letter (Log Nos. B-145-CA-20, 34, and 43) regarding groundwater. In addition, the facility must also evaluate whether perched groundwater is in hydrostratigraphic connection with the uppermost aquifer within the Land Reuse Investigation Report and Closure Plan.

5. A completed RCRA Corrective Action Certification Form must accompany any submittals made regarding RCRA corrective action at the facility.

6. As indicated in Illinois EPA's October 25, 2005 and January 4, 2007 letters addressing the FPH at the FCSA, the first step in the corrective action process at the FCSA has been to address FPH; the soil and groundwater contamination must be addressed later and be carried out in accordance with Condition VII.B.3 of the facility's RCRA permit.

7. Except as modified herein, corrective action at the subject facility must be carried out in accordance with (1) 35 Ill. Adm. Code 620, 724.201 and 742: (2) the facility's RCRA Permit; and (3) Illinois EPA letters regarding these activities.

This letter shall constitute Illinois EPA's final decision on the subject submittal. Within 35 days of the date of mailing of the Illinois EPA's final decision, the applicant may petition for a hearing before the Illinois Pollution Control Board to contest the decision of the Illinois EPA, however, the 35-day period for petitioning for a hearing may be extended for a period of time not to exceed 90 days by written notice provided to the Board from the applicant and the Illinois EPA within the 35-day initial appeal period.

Work required by this letter, your submittal or the regulations may also be subject to other laws governing professional services, such as the Illinois Professional Land Surveyor Act of 1989, the Professional Engineering Practice Act of 1989, the Professional Geologist Licensing Act, and the Structural Engineering Licensing Act of 1989. This letter does not relieve anyone from compliance with these laws and regulations adopted pursuant to these laws. All work that falls within the scope and definitions of these laws must be performed in compliance with them. The Illinois EPA may refer any discovered violation of these laws to the appropriate regulating authority.

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Should you have any questions regarding groundwater-related matters associated with this project, please contact Amy Boley at 217/558-4716; questions regarding other aspects of this project should be directed to Karen Nachtwey at 217/524-3273.

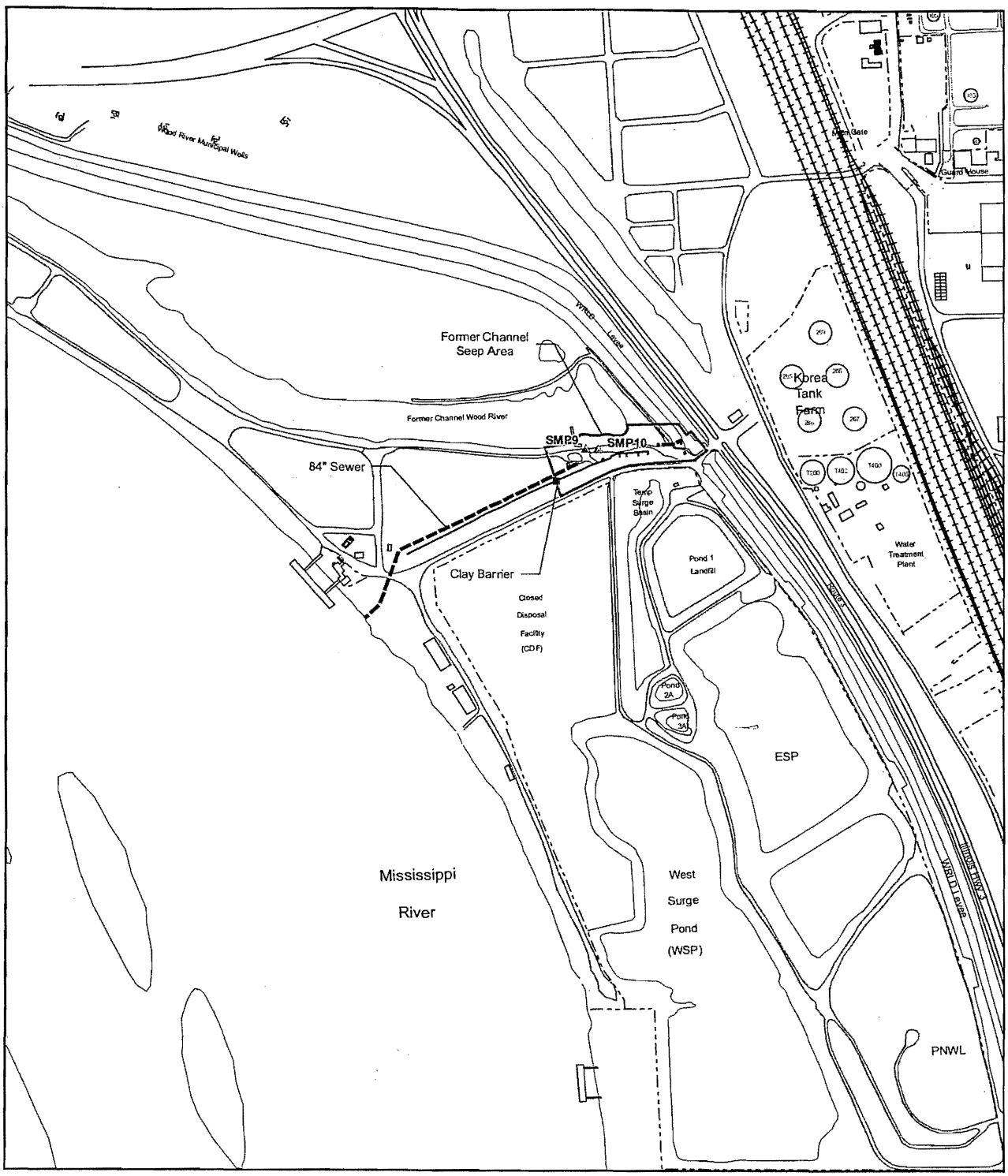
Sincerely,

Stephen F. Nightingale, P.E.
Manager, Permit Section
Bureau of Land

SFN:KEN/mls/102311s.doc
JCH KMB-TBN

Attachments: Site Layout Map
FCSA Layout Map

c: Ryan Hartley, URS



Legend

- Approximate Location of New Recovery Sump
- Approximate Location of Clay Barrier
- FCSA Recovery Trench
- 84" Sewer
- Former Channel Seep Area

N

350 175 0 350

Feet

1 inch equals 700 feet

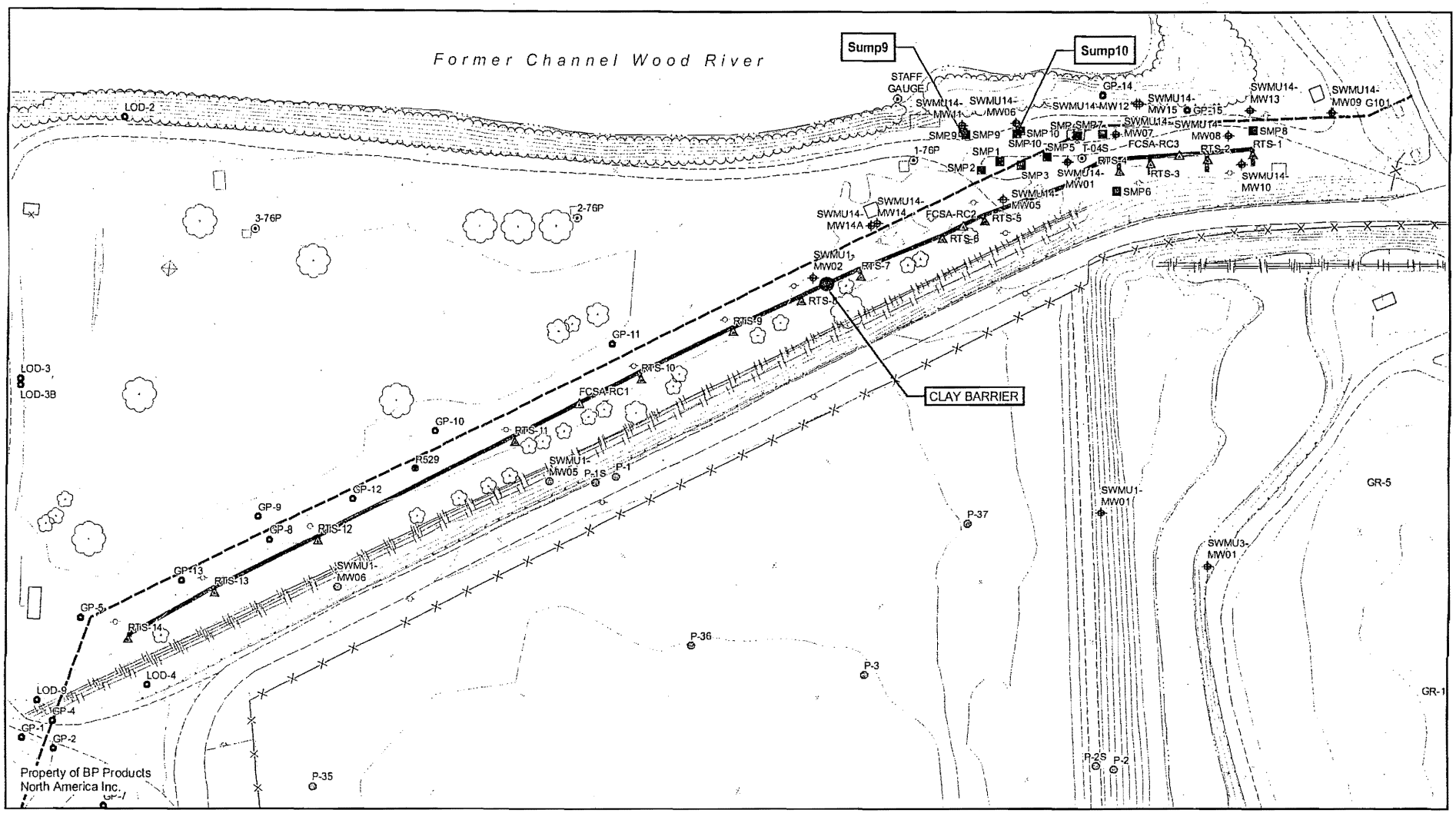
URS 100 South Wacker Drive Suite 500
Chicago, Illinois 60606

Riverfront Property
BP Former Refinery
Wood River, Illinois

DESIGN: JP	CHKD: TD	PROJECT NO.	FIG NO.
DRAWN: KWH	DATE: 7/2/07	25366309	1

O:\Schematics_Library\P\Wood_River\Riverfront\Wood_CCMS\fig_1_propertymap.pdf

O:_PROJECTS_(APR-MXD)_A-F\BP\WOOD_RIVER\RIVERFRONT\PARCEL_CCMS\FIG1_PROPERTYMAP.MXD



Legend

- FCSA Trench Sump
- FCSA Individual Sump
- FCSA Recovery Well
- Approximate Location of Clay Barrier
- Former Channel Seep Area Well
- Riverfront CDF Well
- Riverfront Compliance Well
- Riverfront LOD Well
- Riverfront RFI Well
- 84" Sewer
- FCSA Recovery Trench

N

150 0 150

Feet

1 inch = 150 feet

O:\DELIVERABLES LIBRARY\BP\WOODRIVER\RIVERFRONT\PARCEL C\CMS\FIG1 FCSA SITE MAP.PDF

URS 100 South Wacker Drive Suite 500 Chicago, Illinois 60606

FCSA Site Map
BP Former Refinery
Wood River, Illinois

DESIGN: JP	CHKD: TD	PROJECT NO.	FIG NO.
DRAWN: SK	DATE: 11/24/2009	25366309	1

O:_Projects_(apr-mxd)_A-F\BP\Wood_River\Riverfront\Parcel_C\CMS\Fig1_FCSA_Site_Map.mxd

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Attachment 4-2

Former Channel Seep Area Layout

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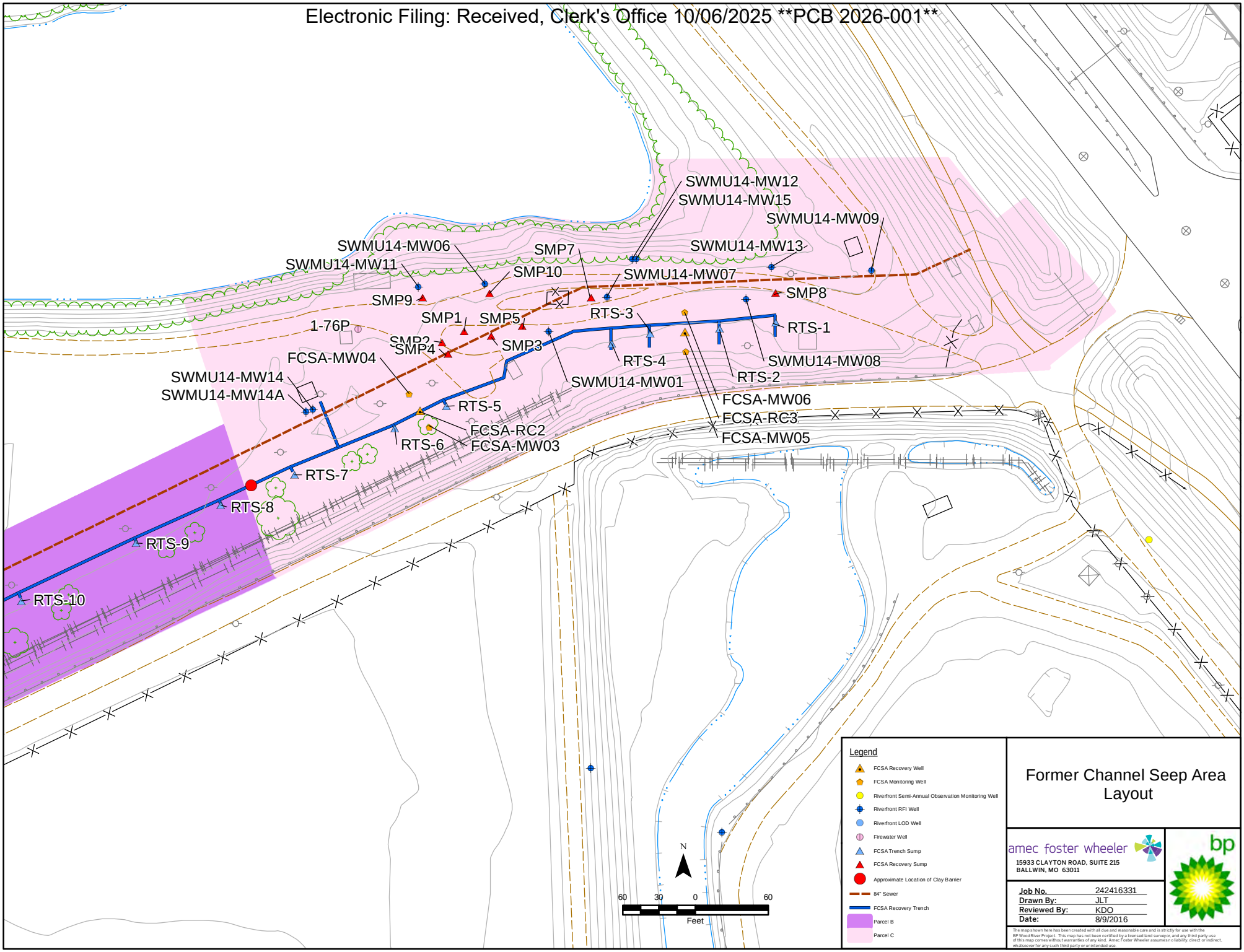

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Attachment 4-3

Table of Measured LNAPL Thicknesses (Third Quarter 2014 to Present)

RTS-1 to RTS-7
FCSA-MW03 and FCSA-MW05
Wells near FCSA-MW03 (FCSA-MW04 and FCSA-RC2)
Wells near FCSA-MW05 (FCSA-MW06 and FCSA-RC3)

FCSA LNAPL Thickness (Feet) Gauging Summary (7/2014-7/2016)													
Date	RTS-7	RTS-6	FCSA-MW03	FCSA-MW04	FCSA-RC2	RTS-5	RTS-4	RTS-3	FCSA-MW05	FCSA-MW06	FCSA-RC3	RTS-2	RTS-1
TOS Elev	411.31	408.13	417.3	417.97	418.45	411.27	411.17	412.22	417.66	417.71	417.55	411.65	409.49
BOS Elev	409.31	406.13	403.16	403.5	403.97	409.27	409.17	410.22	403.41	403.5	403.09	409.65	407.49
7/25/2014	0.00	0.00	NM	NM	0.00	0.00	0.00	0.00	NM	NM	0.00	0.00	0.00
8/11/2014	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00
8/26/2014	0.00	0.00	0.36	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00
9/9/2014	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00
9/24/2014	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/20/2014	0.00	0.00	0.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/5/2014	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/4/2014	0.00	0.00	0.61	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00
12/17/2014	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00
1/16/2015	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/2/2015	0.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00
2/13/2015	0.00	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/27/2015	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/13/2015	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/30/2015	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/14/2015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
4/20/2015	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/5/2015	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/18/2015	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/4/2015	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/6/2015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00
9/1/2015	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/18/2015	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/28/2015	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/8/2015	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/23/2015	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/5/2015	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
11/20/2015	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/4/2015	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/18/2015	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/15/2016	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/27/2016	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/9/2016	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/24/2016	0.00	0.00	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/7/2016	0.00	0.00	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/23/2016	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/7/2016	0.00	0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/20/2016	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/2/2016	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/19/2016	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/1/2016	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/14/2016	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/30/2016	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/14/2016	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

EXHIBIT B

Electronic Filing: Received, Clerk's Office 10/06/2025 **PCB 2026-001**

Remediation Management Services Company

30 S. Wacker Dr. Ste 900
Chicago, IL 60606

Mobile: (847) 346-7112
Michelle.Knapp@bp.com

May 25, 2023

Jacqueline M. Cooperider, P.E.
Illinois Environmental Protection Agency
Bureau of Land, Division of Land Pollution Control
1021 North Grand Avenue East
Springfield, Illinois 62794-9276

Re: 1191155009—Madison County
BP Products North America Inc. – Riverfront Property
USEPA ILD980503106
Corrective Action Modification Request – Light Oils Dock Area

Dear Ms. Cooperider:

On behalf of BP Products North America Inc. (bp), Remediation Management Services Company (RMSC) is submitting an original and two (2) copies of the Corrective Action Modification Request for the Light Oils Dock Area on the Riverfront Property, located in Wood River, Illinois. This request includes background information and data from pre-design activities completed to support the modification. Also enclosed is an Illinois Environmental Protection Agency (Illinois EPA) Resource Conservation and Recovery Act (RCRA) Corrective Action Certification Form (LPC 632).

If you have any questions or concerns regarding the information provided, please contact me at (847) 346-7112.

Sincerely,

Michelle Knapp
Liability Manager
Remediation Management Services Company

Enclosures: Corrective Action Modification Request - Light Oils Dock Area, Riverfront Property
Illinois EPA RCRA Corrective Action Certification Form (LPC 632)

cc: Amy Butler, Illinois EPA
Takako Halteman, Illinois EPA
Tom Stalcup, Mayor of the City of Wood River
Michael J. Hoffman, P.E., WSP USA Environment & Infrastructure
Kevin Wheeler, Sovereign Consulting Inc.

RCRA CORRECTIVE ACTION MODIFICATION REQUEST
LIGHT OILS DOCK (LOD) AREA
BP WOOD RIVER RIVERFRONT PROPERTY

Site

BP Products North America Inc. (bp) – Riverfront Property
1191150001 – Madison County
USEPA ILD980503106
RCRA Part B Permit Log No. B-145R-M-4, M-14, M-15, M-18, modified February 7, 2022

Introduction

On behalf of BP Products North America Inc. (bp), Remediation Management Services Company (RMSC) is submitting to the Illinois Environmental Protection Agency (Illinois EPA) this Corrective Action Modification Request for the Light Oils Dock (LOD) Area located within Parcel B of the former petroleum refinery Riverfront facility located in Wood River, Madison County, Illinois. A Riverfront Facility Parcel Map is provided as **Figure 1**.

The Riverfront facility Groundwater Corrective ~~Action~~ Program requires hydraulic control of Uppermost Aquifer (UMA) groundwater in the Riverfront Groundwater Management Zone (GMZ) via the Cone of Depression (COD) well system located on the BP Wood River Main Plant facility. The flow control of the COD well system is intended to prevent contaminant migration beyond the boundaries of the Riverfront facility for groundwater above Class 1 Groundwater Quality Standards (GQS) for volatile organic compounds (VOCs) and is the basis for the GMZ. The current corrective action (i.e., hydraulic control) is measured through quarterly groundwater gauging and contouring. Compliance is verified by monitoring contaminants in groundwater in GMZ boundary wells.

The proposed Corrective Action Modification (CA-Modification) includes implementation of a biological treatment program for impacted UMA groundwater within the LOD Area (**Figure 2**) in lieu of hydraulic flow control. The biological treatment program will consist of biosparging followed by natural attenuation mechanisms enhanced by passive bioventing. In lieu of measuring hydraulic control in in the LOD Area, the biological treatment program will provide contaminant control. Compliance will continue to be verified by monitoring contaminants in groundwater in GMZ boundary wells. Details are provided below.

Background

Within the UMA of the Riverfront facility, VOCs including benzene exceed Class 1 GQS in only a small number of wells centered within the LOD Area. As illustrated on the Fourth Quarter 2022 benzene isoconcentration map provided as **Figure 3**, benzene only exceeds the Class 1 GQS of 5 ug/L in monitoring well LOD-6 (1,870 ug/L in October 2022). Other constituents above Class 1 GQS in this area include arsenic and sporadically lead. Benzene and total and dissolved arsenic

concentrations have been decreasing at this location since monitoring began in 1995, and high and low water table trends do not generally correlate to increasing or decreasing trends for these analytes. Arsenic is not considered a chemical of concern that requires a constituent-specific remedy and is anticipated to attenuate following reduction of hydrocarbon impacts and resulting increases in oxidation reduction potential (ORP).

Light non-aqueous phase liquid (LNAPL) is observed intermittently at thicknesses typically <0.50 feet in monitoring wells LOD-6 and G-102/RL-2 in the LOD Area. Because of the intermittent LNAPL at minimal thickness, no transmissivity testing has been completed in these wells. Based on gauged LNAPL thickness, soil logging, and the LNAPL investigation described below, the majority of LNAPL mass does not correlate with the interval of gauged LNAPL thickness; rather, the source area is dominated by residual LNAPL.

Groundwater monitoring is currently completed at 13 monitoring wells located in the LOD Area in accordance with the Illinois EPA letter dated May 11, 2009 (Log No. B-145-CA-63). Of the 13 LOD monitoring program wells, 5 are also Riverfront Observation Monitoring Wells (RFOWs) and designated GMZ boundary wells monitored in accordance with the RCRA Permit. One additional monitoring well located within the LOD Area, Riverfront Gradient Control (RF GC) monitoring well G102, is also monitored in accordance with the current RCRA Permit.

A No Further Action determination was issued for soils in Parcel B in an Illinois EPA letter dated October 22, 2009. A No Further Action determination was issued for perched groundwater in Parcel B in an Illinois EPA letter dated May 20, 2016 (Log No. B-145R-CA-48); in response to Condition 2 of the Illinois EPA letter, bp submitted a proposed Environmental Land Use Control to Illinois EPA in a letter dated October 17, 2016. In a letter dated August 18, 2016, bp submitted a response to Conditions 3 and 4 of the Illinois EPA letter dated May 20, 2016 regarding the UMA in the East Corridor of Parcel B (Figure 1) and operation of the east portion of the Former Channel Seep Area (FCSA) recovery trench located within Parcel C. Illinois EPA approved cessation of the western portion of the FCSA recovery trench located within the East Corridor of Parcel B in a letter dated January 10, 2011 (Log No. B-145R-CA-10).

Currently, the groundwater remedy is containment of groundwater via operation of the COD well system and source reduction via natural attenuation mechanisms. Source remediation has been primarily driven by natural source zone depletion based on compositional analysis and pre-pilot test soil gas data. Though contaminants in groundwater show decreasing trends, the proposed Corrective Action will expedite the timeframe to achieve remedial objectives in groundwater. Enhancing the source remediation will represent a sustainable long-term risk reduction and will address remaining mobile and residual LNAPL.

Pre-Design Investigations

The following section details the pre-design investigations completed in the LOD Area in support of this CA-Modification.

Subsurface Investigation

To further characterize LNAPL and geology in the area, a pre-design subsurface investigation was conducted in June 2022 utilizing hydraulic profiling tool (HPT) technology to verify geology in the area and ultra-violet optical screening tool (UVOST®) technology to identify where residual or mobile LNAPL may be present and constitute a source to dissolved phase hydrocarbons in groundwater. UVOST results were validated with logging of soils and gas chromatograph/flame ionization detector (GC/FID) analysis of LNAPL in soil.

Locations of the eight borings completed are shown on **Figure 4**, overlaid with the GC/FID results. UVOST-HPT boring logs are provided in **Appendix A**. Cross-section diagrams are provided as **Figures 5 and 6**. GC/FID results are provided in **Appendix B**. Soil boring logs are included in **Appendix C**. Findings are summarized below.

- The geology in this area was confirmed with the HPT.
    - The central portion of the LOD Area near monitoring well LOD-6 contains sandy clay at the surface that grades to silty clay with a thin discontinuous sand layer at approximately 10-12 feet below ground surface (bgs).
    - Another sand layer representing the upper portion of the UMA is present at approximately 20 feet bgs.
    - Interbedded layers of silt and sand continue until 30 feet bgs, where most of the HPT logs in that area terminated. The area below this is primarily sand. This interbedded layer is present at deeper depths north of monitoring well LOD-6 and is generally shallower to the south.
- UVOST results identified where residual or mobile LNAPL may be present and constitute a potential source to dissolved phase hydrocarbons in groundwater.
    - The area including LOD-BH-1, LOD-BH-5, and LOD-BH-3 represents a potential source to dissolved phase concentrations in the UMA. This area is bounded by UVOST borings to the west, east, and south. Furthermore, surrounding monitoring wells RL-17 (north), LOD-9 (southeast), and G102/RL-2 (south) contain relatively low benzene concentrations.
    - UVOST results show that remaining LNAPL impacts are often present at interfaces between lower and higher permeability zones as shown on the cross-sections.
    - Comparison of the intervals of UVOST response, well screens, and gauged thicknesses indicates that the majority of LNAPL impacts identified by UVOST do not correlate with gauged LNAPL intervals and the majority of LNAPL is residual in nature.

Eleven (11) samples were collected for GC/FID analysis from six (6) borings as shown on Figure 4. Sample locations were selected to correspond with elevated UVOST responses. The samples generally represented weathered oil with a low volatile fraction. Peak area responses from the chromatograms are provided graphically and in tabular form in Appendix B.

- 7 of the 11 samples did not contain benzene. A table summarizing responses of key VOCs including benzene is included as Table 2.
- As shown on Table 2, of the 4 samples with benzene, the mol fraction of benzene suggests that <1% of the estimated original benzene concentration remains; i.e. the effective solubility of benzene in remaining LNAPL has decreased over time due to natural attenuation mechanisms since the original release.

Overall, the investigation helped delineate the vertical and horizontal distribution of remaining LNAPL and identify areas of more permeable (i.e., sandy) formation that could be conducive to fluid injections (i.e., air, gas, or liquid). The UVOST-HPT data along with GC/FID compositional analysis identified an area where LNAPL impacts containing benzene remain in or adjacent to more permeable layers and could represent a source to UMA groundwater; this is the target area for remediation as detailed below.

Sparge Evaluation

A short-term sparge evaluation was subsequently completed in October 2022 to determine the efficacy and design basis for an oxygen or air biosparge treatment system to address residual LNAPL in the target area identified during the pre-design soil boring investigation.

For performance of the sparge evaluation, three two-inch diameter piezometers were installed with the goal to set the screens in the sand seam near soil boring BH-1 and monitoring well LOD-6 with elevated impacts (see Figures 4 through 6). At boring BH-1, the area of impact was between 20-25 feet bgs; the sand layer representing the upper portion of the UMA is present at approximately 20 feet bgs. From this location, clay is present deeper in the southwest direction as confirmed with logging during boring. Drilling and logging was accomplished using the piston rod macro-core method within the sandy area. GC/FID results are included in Appendix B. Soil boring and well construction logs for the piezometers are provided in Appendix C and Appendix D, respectively. The well screens were set as follows:

- LOD-PZ-1 22-27 feet bgs
- LOD-PZ-2 23-28 feet bgs
- LOD-PZ-3 22-27 feet bgs

Vapor monitoring points (VMPs) were also installed with the goal of identifying whether sparging would cause vertical gas flow through the clay above the sand seam being targeted. One-inch diameter VMPs were installed adjacent the piezometers with screens from 7-12 feet bgs. Well construction logs for the VMPs are provided in Appendix D.

The sparge test was conducted over two days using compressed oxygen (~99% by volume) cylinders connected through a regulator and manifold to deliver oxygen gas to the subsurface. On day one, oxygen was delivered at flow rates of 2, 4, 8, and 12 standard cubic feet per minute (scfm) to piezometer LOD-PZ-1 for a period of approximately 5 hours. On day two, oxygen was delivered at flow rates of 4, 8, and 12 scfm to piezometer LOD-PZ-3 over a period of approximately 2 hours.

Throughout the test, sparge flow and pressure were monitored at the sparge wells (LOD-PZ-1 and LOD-PZ-3). Surrounding wells and VMPs were monitored for induced pressure, soil gases, and groundwater geochemistry throughout the duration of the test, with at least one reading at each flow rate. Readings were also taken as a baseline before the test and after shutdown of the test.

Sparge test monitoring results relative to test goals are summarized below. Detailed monitoring results are provided in Appendix E.

- Sparge breakout pressure – flow was attainable through the wells at breakout pressures of less than 4 pounds per square inch (PSI) throughout the test. The impacted zone is near the top of the saturated zone with minimal head pressure to breakthrough for flow.
- Operational pressure – operational pressure for all flow rates was at 2 PSI or below throughout the test.
- Sparge flow rates – sparge flow rates of 4-12 scfm were attainable at low pressures described above.
- Radius of influence (ROI) based on pressure and DO in surrounding piezometers – though short duration, both pressure and DO increased during the test. Pressure in surrounding piezometers increased by over 0.1 inches of water during sparge tests at both LOD-PZ-1 and LOD-PZ-3. Results suggest an ROI of over 30 feet.
- Vertical gas flow – pressure and soil gases in VMPs showed increases during sparging, demonstrating that there is some vertical gas flow through the relatively impermeable layers above the impacted zone. However, the changes in oxygen levels and pressure in VMPs were approximately 90% lower than measured in piezometers (screened deeper than VMPs) after travelling through the approximately 10-foot thick zone between the top of piezometer screen and bottom of the VMP screen.
    - No gases other than ambient were measured at ground surface.
    - Sparge gases can be sufficiently controlled by the system and surrounding geology to not require vapor extraction for off-gas control.
- Sparging coincided with positive indications in soil gases in surrounding piezometers
    - Oxygen was measured at concentrations up to 40% by volume (significantly above baseline and atmospheric conditions) following system operation of less than 5 hours.
    - Following sparging, oxygen decreased and carbon dioxide increased suggesting degradation of impacts or oxidation of methane was occurring.

  - Methane decreased following initiation of sparging, suggesting aerobic oxidation.
  - VOCs increased during sparging then decreased, suggesting capacity for degradation.
  - Similar trends were observed in VMPs but with lower overall levels of change as noted above.
- Sparging increased levels of both DO and ORP in piezometers following sparging.
  - After sparging was completed, post-test monitoring showed decreases in DO and ORP back to baseline overnight.

Overall, the test found that biosparging is a viable option for treating remaining hydrocarbon impacts in the LOD area and identified key design parameters for the design presented below.

Summary

The pre-design investigation confirmed the area and intervals of impacts to be targeted for treatment to decrease benzene concentrations in the LOD Area. The subsequent sparge evaluation results concluded that biosparging is a viable option for treating remaining hydrocarbon impacts in the LOD Area. The approximately 0.5-acre treatment area will surround borings LOD-BH-1, LOD-BH-3, and LOD-BH-5 near monitoring well LOD-6 as shown on Figure 7. Treatment depth will target impacts between ~25-35 feet bgs. Nested VMPs to be installed in the proposed system area will verify that no emissions are being generated and no off-gas treatment is required.

Results of the pre-design investigation and sparge test in the LOD Area were presented to the Illinois EPA during a conference call in January 2023. As part of the meeting, a conceptual remedy including biosparging followed by natural source zone depletion (NSZD) with passive bioventing and monitored natural attenuation (MNA) was provided for comment. Illinois EPA was receptive to this approach and advised that a CA-Modification request should be submitted for review.

Proposed Corrective Action

The proposed corrective action includes enhancing biodegradation to reduce benzene source concentrations and establish aerobic subsurface conditions. Initially, biodegradation will be enhanced with biosparging followed by passive bioventing with natural attenuation mechanisms (i.e., MNA and NSZD) to further mitigate dissolved phase groundwater concentrations. This proposed CA-Modification includes a replacement of current hydraulic control requirements with contaminant control via the proposed remedy, i.e., groundwater protection will be achieved through implementation of the remedy and associated groundwater monitoring. There are no current complete receptor pathways that drive risk; the primary driver for the remedy is benzene in groundwater. While concentrations of benzene in groundwater are currently decreasing in the LOD Area, the proposed corrective action will accelerate the reduction and reduce the timeframe to meet remedial objectives.

The proposed CA-Modification will apply to 14 monitoring wells located within the LOD Area (see Figure 2 and Table 1). The proposed biosparge treatment area is shown on Figure 7. Under the current Groundwater Corrective Action Program, 6 of the 14 monitoring wells in the LOD Area are included in the quarterly hydraulic control gauging and contouring program: RFOWs LOD-1, LOD-2, LOD-5, LOD-7, RL-17B, and RF GC well G102. RFOWs LOD-1, LOD-2, LOD-5, LOD-7, and RL-17B are also designated GMZ boundary wells. Additionally, LOD monitoring program wells LOD-6 and LOD-9 are designated RFOWs under the optimized groundwater monitoring program approved by Illinois EPA in a letter dated January 19, 2023.

Under the proposed CA-Modification:

- RFOWs LOD-1, LOD-2, LOD-5, LOD-7, and RL-17B in the LOD Area will no longer be part of the quarterly hydraulic control gauging and contouring program or LOD monitoring program but will continue to be sampled in accordance with the RCRA permit;
- LOD-6 and LOD-9, which are designated RFOWs to be sampled annually under the optimized groundwater monitoring program, will no longer be monitored under the LOD monitoring program;
- LOD monitoring program wells LOD-3, LOD-3B, LOD-4, LOD-8, RL-17, and RL-18 will continue to be monitored in accordance with the Illinois EPA letter dated May 11, 2009; and
- RF GC monitoring well G102 will no longer be part of the quarterly hydraulic control gauging and contouring program.

Performance of the modified corrective action will continue to be reported in accordance with Section V.9 of the RCRA permit using the monitoring program proposed below. GMZ boundary wells will continue to be monitored for compliance with applicable GQS.

Following Illinois EPA approval of this CA-Modification, bp will submit Class 1* Permit Modification Request to Illinois EPA to modify Section IV.A.1 of the RCRA permit.

Biosparging

Biosparging will be utilized as the first stage for treating the benzene source in the LOD Area. Biosparging is implemented to introduce atmospheric air to the saturated zone of the subsurface to increase DO concentrations in the saturated zone and increase oxygen in soil gas in the vadose zone above the water table. The increase in oxygen is intended to convert the saturated and unsaturated zone to an aerobic environment and enhance aerobic biodegradation of hydrocarbons.

Conceptual design of the system includes:

- Biosparging to reduce benzene concentrations in groundwater and create aerobic conditions in the subsurface that can be maintained utilizing subsequent (post-biosparging) passive bioventing.
    - Anticipated biosparging duration of 18-24 months based on approximately one order of magnitude reduction in benzene (half-life of 6 months assumed).
- Twelve (12) sparge wells will be utilized to treat the system area.
    - ROI of 25 feet for sparge wells (50 feet on center) to maintain lower flow rates and eliminate need for vapor extraction.
    - VMPs will be installed to confirm sufficient oxygen is present and no off-gassing of vapors (VOC or methane) occurs.
    - Piezometers will be installed within the treatment area to monitor system effects.
- Solenoid-controlled manifold with timers for pulsed operation of approximately 6 wells concurrently.
- A low-pressure rotary vane or rotary claw compressor capable of 75 scfm @ 15 psi.
- An equipment trailer mounted with external disconnect to allow for portability in the case of flooding from adjacent river.

The proposed system layout is provided as Figure 7. A system process flow schematic is provided as Figure 8. Further details of the engineered system design are provided below.

As detailed above, monitoring wells LOD-1, LOD-2, LOD-5, LOD-6, LOD-7, LOD-9, and RL-17B will be removed from the LOD monitoring program requirements in the Illinois EPA letter dated May 11, 2009, and will be monitored in accordance with the RCRA Permit and this CA-Modification. LOD monitoring program wells LOD-3, LOD-3B, LOD-4, LOD-8, RL-17, and RL-18 will continue to be monitored in accordance with the Illinois EPA letter dated May 11, 2009. In addition to the RCRA Permit and LOD groundwater monitoring program requirements, operational and performance monitoring will be completed during biosparging to evaluate system performance and support a subsequent transition from biosparging to passive bioventing with MNA and NSZD. Biosparge monitoring parameters are summarized below.

Monitoring Activity (frequency)	Description	Locations
Operational Parameters (Monthly)	Collect pressure and flow readings. Perform system maintenance.	Biosparge enclosure and manifold

Monitoring Activity (frequency)	Description	Locations
Pressure/Soil Gas Monitoring (Monthly)	Collect pressure readings. Use pump on vapor meter to purge well and analyze for soil gases (CH4, CO2, O2, VOCs). Analyze headspace in monitoring wells or piezometers.	New VMPs, monitoring wells (LOD-6, RL-17), and piezometers (LOD-PZ-1 through LOD-PZ-6)
Groundwater Geochemistry (Quarterly)	Collect field parameters including depth to water/ LNAPL, pH, DO, ORP, temperature and specific conductivity. Collect groundwater samples for analysis of dissolved gases (CH4, CO2, O2, N2), MNA parameters (iron species, nitrogen compounds, sulfate), and metals including arsenic, lead, manganese, magnesium, nickel, and chromium.	Monitoring wells (LOD-6, RL-17), and piezometers (LOD-PZ-1 through LOD-PZ-6)
Groundwater COC (Quarterly)	Collect groundwater samples for analysis of BTEX, TPH-GRO, and TPH-DRO.	Monitoring wells (LOD-6, RL-17), and piezometers (LOD-PZ-1 through LOD-PZ-6)

Notes:
BTEX: benzene, toluene, ethylbenzene, total xylenes
TPH-GRO: total petroleum hydrocarbons as gasoline range organics
TPH-DRO: total petroleum hydrocarbons as diesel range organics

Baseline monitoring for the above parameters will be completed prior to system startup. The dissolved gases and MNA parameters will help monitor groundwater geochemical conditions and degradation capacity during and after sparging. Dissolved metals are included to confirm sparging does not mobilize dissolved metals in groundwater.

As detailed above, under the proposed CA-Modification, the following six monitoring wells will no longer be part of the hydraulic control gauging and contouring program: RF GMZ/RFOWs LOD-1, LOD-2, LOD-5, LOD-7, RL-17B, and RF GC monitoring well G102. Performance of the modified CA-Modification will continue to be reported in accordance with Section V.9 of the RCRA permit using the monitoring program proposed below. GMZ boundary wells will continue to be monitored for compliance with applicable GQS.

The monitoring program will support selection of the appropriate time to transition from biosparging to natural attenuation mechanisms enhanced with passive bioventing. If the

following conditions are met, bp will implement the transition from biosparging to Passive Bioventing and MNA.

Parameter	Monitoring	Transition Point / Condition
LNAPL (if present >0.5 feet thickness)	Transmissivity (Tn) testing	Tn<0.8 ft^2/day
Dissolved phase benzene concentrations	Groundwater sampling	Stable or declining trend indicating remedial objectives will be met within 5 years
Oxygen and DO	Soil gas measurements at VMPs and dissolved gas sampling at monitoring wells	Indication of decrease in oxygen utilization or reduced source mass, e.g., consistent O2 >10% by volume in VMPs and DO >2 mg/L in groundwater

Passive Bioventing and MNA

The subsequent implementation of passive bioventing with MNA and NSZD will include installation of passive biovent wellheads on the 12 biosparge wells, monitoring piezometers, and deeper VMPs. Passive biovent wellheads are fitted with one-way valves to utilize pressure changes in the subsurface to introduce air and oxygen into the unsaturated zone (i.e., barometric pumping, where atmospheric air can enter, but soil gases cannot escape). The oxygen added to the subsurface can help maintain enhanced biodegradation processes. The following monitoring program will be implemented following the transition to passive bioventing with MNA and NSZD to demonstrate natural attenuation is occurring with no increase or migration of dissolved phase benzene.

Monitoring Activity	Description	Locations
Pressure/Soil Gas Monitoring (Quarterly)	Collect pressure readings. Use pump on vapor meter to purge well and analyze for soil gases (CH4, CO2, O2, VOCs). Analyze headspace in monitoring wells or piezometers.	New VMPs, monitoring wells (LOD-6, RL-17), and piezometers (LOD-PZ-1 through LOD-PZ-6)
Groundwater Geochemistry (Semi-Annual)	Collect field parameters including depth to water/ LNAPL, pH, DO, ORP, temperature and specific conductivity. Collect groundwater samples for analysis of dissolved gases (CH4, CO2, O2, N2), MNA parameters (iron species, nitrogen compounds, sulfate), and metals including arsenic, lead, manganese, magnesium, nickel, and chromium.	Monitoring wells (LOD-6, RL-17), and piezometers (LOD-PZ-1 through LOD-PZ-6)

Monitoring Activity	Description	Locations
Groundwater COC (Semi-Annual)	Collect groundwater samples for analysis of BTEX, TPH-GRO, and TPH-DRO.	Monitoring wells (LOD-6, RL-17), and piezometers (LOD-PZ-1 through LOD-PZ-6)

Monitoring of the proposed corrective action will be reported as part of the quarterly Corrective Action Progress Reports for the Riverfront facility in accordance with Section V.9 of the RCRA permit. Following the transition, GMZ wells will continue to be monitored and compliance with applicable GQS maintained in GMZ boundary wells.

Engineered System Design

System details are provided in the sections below.

Biosparge Equipment Details

The proposed biosparge system is designed to deliver air from a compressor into the subsurface at flow rates up to 75 scfm @ 15 psi. Air from the compressor will have a particulate filter, throttling valve, temperature indicator, check valve, and pressure indicator. The compressor motor will be a totally enclosed, fan-cooled (TEFC) motor.

Flow will be routed from the compressor through a 12-point manifold to each of the biosparge wells under a pulsed scenario. Each manifold leg will have a flow control valve, rotameter-style flowmeter, and pressure gauge. Operation of each leg will be controlled with a normally-closed solenoid controlled via a human-machine interface (HMI) screen and timers.

The system components will be plumbed in a modular/mobile enclosure with environmental controls (e.g., lighting, heating, and ventilation). The system will be in an unclassified electrical area based on process conditions and location.

Operational safety features, including controls and fail-safes are included in the system design. All processes will be monitored and controlled by a programmable logic controller (PLC). This system will be shut down when Mississippi River elevation is above 414 feet above mean sea level (ft MSL) as measured at the Alton Lock and Dam to mitigate risk of flooding on equipment.

Well Details

Well spacing and layout for the individual remediation and monitoring wells considered the vertical and horizontal source area extent as identified in the pre-design investigation above. Proposed well layout and spacing is provided on **Figure 7**.

Well drilling and construction methods for the remediation wells are based on the specific lithologic conditions in the area and are planned using hollow-stem auger (HSA) or Sonic drilling technology. All new wells will be developed after installation. Purge water will be containerized and transferred to the on-site treatment system for disposal. Well construction is detailed below.

Biosparge Wells: Eleven (11) new biosparge wells will be installed in the treatment zone, and one of the pilot sparge wells will be utilized, for a total of 12 biosparge wells. Based on results of the pilot test, wells will be installed approximately 50 ft on center for a 25 ft ROI to develop overlapping zones of influence. Depth of wells is to target the lower depth of impacts, with 5-foot screens installed to depths of approximately 27-30 feet bgs based on stratigraphy in surrounding well/boring locations.

- Wells completed to a depth below the LNAPL interval with sufficient permeability as identified in the pre-design investigation - approximately 27 to 30 feet bgs depending on location;
- 5-feet of 0.020-inch slot well screen (flush-threaded);
- 2-inch diameter, schedule 40 PVC construction;
- Georgia #1 sand filter-pack to 1-foot above top of screen;
- 3-foot bentonite seal above filter-pack, followed by bentonite-cement grout to surface;
- Bottom slip cap, and locking gripper top cap;
- Surface completion with well extending 30 inches above ground surface with a steel well protector;
- Wellheads will be fitted with a lockable sample port to allow for pressure and soil gas measurements at the wellhead.

Piezometers: Three (3) new piezometers will be installed in the target depth interval from 20-30 feet bgs to monitor system performance, and later to monitor MNA and NSZD parameters in the transmissive sandier zones.

- Piezometers completed to 30 feet bgs;
- 10-feet of 0.010-inch slot well screen (flush-threaded);
- 2-inch diameter, schedule 40 PVC construction;
- Georgia #1 sand filter-pack to 1-foot above top of screen;
- 3-foot bentonite seal above filter-pack, followed by bentonite-cement grout to surface;
- Bottom slip cap, and locking gripper top cap;
- Surface completion with well extending 30 inches above ground surface with a steel well protector;
- Wellheads will be fitted with a lockable sample port to allow for pressure and soil gas measurements at the wellhead.

Vapor Monitoring Points: Five (5) nested VMPs will be installed to confirm no air emissions are present due to biosparging, to monitor system performance in the treatment area, and later to monitor MNA and NSZD parameters; one nested VMP location from the pilot sparge test will be

utilized, for a total of 6 sets of VMPs. Each set of nested VMPs will contain two monitoring points to monitor gas gradients vertically at 5 feet bgs and 15 feet bgs, for a total of 12 monitoring points.

- 2 nested screen depths – 5 feet bgs, 15 feet bgs;
- ¾-inch schedule 40 PVC points; 24-inch screen lengths of 0.010-inch slot well screen;
- Georgia #1 sand filter-pack from 6-inches below to 6-inches above screens;
- Bentonite seals between screens and above top of screen;
- Above top screen bentonite-cement grout to surface;
- Bottom slip cap;
- Surface completion with wells extending 30 inches above ground surface with a steel well protector;
- Wellheads will be fitted with a lockable sample port to allow for pressure and soil gas measurements at the wellhead.

System Infrastructure and Logistics

The biosparge system treatment area is an open area containing one aboveground storage tank within a secondary containment wall and berms surrounding the area. There are no known historical underground utility corridors in the area that could cause short-circuiting or convey vapors horizontally. The treatment area is near the Mississippi River and has been inundated during previous flooding events. The area is closed to the general public but is accessible by multiple other companies (i.e., it is not within the bp-controlled fence line).

Because of the small number of wells, and to maximize control, all piping runs will be individual lateral runs from an equipment trailer housing the biosparge equipment to the biosparge wells. Though there are no freezing concerns with compressed air, the air conveyance lines will be buried at a depth of 12 to 18 inches bgs and set in gravel. This will prevent any concerns with above ground infrastructure during flooding and prevent potential tripping hazards. Pipe materials of construction and specifications consider the material to be conveyed (compatibility), the flow rates, and applied pressures and temperatures. Because all piping will be at relatively low pressure (<15 psi limited by the compressor) and will be buried, HDPE pipe is specified as it is resistant to corrosion and can meet the pressure and temperature requirements.

The system trailer will stay on a hitch with disconnects should flooding require the equipment be moved to avoid damage. A temporary system move will be considered when the Mississippi River elevation is above 414 ft MSL as measured at the Alton Lock and Dam. This will also allow for redeployment of the system in a different area, as needed, following biosparging in the LOD Area.

Power is available from a nearby 480V pole-mounted transformer. A 480V line will be run to a power pole installed adjacent the proposed system trailer and will feed directly to an external disconnect mounted to the system enclosure. A step-down transformer will be provided on the

enclosure as needed to power system components. The system enclosure will be grounded using a copper rod driven into the ground.

Path Forward

Upon Illinois EPA approval of the proposed CA-Modification, bp will initiate system procurement and installation activities for the proposed biosparge system. Once operational, the proposed contaminant control remedy will replace the current corrective action of hydraulic control for wells in the LOD Area. It is estimated that the system could be installed within 180 days of Illinois approval of this CA-Modification request.

Under the proposed CA-Modification, monitoring wells LOD-1, LOD-2, LOD-5, LOD-7, RL-17B, and G102 located within the LOD Area will no longer be part of the hydraulic control gauging and contouring program. Performance of the modified Corrective Action Program will continue to be reported quarterly in accordance with Section V.9 of the RCRA permit. GMZ boundary wells will continue to be monitored for compliance with applicable GQS.

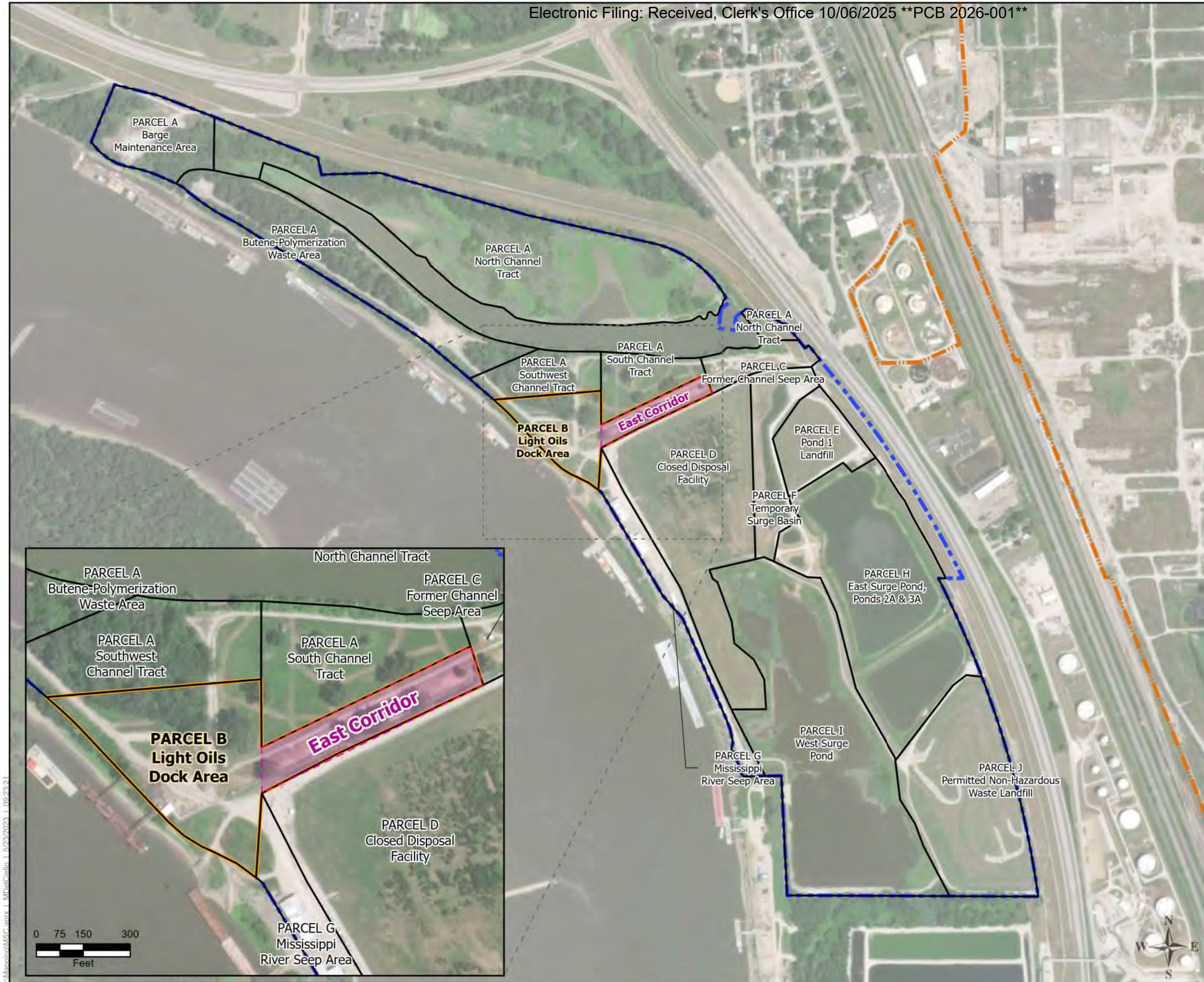
Following Illinois EPA approval of this CA-Modification, bp will submit Class 1* Permit Modification Request to Illinois EPA to modify Section IV.A.1 of the RCRA permit.

ATTACHMENTS

Figures 1-8
Tables 1-2
Appendices A-E

FIGURES

Figure 1	Riverfront Facility Parcel Map
Figure 2	Light Oils Dock Area Monitoring Well Locations
Figure 3	4Q2022 Riverfront Benzene Isoconcentration Map
Figure 4	LOD Borings with GCFID and Cross-Section Traverses
Figure 5	Cross-Section A-A'
Figure 6	Cross-Section B-B'
Figure 7	Proposed Treatment System Layout
Figure 8	Process Flow Schematic



Main Plant

Riverfront

Land Reuse Parcel Boundary

0 300 600 1,200

1 INCH = 600 FEET

RIVERFRONT FACILITY PARCEL MAP

BP FORMER REFINERY
WOOD RIVER, ILLINOIS

SOVEREIGN CONSULTING Inc.
111-A North Gold Drive
Robbinsville, New Jersey 08691
(609) 259-8200 (609) 259-8288 (fax)

FIGURE:

1

References: New Jersey Office of Information Technology, Office of GIS (2023). World Imagery: STL Imagery Consortium, Maxar

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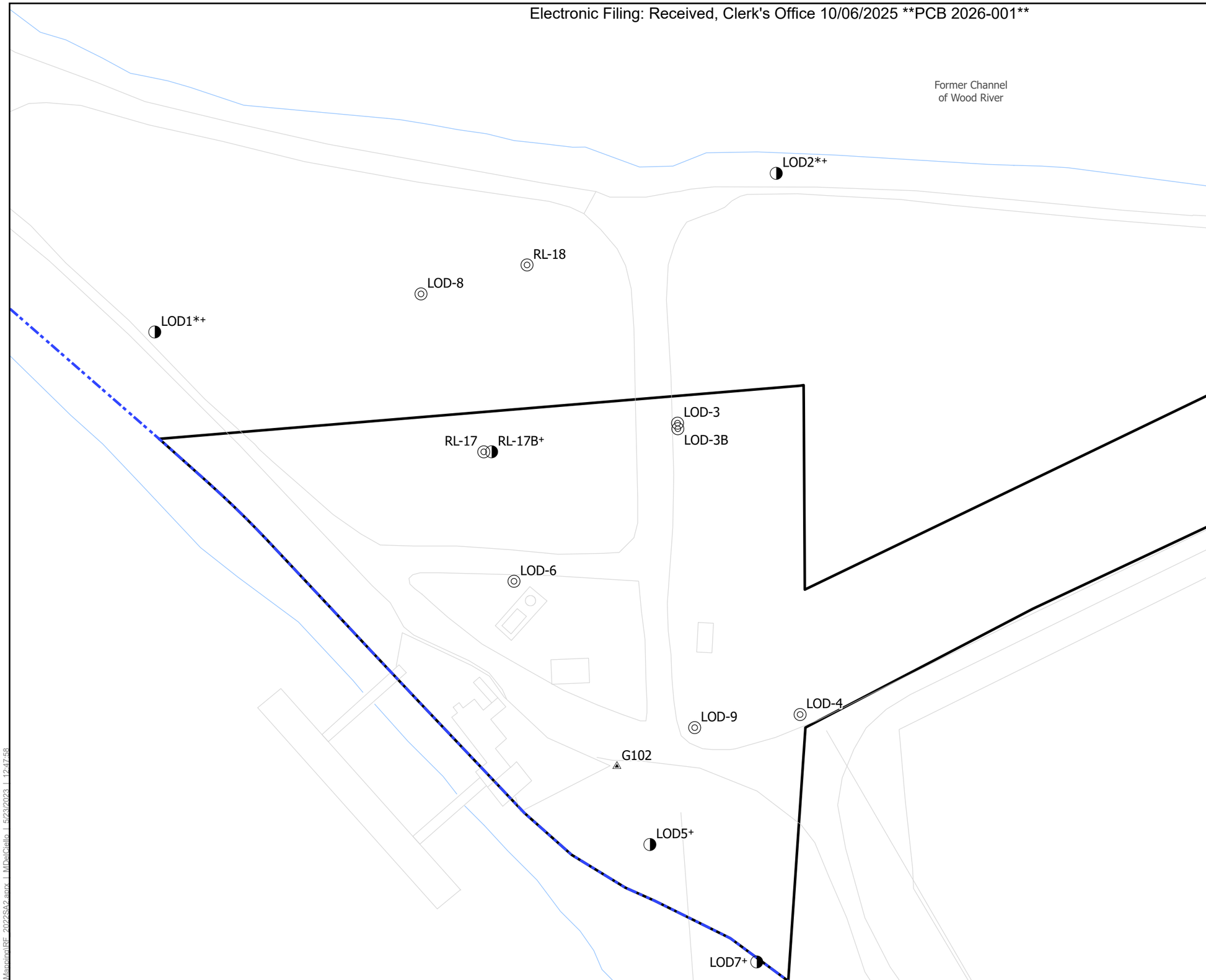

Light Oils Dock (LOD) Well

Riverfront Gradient Control Well

Riverfront Semi-Annual Observation Monitoring Well

Riverfront Property Boundary

Parcel B Boundary

Notes:

* - LOD1 and LOD2 are approved sentinel wells by Permit.
\+ - Riverfront GMZ Well.

N
W E
S

0 50 100 200
1 INCH = 100 FEET

LIGHT OILS DOCK AREA
MONITORING WELL LOCATIONS

BP FORMER REFINERY
WOOD RIVER, ILLINOIS

SOVEREIGN CONSULTING Inc.
111-A North Gold Drive
Robbinsville, New Jersey 08691
(609) 259-8200 (609) 259-8288 (fax)

FIGURE:
2

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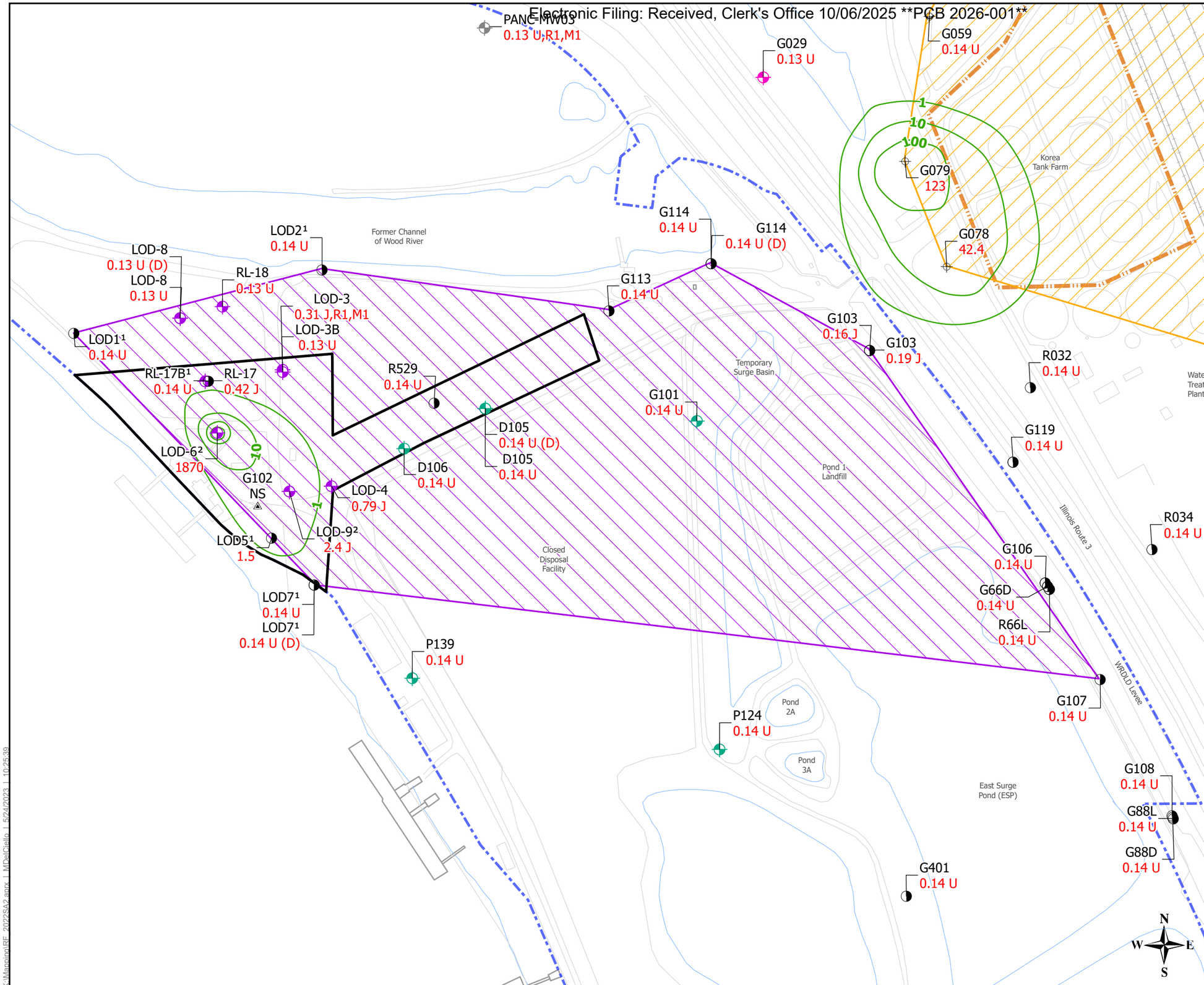
References: Site features are from various surveys.



CDF Monitoring Well

LOD Monitoring Well

Main Plant GMZ Well

Parcel A Sentinel Well

Riverfront Semi-Annual Observation Well

Riverfront Gradient Control Monitoring Well

Abandoned Well

Parcel B Boundary

Benzene Isoconcentration Contour (µg/L)

Main Plant GMZ

Riverfront GMZ

Main Plant Property Boundary

Riverfront Property Boundary

0.001 U Fourth Quarter 2022 benzene concentration in micrograms per liter (µg/L)

Notes:
(D) - Duplicate.
J - Estimated Concentration.
U - Not Detected at the Reporting Limit.
H1 - Analysis conducted outside of EPA method holding time.
M1 - Matrix spike recovery exceeded QC limits. Accepted based on on laboratory control sample recovery.
NS - Not Sampled.

LOD-1, LOD-2, LOD-5, LOD-7, and RL-17B also monitored under LOD monitoring program in accordance with the Illinois EPA letter dated May 11, 2009.

PANC-MW03 abandoned in April 2023 in accordance with Illinois EPA letter dated January 19, 2023.

1. Also Riverfront GMZ well.
2. Also Riverfront Observation Well under optimized groundwater monitoring program.

0 125 250 500
1 INCH = 250 FEET

4Q22 BENZENE ISOCONCENTRATION MAP OF RIVERFRONT GMZ BOUNDARY

BP RIVERFRONT PROPERTY
WOOD RIVER, ILLINOIS

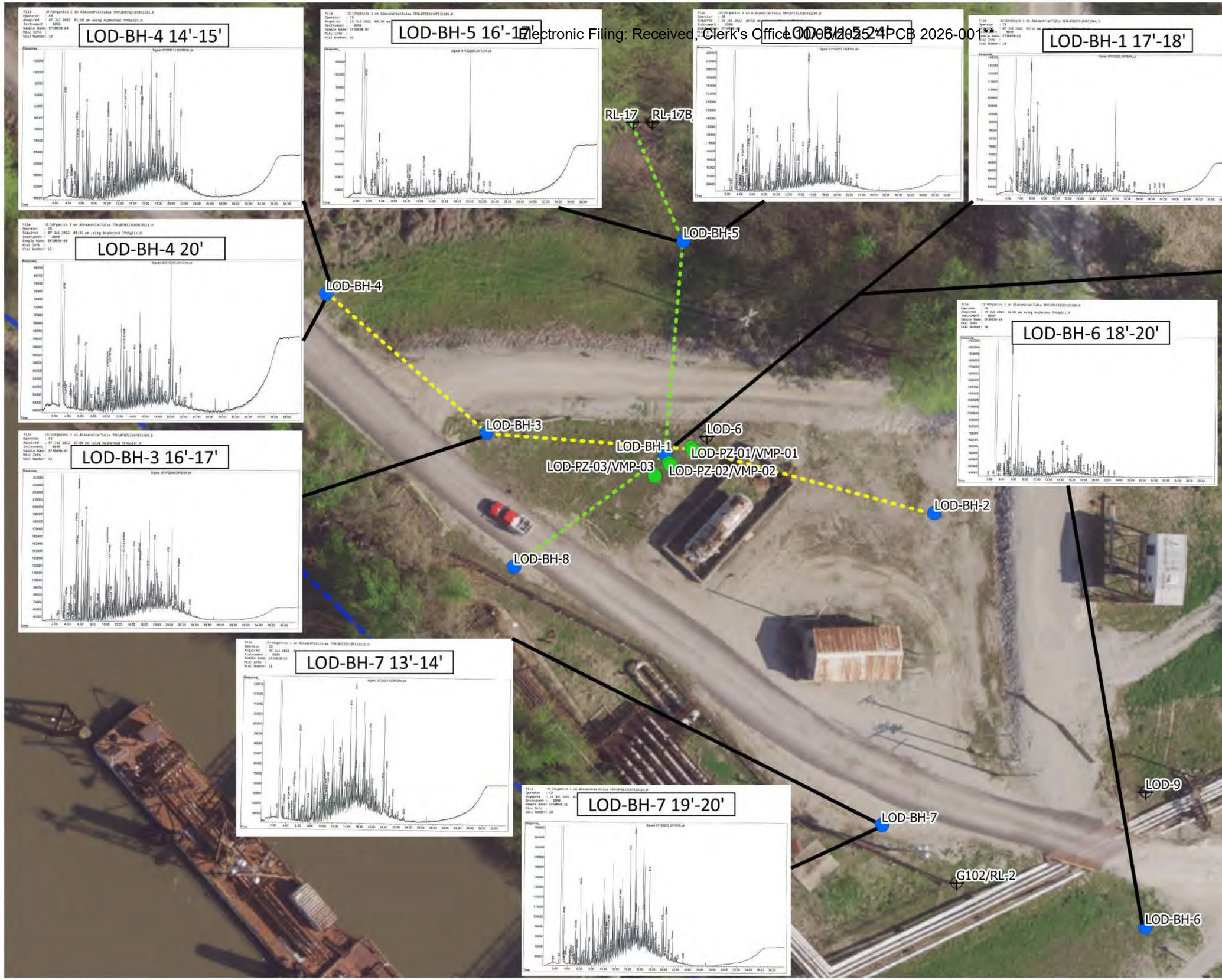
SOVEREIGN CONSULTING Inc.
111-A North Gold Drive
Robbinsville, New Jersey 08691
(609) 259-8200 (609) 259-8288 (fax)

FIGURE:
3

K:\Mapping\RF 2022SA2.aprx | MDelCiello | 5/24/2023 | 10:25:39

References: New Jersey Office of Information Technology, Office of GIS (2023).

Electronic Filing: Received, Clerk's Office 10/8/2025 PCB 2026-001



LOD Sparge PZs and VMPs

LOD Borings (UVOST/HPT)

Existing Monitoring Well

LOD Borings A-A'

Lod Borings B-B'

Riverfront Property Boundary

N W E S

0 50 100 ft

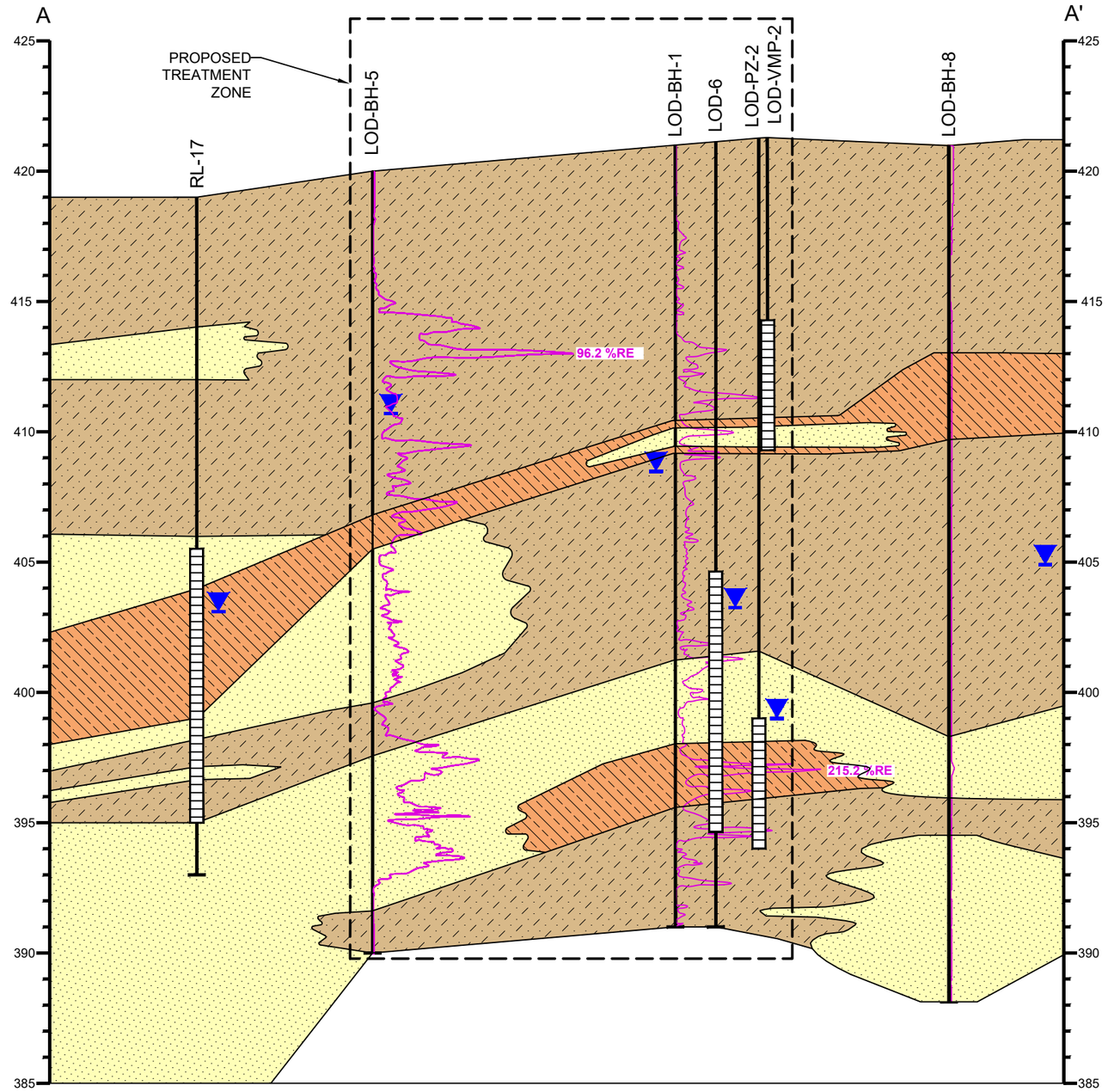
LOD BORINGS WITH GCFID

BP FORMER REFINERY
WOOD RIVER, ILLINOIS

DRAWN: AMM	DATE: 05/03/2023
CHECKED: JCM	PROJECT NO: BP050.

SOVEREIGN CONSULTING Inc.
111-A North Gold Drive
Robbinsville, New Jersey 08691
(609) 259-8200 (609) 259-8288 (fax)

FIGURE: 4



LEGEND

Monitoring Well

Screened Interval

Water Table

UVOST %RE Curve
215.12 %RE (Max %RE)

CL/ML Fine Grained Material Consisting Predominantly of Clay and Silt

SP_SM / SP_SC Transitional Zones Consisting of Clay, Silt, and Sand Mixes

SM/SP Coarse Grained Material Consisting Predominantly of Sand

VERTICAL SCALE (IN FEET) 5

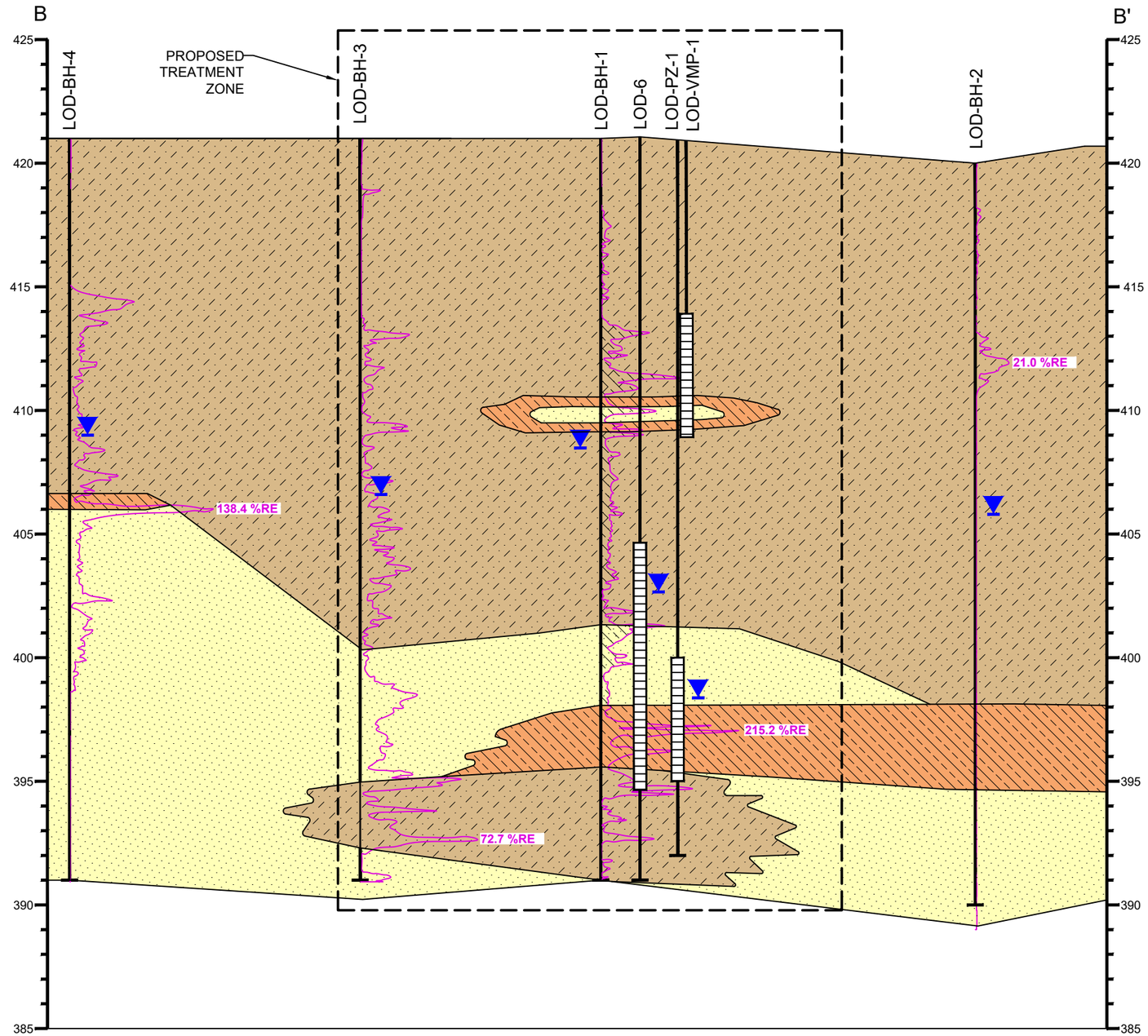
HORIZONTAL SCALE (IN FEET) 40

Sovereign Consulting Inc.
111-A North Gold Drive
Robbinsville, NJ 08691
(609) 259-8200 Fax (609) 259-8288

Project No. BP050.103.05 File: 0523_WR_LOD_XS.dwg XS_AA' Date: 05/4/2023

FIGURE 5
CROSS SECTION AA'

BP FORMER WOOD RIVER REFINERY
WOOD RIVER, ILLINOIS



LEGEND

Monitoring Well

Screened Interval

Water Table

UVOST %RE Curve
215.12 %RE (Max %RE)

CL/ML Fine Grained Material Consisting Predominantly of Clay and Silt

SP_SM / SP_SC Transitional Zones Consisting of Clay, Silt, and Sand Mixes

SM/SP Coarse Grained Material Consisting Predominantly of Sand

VERTICAL SCALE (IN FEET) 5

HORIZONTAL SCALE (IN FEET) 40

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111-A North Gold Drive
Robbinsville, NJ 08691
(609) 259-8200 Fax (609) 259-8288

Project No. BP050.103.05 File: 0523_WR_LOD_XS.dwg XS_BB' Date: 05/4/2023

FIGURE 6
CROSS SECTION BB'

BP FORMER WOOD RIVER REFINERY
WOOD RIVER, ILLINOIS

Electronic Filing: Received, Clerk's Office 10/06/2025 **PCB 2026-001**

Proposed Sparge Well

Proposed Nested VMP

Proposed Piezometer

Sparge Piezometers and VMPs

Borings (UVOST/HPT)

Treatment System Area

Existing Monitoring Well

Riverfront Property Boundary

Note: Exact Locations of LOD Sparge Wells, Piezometers, and VMPs May Change During Install Due to Field Conditions.

N W E S

0 25 50 ft

PROPOSED TREATMENT SYSTEM

BP FORMER REFINERY
WOOD RIVER, ILLINOIS

DRAWN: AMM	DATE: 05/11/2023
CHECKED: JCM	PROJECT NO: BP050.

SOVEREIGN CONSULTING Inc.
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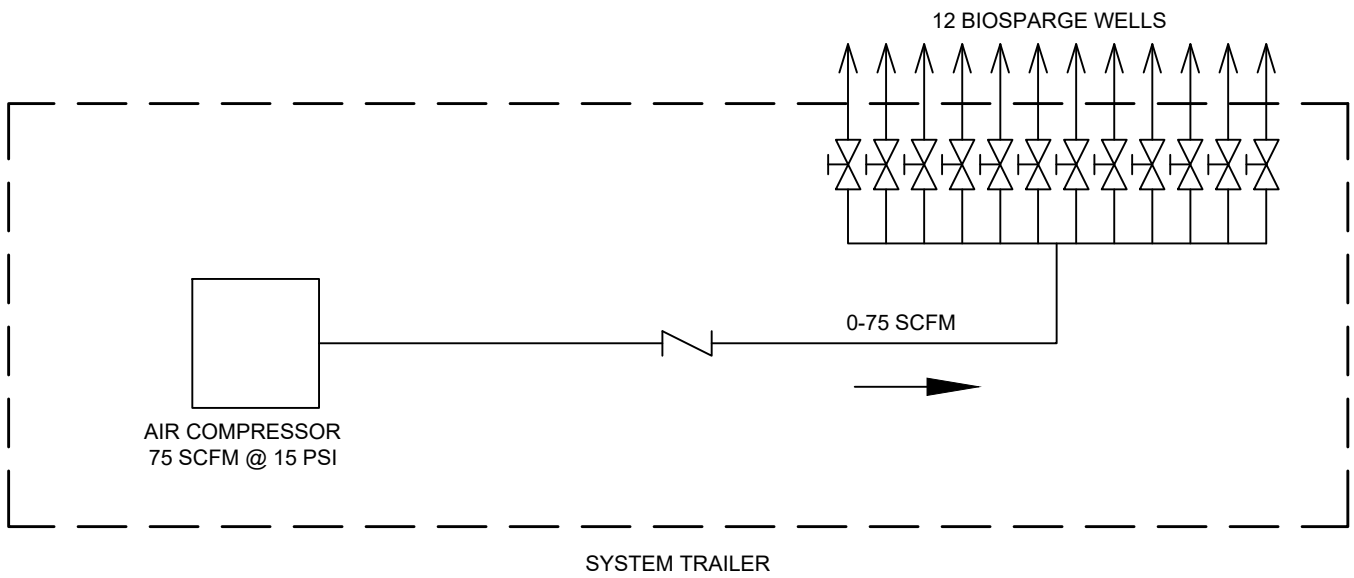
Robbinsville, New Jersey 08691
(609) 259-8200 (609) 259-8288 (fax)

FIGURE: 7



Sovereign Consulting Inc.
111-A North Gold Drive
Robbinsville, NJ 08691
(609) 259-8200 Fax (609) 259-8288

Project No. BP050.003 File: WR_Fig8_PFD_LODarea.dwg Date: 05/11/2023

FIGURE 8
PROCESS FLOW SCHEMATIC
LOD AREA

BP FORMER WOOD RIVER REFINERY
WOOD RIVER, ILLINOIS

TABLES

Table 1 Light Oils Dock Area Monitoring Wells

Table 2 GCFID Peak Area Responses

TABLE 1
LIGHT OILS DOCK AREA MONITORING WELLS
BP RIVERFRONT PROPERTY - WOOD RIVER, ILLINOIS

IEPA Well ID	BP Well ID	Current Well Program	TOS Interval (ft bgs)	BOS Interval (ft bgs)	TOS Interval Elevation (ft amsl)	BOS Interval Elevation (ft amsl)	2020 TOC Elevation (ft amsl)	2020 Grade Elevation (ft amsl)
LOD-3	LOD-3	LOD	30	40	390.75	380.75	423.04	420.73
LOD-3B	LOD-3B	LOD	45	55	375.80	365.80	423.09	420.79
LOD-4	LOD-4	LOD	31	41	394.22	384.22	427.76	425.20
LOD-6	LOD-6	LOD	18.3	28.3	403.19	393.19	422.92	421.70
LOD-8	LOD-8	LOD	17.9	28	402.01	391.91	NS	NS
LOD-9	LOD-9	LOD	18.5	28.5	403.93	393.93	425.16	422.62
RL-17	RL-17	LOD	14	24	404.82	394.82	421.51	418.81
RL-18	RL-18	LOD	20	30	401.34	391.34	423.35	421.21
LOD-1*	LOD-1	LOD/RFOW	21.1	31.1	403.41	393.41	426.51	424.58
LOD-2*	LOD-2	LOD/RFOW	31.2	41.2	389.79	379.79	423.51	421.15
LOD-5*	LOD-5	LOD/RFOW	18.5	28.5	403.43	393.43	423.03	422.11
LOD-7*	LOD-7	LOD/RFOW	18.5	28.5	401.65	391.65	422.11	420.34
RL-17B*	RL-17B	LOD/RFOW	45	55	373.89	363.89	421.52	418.82
G102	RL-02	RF GC	24	34	398.78	388.78	426.30	422.78

Notes:
TOS = top of screen
BOS = bottom of screen
ft bgs = feet below ground surface
ft amsl = feet above mean sea level
LOD = Light Oils Dock
RFOW = Riverfront Observation Well
RF GC = Riverfront Gradient Control Monitoring Well
NS = Not Surveyed
Elevations based on 2020 5-Year TOC survey elevation.
Current LOD Program monitoring required per Illinois EPA letter dated May 11, 2009.
*Also designated GMZ boundary well under the RCRA Permit.

TABLE 2
GCFID PEAK AREA RESPONSES RELATIVE MOL FRACTION
BP RIVERFRONT PROPERY, WOOD RIVER, ILLINOIS

Compound Name	LOD-BH-1 (17-18)	LOD-BH-1 (20-21)	LOD-BH-3 (16-17)	LOD-BH-3 (21-22)	LOD-BH-4 (14-15)	LOD-BH-4 (20)	LOD-BH-5 (16-17)	LOD-BH-5 (24)	LOD-BH-6 (18-20)	LOD-BH-7 (13-14)	LOD-BH-7 (19-20)
Hexane	0.27%	0.00%	0.17%	0.00%	0.00%	0.00%	0.00%	0.49%	0.00%	0.00%	0.00%
Benzene	0.82%	0.00%	0.81%	0.00%	0.00%	0.00%	0.00%	0.88%	0.08%	0.00%	0.00%
Cylcohexane	3.95%	2.09%	7.85%	1.25%	0.00%	0.73%	0.72%	8.84%	3.21%	0.87%	0.76%
Toluene	1.16%	0.84%	2.76%	0.65%	0.50%	0.38%	0.19%	1.85%	14.92%	0.18%	0.16%
Ethylbenzene	0.12%	0.33%	0.60%	0.05%	0.02%	0.05%	0.00%	0.29%	0.99%	0.17%	0.23%
m/p-Xylene	0.09%	0.08%	0.43%	0.10%	0.09%	0.07%	0.02%	0.29%	0.16%	0.33%	0.02%
o-Xylene	0.03%	0.05%	0.31%	0.07%	0.07%	0.06%	0.02%	0.23%	1.39%	0.43%	0.45%
1,3,5-Trimethylbenzene	0.46%	0.37%	2.03%	0.66%	0.29%	0.46%	0.13%	1.88%	2.48%	1.51%	1.50%
1,2,4-Trimethylbenzene	0.15%	0.12%	0.72%	0.23%	0.09%	0.14%	0.03%	0.64%	0.99%	0.61%	0.63%

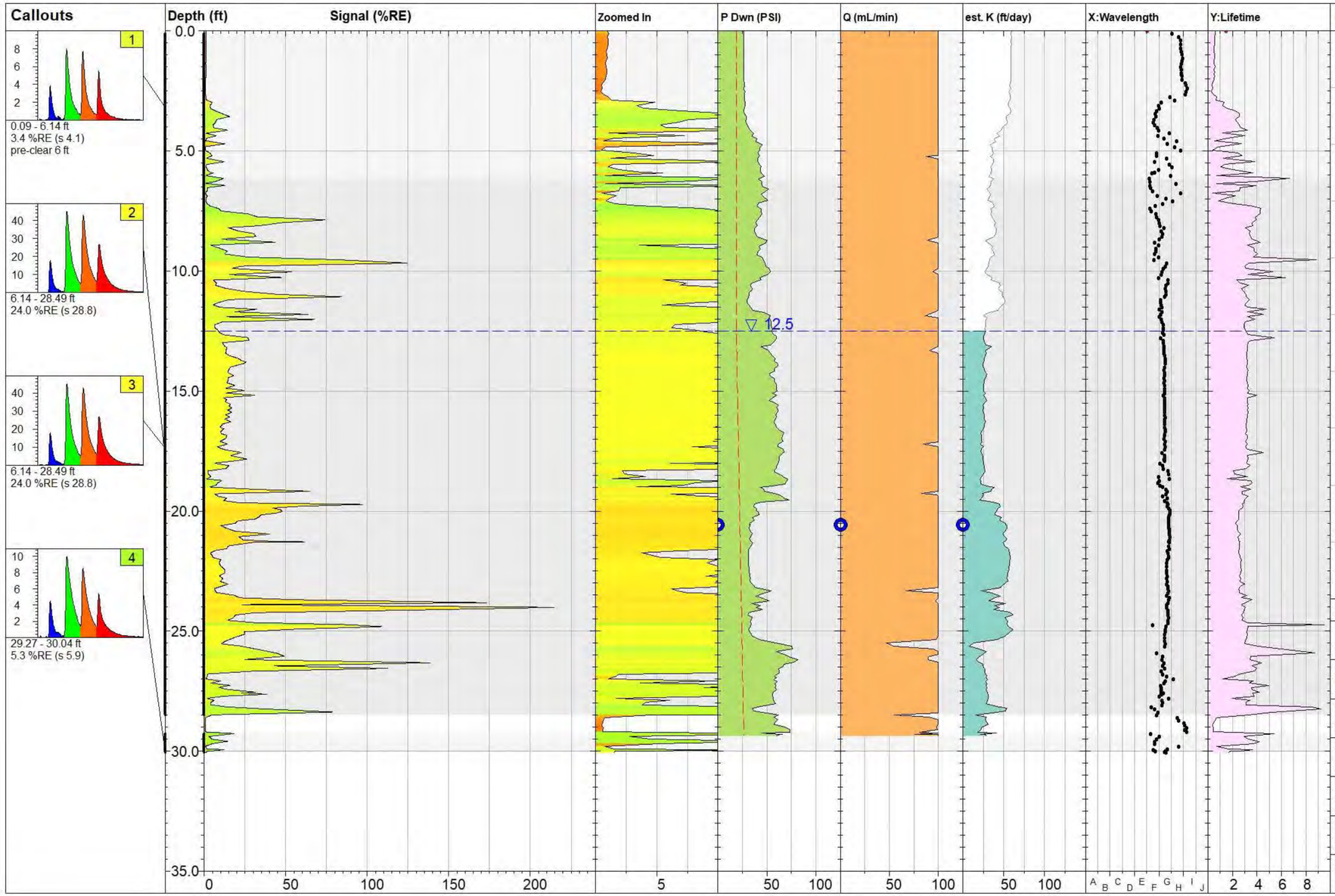
Note:
Relative mol fraction showing percentage of compound remaining compared to an unweathered standard for this LNAPL type.

Electronic Filing: Received, Clerk's Office 10/06/2025 **PCB 2026-001**

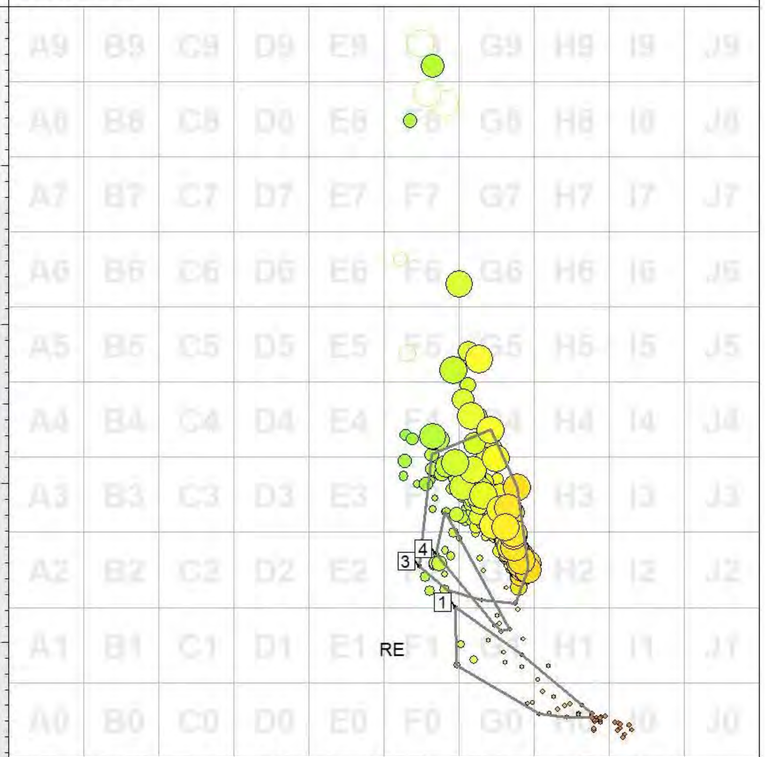
APPENDICES

Electronic Filing: Received, Clerk's Office 10/06/2025 **PCB 2026-001**

APPENDIX A
UVOST-HPT Boring Logs



Cluster Plot



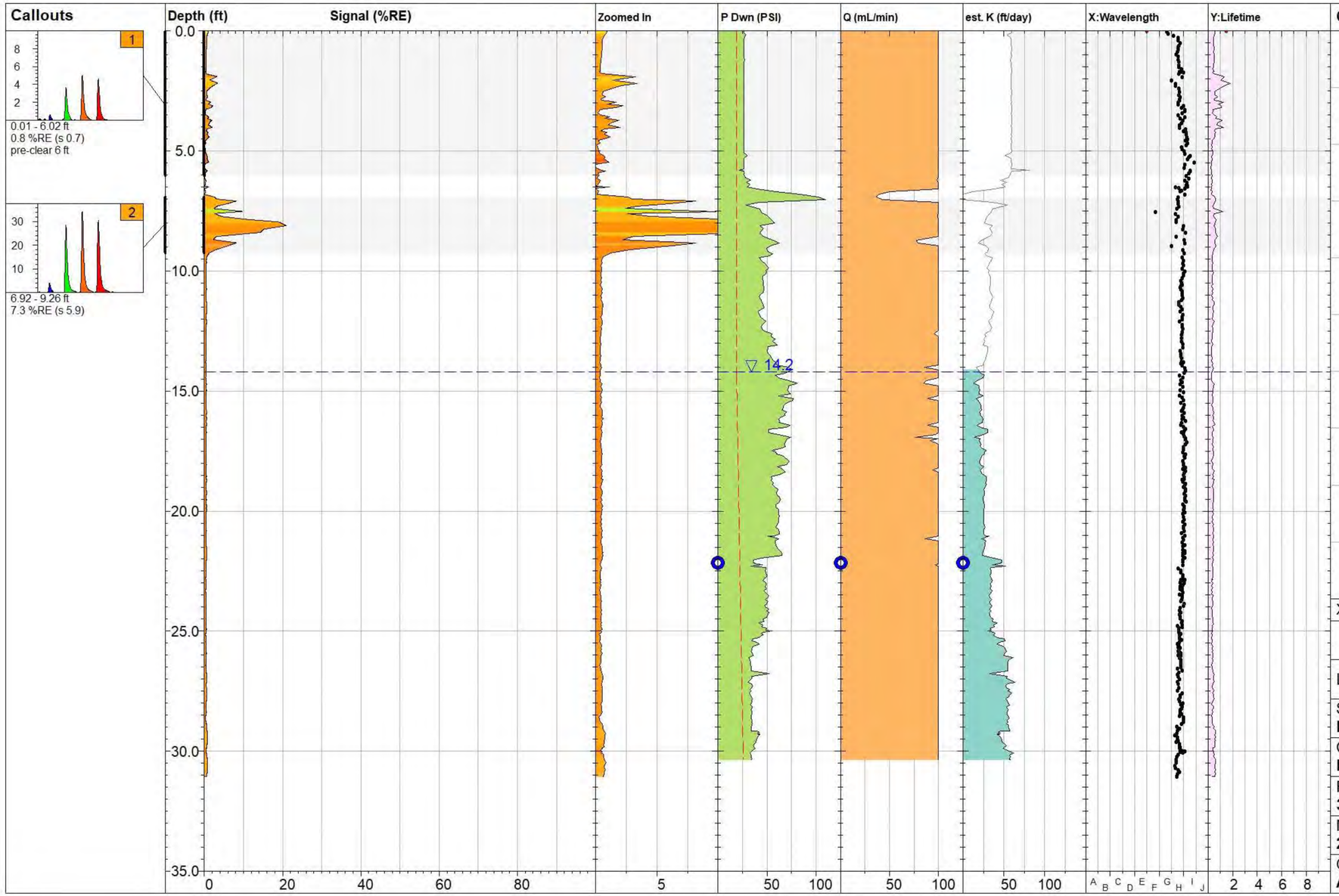
X-axis = Wavelength balance of waveform; Y-axis = Lifetime avg. of waveform

UVOST® By Dakota

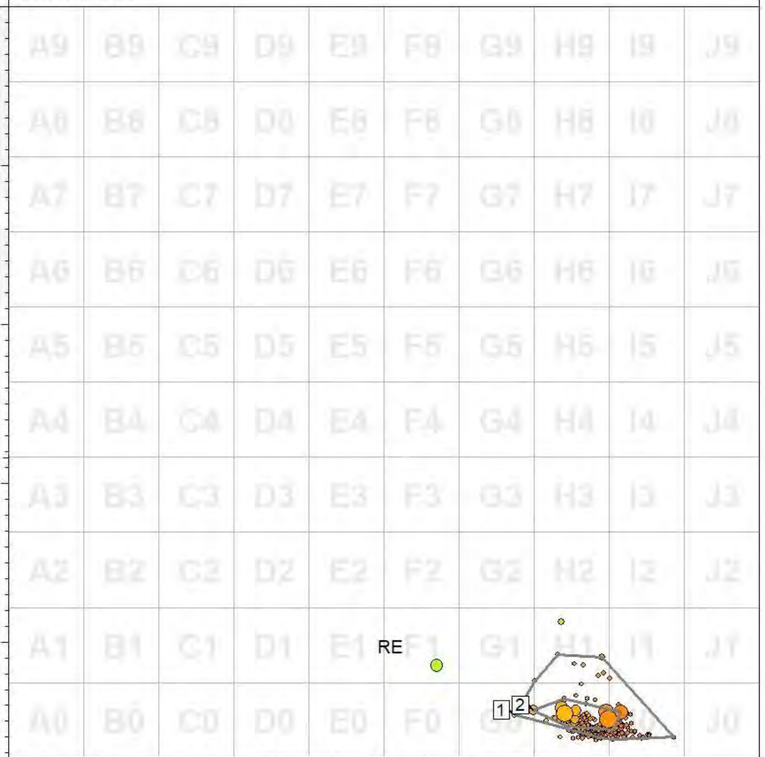
Data Presentation Format © 2022 Dakota Technologies, Inc. (v2.7.0)

Log: **LOD-BH-1**

Site: **BP Property Site**	Date & Time: **2022-06-14 14:26 CDT**
Client: **REDI**	Job: **0118.2022**
Final Depth: **30.04 ft**	X Coord.(Long/East): **Unavailable**
Max Signal: **215.2 %RE @ 24.01 ft**	Y Coord.(Lat/North): **Unavailable**
Operator / Unit: **A. Nagle / UVOST1613**	Elevation: **Unavailable**



Cluster Plot



X-axis = Wavelength balance of waveform; Y-axis = Lifetime avg. of waveform

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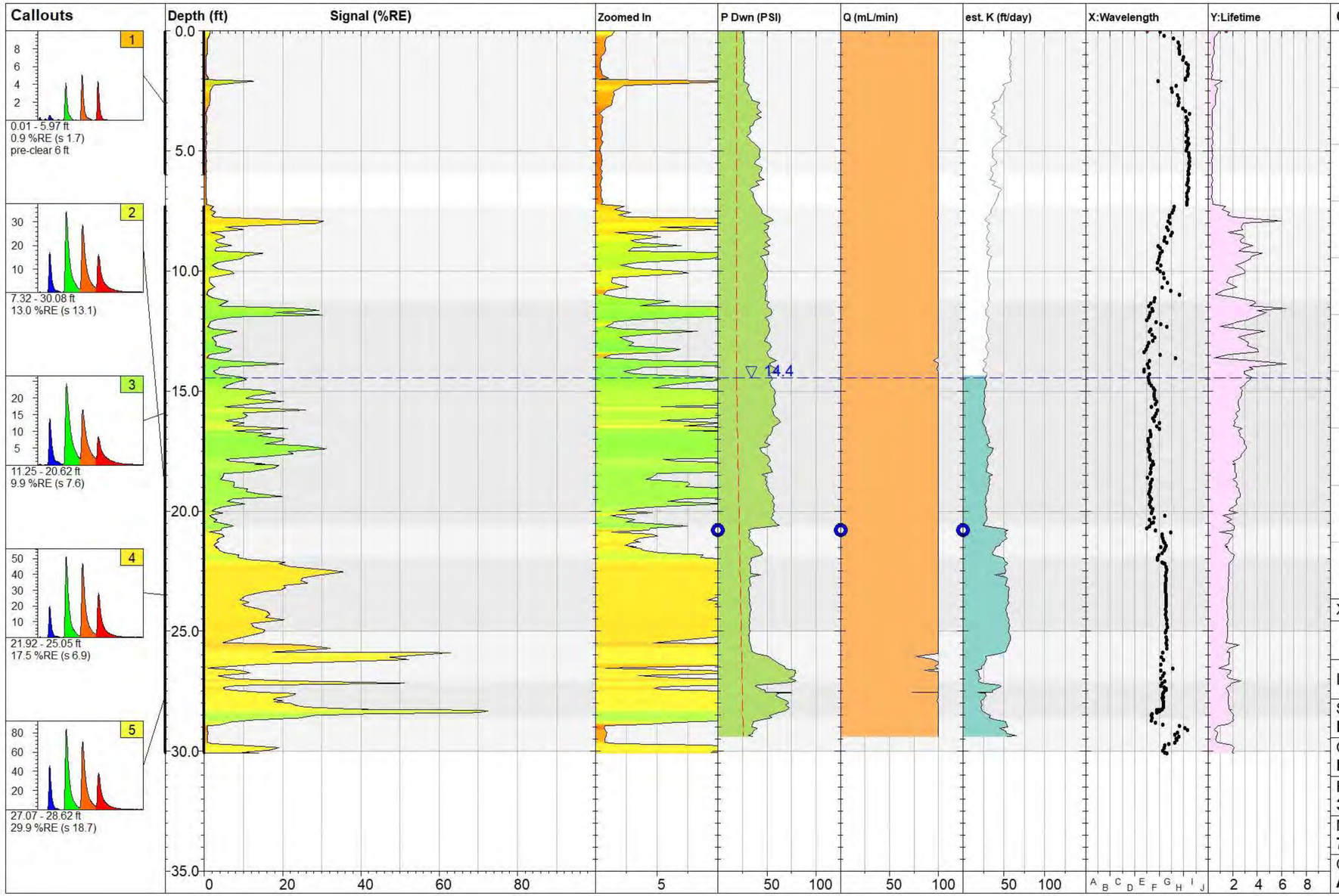
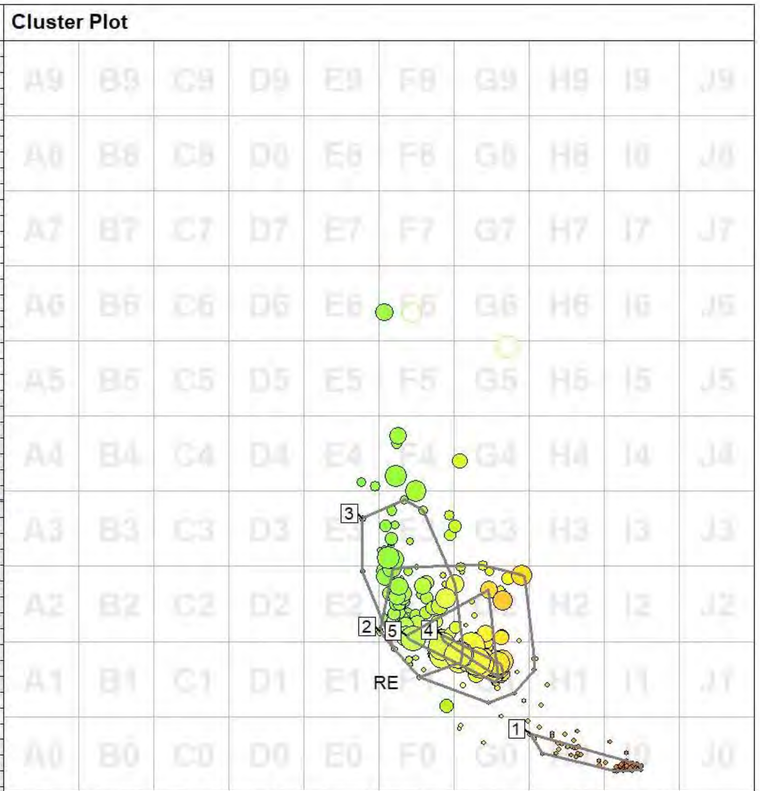
Log: **LOD-BH-2**

Site: **BP Property Site**	Date & Time: **2022-06-15 07:53 CDT**
Client: **REDI**	Job: **0118.2022**
Final Depth: **31.05 ft**	X Coord.(Long/East): **Unavailable**
Max Signal: **21.0 %RE @ 8.11 ft**	Y Coord.(Lat/North): **Unavailable**
Operator / Unit: **A. Nagle / UVOST1613**	Elevation: **Unavailable**





X-axis = Wavelength balance of waveform; Y-axis = Lifetime avg. of waveform

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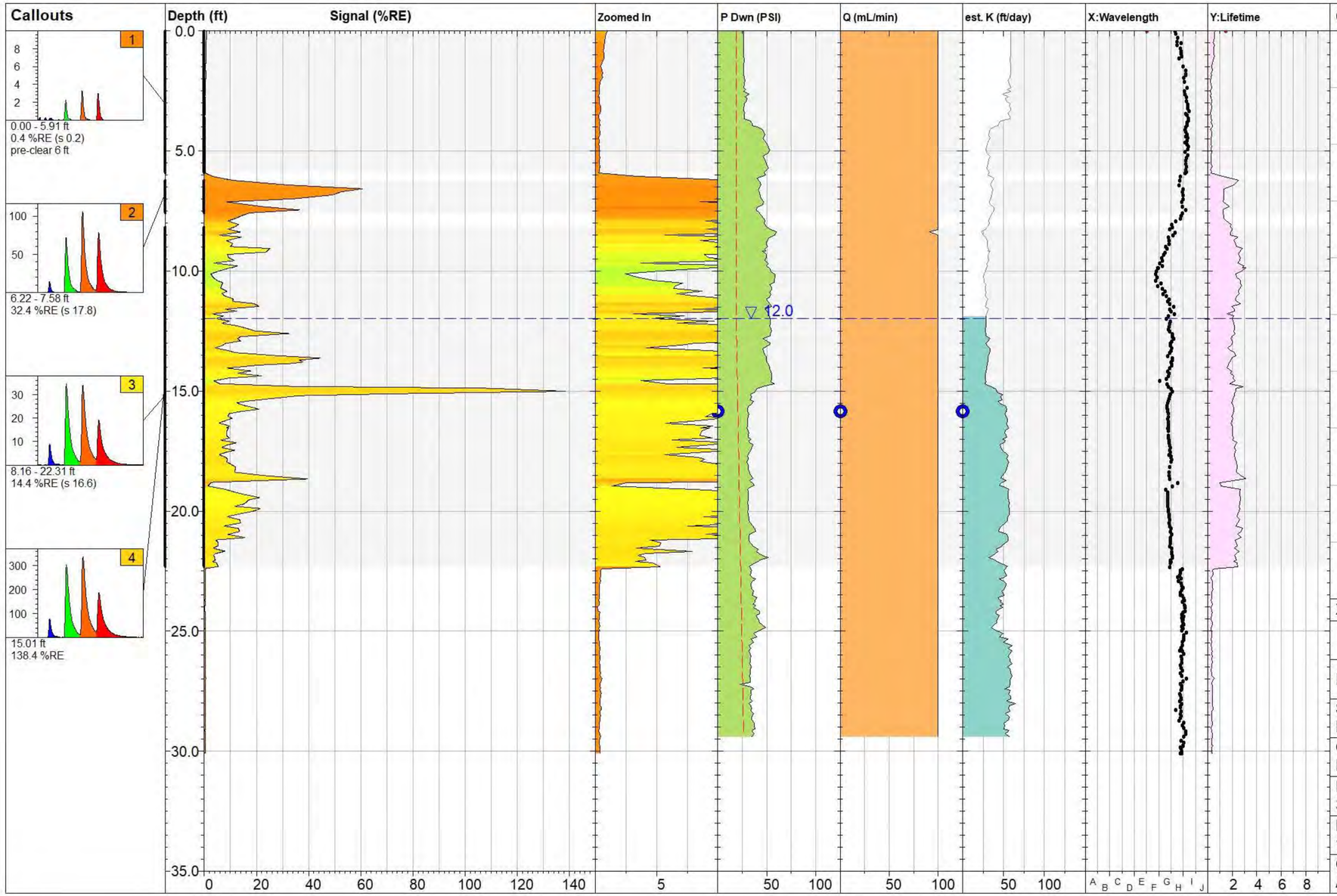
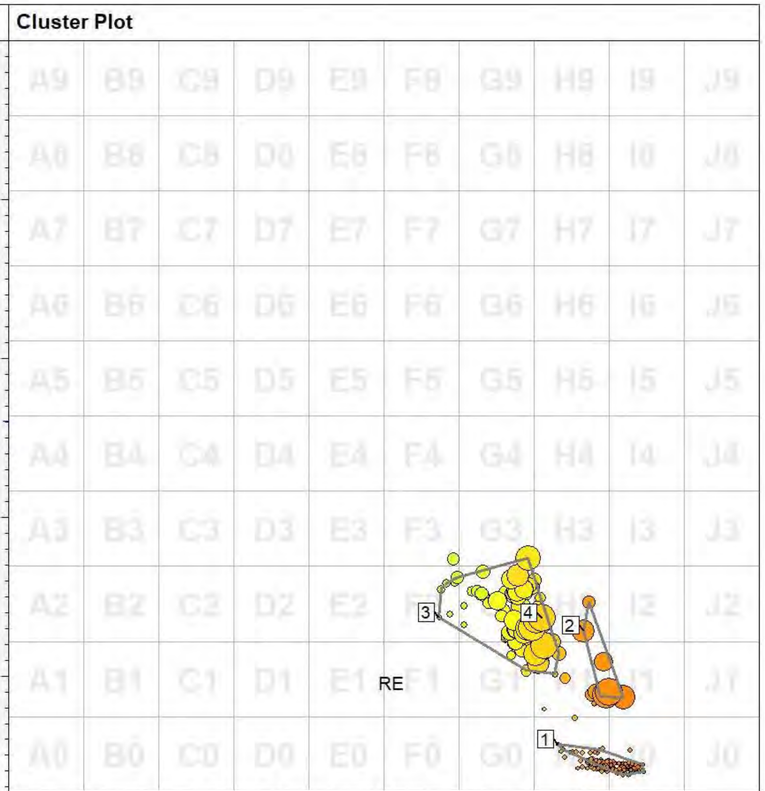
Data Presentation Format © 2022 Dakota Technologies, Inc. (v2.7.0)

Log: **LOD-BH-3**

Site: **BP Property Site**	Date & Time: **2022-06-14 12:57 CDT**
Client: **REDI**	Job: **0118.2022**
Final Depth: **30.08 ft**	X Coord.(Long/East): **Unavailable**
Max Signal: **72.7 %RE @ 28.32 ft**	Y Coord.(Lat/North): **Unavailable**
Operator / Unit: **A. Nagle / UVOST1613**	Elevation: **Unavailable**

Electronic Filing: Received, Clerk's Office 10/06/2025 **PCB 2026-001**





X-axis = Wavelength balance of waveform; Y-axis = Lifetime avg. of waveform

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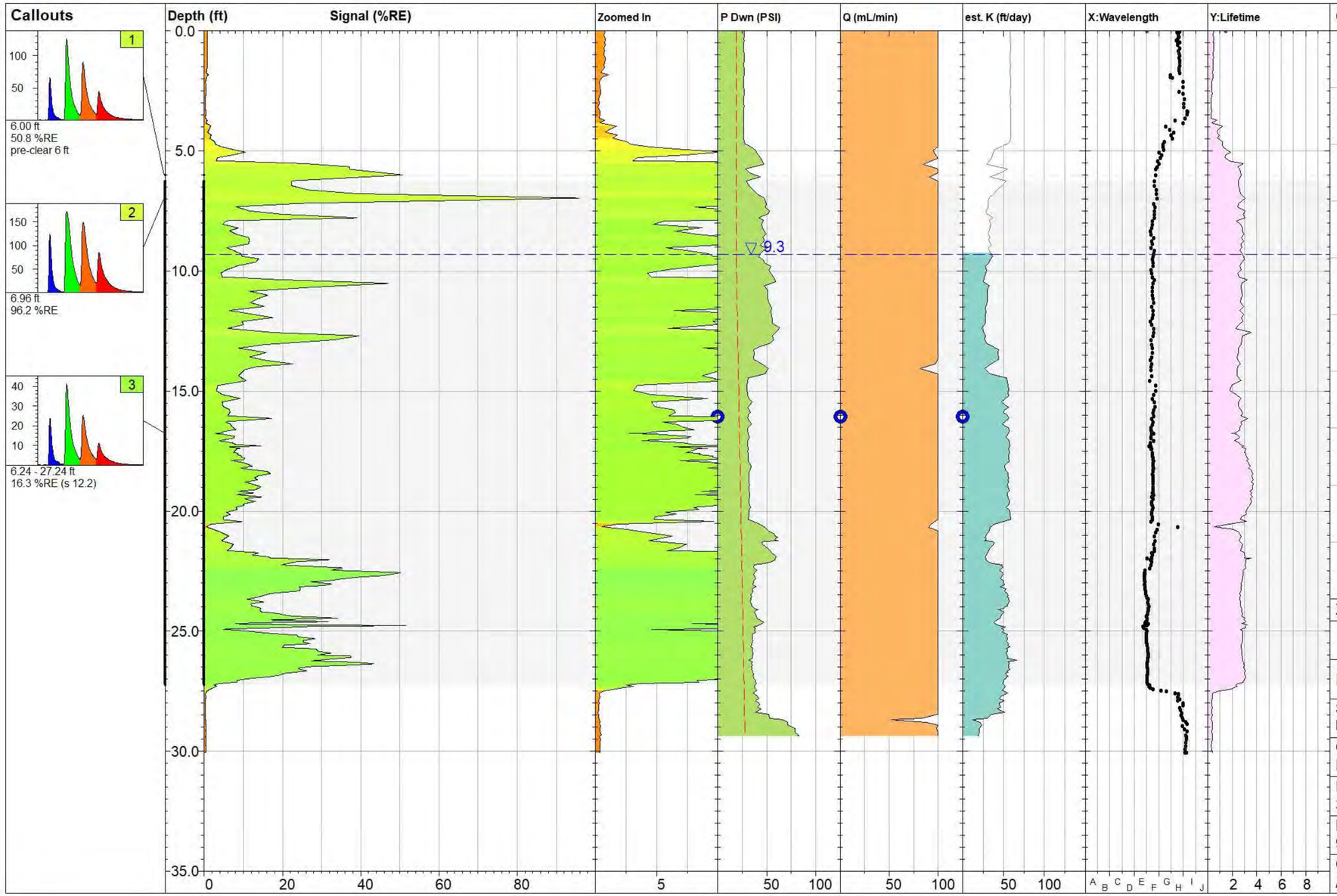
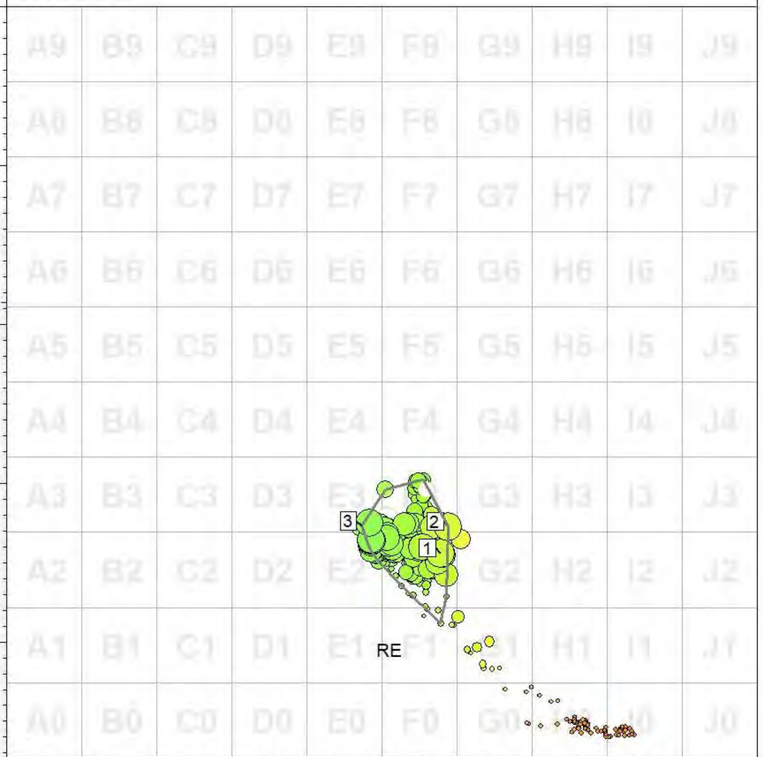
Data Presentation Format © 2022 Dakota Technologies, Inc. (v2.7.0)

Log: **LOD-BH-4**

Site: **BP Property Site**	Date & Time: **2022-06-14 12:03 CDT**
Client: **REDI**	Job: **0118.2022**
Final Depth: **30.09 ft**	X Coord.(Long/East): **Unavailable**
Max Signal: **138.4 %RE @ 15.01 ft**	Y Coord.(Lat/North): **Unavailable**
Operator / Unit: **A. Nagle / UVOST1613**	Elevation: **Unavailable**



Cluster Plot



X-axis = Wavelength balance of waveform; Y-axis = Lifetime avg. of waveform

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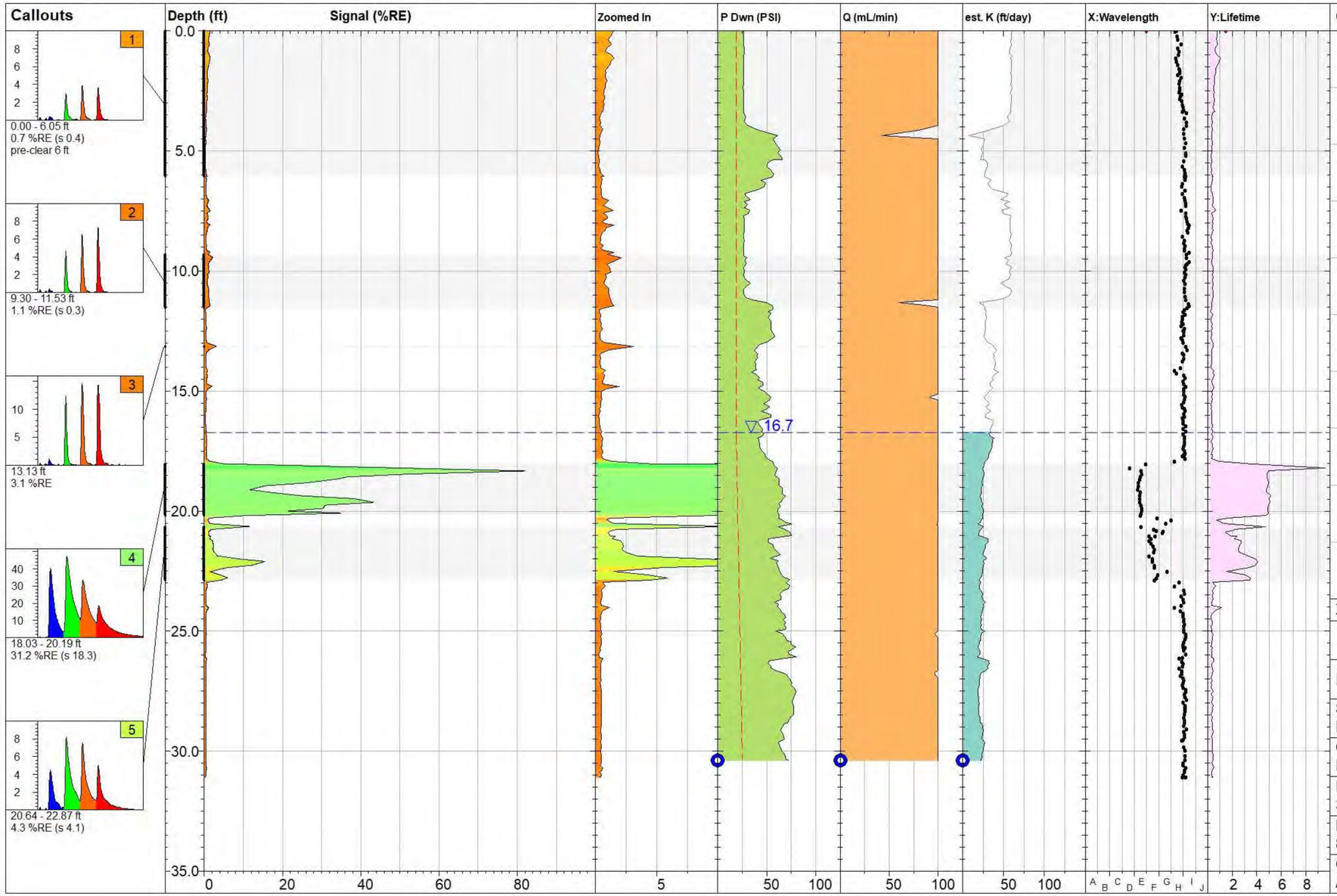
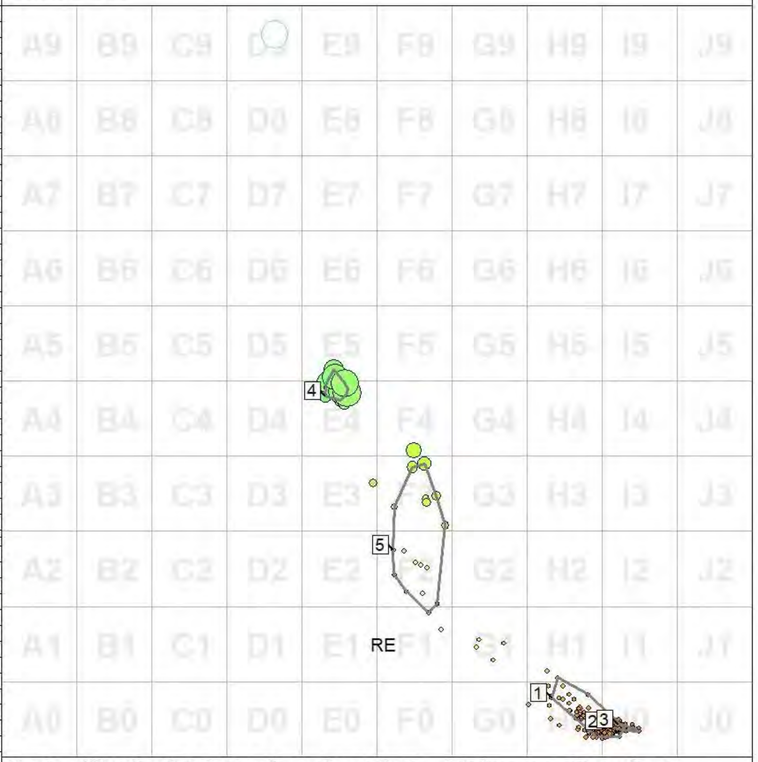
Data Presentation Format © 2022 Dakota Technologies, Inc. (v2.7.0)

Log: **LOD-BH-5**

Site: **Phillips 66 Property Site**	Date & Time: **2022-06-14 10:50 CDT**
Client: **REDI**	Job: **0118.2022**
Final Depth: **30.06 ft**	X Coord.(Long/East): **Unavailable**
Max Signal: **96.2 %RE @ 6.96 ft**	Y Coord.(Lat/North): **Unavailable**
Operator / Unit: **A. Nagle / UVOST1613**	Elevation: **Unavailable**



Cluster Plot



X-axis = Wavelength balance of waveform; Y-axis = Lifetime avg. of waveform

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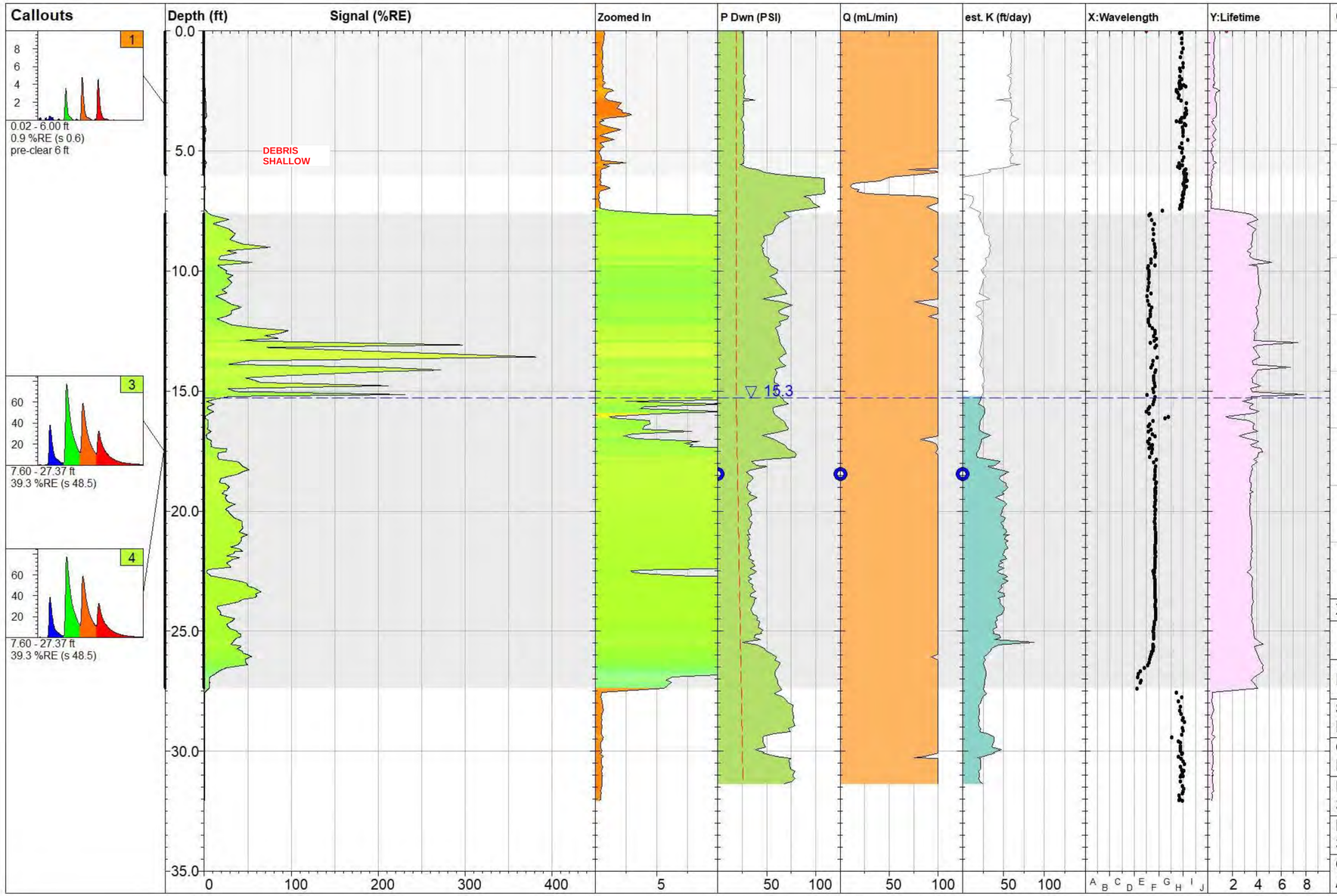
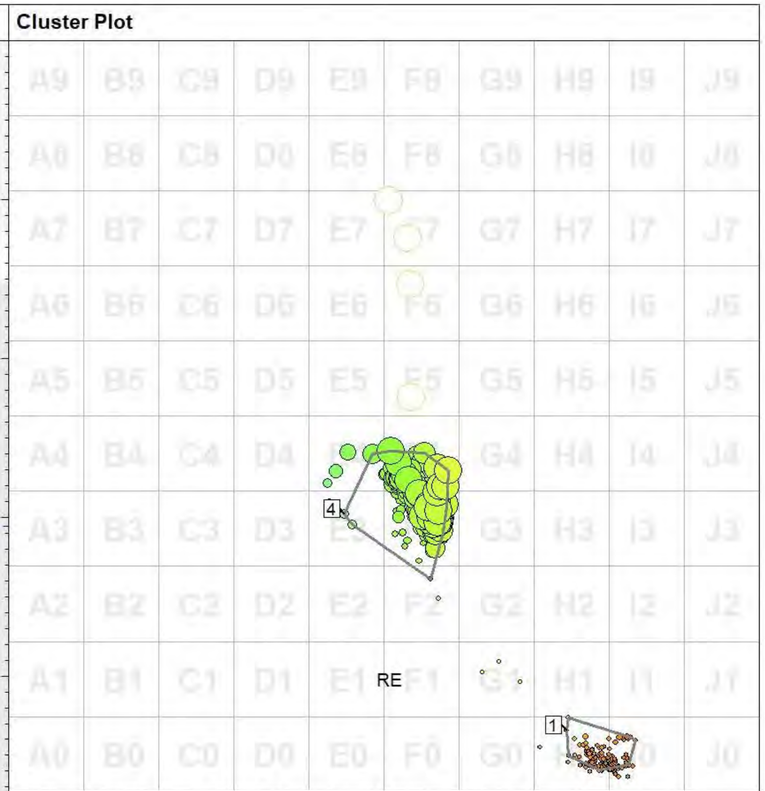
Data Presentation Format © 2022 Dakota Technologies, Inc. (v2.7.0)

Log: **LOD-BH-6**

Site: **BP Property Site**	Date & Time: **2022-06-15 08:33 CDT**
Client: **REDI**	Job: **0118.2022**
Final Depth: **31.07 ft**	X Coord.(Long/East): **Unavailable**
Max Signal: **82.3 %RE @ 18.33 ft**	Y Coord.(Lat/North): **Unavailable**
Operator / Unit: **A. Nagle / UVOST1613**	Elevation: **Unavailable**

Electronic Filing: Received, Clerk's Office 10/06/2025 **PCB 2026-001**





X-axis = Wavelength balance of waveform; Y-axis = Lifetime avg. of waveform

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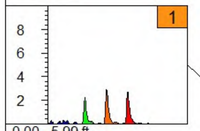
Data Presentation Format © 2022 Dakota Technologies, Inc. (v2.7.0)

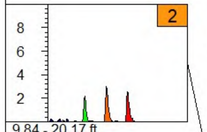
Log: **LOD-BH-7**

Site: **BP Property Site**	Date & Time: **2022-06-15 10:30 CDT**
Client: **REDI**	Job: **0118.2022**
Final Depth: **32.07 ft**	X Coord.(Long/East): **Unavailable**
Max Signal: **381.7 %RE @ 13.58 ft**	Y Coord.(Lat/North): **Unavailable**
Operator / Unit: **A. Nagle / UVOST1613**	Elevation: **Unavailable**

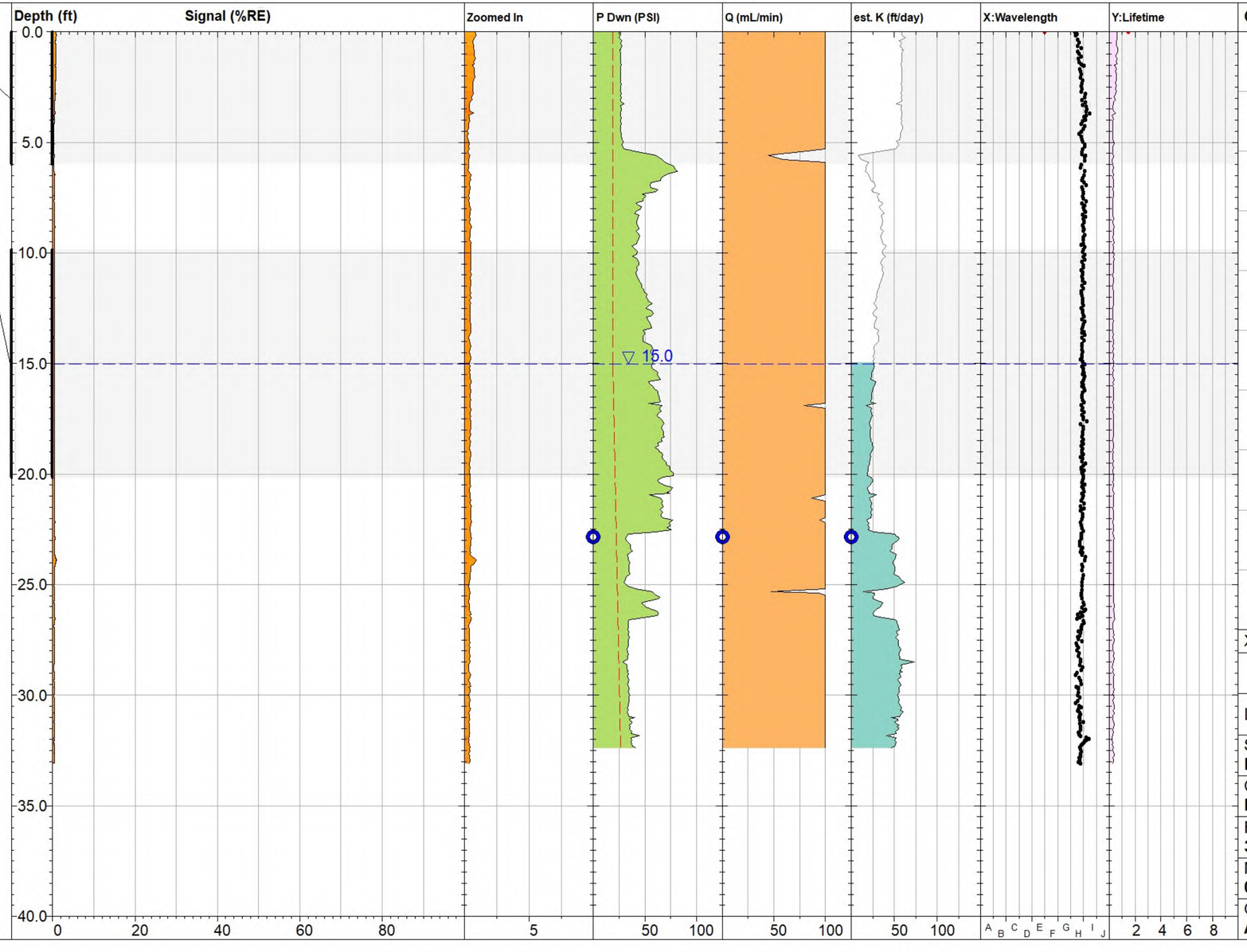
Callouts



0.00 - 5.99 ft
0.5 %RE (s 0.2)
pre-clear 6 ft



9.84 - 20.17 ft
0.4 %RE (s 0.0)
background soil



Cluster Plot

X-axis = Wavelength balance of waveform; Y-axis = Lifetime avg. of waveform

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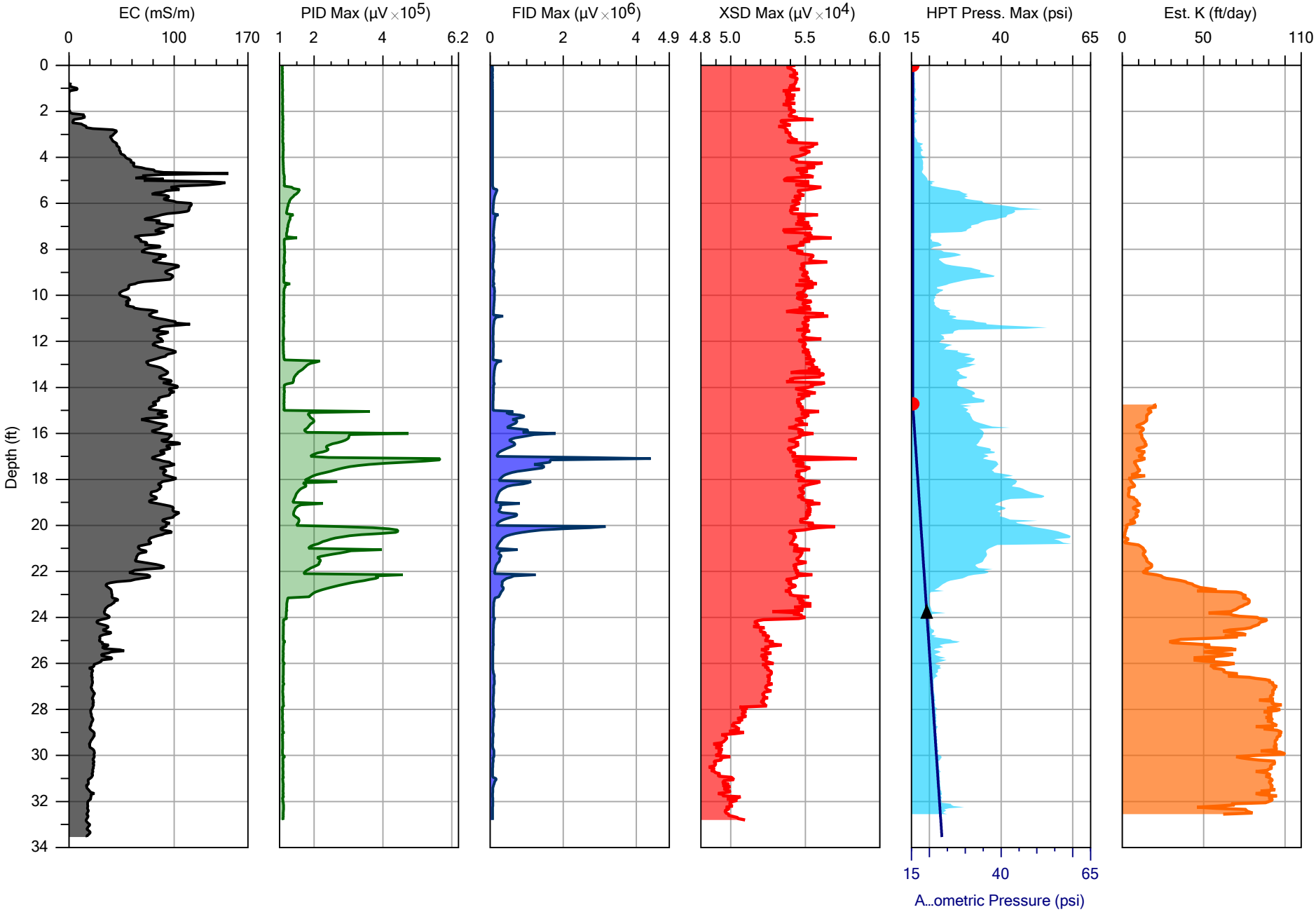
Data Presentation Format © 2022 Dakota Technologies, Inc. (v2.7.0)

Log: **LOD-BH-8**

Site: **BP Property Site**	Date & Time: **2022-06-15 11:12 CDT**
Client: **REDI**	Job: **0118.2022**
Final Depth: **33.07 ft**	X Coord.(Long/East): **Unavailable**
Max Signal: **0.9 %RE @ 23.88 ft**	Y Coord.(Lat/North): **Unavailable**
Operator / Unit: **A. Nagle / UVOST1613**	Elevation: **Unavailable**



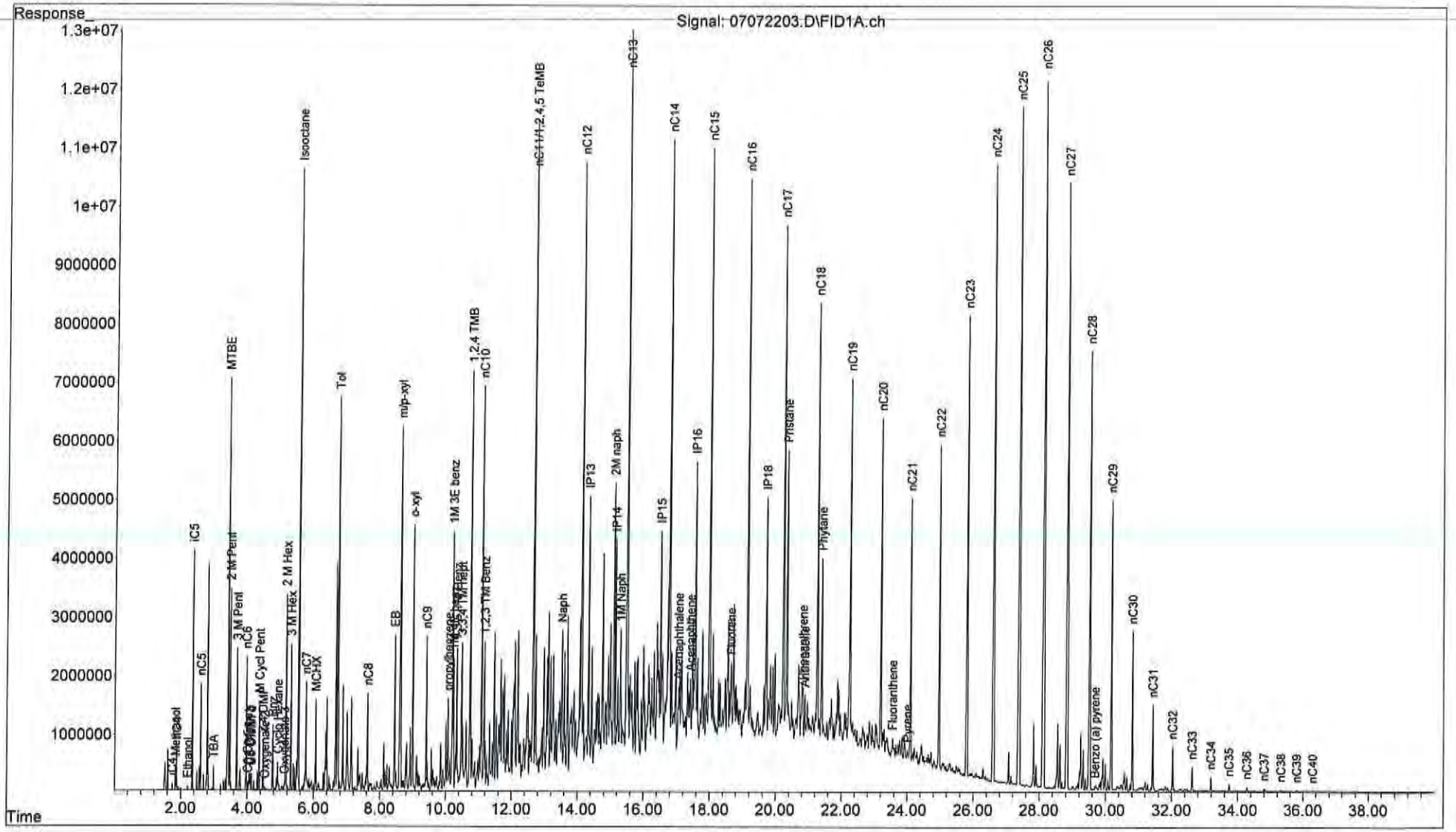
			File: LOD-BH-8MIP.MHP
Company: Dakota Technologies	Operator: A. Nagle		Date: 6/15/2022
Project ID: 0118.2022	Client: REDI		Location: Wood River, IL

Electronic Filing: Received, Clerk's Office 10/06/2025 **PCB 2026-001**

APPENDIX B
GC/FID Results

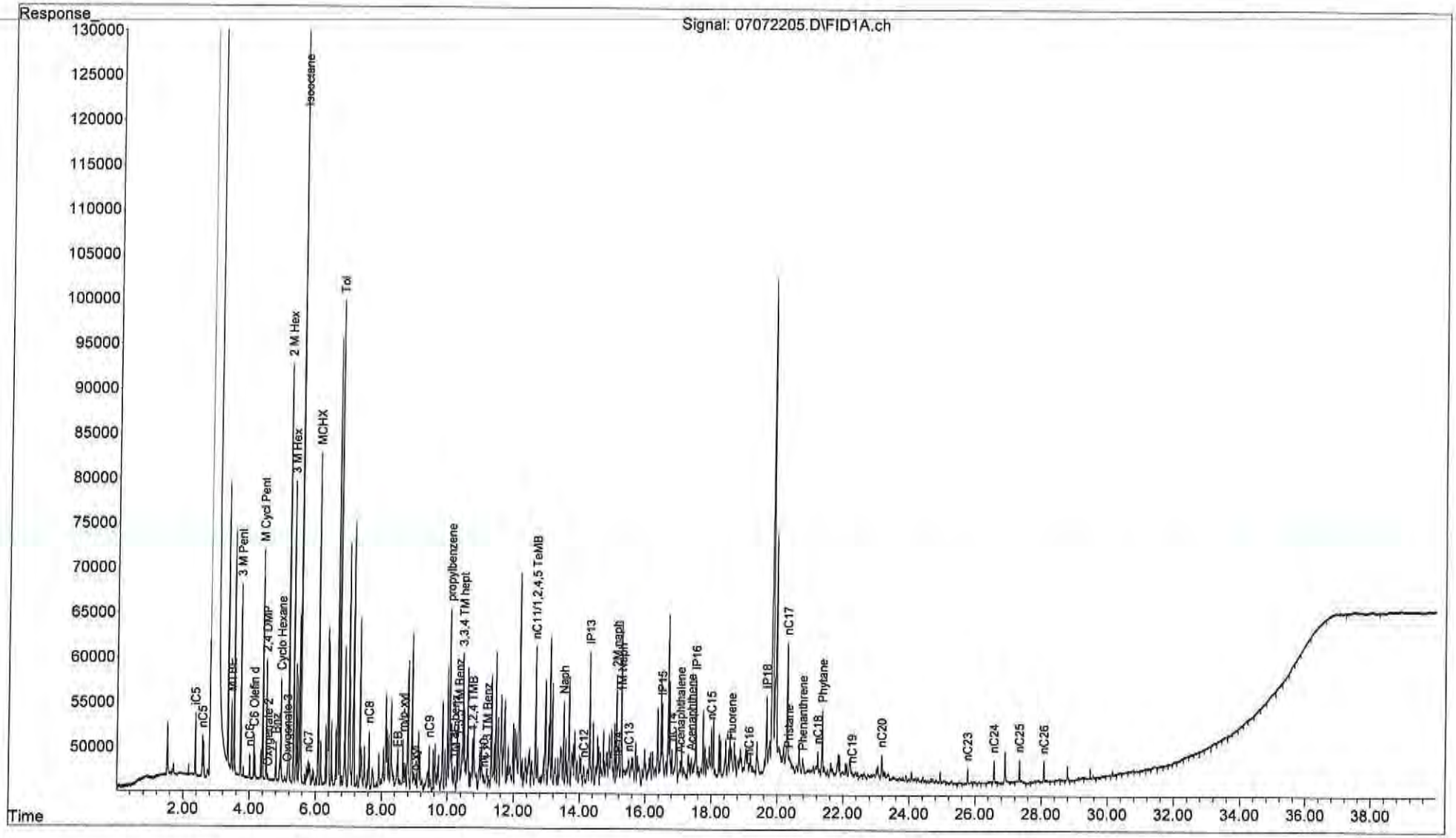
File :O:\Organics 1 on Alexandria\Tulsa TPH\070722\07072203.D
Operator : CR
Acquired : 07 Jul 2022 08:46 am using AcqMethod TPHSplit.M
Instrument : 8890
Sample Name: STD
Misc Info :
Vial Number: 2

STANDARD



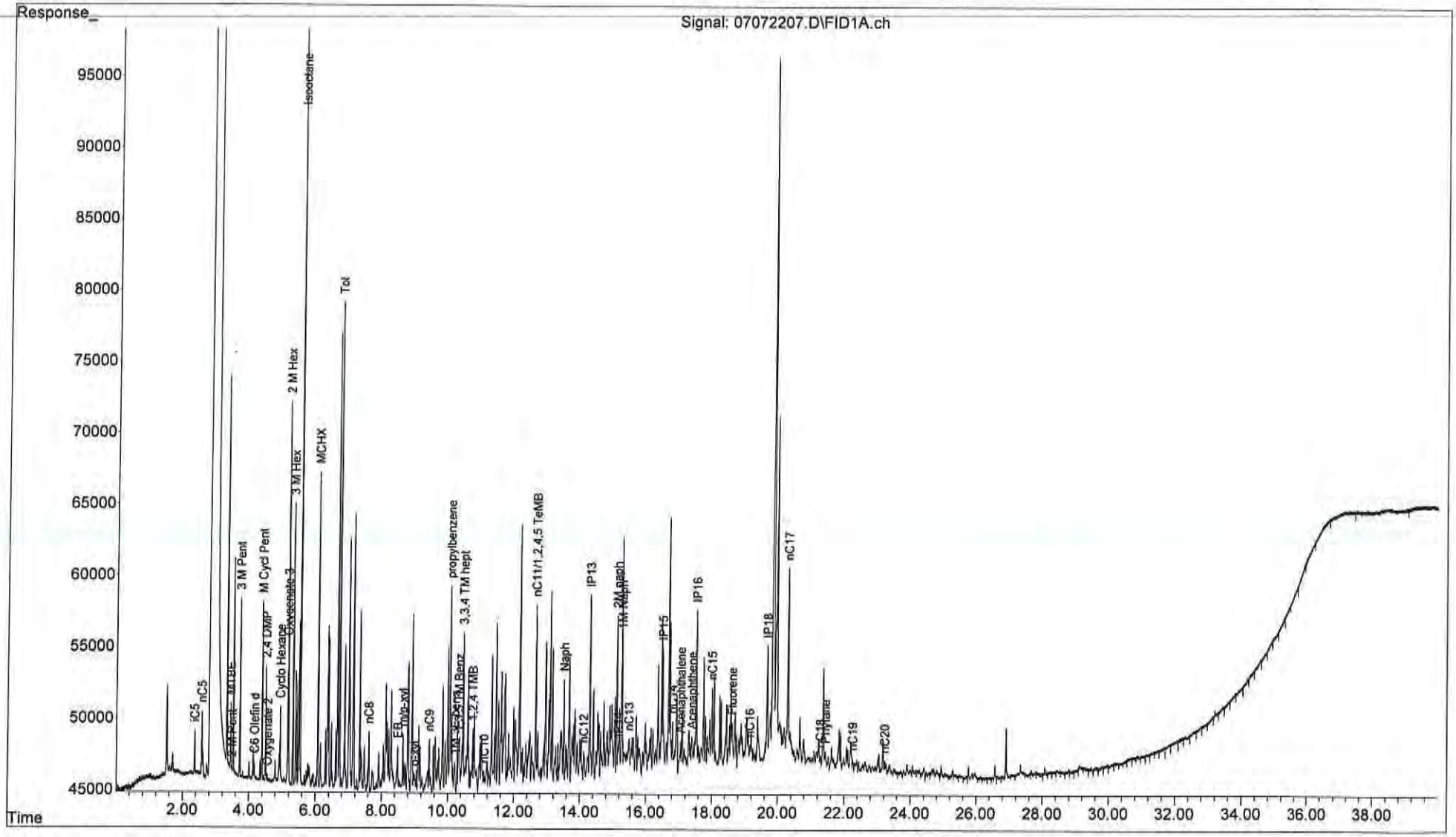
File :O:\Organics 1 on Alexandria\Tulsa TPH\070722\07072205.D
Operator : CR
Acquired : 07 Jul 2022 09:52 am using AcqMethod TPHSplit.M
Instrument : 8890
Sample Name: EF30030-01
Misc Info :
Vial Number: 10

LOD-BH-1 (17-18)



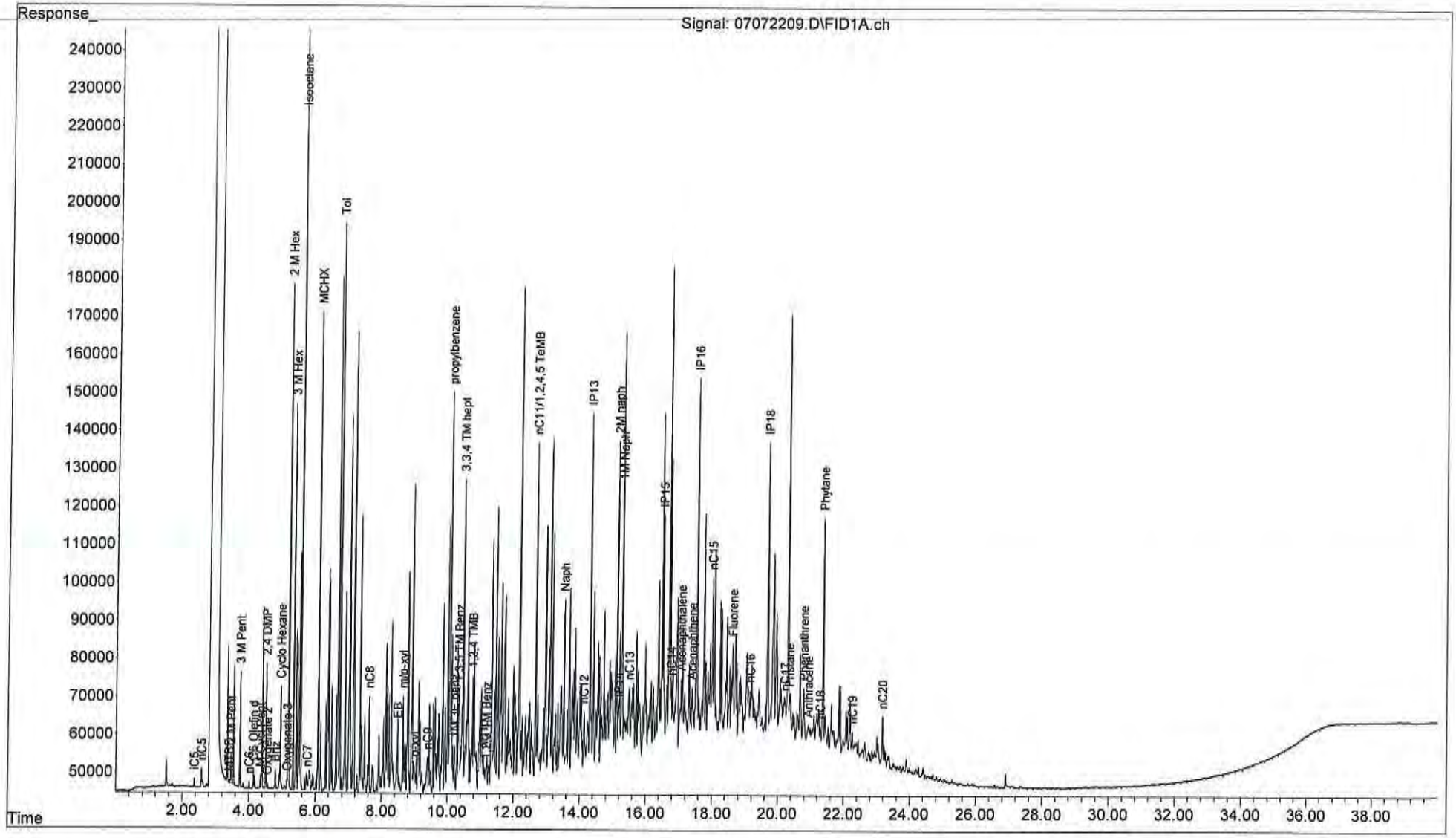
LOD-BH-1 (20-21)

File :O:\Organics 1 on Alexandria\Tulsa TPH\070722\07072207.D
Operator : CR
Acquired : 07 Jul 2022 10:58 am using AcqMethod TPHSplit.M
Instrument : 8890
Sample Name: EF30030-02
Misc Info :
Vial Number: 11



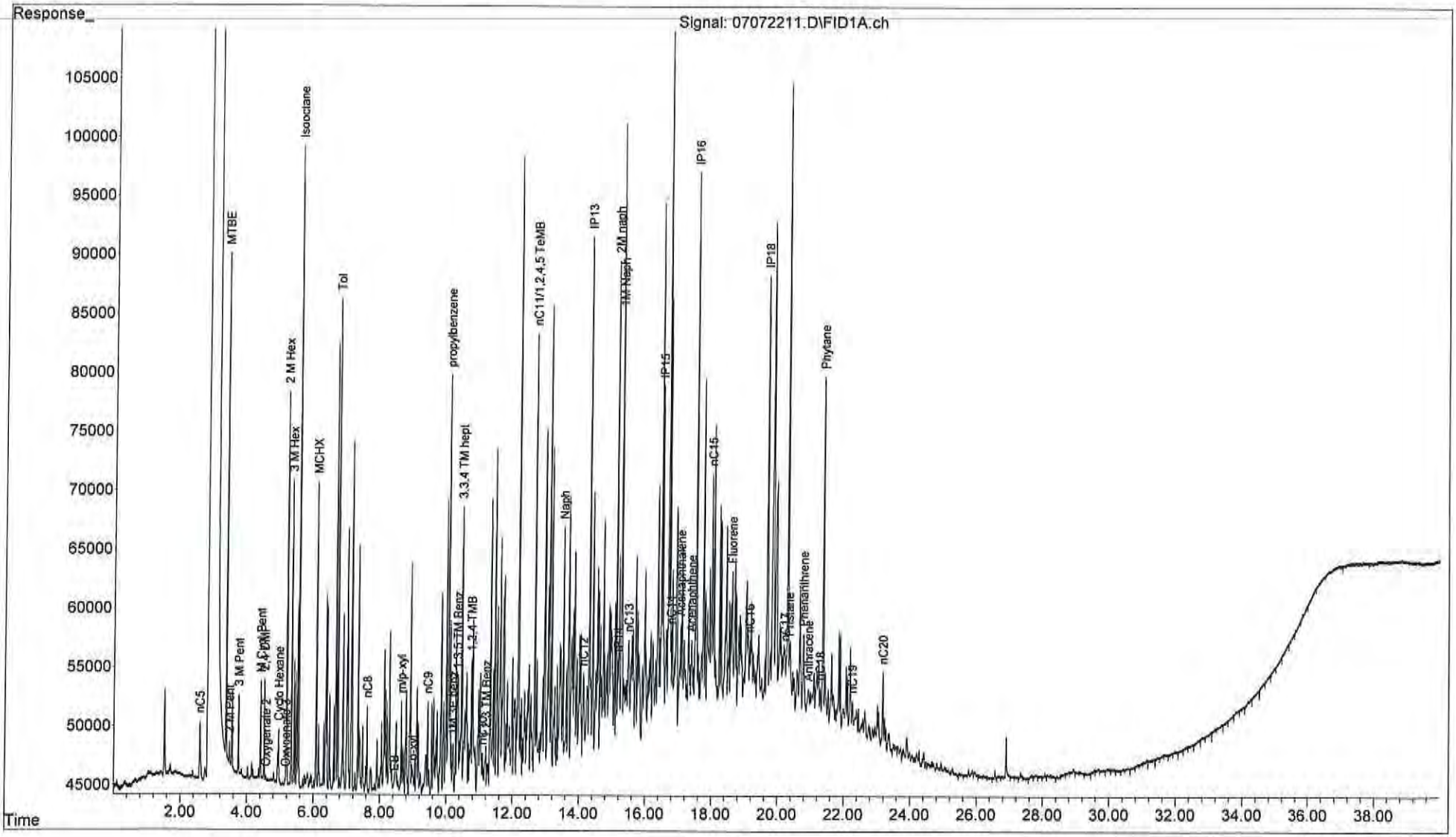
```
File        :O:\Organics 1 on Alexandria\Tulsa TPH\070722\07072209.D
Operator    : CR
Acquired    : 07 Jul 2022  12:04 pm using AcqMethod TPHSplit.M
Instrument :   8890
Sample Name: EF30030-03
Misc Info  :
Vial Number: 12
```

LOD-BH-3 (16-17)



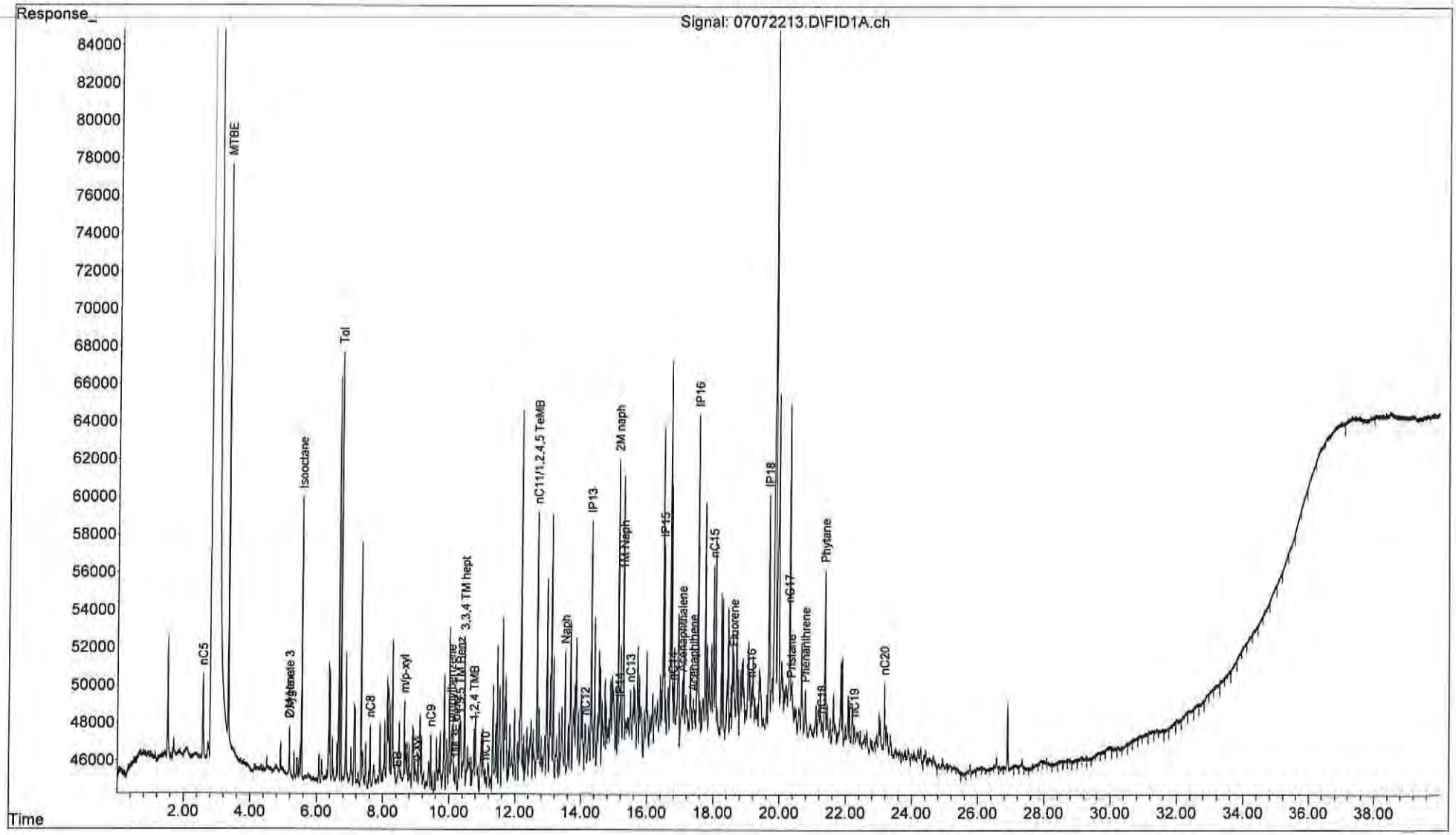
File :O:\Organics 1 on Alexandria\Tulsa TPH\070722\07072211.D
Operator : CR
Acquired : 07 Jul 2022 01:10 pm using AcqMethod TPHSplit.M
Instrument : 8890
Sample Name: EF30030-04
Misc Info :
Vial Number: 13

LOD-BH-3 (21-22)



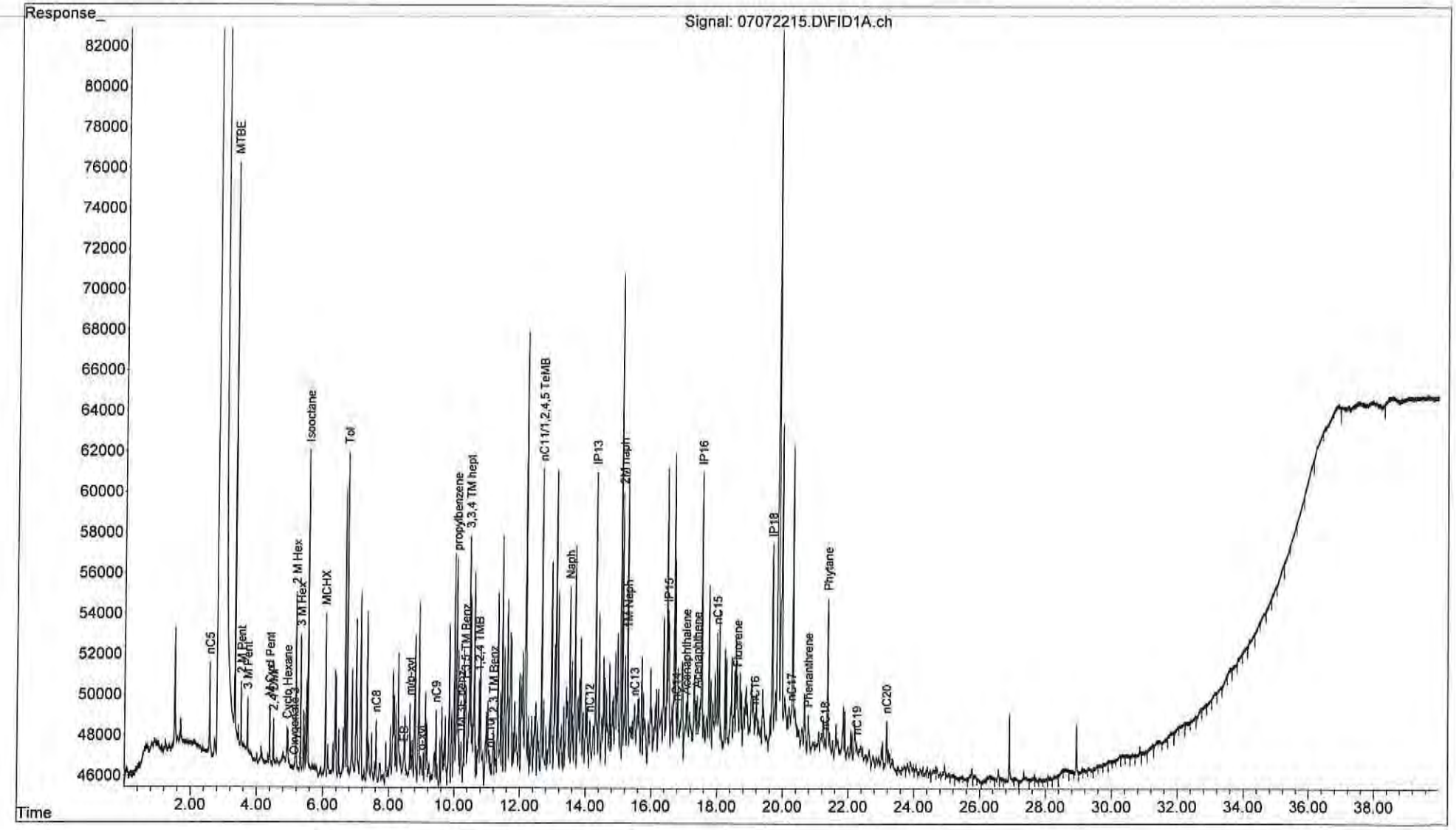
```
File        :O:\Organics 1 on Alexandria\Tulsa TPH\070722\07072213.D
Operator    : CR
Acquired    : 07 Jul 2022  02:16 pm using AcqMethod TPHSplit.M
Instrument :   8890
Sample Name: EF30030-05
Misc Info  :
Vial Number: 14
```

LOD-BH-4 (14-15)



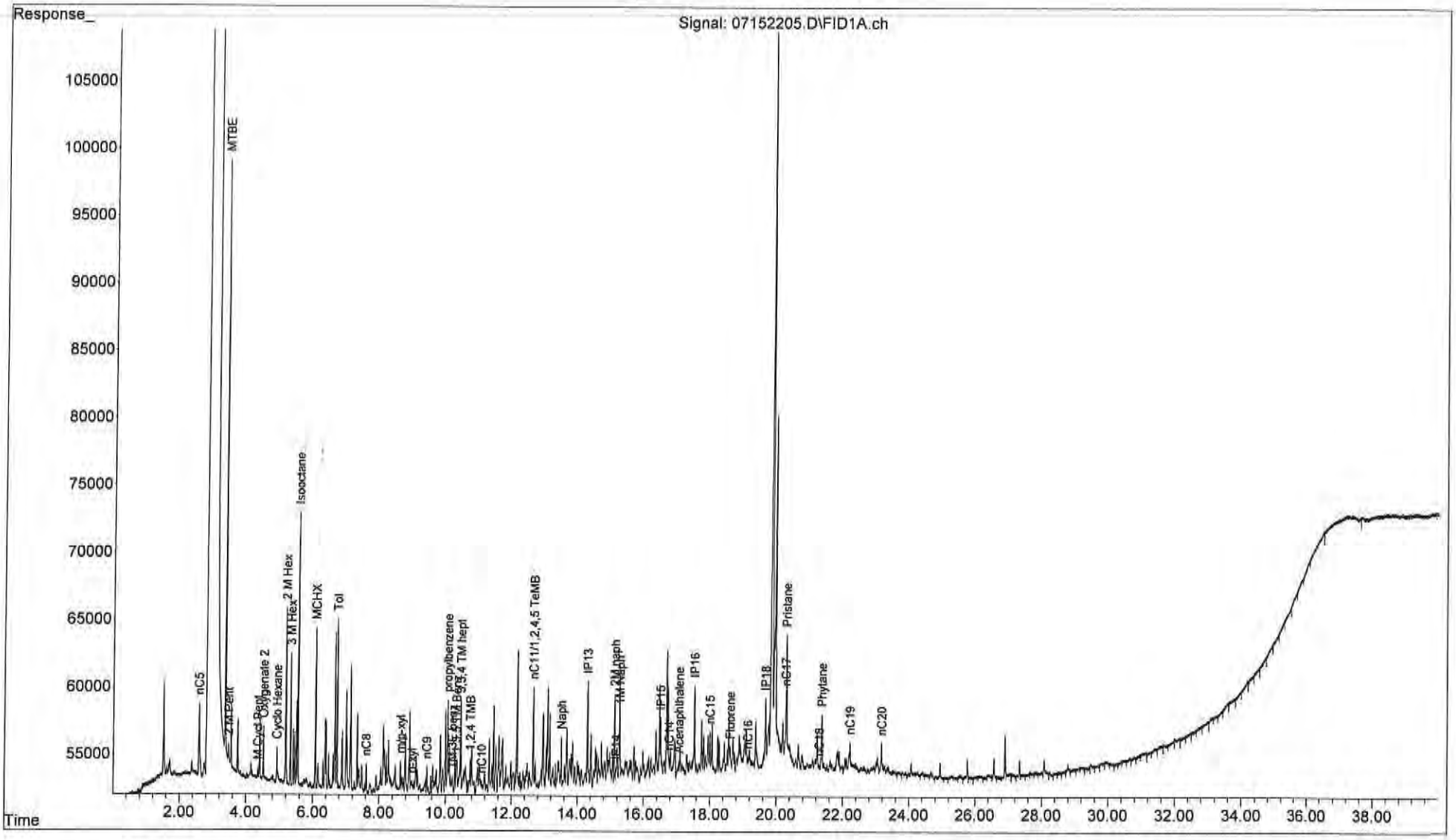
```
File        :O:\Organics 1 on Alexandria\Tulsa TPH\070722\07072215.D
Operator    : CR
Acquired    : 07 Jul 2022  03:22 pm using AcqMethod TPHSplit.M
Instrument :   8890
Sample Name: EF30030-06
Misc Info  :
Vial Number: 15
```

LOD-BH-4 (20)



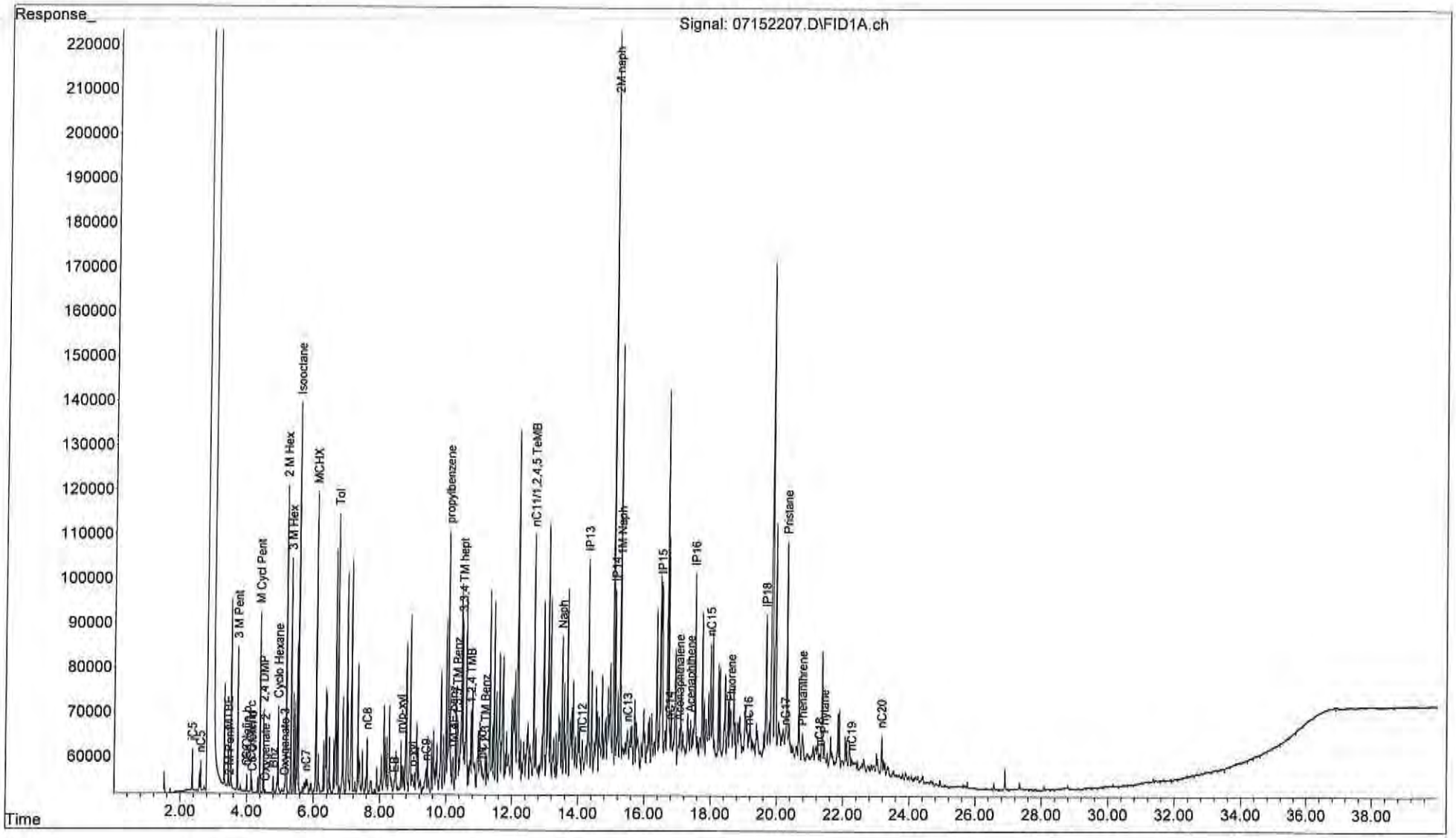
```
File        :O:\Organics 1 on Alexandria\Tulsa TPH\071522\07152205.D
Operator    : CR
Acquired    : 15 Jul 2022  09:34 am using AcqMethod TPHSplit.M
Instrument :   8890
Sample Name: EF30030-07
Misc Info   :
Vial Number: 16
```

LOD-BH-5 (16-17)



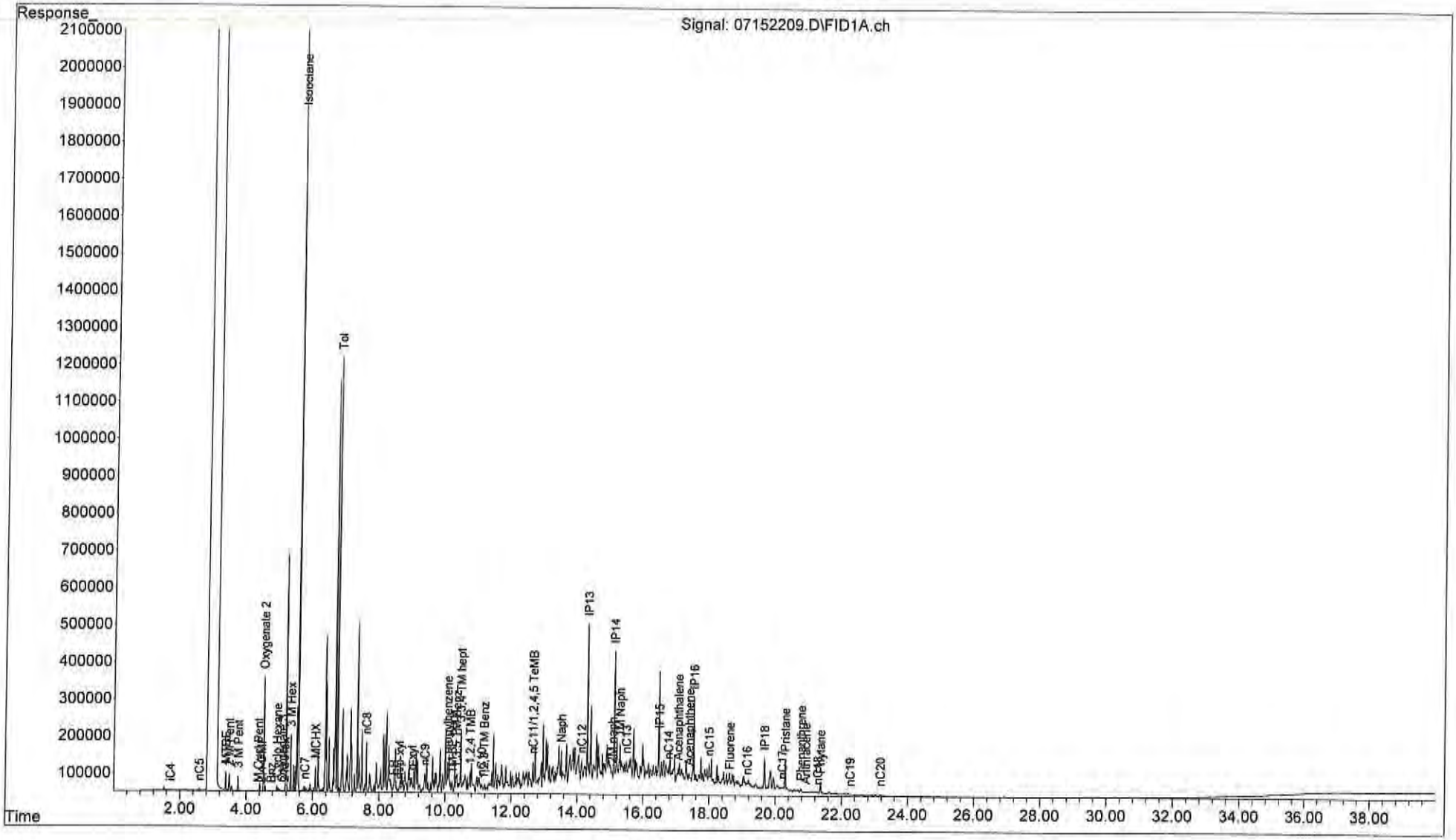
LOD-BH-5 (24)

```
File        :O:\Organics 1 on Alexandria\Tulsa TPH\071522\07152207.D
Operator    : CR
Acquired    : 15 Jul 2022  10:58 am using AcqMethod TPHSplit.M
Instrument :   8890
Sample Name: EF30030-08
Misc Info  :
Vial Number: 17
```



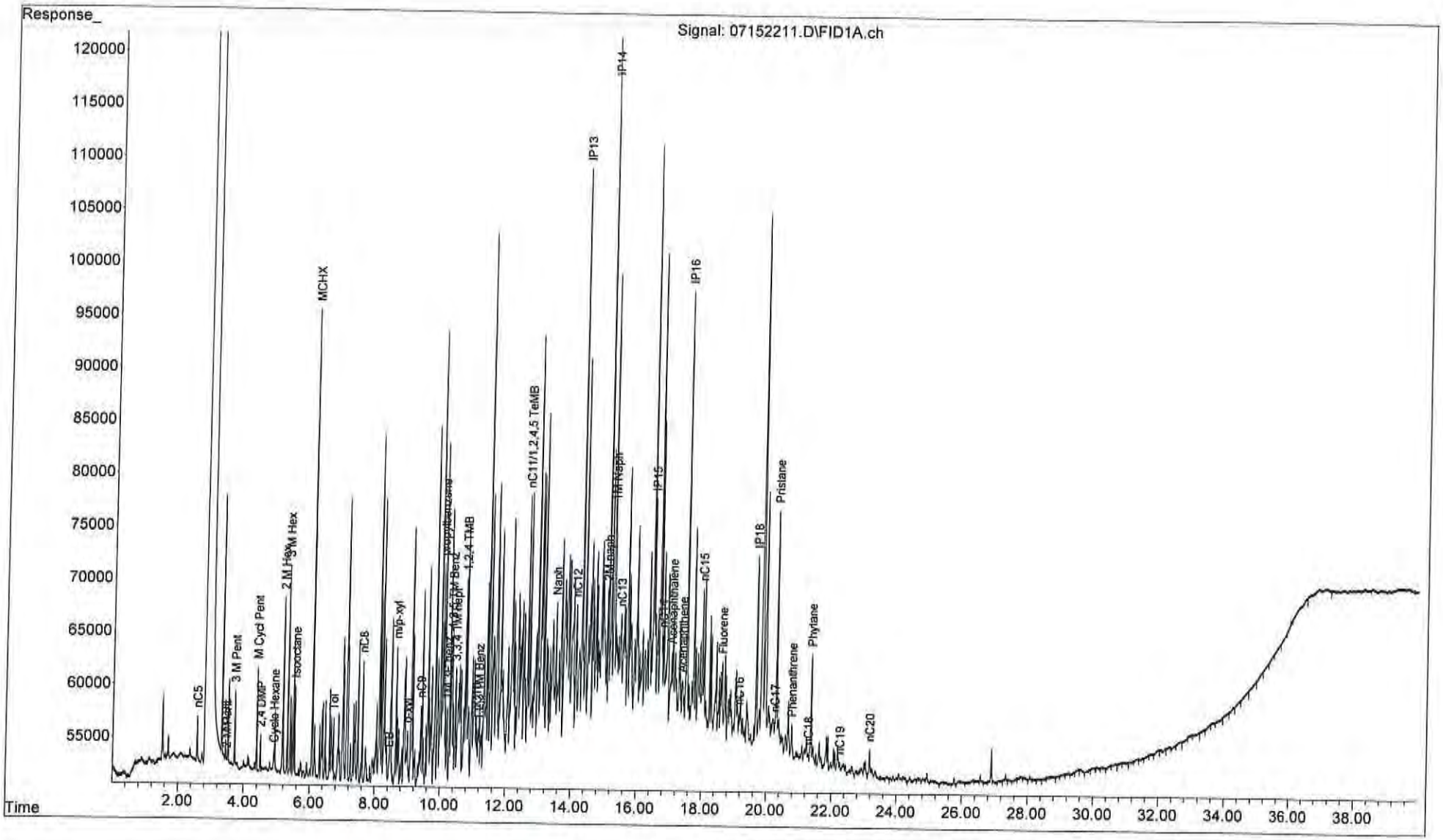
File :O:\Organics 1 on Alexandria\Tulsa TPH\071522\07152209.D
Operator : CR
Acquired : 15 Jul 2022 12:05 pm using AcqMethod TPHSplit.M
Instrument : 8890
Sample Name: EF30030-09
Misc Info :
Vial Number: 18

LOD-BH-6 (18-20)



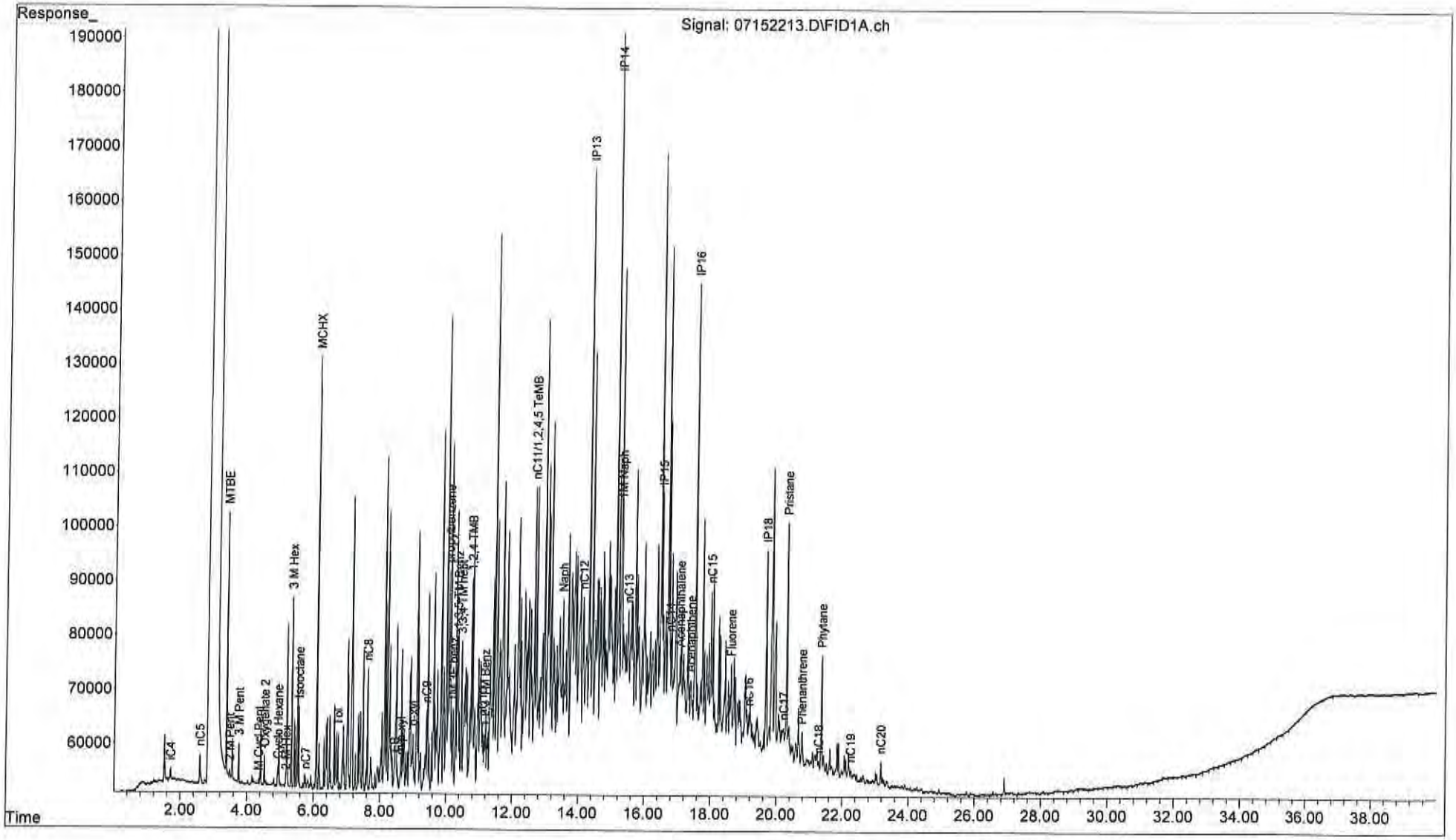
File :O:\Organics 1 on Alexandria\Tulsa TPH\071522\07152211.D
Operator : CR
Acquired : 15 Jul 2022 01:11 pm using AcqMethod TPHSplit.M
Instrument : 8890
Sample Name: EF30030-10
Misc Info :
Vial Number: 19

LOD-BH-7 (13-14)

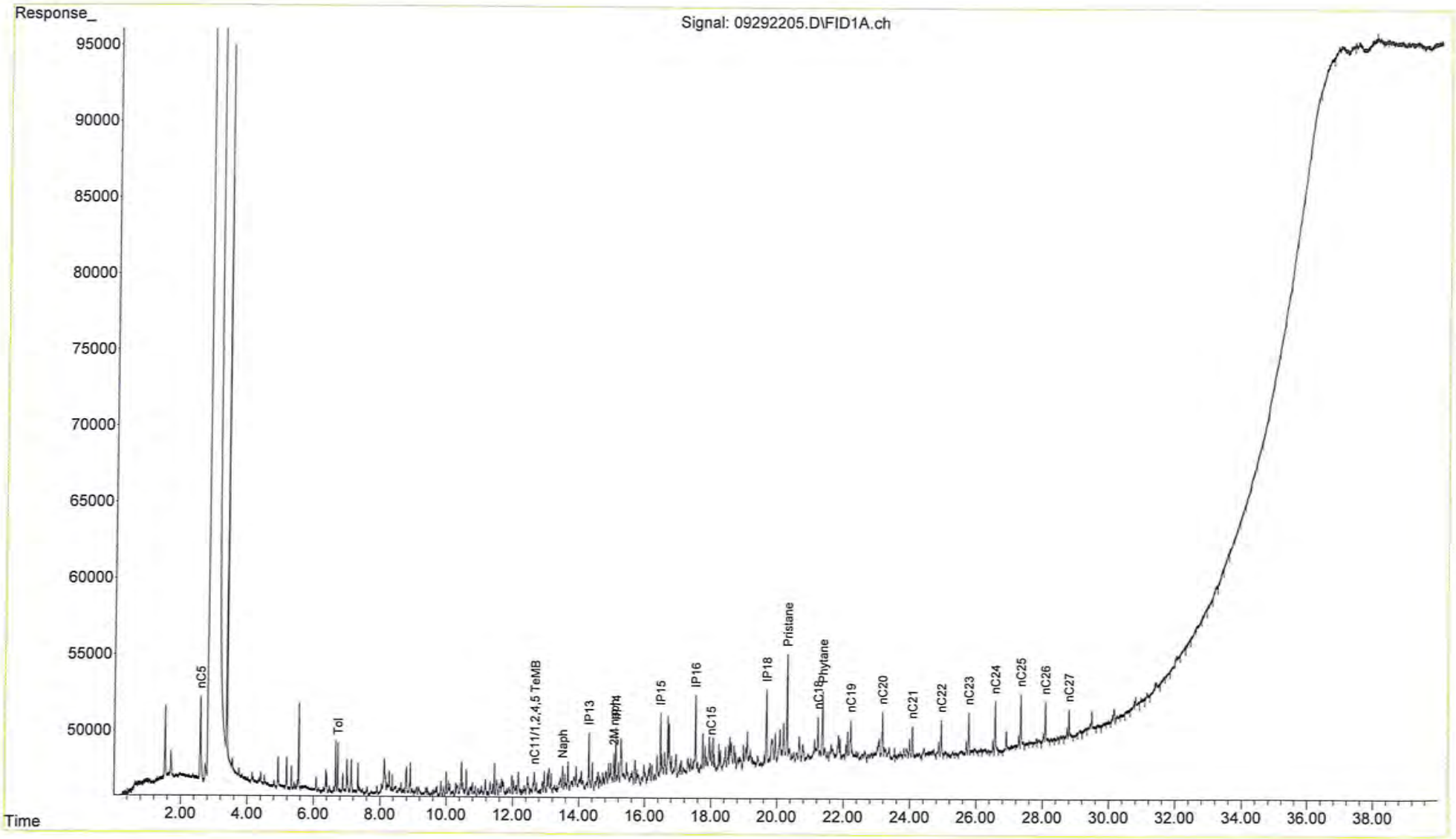


File :O:\Organics 1 on Alexandria\Tulsa TPH\071522\07152213.D
Operator : CR
Acquired : 15 Jul 2022 02:17 pm using AcqMethod TPHSplit.M
Instrument : 8890
Sample Name: EF30030-11
Misc Info :
Vial Number: 20

LOD-BH-7 (19-20)

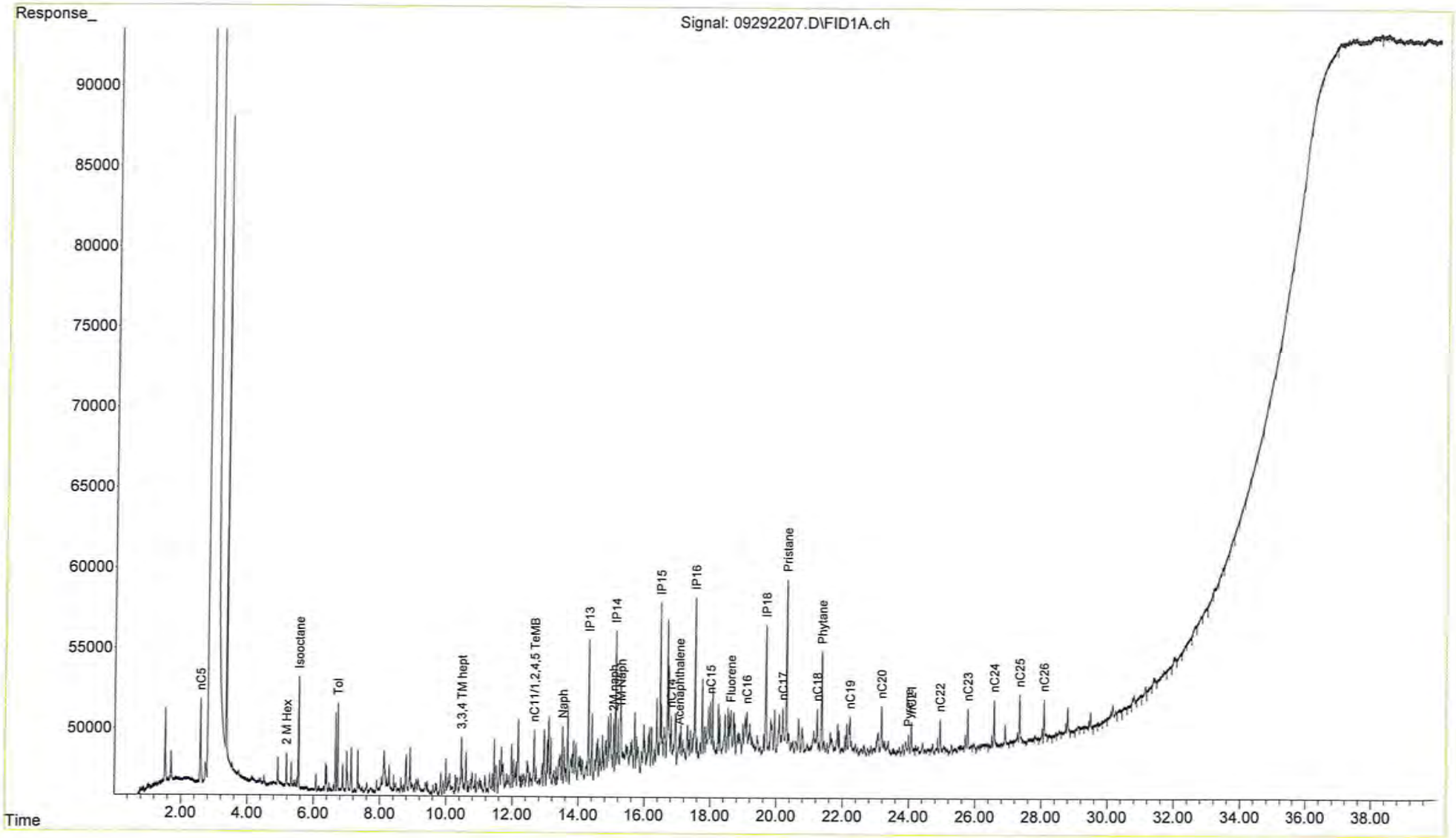


```
File        :O:\Organics 1 on Alexandria\Tulsa TPH\Tulsa TPH September 20
...          22\092922\09292205.D
Operator    : CR
Instrument :    8890
Acquired    : 29 Sep 2022  09:41 am using AcqMethod TPHSplit.M
Sample Name: EI22042-01
Misc Info   :
```



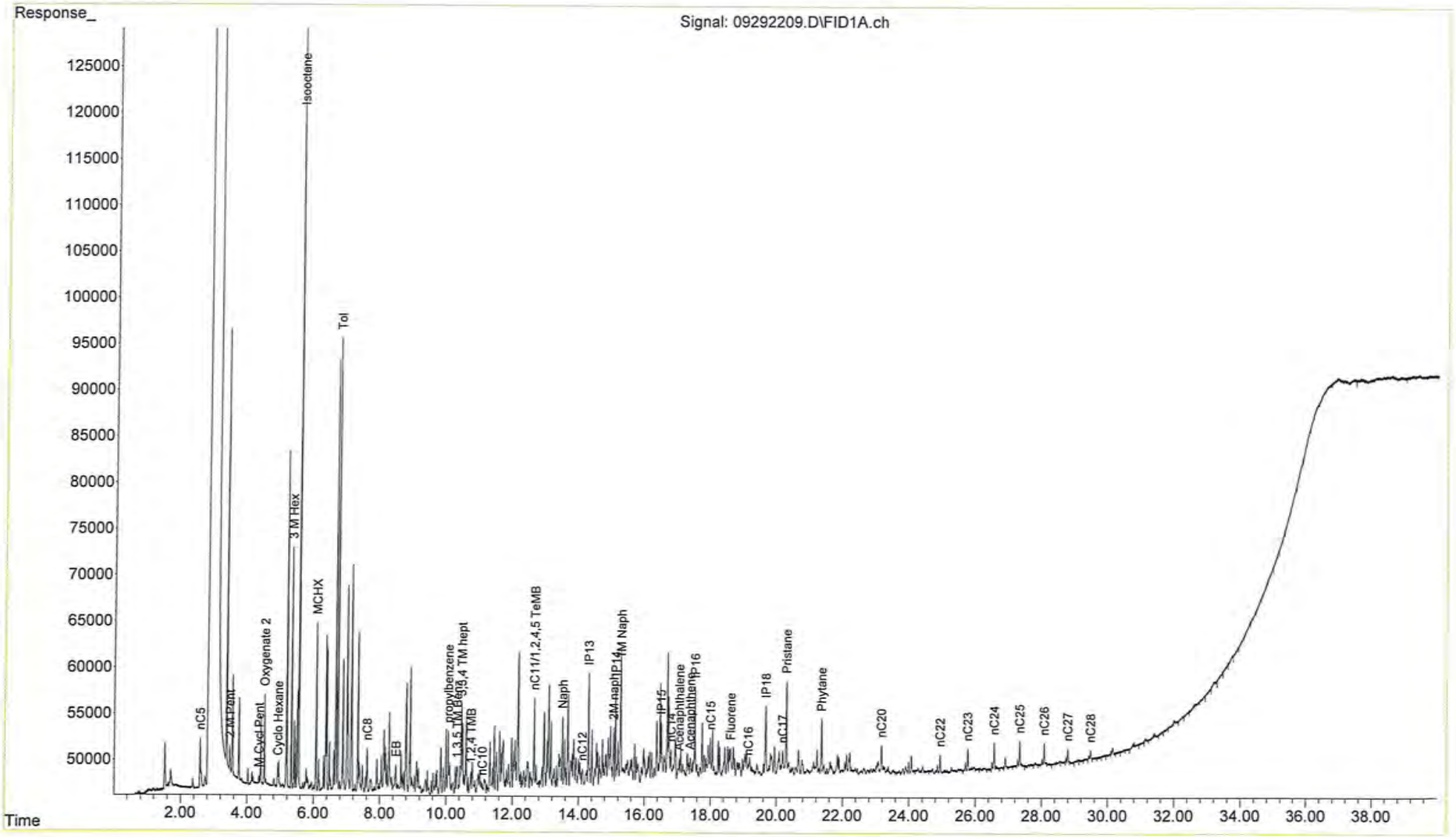
LOD-PZ-02 (24)

```
File        :O:\Organics 1 on Alexandria\Tulsa TPH\Tulsa TPH September 20
...          22\092922\09292207.D
Operator    : CR
Instrument :    8890
Acquired    : 29 Sep 2022  10:47 am using AcqMethod TPHSplit.M
Sample Name: EI22042-02
Misc Info   :
```



LOD-PZ-03 (24)

```
File        :O:\Organics 1 on Alexandria\Tulsa TPH\Tulsa TPH September 20
...          22\092922\09292209.D
Operator    : CR
Instrument :    8890
Acquired    : 29 Sep 2022  11:53 am using AcqMethod TPHSplit.M
Sample Name: EI22042-03
Misc Info   :
```



Appendix B

GCFID Response Area Table

		STD	LOD-BH-1 (17-18)	LOD-BH-1 (20-21)	LOD-BH-3 (16-17)	LOD-BH-3 (21-22)	LOD-BH-4 (14-15)	LOD-BH-4 (20)	LOD-BH-5 (16-17)	LOD-BH-5 (24)	LOD-BH-6 (18-20)	LOD-BH-7 (13-14)	LOD-BH-7 (19-20)
Chromatogram ID	Compound Name	Target Response	Target Response	Target Response	Target Response	Target Response	Target Response	Target Response	Target Response	Target Response	Target Response	Target Response	Target Response
iC4	Isobutane	1040578.027	0	0	0	0	0	0	0	0	56731	0	35904.56
Methanol	Methanol	4992714.325	0	0	0	0	0	0	0	0	0	0	0
nC4	Butane	6759597.732	0	0	0	0	0	0	0	0	0	0	0
Ethanol	Ethanol	701718.536	0	0	0	0	0	0	0	0	0	0	0
iC5	Isopentane	34803814.72	71675.412	31485.866	27265.063	0	0	0	0	87247	0	0	0
nC5	Pentane	15986725.37	70963.076	60344.14	78978.07	98996.15	76192.75	62174	116465.25	68371.63	121588.775	56749.154	121838.663
TBA	Oxygenate 1	3949371.152	0	0	0	0	0	0	0	0	0	0	0
MTBE	MtBE	70505227.39	87428.855	47656.179	11202.959	406171.097	291865.812	266598.063	423853.343	112652.025	465233.73	17971.6	459573.427
2 M Pent	2-Methylpentane	32739340.22	0	2413.269	104376.971	23777.212	0	33262.75	16002.481	7930.865	660345.766	2795.088	21362.213
3 M Pent	3-Methylpentane	23915092.11	229154.146	130402.479	339388.125	83236.75	0	29098.25	0	324257.969	519537.071	71725.188	95524.688
nC6	Hexane	23210908.65	31878.812	0	23998.791	0	0	0	0	42986.714	0	0	0
C6 Olefin a	C6 Olefin	1800693.757	0	0	0	0	0	0	0	0	0	0	0
C6 Olefin b	C6 Olefin	3006238.01	0	0	0	0	0	0	0	42986.714	0	0	0
C6 Olefin c	C6 Olefin	3913351.484	0	0	0	0	0	0	0	57068.046	0	0	0
C6 Olefin d	C6 Olefin	2955687.974	50834.208	13388.687	55646.735	0	0	0	0	28980.855	0	0	0
M Cycl Pent	Methyl cyclopentane	16267125.63	277643.697	134627.983	36646.349	94398.75	0	31097.259	6335.912	422955.25	12882.376	106594.428	11140.893
2,4 DMP	2,4-Dimethylpentane	8735809.432	140177.724	83278.107	346566.475	91754.242	0	23610.75	0	190626.5	9895.56	36847.775	0
Oxygenate 2	Oxygenate 2	750472.619	7330.51	5771.764	22588.756	6856.852	0	0	42561.5	10281.567	3281103.987	0	62009.246
Bnz	Benzene	14250204.63	59746.136	0	68511.491	0	0	0	0	47367.563	9481.436	0	0
Cyclo Hexane	Cylcohexane	6696521.77	135860.739	61910.579	312925.076	58701.45	0	22320.248	35287.2	222457.728	178873.587	23641.009	40950.847
Oxygenate 3	Oxygenate 3	1615302.584	13678.4	6582.824	25520.175	5055.1	33817.633	3153.1	0	20177.677	44946.204	0	0
2 M Hex	2-Methylhexane	40421138.11	592527.717	345788.82	1697694.032	431673.9	32855.84	112378	166897.824	881404.457	33690.291	208233.254	8684.595
3 M Hex	3-Methylhexane	27111596.35	354212.5	205530.25	1065081.491	277298.508	0	69361.277	103716.597	551411.125	1600018.031	209458.644	370699.813
Isooctane	Isooctane	135897175.3	896183.706	574527.844	2123186.489	597659.848	160747.302	170680.451	221373.582	944233.766	22168931.1	90825.594	156622.228
nC7	Heptane	22059243.87	31096.107	0	43842.255	0	0	0	0	31547.926	138623.587	0	21003.801
MCHX	Methylcyclohexane	19475399.21	440741.25	263140.25	1476551.894	311188.814	0	96177.75	139701.149	798936.073	874870.437	506371.188	910287.75
Tol	Toluene	105271450.1	624375.802	391983.709	1728746.707	478565.773	261204.375	183780.757	146506.002	731898.036	13074603.25	77690.906	131346.101
nC8	Octane	23669793.48	103055.7	63764.208	332666.917	97335.75	39045.602	45459.355	24239.875	190437.616	1643163.785	141294.771	271235.141
EB	Ethylbenzene	34052482.07	21801.923	50041.01	120830.309	11176.102	4128.374	7604.928	0	36875.945	279879.951	24108.856	62381.152
m/p-xyl	m/p-Xylene	124790515	59092.778	42486.824	317280.93	90769.262	58712.035	41402.541	22356.632	136079.241	167325.122	168015.379	23261.602
o-xyl	o-Xylene	59886482.83	9341.616	12290.956	110733.64	28732.544	19616.736	16809.996	7476.443	51324.58	695030.118	104143.855	215330.384
nC9	Nonane	31337105.22	69022.494	49178.44	105199.36	103058.366	39500.505	47264.267	24669.25	65291.136	436609.674	97781.613	188968.542
propylbenzene	n-Propylbenzene	21031371.71	280096.48	181740.692	1403942.572	478526.917	46710.24	160276.9	89814.816	803292.736	1440925.868	348401.58	687660.853
1M 3E benz	1-methyl-3-ethylbenz	57763492.96	63236.19	46515.292	279940.505	97724.956	28600.015	46177.312	27915.408	171912.026	588377.53	144301.328	295742.934
1M 4E benz	1-Methyl-4-ethylbenz	23882851.58	65994.784	0	0	0	0	0	0	174154.772	0	0	0
1,3,5 TM Benz	1,3,5-Trimethylbenze	31015169.67	73967.965	50988.875	375466.626	144320.648	45558.681	64918.164	30014.827	219146.48	640377.097	189955.324	373708.087
3,3,4 TM hept	3,3,4- Trimethylhepta	41281405.79	248108.909	179760.388	1312979.142	414517.389	144746.056	196180.65	101309.609	478357.692	2572501.121	181647.472	438642.833
1,2,4 TMB	1,2,4-Trimethylbenze	108721272.1	81179.98	59388.108	464562.59	175051.632	50925.436	67976.9	24076.226	259712.175	892461.75	268699.703	546692.102
nC10	Decane	93512108.96	22717.512	16483.164	120682.567	43792.449	13779.38	14275.005	7580.378	66608.102	298051.98	76474.383	150354.257
1,2,3 TM Benz	1,2,3-Trimethylbenze	33027513.31	52889.377	0	82637.96	91346.02	0	48910.547	0	46846.92	162950.205	67777.469	120216.855
nC11/1,2,4,5 TeMB	Undecane	173084044.2	198178.996	162712.251	1147901.576	496650.432	182368.675	207987.356	92472.761	691832.13	1029161.748	340552.597	687713.624
Naph	Napthalene	44342249.19	116515.95	89101.704	570056.366	258713.607	82063.225	113879.62	45983.626	400143.963	1259330.174	179107.639	353712.68
nC12	Dodecane	171677447.5	58461.537	45442.454	348009.774	190712.77	65826.976	60003.043	0	197696.308	1497374.686	292527.56	639734.541
IP13	C13 Isoprenoid	66993993.22	221295.391	185983.083	1326725.9	647333.98	204465.158	211026.738	114470.93	735372.621	5445683.493	758406.676	1482319.496
2M naph	2-Methylnapthalene	79460854.54	145652.388	132834.787	988482.941	483702.772	188327.732	162025.958	77446.329	2172780.596	327661.228	144820.887	0
IP14	C14 Isoprenoid	44191800.92	30427.672	28154.204	184286.704	90816.728	45407.948	0	12802.948	482925.524	4192734.339	758605.388	1485420.43
1M Naph	1-Methylnapthalene	38811169.42	32831.689	30290.392	227712.176	121586.468	44677.116	30664.021	16625.818	95739.44	1348797.273	183010.403	332054.144
nC13	Tridecane	224935359.5	84863.166	44349.959	262793.457	275182.362	94053.111	71099.381	0	213451.817	940144.427	201277.584	417020.293
IP15	Farnesane	51875541.52	117018.524	115619.2	878157.88	406453.064	148263.121	95134.019	57847.031	555339.867	213724.56	294797.811	604966.624
nC14	Tetradecane	209345299	36730.328	35091.781	239840.111	114609.276	38115.741	30352.924	13153.946	112775.711	773381.526	110320.325	206172.007
Acenaphthalene	Acenapthalene	19269656.17	40977.4	30471.76	303255.745	145467.581	54105.647	37666.501	16105.552	122171.973	653881.309	119607.6	237909.385
Acenaphthene	Acenapthene	17758285.99	37060.324	27228.178	226847.43	100236.407	40069.916	38728.601	0	110022.262	508969.001	94648.458	188026.133
IP16	C16 Isoprenoid	80386358.97	169841.04	152155.179	1454804.14	658764.975	240525.408	197260.796	94759.064	617330.655	3001711.672	624291.276	1226417.999
nC15	Pentadecane	184641754.5	76795.348	76602.641	691975.837	336173.801	126191.375	84273.305	39329.49	402595.082	930201.519	214596.344	454347.788
Fluorene	Fluorene	31947536.84	76307.79	77978.31	560453.758	268863.221	108795.25	87617.181	31905.516	293192.237	157160.404	173937.405	345379.239
nC16	Hexadecane	169548271.5	14841.755	9897.008	185833.103	76958.693	30386.288	20812.2	9261.76	80916.678	264155.444	45126.809	101944.944

Appendix B

GCFID Response Area Table

IP18	Norpristane	80200047.26	145731.008	133259.331	1450668.526	686897.583	249964.456	185594.663	79473.156	608247.356	1632792.975	351336.37	694457.812
nC17	Heptadecane	152287287.9	237593.359	218405.432	150007.315	57691.797	18285.574	15994.824	18902.284	40168.752	175250.536	25084.504	71567.618
Pristane	Pristane	96626460.47	7216.808	0	143581.48	61493.122	19764.621	0	159632.23	802077.987	1358577.384	365899.385	690447.335
Phenanthrene	Phenanthrene	11338059.1	45126.438	0	379743.609	195046.528	58962.187	56044.91	0	181462.572	302844.56	68586.788	155173.418
Anthracene	Anthracene	12954462.65	0	0	181800.569	87357.211	0	0	0	0	94094.322	0	0
nC18	Octadecane	123227669.7	44553.161	10237.566	126187.534	50994.055	19803.088	12468.544	7113.555	43647.704	55171.605	17974.916	34556.376
Phytane	Phytane	57750776.65	130409.054	23211.133	1081299.202	521675.064	162926.629	128432.463	78609.224	109058.388	611929.273	189407.3	390621.826
nC19	Nonadecane	103222791.5	11562.837	12418.789	128543.274	51242.205	22036.424	17978.947	24313.635	57709.559	40007.051	12010.424	26442.655
nC20	Eicosane	90279583.72	45590	8929.12	238102.835	104665.192	67257.936	39394.178	34285.76	153453.05	84415.938	40916.063	75264.557
Fluoranthene	Fluoranthene	5682533.048	0	0	0	0	0	0	0	0	0	0	0
Pyrene	Pyrene	3013322.258	0	0	0	0	0	0	0	0	0	0	0
nC21	Heneicosane	65432263.25	0	0	0	0	0	0	0	0	0	0	0
nC22	Docosane	87724462.56	0	0	0	0	0	0	0	0	0	0	0
nC23	Tricosane	144747678.5	22400.429	0	0	0	0	0	0	0	0	0	0
nC24	Tetracosane	226261257.4	31364	0	0	0	0	0	0	0	0	0	0
nC25	Pentacosane	277872686.1	31669.839	0	0	0	0	0	0	0	0	0	0
nC26	Hexacosane	291761660.3	30846.964	0	0	0	0	0	0	0	0	0	0
nC27	Heptacosane	227052725.4	0	0	0	0	0	0	0	0	0	0	0
nC28	Octacosane	145446441.7	0	0	0	0	0	0	0	0	0	0	0
Benzo (a) pyrene	Benzo(a)pyrene	830431.862	0	0	0	0	0	0	0	0	0	0	0
nC29	Nonacosane	81424218.12	0	0	0	0	0	0	0	0	0	0	0
nC30	Tricontane	41040335.18	0	0	0	0	0	0	0	0	0	0	0
nC31	Hentriacontane	21512161.39	0	0	0	0	0	0	0	0	0	0	0
nC32	Dotriacontane	11301949.78	0	0	0	0	0	0	0	0	0	0	0
nC33	Tritriacontane	6092482.89	0	0	0	0	0	0	0	0	0	0	0
nC34	Tetratriacontane	3448230.225	0	0	0	0	0	0	0	0	0	0	0
nC35	Pentatriacontane	1954646.391	0	0	0	0	0	0	0	0	0	0	0
nC36	Hexatriacontane	1090165.766	0	0	0	0	0	0	0	0	0	0	0
nC37	Heptatriacontane	603948.812	0	0	0	0	0	0	0	0	0	0	0
nC38	Octatriacontane	349258.733	0	0	0	0	0	0	0	0	0	0	0
nC39	Nonatriacontane	238495.75	0	0	0	0	0	0	0	0	0	0	0
nC40	Tetracontane	169103.205	0	0	0	0	0	0	0	0	0	0	0
	Total Chromatogram Response	**15,456,330,761**	**7,935,911,887**	**6,849,662,423**	**9,196,123,236**	**10,853,900,405**	**7,699,293,996**	**7,024,057,631**	**11,293,886,986**	**5,807,467,046**	**12,865,945,713**	**6,255,031,112**	**12,393,447,397**

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APPENDIX C
Soil Boring Logs

Client:	BP
Project:	Wood River Former Refinery - LOD Investigation
Project Number:	BP050.133.02
Location:	Wood River, IL - Riverfront - LOD

Boring/Well ID
LOD-BH-1

Drilling Co.:	REDI
Drill Rig:	Geoprobe 7822DT
Drill Method:	direct push
Foreman:	Eric Wetzel
Start Date:	6/28/2022
End Date:	6/28/2022
Clear Method:	air knife
End Clear:	6.5
Ground Surface:	

Well Installation Information

Drill Method:	soil boring only	**Screen Material**
Drill Rig:		**Screen Interval (ft bgs)**
Drilling Co.:		**Filter Material**
Foreman:		**Filter Interval (ft bgs)**
Start Date:		**Annular Seal:**
End Date:		**Seal Interval (ft bgs)**
Bore Diamter (inch)		**Pad Material:**
Borehole Depth (ft bgs)		**Pad Interval (ft bgs)**
Well Diameter (inch)		**Coordinate System:**
Casing Material:		**X Coordinate:**
Casing Interval (ft bgs):		**Y Coordinate:**
Stickup or Flush:		**TOC relative to Ground**

Sample Information

Start Depth	End Depth	PID (PPM)	Shake Test	Sample ID	Sample Time	Comment	Lithologic Description	Construction	Lithology	Sample Info
0.0	6.5	--	--	--	--	Air knifed for UVOST investigation and backfilled with sand. No logging completed.				
16.0	17.0	366.2	no sheen				(16-17) Silty clay; firm; medium plasticity; no dilatancy; light brown grading into grey; moist; odor		CL_ML	
17.0	18.0	712	no sheen	BH-1 (	0.48611		(17-18) Silt; soft; medium plasticity; no dilatancy; grey; moist; odor		ML	
18.0	19.0	603.9	no sheen				(18-19) Silt; soft; low plasticity; no dilatancy; grey; moist; odor		ML	
19.0	20.0	639.3	sheen				(19-20) Silt with sand; soft; low plasticity; no dilatancy; grey; wet; odor; 1/4 in sand seam approximately 2 inches from bottom		ML	
20.0	21.0	732.1	sheen	BH-1 (	0.49306		(20-21) Poorly graded sand with silt; subangular grains; weak cementation; grey; wet; odor; hard transition at 20 feet		SP_SM	
21.0	22.0	760.8	no slheen	BH-1 (	0.49653	heaving sands at 22	(21-22) Poorly graded sand with silt; subangular grains; weak cementation; grey; saturated; odor; heaving sands at 22 feet		SP_SM	
END	0.0	END	END	END	END	END	(END-END) END		END	

Boring/Well ID
LOD-BH-3

Client:	BP
Project:	d River Former Refinery - LOD Investig
Project Number:	BP050.133.02
Location:	Wood River, IL - Riverfront - LOD

Drilling Co.:	REDI
Drill Rig:	Geoprobe 7822DT
Drill Method:	direct push
Foreman:	Eric Wetzel
Start Date:	6/28/2022
End Date:	6/28/2022
Clear Method:	air knife
End Clear:	6.5
Ground Surface:	

Well Installation Information

Drill Method:	soil boring only	**Screen Material**	
Drill Rig:		**Screen Interval (ft bgs)**	
Drilling Co.:		**Filter Material**	
Foreman:		**Filter Interval (ft bgs)**	
Start Date:		**Annular Seal:**	
End Date:		**Seal Interval (ft bgs)**	
Bore Diamter (inch)		**Pad Material:**	
Borehole Depth (ft bgs)		**Pad Interval (ft bgs)**	
Well Diameter (inch)		**Coordinate System:**	
Casing Material:		**X Coordinate:**	
Casing Interval (ft bgs):		**Y Coordinate:**	
Stickup or Flush:		**TOC relative to Ground**	

Sample Information

Start Depth	End Depth	PID (PPM)	Shake Test	Comment	Lithologic Description	Construction	Lithology	Sample Info
0.0	6.5	--	--	Air knifed for UVOST investigation and backfilled with sand. No logging completed.				
14.0	15.0	538.6	no sheen		(14-15) Silty clay; soft; medium plasticity; no dilatancy; light brown grading to grey; moist; odor		CL_ML	
15.0	16.0	615.7	no sheen		(15-16) Silty clay; soft; medium plasticity; no dilatancy; light brown grading to grey; moist; odor; becomes more silty at bottom		CL_ML	
16.0	17.0	869.1	sheen		(16-17) Silt; soft; low plasticity; no dilatancy; grey; moist; odor		ML	
17.0	18.0	320.2	sheen		(17-18) Silt; soft; low plasticity; no dilatancy; grey; moist; odor		ML	
18.0	19.0	143.7	no sheen		(18-19) Silt; soft; low plasticity; no dilatancy; grey; moist; odor		ML	
19.0	20.0	644.1	no sheen		(19-20) Sandy silt; soft; low plasticity; no dilatancy; grey; wet; odor; more of a grading transition into sandier soil		ML	
20.0	21.0	323.4	no sheen		(20-21) Sandy silt; soft; medium plasticity; no dilatancy; grey; wet; odor		ML	
21.0	22.0	746.9	sheen	heaving sands at 22	(21-22) Silty sand; subangular grains; weak cementation; grey; saturated; odor; hard transition into sandy soil at 21 feet, heaving sands at 22 feet		SM	
END	0.0	END	END	END	(END-END) END		END	

Client:	BP
Project:	d River Former Refinery - LOD Investig
Project Number:	BP050.133.02
Location:	Wood River, IL - Riverfront - LOD

Boring/Well ID
LOD-BH-4

Drilling Co.:	REDI
Drill Rig:	Geoprobe 7822DT
Drill Method:	direct push
Foreman:	Eric Wetzel
Start Date:	6/28/2022
End Date:	6/28/2022
Clear Method:	air knife
End Clear:	6.5
Ground Surface:	

Well Installation Information

Drill Method:	soil boring only	**Screen Material**	
Drill Rig:		**Screen Interval (ft bgs)**	
Drilling Co.:		**Filter Material**	
Foreman:		**Filter Interval (ft bgs)**	
Start Date:		**Annular Seal:**	
End Date:		**Seal Interval (ft bgs)**	
Bore Diamter (inch)		**Pad Material:**	
Borehole Depth (ft bgs)		**Pad Interval (ft bgs)**	
Well Diameter (inch)		**Coordinate System:**	
Casing Material:		**X Coordinate:**	
Casing Interval (ft bgs):		**Y Coordinate:**	
Stickup or Flush:		**TOC relative to Ground**	

Sample Information

Start Depth	End Depth	PID (PPM)	Shake Test	Comment	Lithologic Description	Construction	Lithology	Sample Info
0.0	6.5	--	--	Air knifed for UVOST investigation and backfilled with sand. No logging completed.				
13.0	14.0	69.5					CL_ML	
14.0	15.0	355.2	sheen	sand in boot of liner	(14-15) Silty clay; soft; medium plasticity; no dilatancy; grey; moist; odor; sand in boot of liner, heaving sands at 15 feet		CL_ML	
15.0	17.0			NR, encountered heaving sands at 15 ft right at interface of clay/sand.	(15-17) no recovery		no recovery	
20.0	20.0	224.8	nt oil feel on	NR due to heaving sands. However, end cap at 20 ft had some sand and and maybe some residual oil.	(20-20) no recovery		no recovery	
END	0.0	END	END	END	(END-END) END		END	

Boring/Well ID
LOD-BH-5

Client:	BP
Project:	od River Former Refinery - LOD Investiga
Project Number:	BP050.133.02
Location:	Wood River, IL - Riverfront - LOD

Drilling Co.:	REDI
Drill Rig:	Geoprobe 7822DT
Drill Method:	direct push
Foreman:	Eric Wetzel
Start Date:	6/28/2022
End Date:	6/28/2022
Clear Method:	air knife
End Clear:	6.5
Ground Surface:	

Well Installation Information

Drill Method:	soil boring only	**Screen Material**
Drill Rig:		**Screen Interval (ft bgs)**
Drilling Co.:		**Filter Material**
Foreman:		**Filter Interval (ft bgs)**
Start Date:		**Annular Seal:**
End Date:		**Seal Interval (ft bgs)**
Bore Diamter (inch)		**Pad Material:**
Borehole Depth (ft bgs)		**Pad Interval (ft bgs)**
Well Diameter (inch)		**Coordinate System:**
Casing Material:		**X Coordinate:**
Casing Interval (ft bgs):		**Y Coordinate:**
Stickup or Flush:		**TOC relative to Ground**

Sample Information

Start Depth	End Depth	PID (PPM)	Shake Test	Comment	Lithologic Description	Construction	Lithology	Sample Info
0.0	6.5	--	--	Air knifed for UVOST investigation and backfilled with sand. No logging completed.				
16.0	17.0	294.5	no sheen	slight heaving encountered in sands 16-20	(16-17) Poorly graded sand with silt; subangular grains; weak cementation; grey; saturated; odor; Sands heavied at 16 ft. Only retreived 16-17 out of the 16-20 interval.		SP_SM	
17.0	18.0			NR due to heaving sands.	(17-18) no recovery		no recovery	
18.0	19.0			NR due to heaving sands.	(18-19) no recovery		no recovery	
19.0	20.0			NR due to heaving sands.	(19-20) no recovery		no recovery	
24.0	24.0	142.4	oily feel on liner	However, liner tip at 24 ft had oil residue.	(24-24) no recovery		no recovery	
END	0.0	END	END	END	(END-END) END		END	

Client:	BP
Project:	d River Former Refinery - LOD Investig
Project Number:	BP050.133.02
Location:	Wood River, IL - Riverfront - LOD

Boring/Well ID
LOD-BH-6

Drilling Co.:	REDI
Drill Rig:	Geoprobe 7822DT
Drill Method:	direct push
Foreman:	Eric Wetzel
Start Date:	6/28/2022
End Date:	6/28/2022
Clear Method:	air knife
End Clear:	6.5
Ground Surface:	

Well Installation Information

Drill Method:	soil boring only	**Screen Material**	
Drill Rig:		**Screen Interval (ft bgs)**	
Drilling Co.:		**Filter Material**	
Foreman:		**Filter Interval (ft bgs)**	
Start Date:		**Annular Seal:**	
End Date:		**Seal Interval (ft bgs)**	
Bore Diamter (inch)		**Pad Material:**	
Borehole Depth (ft bgs)		**Pad Interval (ft bgs)**	
Well Diameter (inch)		**Coordinate System:**	
Casing Material:		**X Coordinate:**	
Casing Interval (ft bgs):		**Y Coordinate:**	
Stickup or Flush:		**TOC relative to Ground**	

Sample Information

Start Depth	End Depth	PID (PPM)	Shake Test	Comment	Lithologic Description	Construction	Lithology	Sample Info
0.0	6.5	--	--	Air knifed for UVOST investigation and backfilled with sand. No logging completed.				
16.0	18.0	112		soil compressed about 50%	(16-18) Silty clay with sand; soft; medium plasticity; no dilatancy; grey with black staining; moist; odor; black staining on exterior of soil core with black speckels in interior, soil compressed about 50%		CL_ML	
18.0	20.0	919.6		soil compressed about 50%	(18-20) Silt with sand; soft; low plasticity; no dilatancy; grey; wet; odor; more of a silty clay with some sand and transitions to a silt-sand mix towards bottom, soil compressed about 50%		ML	
END	0.0	END	END	END	(END-END) END		END	

Boring/Well ID
LOD-BH-7

Client:	BP
Project:	d River Former Refinery - LOD Investig
Project Number:	BP050.133.02
Location:	Wood River, IL - Riverfront - LOD

Drilling Co.:	REDI
Drill Rig:	Geoprobe 7822DT
Drill Method:	direct push
Foreman:	Eric Wetzel
Start Date:	6/28/2022
End Date:	6/28/2022
Clear Method:	air knife
End Clear:	6.5
Ground Surface:	

Well Installation Information

Drill Method:	soil boring only	**Screen Material**	
Drill Rig:		**Screen Interval (ft bgs)**	
Drilling Co.:		**Filter Material**	
Foreman:		**Filter Interval (ft bgs)**	
Start Date:		**Annular Seal:**	
End Date:		**Seal Interval (ft bgs)**	
Bore Diamter (inch)		**Pad Material:**	
Borehole Depth (ft bgs)		**Pad Interval (ft bgs)**	
Well Diameter (inch)		**Coordinate System:**	
Casing Material:		**X Coordinate:**	
Casing Interval (ft bgs):		**Y Coordinate:**	
Stickup or Flush:		**TOC relative to Ground**	

Sample Information

Start Depth	End Depth	PID (PPM)	Shake Test	Comment	Lithologic Description	Construction	Lithology	Sample Info
0.0	6.5	--	--	Air knifed for UVOST investigation and backfilled with sand. No logging completed.				
12.0	13.0	745.6	sheen		(12-13) Silty clay; firm; medium plasticity; no dilatancy; light brown grading to grey; dry; odor		CL_ML	
13.0	14.0	822.1	no sheen		(13-14) Silt with sand; soft; low plasticity; no dilatancy; grey; moist; odor; sand near top and grades out downward		ML	
14.0	15.0	353.3	no sheen		(14-15) Silt; soft; low plasticity; no dilatancy; grey; wet; odor		ML	
15.0	16.0	103.7	no sheen		(15-16) silt; soft; low plasticity; no dilatancy; grey; wet; odor		ML	
16.0	17.0	198.6	no sheen		(16-17) silt; soft; low plasticity; no dilatancy; grey with brown noddules; wet; odor		ML	
17.0	18.0	394.1	no sheen		(17-18) Silt with sand; hard; low plasticity; no dilatancy; grey; wet; odor		ML	
18.0	19.0	135.7	no sheen		(18-19) Silt with sand; soft; low plasticity; no dilatancy; grey; saturated; odor		ML	
19.0	20.0	765.6	sheen	heaving sands at 20 feet	(19-20) Poorly graded sand with silt; subangular grains; weak cementation; grey; ; odor; first 6 inch similar to above then bottom 6 inch is sand with		SP_SM	
END	0.0	END	END	END	(END-END) END		END	

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Client:	bp Products North America Inc.
Project:	Light Oils Dock
Project Number:	BP050.138.01
Location:	Riverfront Property - Wood River, Il

LOD-PZ-01

Driller Information		Soil Boring Information		Well Information	
Drilling Co.:	Dakota Technologies	**Start Date:**	9/14/2022	Bore Diameter (in):	6
Drill Rig:	Geoprobe 6600	**End Date**	9/14/2022	Well Depth (ft bgs):	27
Drill Method:	Direct Push & HSA	**Clear Method:**	Air Knife	Well Diameter (in):	2
Driller:	A. Sense	**Clear Depth:**	6.5	Casing Material & Interval (ft bgs):	PVC / 0 - 22
		Boring Depth:	30	Screen Material & Interval (ft bgs):	PVC / 22 - 27
		Surface Elevation	422	Filter Material & Interval (ft bgs):	sand / 21 - 27
		Coordinate System:	WGS-84	Seal Material & Interval:	Bentonite / 1 - 21
		Latitude:	38.851294	Stickup or Flush:	Stickup
		Longitude:	-90.109653	Install Date:	9/14/2022

Sample Information									
Start Depth	End Depth	PID (PPM)	Shake Test	Sample ID	Sample Time	Comment	Lithologic Description	Construction	Lithology
0.0	0.5					0-6.5: 5-10 ppm in open hole	(0-6.5) fill; clayey silt, gravel, wood, concrete, asphalt, and sand		fill
0.5	1.0								fill
1.0	1.5								fill
1.5	2.0								fill
2.0	2.5								fill
2.5	3.0								fill
3.0	3.5								fill
3.5	4.0								fill
4.0	4.5								fill
4.5	5.0								fill
5.0	5.5								fill
5.5	6.0								fill
6.0	6.5								fill
6.5	7.0						(6.5-9) Fat clay; high plasticity; dark grey; dry		CH
7.0	7.5								CH
7.5	8.0	230							CH
8.0	8.5								CH
8.5	9.0								CH
9.0	9.5						(9-10) Silty clay; medium plasticity; dark grey; dry		CL_ML
9.5	10.0	260							CL_ML
10.0	10.5						(10-11) Silty clay; medium plasticity; dark grey; moist		CL_ML
10.5	11.0								CL_ML
11.0	11.5						(11-14) Silt with sand; low plasticity; olive grey; moist; trace clay		ML
11.5	12.0	281							ML
12.0	12.5								ML
12.5	13.0								ML
13.0	13.5								ML
13.5	14.0								ML
14.0	14.5	397					(14-15) Lean clay; plasticity; dark grey; moist		CL
14.5	15.0								CL

Sample Information							Lithologic Description	Construction	Lithology
Start Depth	End Depth	PID (PPM)	Shake Test	Sample ID	Sample Time	Comment			
15.0	15.5						(15-16.5) Silty sand; weak cementation; grey; wet; trace clay, fine-grained sand		SM
15.5	16.0								SM
16.0	16.5	178							SM
16.5	17.0						(16.5-20) Fat clay; plasticity; dark grey; moist		CH
17.0	17.5								CH
17.5	18.0								CH
18.0	18.5								CH
18.5	19.0								CH
19.0	19.5								CH
19.5	20.0	270							CH
20.0	20.5						(20-23.5) Silt; low plasticity; dark grey; moist; (clayey silt)		ML
20.5	21.0								ML
21.0	21.5								ML
21.5	22.0								ML
22.0	22.5								ML
22.5	23.0	385							ML
23.0	23.5								ML
23.5	24.0						(23.5-29.5) Poorly graded sand with silt; weak cementation; wet; fine-grained sand		SP_SM
24.0	24.5								SP_SM
24.5	25.0	280							SP_SM
25.0	25.5								SP_SM
25.5	26.0								SP_SM
26.0	26.5								SP_SM
26.5	27.0	140							SP_SM
27.0	27.5								SP_SM
27.5	28.0								SP_SM
28.0	28.5								SP_SM
28.5	29.0	380							SP_SM
29.0	29.5								SP_SM
29.5	30.0						(29.5-30) Lean clay; dark grey; wet; some silt		CL

Notes:
1) Water level recorded at 23.6 feet.
2)
3)
4)
5)
6)

Key: Cement, Grout, Bentonite, Sand, Screen, Riser; Fill / Other, Gravel, Sand, Silt, Clay, Bedrock

Remarks:
1) Stratification lines represent approximate boundaries between soil types and the transition may be gradual. Water level readings were completed at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.
2) Field testing values represent total volatile organic vapors (referenced to an isobutylene standard) measured in the headspace of a sealed soil sample with a photoionization detector with a 10.6 Ev lamp and set to a reference factor of 0.53 (benzene).
▼ = Approximate water table NA=Not Applicable NR=No Recovery bgs=below ground surface ags=above ground surface SAA= Same As Above

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Client:	bp Products North America Inc.
Project:	Light Oils Dock
Project Number:	BP050.138.01
Location:	Riverfront Property - Wood River, Il

LOD-PZ-02

Driller Information		Soil Boring Information		Well Information	
Drilling Co.:	Dakota Technologies	**Start Date:**	9/14/2022	Bore Diameter (in):	6
Drill Rig:	Geoprobe 6600	**End Date**	9/14/2022	Well Depth (ft bgs):	28
Drill Method:	Direct Push & HSA	**Clear Method:**	Air Knife	Well Diameter (in):	2
Driller:	A. Sense	**Clear Depth:**	6.5	Casing Material & Interval (ft bgs):	PVC / 0 - 23
		Boring Depth:	25	Screen Material & Interval (ft bgs):	PVC / 23 - 28
		Surface Elevation	422	Filter Material & Interval (ft bgs):	sand / 22 - 28
		Coordinate System:	WGS-84	Seal Material & Interval:	Bentonite / 1 - 22
		Latitude:	38.851269	Stickup or Flush:	Stickup
		Longitude:	-90.109661	Install Date:	9/19/2022

Sample Information									
Start Depth	End Depth	PID (PPM)	Shake Test	Sample ID	Sample Time	Comment	Lithologic Description	Construction	Lithology
0.0	0.5						(0-6.5) fill; clayey silt, gravel, wood, concrete, and asphalt		fill
0.5	1.0								fill
1.0	1.5								fill
1.5	2.0								fill
2.0	2.5								fill
2.5	3.0								fill
3.0	3.5								fill
3.5	4.0								fill
4.0	4.5								fill
4.5	5.0								fill
5.0	5.5								fill
5.5	6.0								fill
6.0	6.5								fill
6.5	7.0						(6.5-11) Fat clay; high plasticity; dark grey; dry		CH
7.0	7.5								CH
7.5	8.0								CH
8.0	8.5								CH
8.5	9.0	94							CH
9.0	9.5								CH
9.5	10.0								CH
10.0	10.5								CH
10.5	11.0								CH
11.0	11.5						(11-13) Silty clay; dark grey; wet; trace very fine-grained sand		CL_ML
11.5	12.0	52							CL_ML
12.0	12.5								CL_ML
12.5	13.0								CL_ML
13.0	13.5						(13-13.5) Silty sand; weak cementation; olive green; dry		SM
13.5	14.0						(13.5-18.5) Fat clay; dark grey; moist; becomes wet at 17 feet, grey silty sand (SM) layer present at 18.3-18.5 feet		CH
14.0	14.5								CH
14.5	15.0	200							CH

Sample Information							Lithologic Description	Construction	Lithology
Start Depth	End Depth	PID (PPM)	Shake Test	Sample ID	Sample Time	Comment			
15.0	15.5								CH
15.5	16.0								CH
16.0	16.5	51							CH
16.5	17.0								CH
17.0	17.5								CH
17.5	18.0								CH
18.0	18.5	185							CH
18.5	19.0						(18.5-20) Fat clay; dark grey; moist		CH
19.0	19.5								CH
19.5	20.0	152							CH
20.0	20.5						(20-22) Silty clay; low plasticity; dark grey; moist		CL_ML
20.5	21.0								CL_ML
21.0	21.5	178							CL_ML
21.5	22.0								CL_ML
22.0	22.5						(22-24) Fat clay; high plasticity; dark grey; wet		CH
22.5	23.0	260							CH
23.0	23.5								CH
23.5	24.0	360							CH
24.0	24.5						(24-25) Poorly graded sand with silt; weak cementation; wet; fine-grained sand; boring terminated at 25 ft bgs		SP_SM
24.5	25.0	260							SP_SM
25.0	25.5								
25.5	26.0								
26.0	26.5								
26.5	27.0								
27.0	27.5								
27.5	28.0								

Notes:
1) Water level recorded at 23 feet.
2)
3)
4)
5)
6)

Key:

Cement	Fill / Other
Grout	Gravel
Bentonite	Sand
Sand	Silt
Screen	Clay
Riser	Bedrock

Remarks:
1) Stratification lines represent approximate boundaries between soil types and the transition may be gradual. Water level readings were completed at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.
2) Field testing values represent total volatile organic vapors (referenced to an isobutylene standard) measured in the headspace of a sealed soil sample with a photoionization detector with a 10.6 Ev lamp and set to a reference factor of 0.53 (benzene).
▼= Approximate water table NA=Not Applicable NR=No Recovery bgs=below ground surface ags=above ground surface SAA= Same As Above

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Client:	bp Products North America Inc.
Project:	Light Oils Dock
Project Number:	BP050.138.01
Location:	Riverfront Property - Wood River, Il

LOD-PZ-03

Driller Information		Soil Boring Information		Well Information	
Drilling Co.:	Dakota Technologies	**Start Date:**	9/14/2022	Bore Diameter (in):	6
Drill Rig:	Geoprobe 6600	**End Date**	9/14/2022	Well Depth (ft bgs):	27
Drill Method:	Direct Push & HSA	**Clear Method:**	Air Knife	Well Diameter (in):	2
Driller:	A. Sense	**Clear Depth:**	6.5	Casing Material & Interval (ft bgs):	PVC / 0 - 22
		Boring Depth:	25	Screen Material & Interval (ft bgs):	PVC / 22 - 27
		Surface Elevation	422	Filter Material & Interval (ft bgs):	sand / 21 - 27
		Coordinate System:	WGS-84	Seal Material & Interval:	Bentonite / 1 - 21
		Latitude:	38.851253	Stickup or Flush:	Stickup
		Longitude:	-90.109692	Install Date:	9/19/2022

Sample Information									
Start Depth	End Depth	PID (PPM)	Shake Test	Sample ID	Sample Time	Comment	Lithologic Description	Construction	Lithology
0.0	0.5						(0-6.5) fill; clayey silt, gravel, wood, concrete, and asphalt		fill
0.5	1.0								fill
1.0	1.5								fill
1.5	2.0								fill
2.0	2.5								fill
2.5	3.0								fill
3.0	3.5								fill
3.5	4.0								fill
4.0	4.5								fill
4.5	5.0								fill
5.0	5.5								fill
5.5	6.0								fill
6.0	6.5								fill
6.5	7.0						(6.5-9.5) Fat clay; high plasticity; dark grey; dry		CH
7.0	7.5	18							CH
7.5	8.0								CH
8.0	8.5	71							CH
8.5	9.0	72							CH
9.0	9.5								CH
9.5	10.0	153					(9.5-10) Silt; low plasticity; dark grey; wet		ML
10.0	10.5						(10-13) Silt; low plasticity; dark grey; moist; trace clay		ML
10.5	11.0	56							ML
11.0	11.5								ML
11.5	12.0								ML
12.0	12.5	120							ML
12.5	13.0								ML
13.0	13.5						(13-13.5) Lean clay		CL
13.5	14.0	170					(13.5-15) Silty sand; fine-grained sand		SM
14.0	14.5								SM
14.5	15.0	186							SM

Sample Information							Lithologic Description	Construction	Lithology
Start Depth	End Depth	PID (PPM)	Shake Test	Sample ID	Sample Time	Comment			
15.0	15.5						(15-15.5) Silt		ML
15.5	16.0						(15.5-16.5) Poorly graded sand with silt and gravel		SP_SM
16.0	16.5								SP_SM
16.5	17.0	49					(16.5-20) Lean clay; dark grey; moist		CL
17.0	17.5								CL
17.5	18.0								CL
18.0	18.5	70							CL
18.5	19.0								CL
19.0	19.5								CL
19.5	20.0	228							CL
20.0	20.5						(20-23) Silty clay; low plasticity; dark grey; moist		CL_ML
20.5	21.0	67							CL_ML
21.0	21.5								CL_ML
21.5	22.0								CL_ML
22.0	22.5								CL_ML
22.5	23.0	200							CL_ML
23.0	23.5						(23-24) Poorly graded sand; weak cementation; wet; fine-grained sand		SP
23.5	24.0	230							SP
24.0	24.5						(24-25) Poorly graded sand with silt; wet; fine-grained sand; boring terminated at 25 ft bgs		SP_SM
24.5	25.0								SP_SM
25.0	25.5								
25.5	26.0								
26.0	26.5								
26.5	27.0								

Notes:
1) Water level recorded at 23 feet.
2)
3)
4)
5)
6)

Key:

Cement		Fill / Other
Grout		Gravel
Bentonite		Sand
Sand		Silt
Screen		Clay
Riser		Bedrock

Remarks:
1) Stratification lines represent approximate boundaries between soil types and the transition may be gradual. Water level readings were completed at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.
2) Field testing values represent total volatile organic vapors (referenced to an isobutylene standard) measured in the headspace of a sealed soil sample with a photoionization detector with a 10.6 Ev lamp and set to a reference factor of 0.53 (benzene).
▼ = Approximate water table NA=Not Applicable NR=No Recovery bgs=below ground surface ags=above ground surface SAA= Same As Above

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APPENDIX D
Well Construction Logs

Electronic Filing: Received, Clerk's Office 10/06/2025 **PCB 2026-001**

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date 11/04/22

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
   b. **Bored** Well Buried Slab [ ] Yes [ ] No
   Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
   c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
   Hole Diameter 6 in. to 27 ft. 0 in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Chipped	4.5	50Lb	21	1	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven [ ] Yes [ ] No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within [X] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand	12/20 EMI	27	21

2. Well Use [ ] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock
   [X] Monitoring [ ] Other
3. Date Well Completed 09/14/2022 Well Disinfected [ ] Yes [X] No
   Driller's estimated well yield NA gpm
4. Date Permanent Pump Installed NA
5. Pump Capacity NA gpm Set at (depth) NA ft.
6. Pitless Adapter Model and Manufacturer NA
7. Well Cap Type and Manufacturer Env. Manufacturing, Above Ground
8. Pressure Tank Working Cycle NA gals. Captive Air [ ] Yes [X] No
9. Pump System Disinfected [ ] Yes [X] No
10. Name of Pump Company NA
11. Pump Installer NA License # NA
12. NA License # NA
    Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

DO NOT write on these lines

IMPORTANT NOTICE: This state agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. **DISCLOSURE OF THIS INFORMATION IS MANDATORY**. This form has been approved by the Forms Management Center.

GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner BP Products North America, Inc. Well # LOD-P2-01
14. Driller Aaron Sense License # _____
15. Name of Drilling Co. Dakota Technologies Company, LLC
16. Permit No. _____ Date Issued _____
17. Date Drilling Started 09/14/2022
18. Well **SITE** address 399 South Old St. Louis Rd., Wood River, IL 62095
19. Township Name Wood River Township Land ID # _____
20. Subdivision Name _____ Lot # _____
21. Location a. County Madison
    b. Township 5N Range 9W Section 28
    c. _____ Quarter _____ Quarter _____ Quarter
    d. Coordinates 38.851294, -90.109653 Site Elevation 422 ft. (msl)

For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2.0	PVC	Flush	.010"	27	22
2.0	PVC	Flush	NA (Riser)	22	+3.0

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from _____, _____at a depth of _____ft. to _____ft.
    a. Static water level 23.6 ft. below casing which is 33 in. above ground
    b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
See Attached		

(If **dry hole**, fill out log and indicate how hole was sealed.)

25. Licensed Water Well Contractor Signature _____ License Number _____

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Electronic Filing: Received, Clerk's Office 10/06/2025 **PCB 2026-001**

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date 11/04/22

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
   b. **Bored** Well Buried Slab [ ] Yes [ ] No
   Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
   c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
   Hole Diameter 6 in. to 28 ft. 0 in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Chipped	5	50Lb	22	1	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven [ ] Yes [ ] No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within [X] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand	12/20 EMI	28	22

2. Well Use [ ] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock
   [X] Monitoring [ ] Other
3. Date Well Completed 09/14/2022 Well Disinfected [ ] Yes [X] No
   Driller's estimated well yield NA gpm
4. Date Permanent Pump Installed NA
5. Pump Capacity NA gpm Set at (depth) NA ft.
6. Pitless Adapter Model and Manufacturer NA
7. Well Cap Type and Manufacturer Above Ground, Env. Manufacturing
8. Pressure Tank Working Cycle NA gals. Captive Air [ ] Yes [X] No
9. Pump System Disinfected [ ] Yes [X] No
10. Name of Pump Company NA
11. Pump Installer NA License # NA
12. NA License # NA
    Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

DO NOT write on these lines

IMPORTANT NOTICE: This state agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. **DISCLOSURE OF THIS INFORMATION IS MANDATORY**. This form has been approved by the Forms Management Center.

GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner BP Products North America, Inc. Well # LOD-PZ-02
14. Driller Aaron Sense License #
15. Name of Drilling Co. Dakota Technologies Company, LLC
16. Permit No. Date Issued
17. Date Drilling Started 09/14/2022
18. Well **SITE** address 399 South Old St Louis Rd, Wood River, IL 62095
19. Township Name Wood River Township Land ID #
20. Subdivision Name Lot #
21. Location a. County Madison
    b. Township 5N Range 9W Section 28
    c.____ Quarter ____Quarter ____ Quarter
    d. Coordinates 38.851269, -90.109661 Site Elevation 422 ft. (msl)

For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2.0	PVC	Flush	.010"	28	23
2.0	PVC	Flush	NA Riser	23	+3.0

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from _____ at a depth of _____ft. to _____ft.
    a. Static water level 23.0 ft. below casing which is 33 in. above ground
    b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
See Attached		

(If **dry hole**, fill out log and indicate how hole was sealed.)

25. Licensed Water Well Contractor Signature License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Electronic Filing: Received, Clerk's Office 10/06/2025 **PCB 2026-001**

Illinois Department of Public Health
WATER WELL CONSTRUCTION REPORT

Date 11/04/22

TYPE OR PRESS FIRMLY WITH BLACK INK PEN. COMPLETE WITHIN 30 DAYS OF WELL COMPLETION AND SEND TO THE APPROPRIATE HEALTH DEPARTMENT.

1. Type of Well a. **Driven** Well Casing diam. _____in. Depth _____ft.
   b. **Bored** Well Buried Slab [ ] Yes [ ] No
   Hole Diameter ____in. to _____ft.; ____in. to_____ft.; ____in. to_____ft.
   c. **Drilled** Well **PVC** casing Formation packer set at depth of _____ft.
   Hole Diameter 6.0 in. to 27 ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)
Chipped	4.5	50Lb	21	1	

d. **Drilled** Well **Steel** Casing- - - Mechanically Driven [ ] Yes [ ] No
Hole Diameter ____in. to _____ft. ____in. to_____ft. ____in. to_____ft.

Type of Grout	# of Bags	Grout Weight	From (ft.)	To (ft.)	Tremie Depth (ft.)

e. Well finished within [X] Unconsolidated Materials [ ] Bedrock

f. Kind of Gravel Sand Pack	Grain Size/Supplier #	From (ft.)	To (ft.)
Silica Sand	12/20 EMI	27	21

2. Well Use [ ] Domestic [ ] Irrigation [ ] Commercial [ ] Livestock
   [X] Monitoring [ ] Other
3. Date Well Completed 09/14/2022 Well Disinfected [ ] Yes [X] No
   Driller's estimated well yield NA gpm
4. Date Permanent Pump Installed NA
5. Pump Capacity NA gpm Set at (depth) NA ft.
6. Pitless Adapter Model and Manufacturer NA
7. Well Cap Type and Manufacturer Above Ground, Env. Manufacturing
8. Pressure Tank Working Cycle NA gals. Captive Air [ ] Yes [X] No
9. Pump System Disinfected [ ] Yes [X] No
10. Name of Pump Company NA
11. Pump Installer NA License # NA
12. NA License # N/A
    Licensed Pump Contractor Signature

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761

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IMPORTANT NOTICE: This state agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. **DISCLOSURE OF THIS INFORMATION IS MANDATORY**. This form has been approved by the Forms Management Center.

GEOLOGICAL AND WATER SURVEY WELL RECORD

13. Property Owner BP Products North America, Inc. Well # LOD-PZ-03
14. Driller Aaron Sense License #
15. Name of Drilling Co. Dakota Technologies Company, LLC
16. Permit No. Date Issued
17. Date Drilling Started 09/14/2022
18. Well **SITE** address 399 South Old St Louis Rd., Wood River, IL 62095
19. Township Name Wood River Township Land ID #
20. Subdivision Name Lot #
21. Location a. County Madison
    b. Township 5N Range 9W Section 28
    c. _____ Quarter ____Quarter _____ Quarter
    d. Coordinates 38.851253, -90.109692 Site Elevation 422 ft. (msl)

For Survey Use

22. Casings, Liners* and Screen Information

Diam. (in.)	Material	Joint	Slot Size	From (ft.)	To (ft.)
2.0	PVC	Flush	.010"	27	22
2.0	PVC	Flush	NA Riser	22	+3.0

(*) _____
(List reason for liner, type of upper and lower seals installed)

23. Water from _____ at a depth of _____ft. to _____ft.
    a. Static water level 23 ft. below casing which is 33 in. above ground
    b. Pumping level is _____ ft. pumping _____gpm after pumping for _____hours

24. Earth Materials Passed Through	From (ft.)	To (ft.)
See Attached		

(If **dry hole**, fill out log and indicate how hole was sealed.)

25. Licensed Water Well Contractor Signature License Number

SEE REVERSE SIDE FOR ADDITIONAL INFORMATION)

Electronic Filing: Received, Clerk's Office 10/06/2025 **PCB 2026-001**

Illinois Environmental Protection Agency **Well Completion Report**

Site Number: 1191155009 County: Madison

Site Name: BP Products North America, Inc. - Riverfront Property Well #: LOD-VMP-01

State Plane Coordinate: X _____ Y _____ (or) Latitude: 38° 51' 4.70" Longitude: -90° 6' 35.00" Borehole #: LOD-VMP-01

Surveyed by: _____ IL Registration #: _____

Drilling Contractor: Dakota Technologies Driller: Aaron Sense (Dakota)

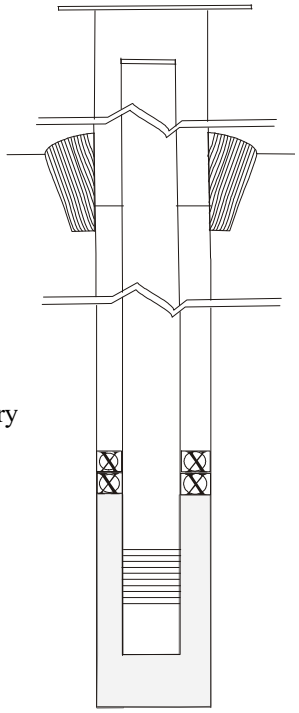
Consulting Firm: Sovereign Consulting, Inc. Geologist: Tom DeReamer (Sovereign)

Drilling Method: Geoprobe 6600 - 3 1/4" HSA Drilling Fluid (Type): N/A

Logged By: Tom DeReamer (Sovereign) Date Started: 09/16/22 Date Finished: 09/16/22

Report Form Completed By: Matthew Cauthon (Sovereign) Date: 05/25/23

ANNULAR SPACE DETAILS



Elevations (MSL)*	Depths (BGS)	(.01ft.)
	0	Top of Protective Casing
	0	Top of Riser Pipe
	0	Ground Surface
	0.25	Top of Annular Sealant
	N/A	Static Water Level (After Completion)
	2	Top of Seal
	6	Top of Sand Pack
	7	Top of Screen
	12	Bottom of Screen
	12	Bottom of Well
	12	Bottom of Borehole

* Referenced to a National Geodetic Datum

Type of Surface Seal: concrete

Type of Annular Sealant: bentonite

Installation Method: gravity

Setting Time: <30 mins

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) ✗

Installation Method: gravity

Setting Time: 30 mins

Type of Sand Pack: quartz

Grain Size: 10/20 (Sieve Size)

Installation Method: gravity

Type of Backfill Material: N/A (if applicable)

Installation Method: N/A

WELL CONSTRUCTION MATERIAL
(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other ✗
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC, or Other ✗
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC, or Other
Screen	SS304, SS316, PTFE, PVC, or Other ✗

CASING MEASURMENTS

Diameter of Borehole (inches)	3.25
ID of Riser Pipe (inches)	1.0
Protective Casing Length (feet)	1.0
Riser Pipe Length (feet)	7.0
Bottom of Screen to End Cap (feet)	0.1
Screen Length (1st slot to last slot) (feet)	5.0
Total Length of Casing (feet)	12.0
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Electronic Filing: Received, Clerk's Office 10/06/2025 **PCB 2026-001**

Illinois Environmental Protection Agency — Well Completion Report

Site Number: 1191155009 County: Madison

Site Name: BP Products North America, Inc. - Riverfront Property Well #: LOD-VMP-02

State Plane Coordinate: X _____ Y _____ (or) Latitude: 38° 51' 4.59" Longitude: -90° 6' 34.98" Borehole #: LOD-VMP-02

Surveyed by: _____ IL Registration #: _____

Drilling Contractor: Dakota Technologies Driller: Aaron Sense (Dakota)

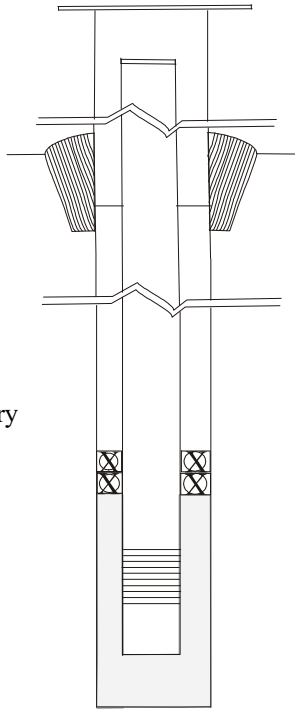
Consulting Firm: Sovereign Consulting, Inc. Geologist: Tom DeReamer (Sovereign)

Drilling Method: Geoprobe 6600 - 3 1/4" HSA Drilling Fluid (Type): N/A

Logged By: Tom DeReamer (Sovereign) Date Started: 09/16/22 Date Finished: 09/16/22

Report Form Completed By: Matthew Cauthon (Sovereign) Date: 05/25/23

ANNULAR SPACE DETAILS



	Elevations (MSL)*	Depths (BGS)	(.01ft.)
		0	Top of Protective Casing
		0	Top of Riser Pipe
		0	Ground Surface
		0.25	Top of Annular Sealant
		N/A	Static Water Level (After Completion)
		2	Top of Seal
		6	Top of Sand Pack
		7	Top of Screen
		12	Bottom of Screen
		12	Bottom of Well
		12	Bottom of Borehole

* Referenced to a National Geodetic Datum

Type of Surface Seal: concrete

Type of Annular Sealant: bentonite

Installation Method: gravity

Setting Time: <30 mins

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) ✗

Installation Method: gravity

Setting Time: 30 mins

Type of Sand Pack: quartz

Grain Size: 10/20 (Sieve Size)

Installation Method: gravity

Type of Backfill Material: N/A (if applicable)

Installation Method: N/A

WELL CONSTRUCTION MATERIAL
(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other ✗
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC, or Other ✗
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC, or Other
Screen	SS304, SS316, PTFE, PVC, or Other ✗

CASING MEASURMENTS

Diameter of Borehole (inches)	3.25
ID of Riser Pipe (inches)	1.0
Protective Casing Length (feet)	1.0
Riser Pipe Length (feet)	7.0
Bottom of Screen to End Cap (feet)	0.1
Screen Length (1st slot to last slot) (feet)	5.0
Total Length of Casing (feet)	12.0
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

Electronic Filing: Received, Clerk's Office 10/06/2025 **PCB 2026-001**

Illinois Environmental Protection Agency — Well Completion Report

Site Number: 1191155009 County: Madison

Site Name: BP Products North America, Inc. - Riverfront Property Well #: LOD-VMP-03

State Plane Coordinate: X _____ Y _____ (or) Latitude: 38° 51' 4.47" Longitude: -90° 6' 35.08" Borehole #: LOD-VMP-03

Surveyed by: _____ IL Registration #: _____

Drilling Contractor: Dakota Technologies Driller: Aaron Sense (Dakota)

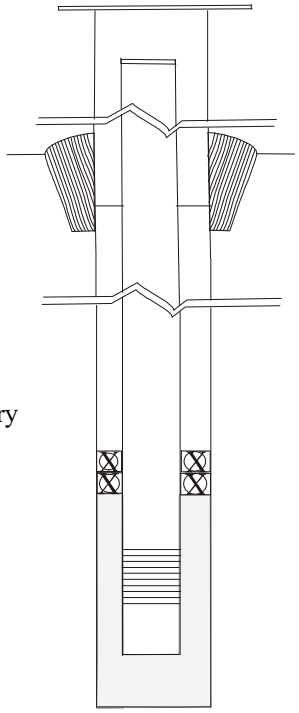
Consulting Firm: Sovereign Consulting, Inc. Geologist: Tom DeReamer (Sovereign)

Drilling Method: Geoprobe 6600 - 3 1/4" HSA Drilling Fluid (Type): N/A

Logged By: Tom DeReamer (Sovereign) Date Started: 09/16/22 Date Finished: 09/16/22

Report Form Completed By: Matthew Cauthon (Sovereign) Date: 05/25/23

ANNULAR SPACE DETAILS



Elevations (MSL)*	Depths (BGS)	(.01ft.)
	0	Top of Protective Casing
	0	Top of Riser Pipe
	0	Ground Surface
	0.25	Top of Annular Sealant
	N/A	Static Water Level (After Completion)
	2	Top of Seal
	6	Top of Sand Pack
	7	Top of Screen
	12	Bottom of Screen
	12	Bottom of Well
	12	Bottom of Borehole

* Referenced to a National Geodetic Datum

Type of Surface Seal: concrete

Type of Annular Sealant: bentonite

Installation Method: gravity

Setting Time: <30 mins

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One) ✗

Installation Method: gravity

Setting Time: 30 mins

Type of Sand Pack: quartz

Grain Size: 10/20 (Sieve Size)

Installation Method: gravity

Type of Backfill Material: N/A (if applicable)

Installation Method: N/A

WELL CONSTRUCTION MATERIAL
(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other ✗
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC, or Other ✗
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC, or Other
Screen	SS304, SS316, PTFE, PVC, or Other ✗

CASING MEASURMENTS

Diameter of Borehole (inches)	3.25
ID of Riser Pipe (inches)	1.0
Protective Casing Length (feet)	1.0
Riser Pipe Length (feet)	7.0
Bottom of Screen to End Cap (feet)	0.1
Screen Length (1st slot to last slot) (feet)	5.0
Total Length of Casing (feet)	12.0
Screen Slot Size **	0.010

**Hand-Slotted Well Screens are Unacceptable

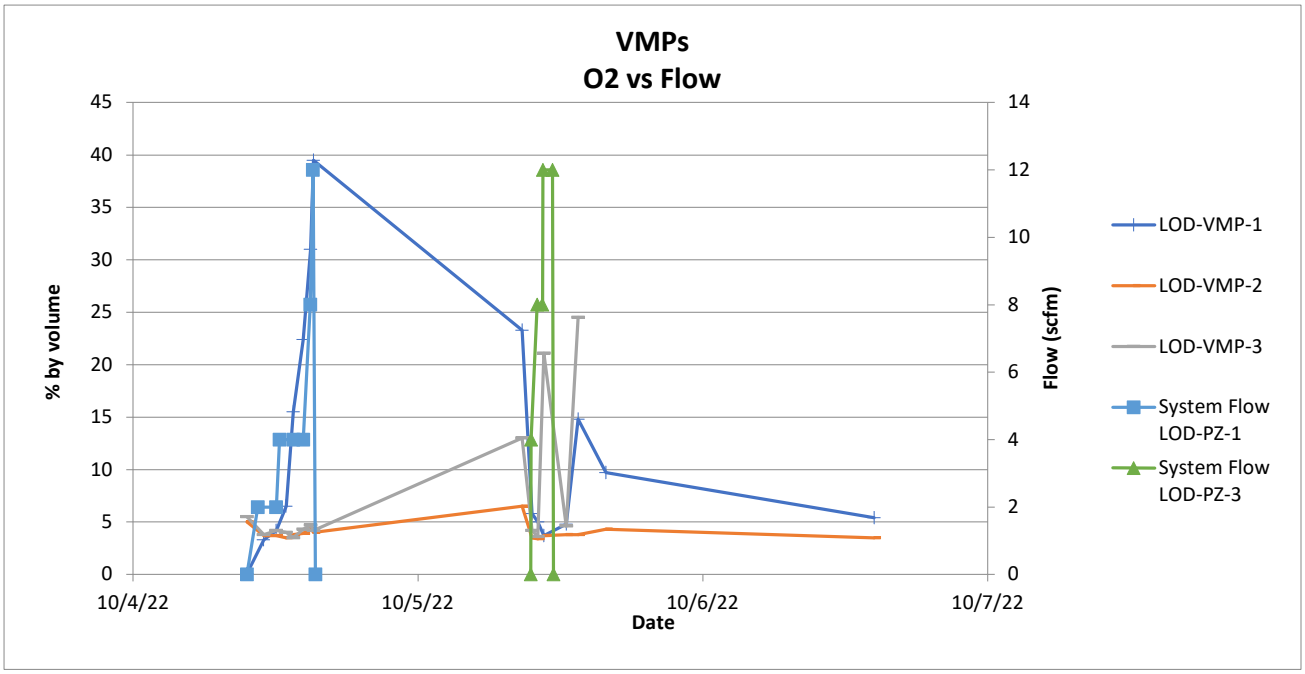
Electronic Filing: Received, Clerk's Office 10/06/2025 **PCB 2026-001**

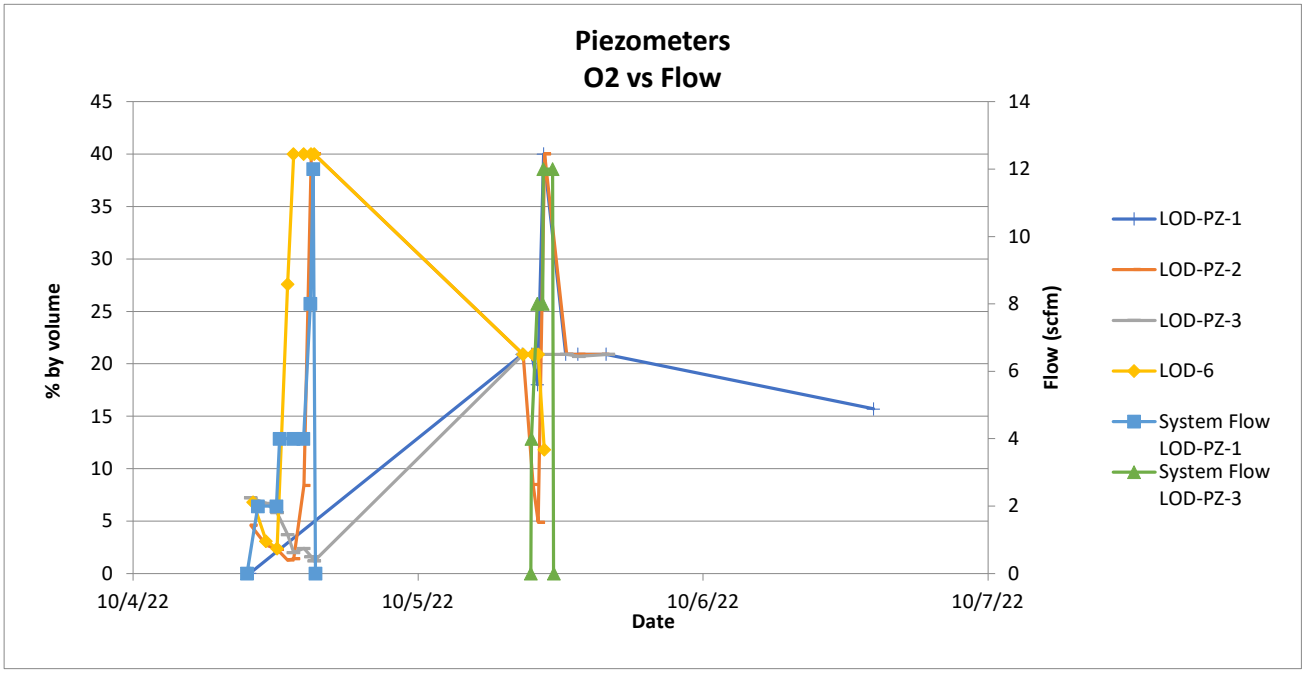
APPENDIX E
Sparge Evaluation Monitoring Results

Appendix E

LOD Sparge Test

Soil Gas/Pressure/Flow Graphs





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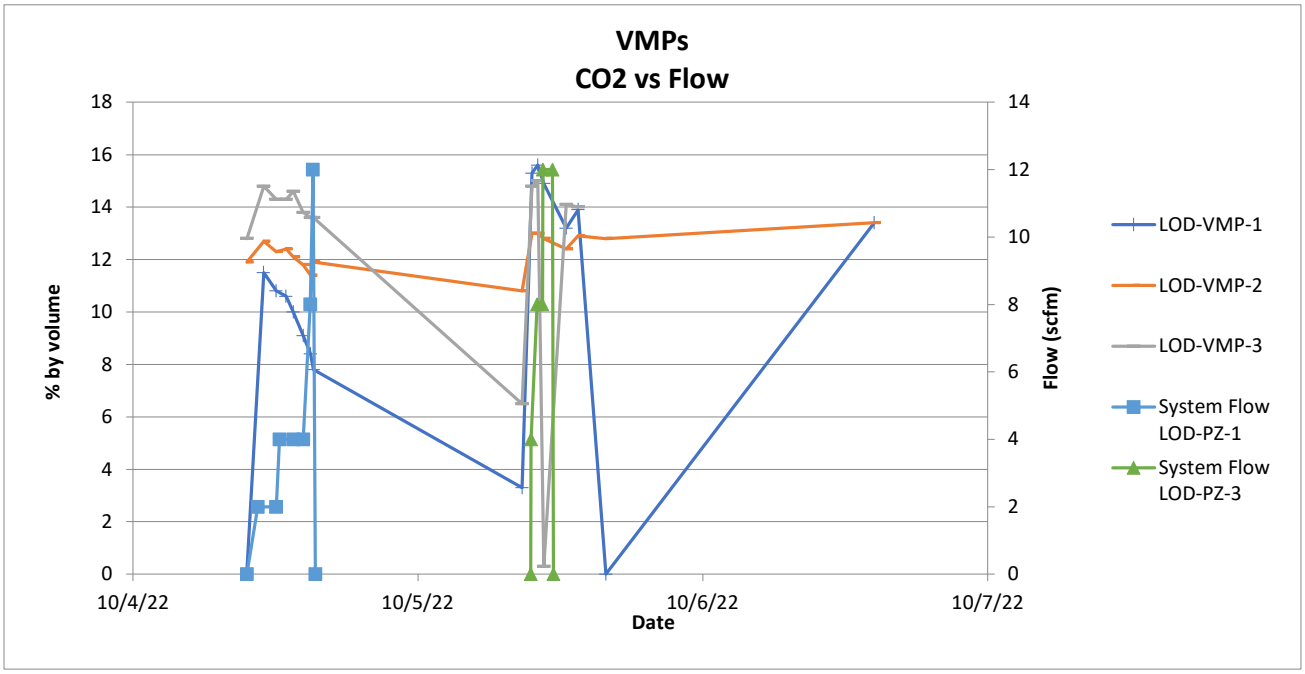

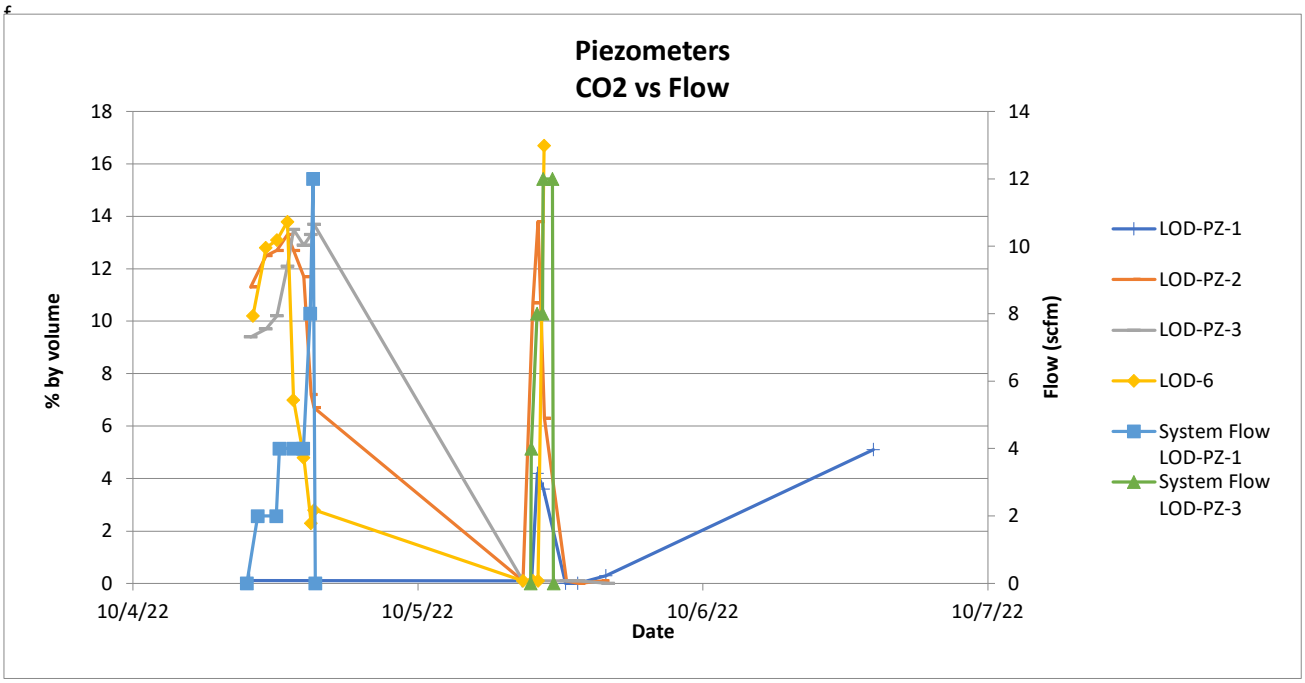

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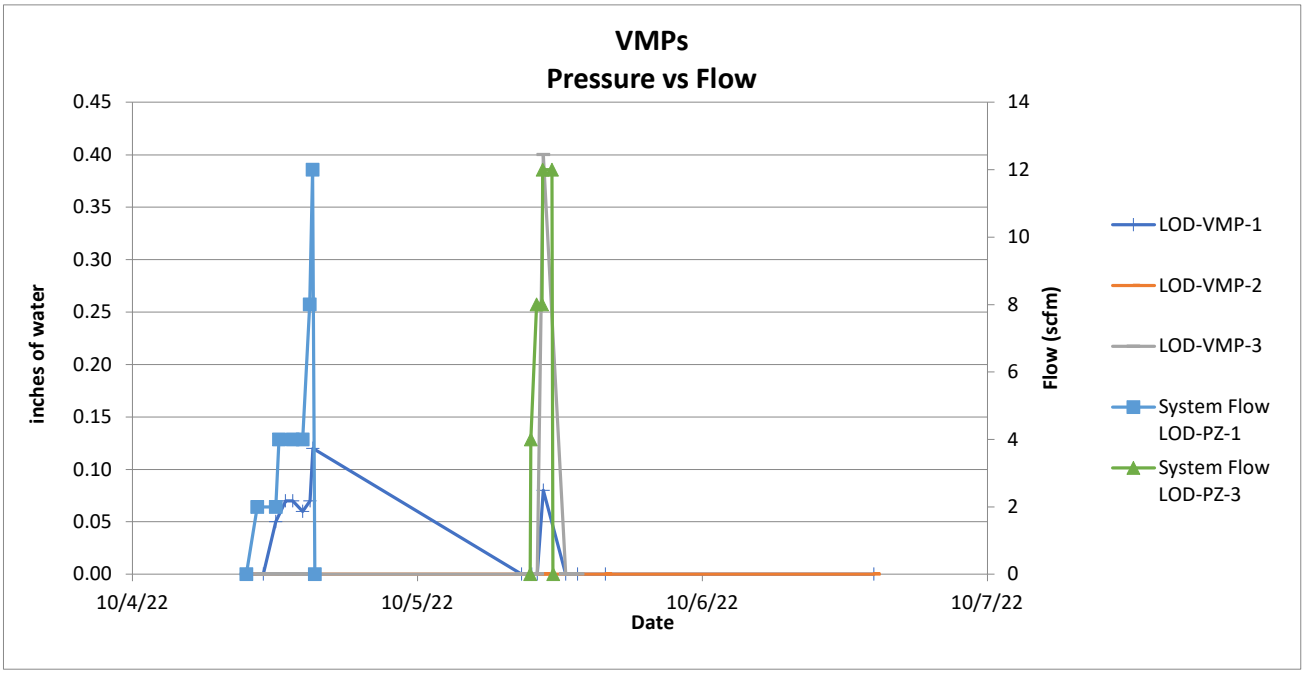

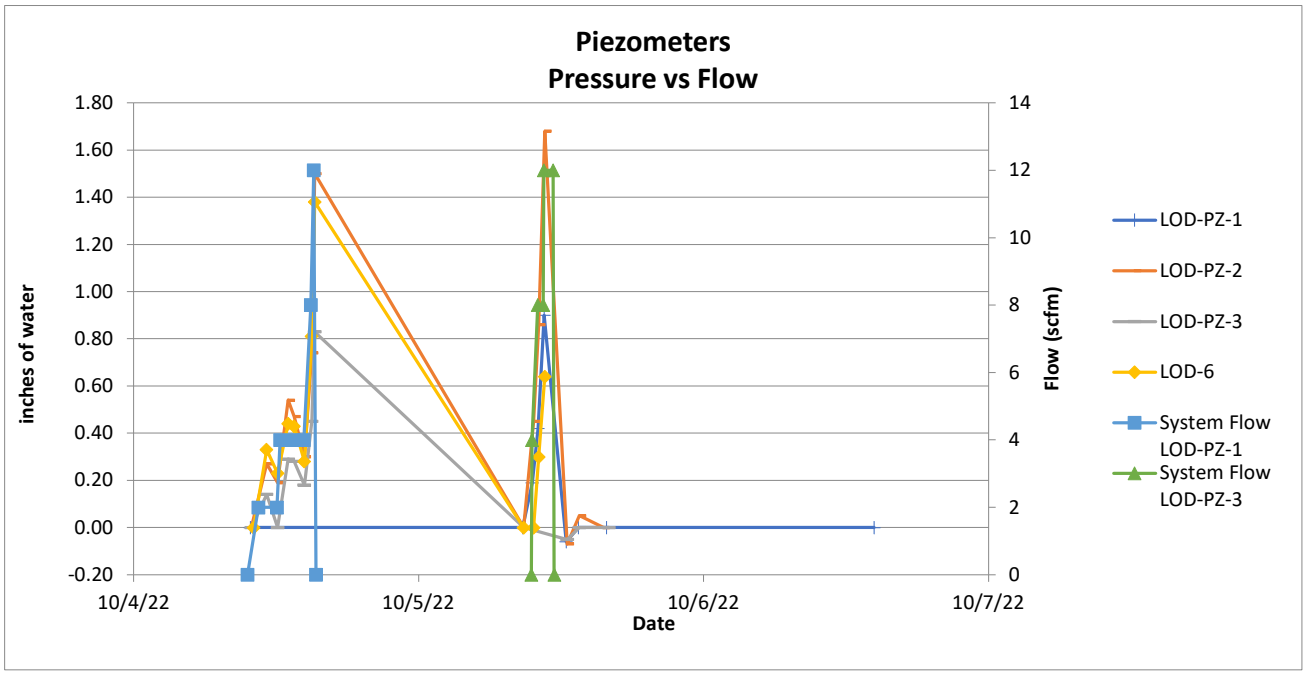

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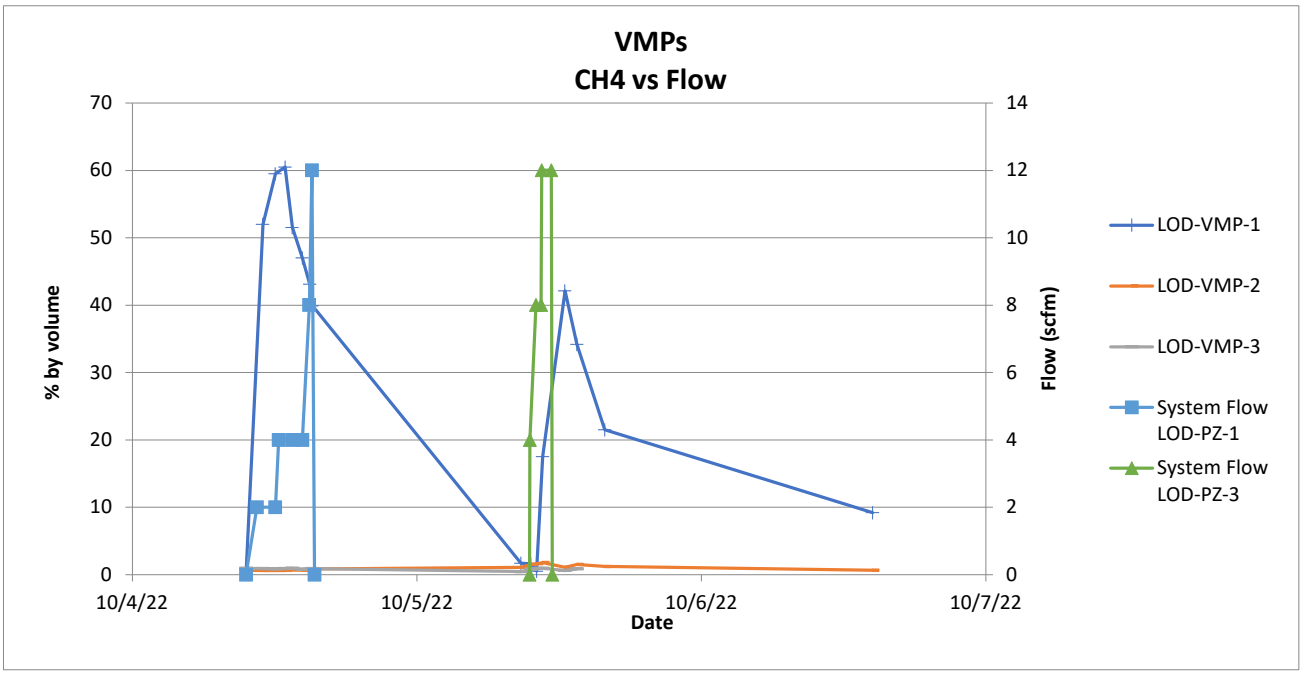

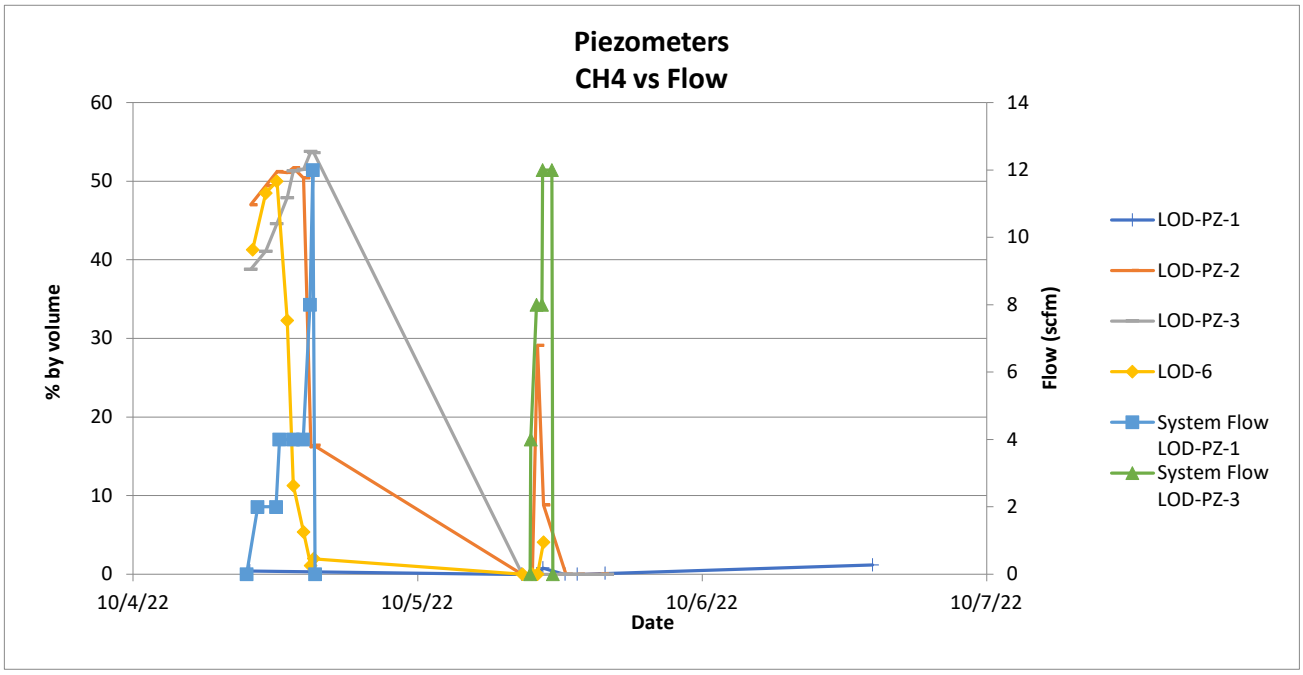

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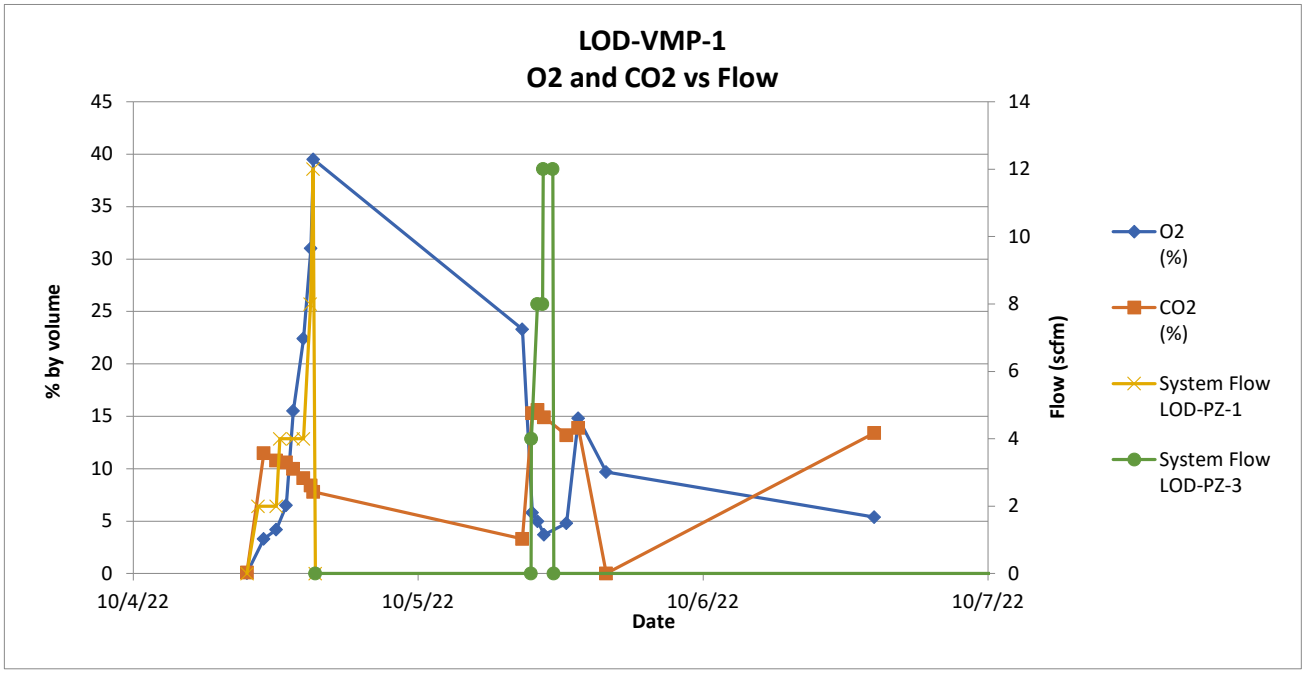

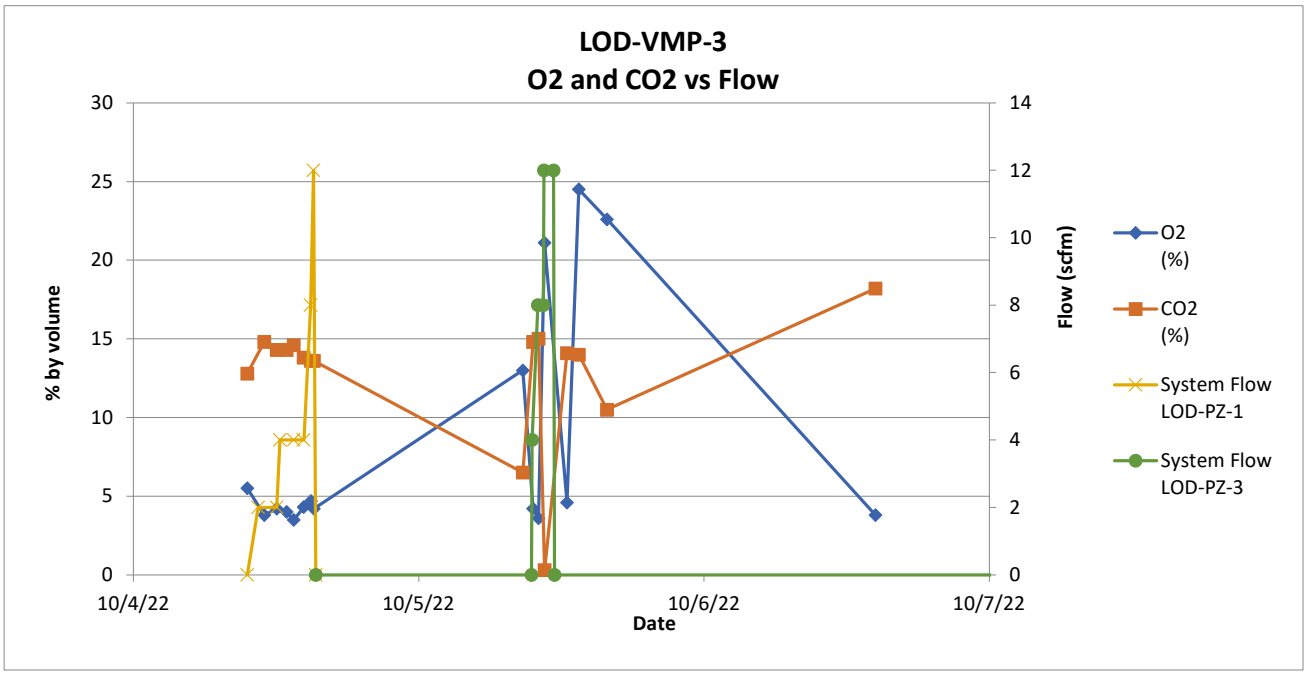

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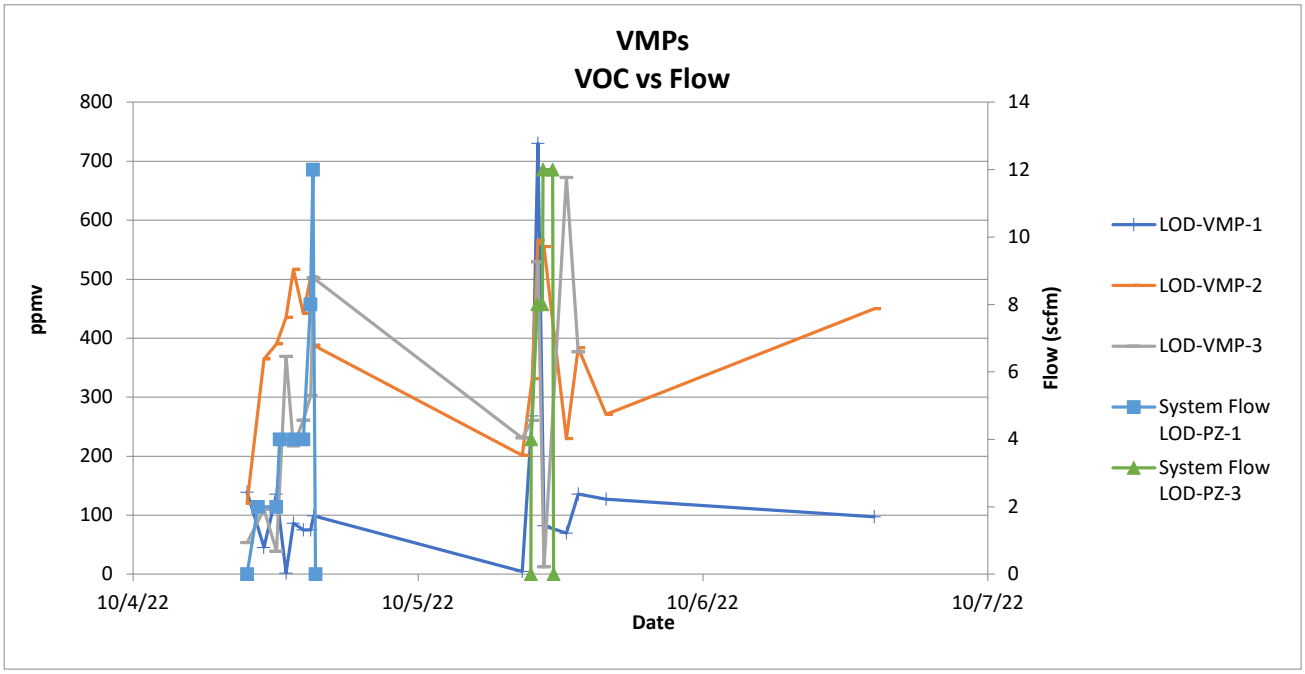

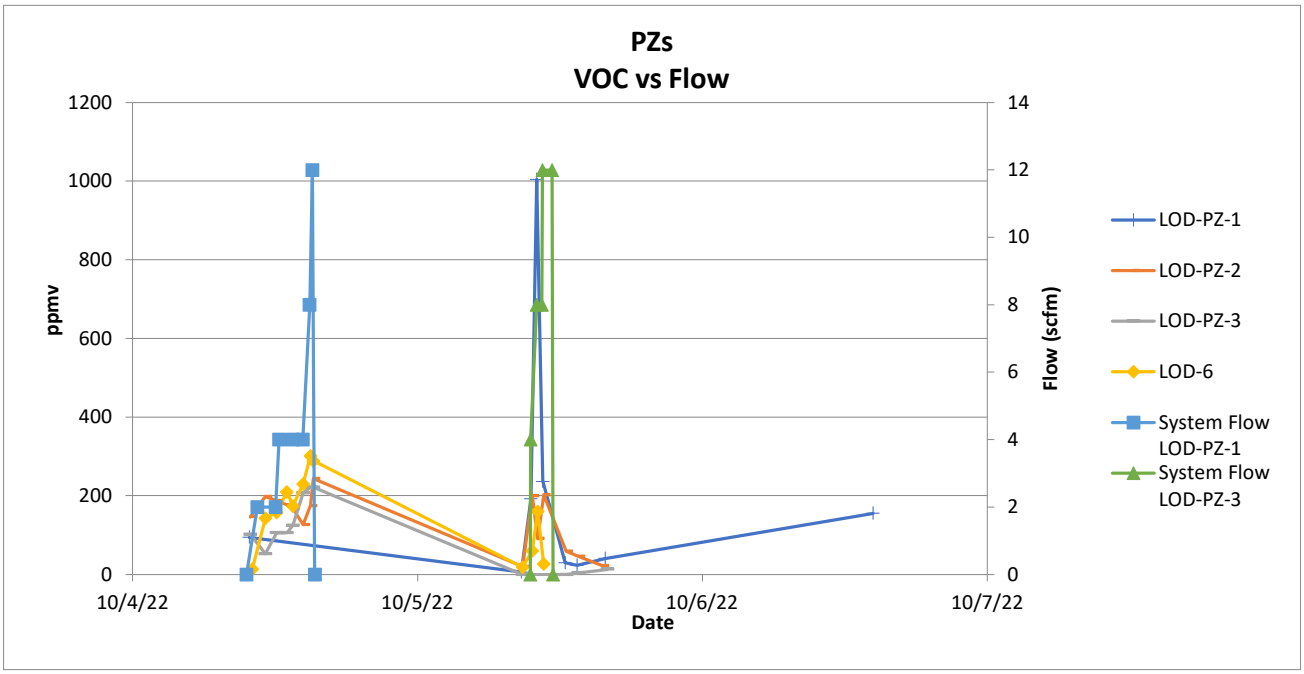

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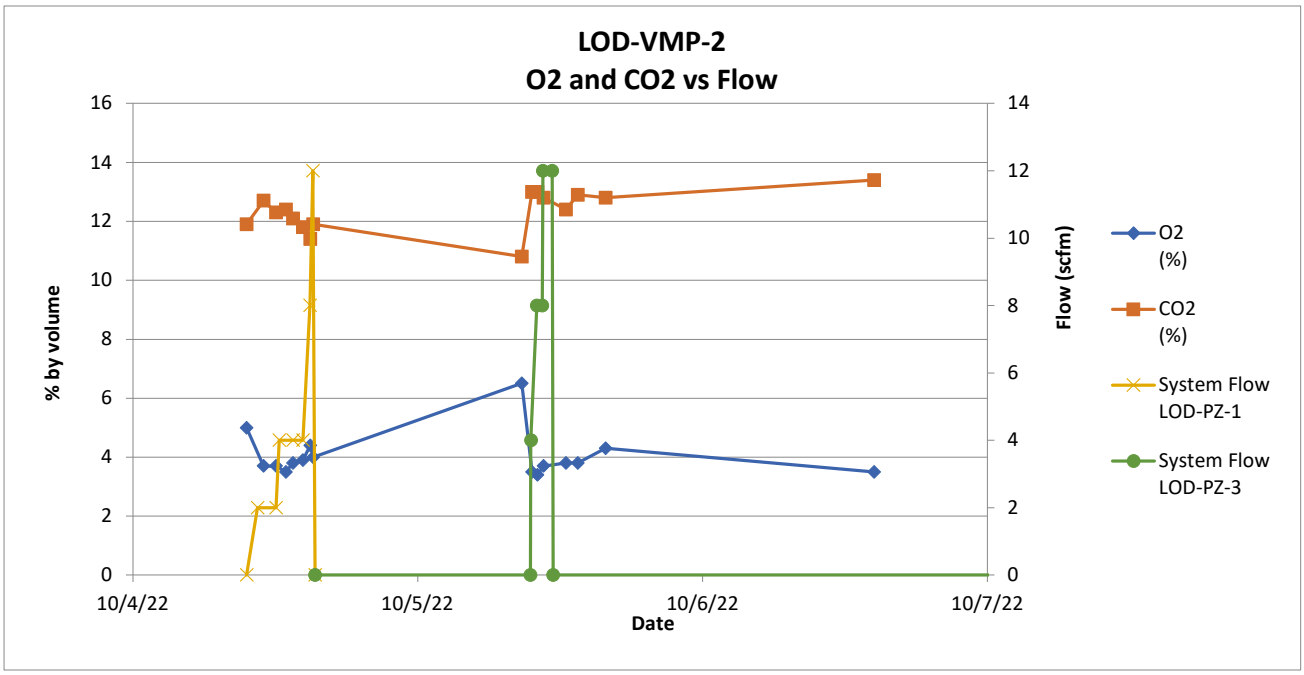

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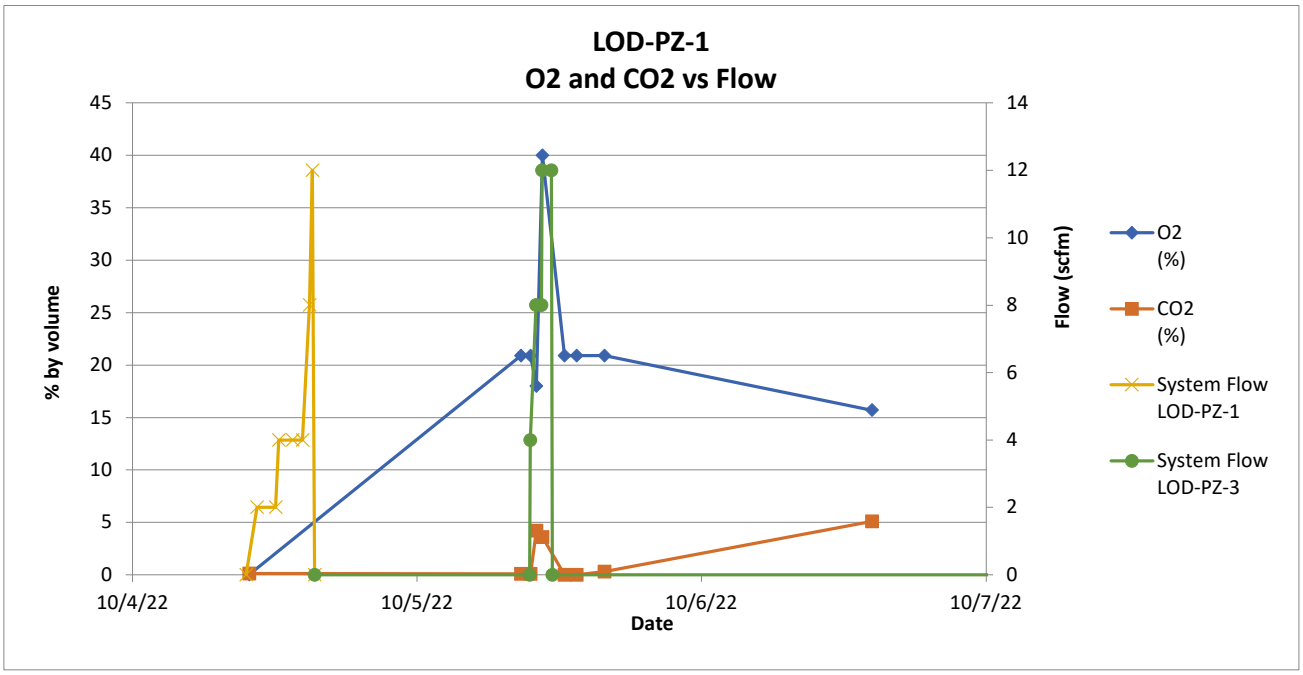

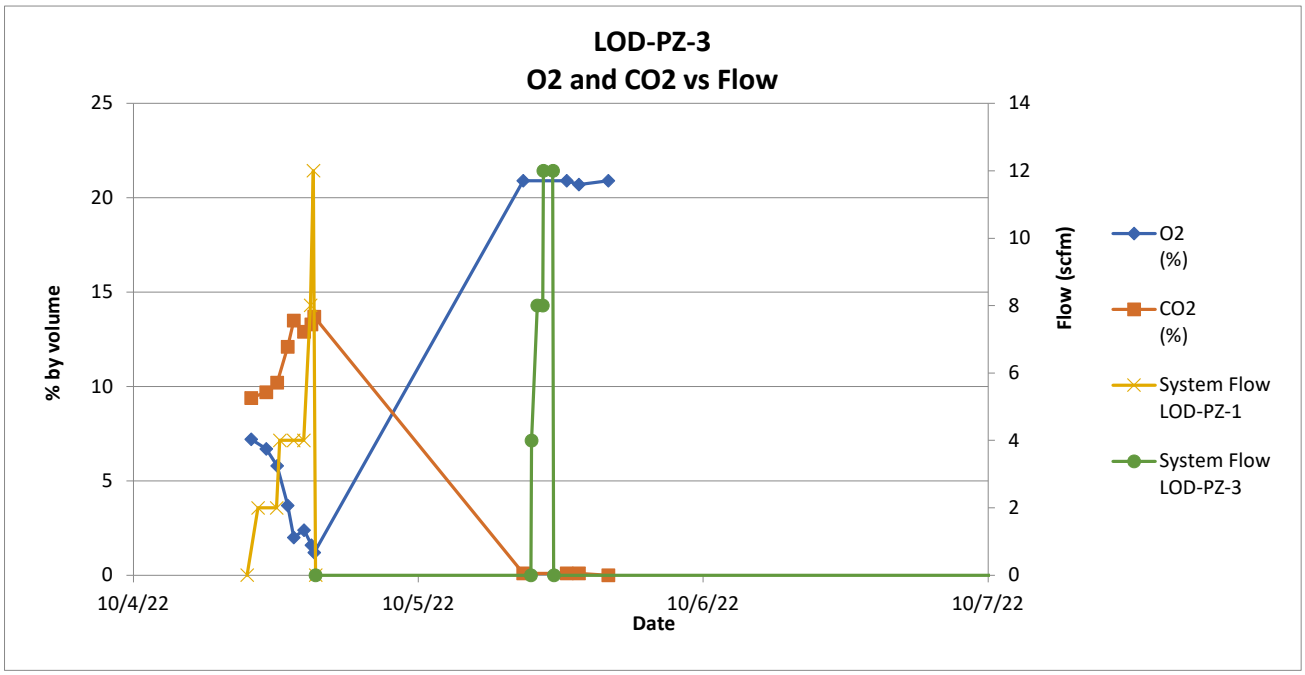

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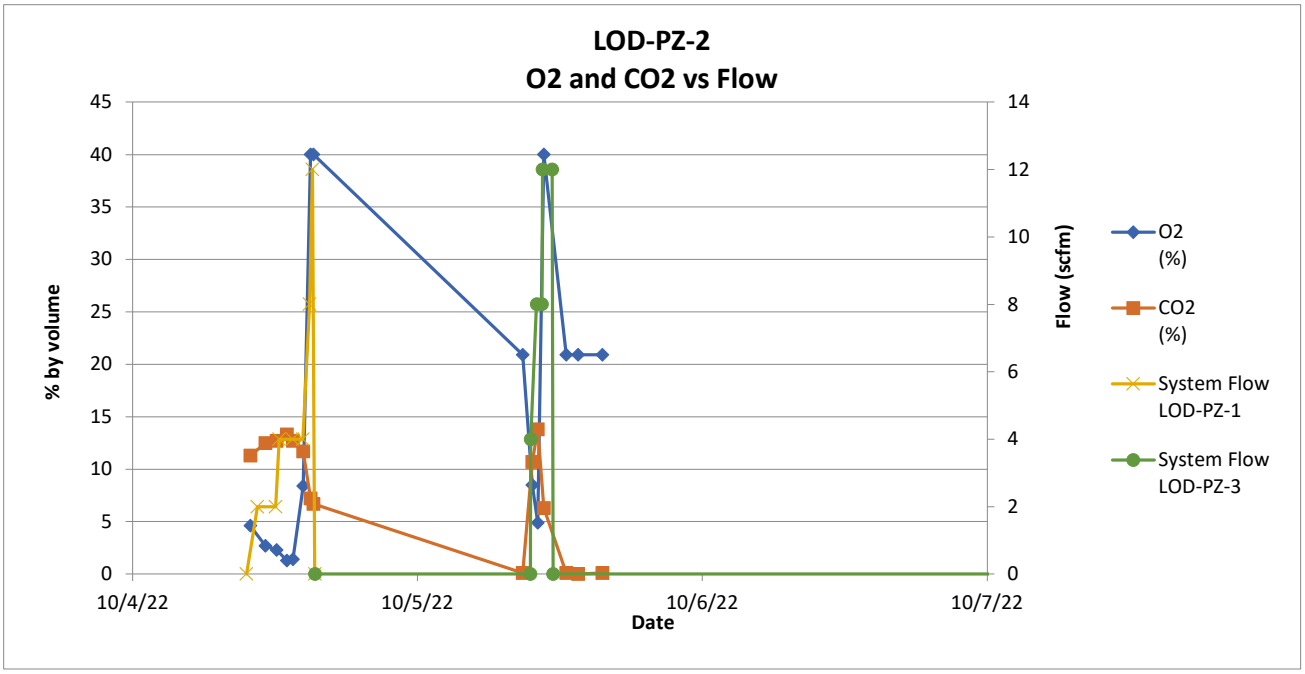
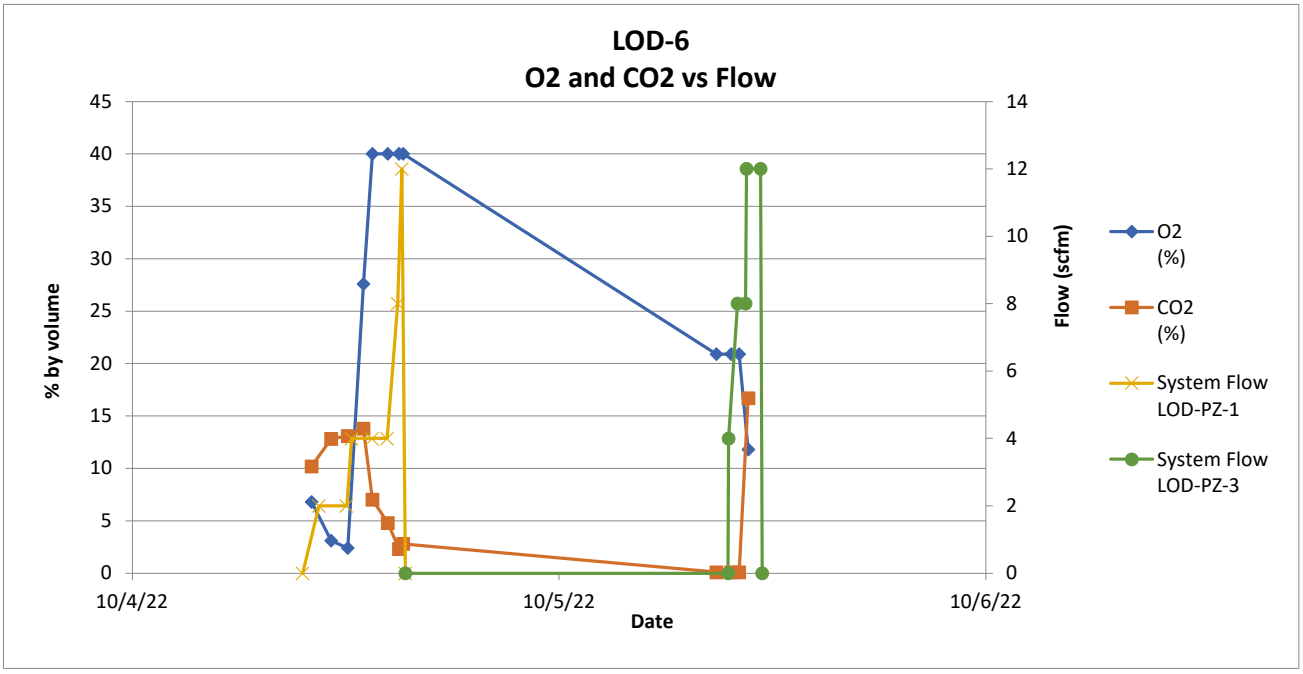
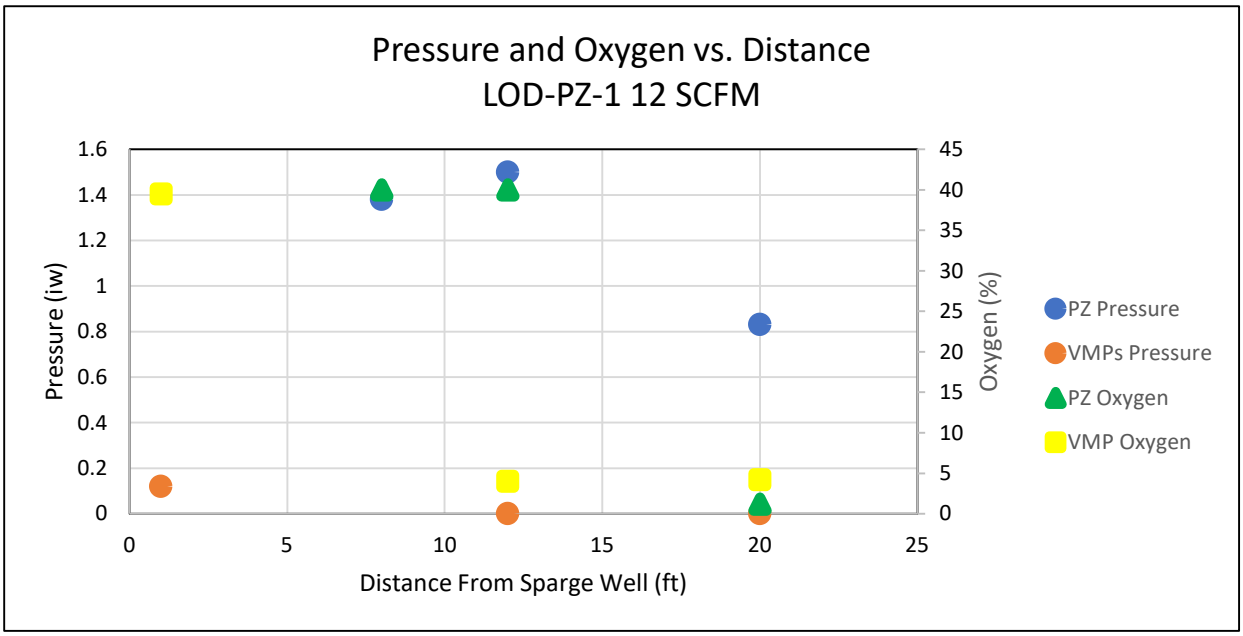


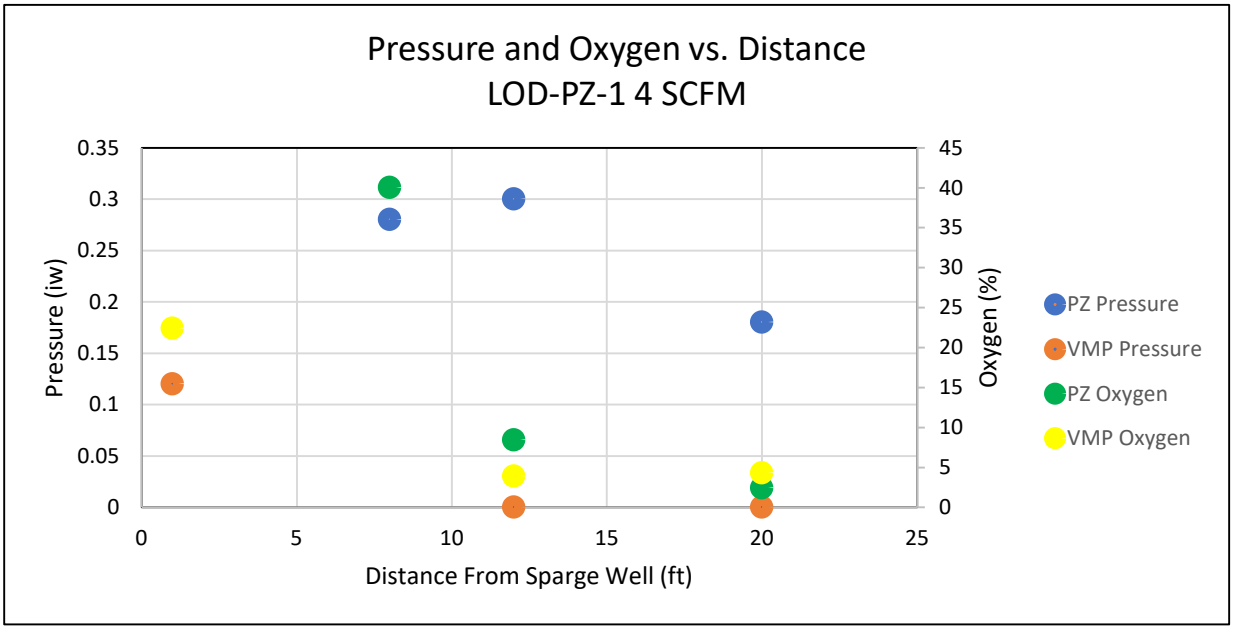


Appendix E

LOD Sparge Test

ROI Charts





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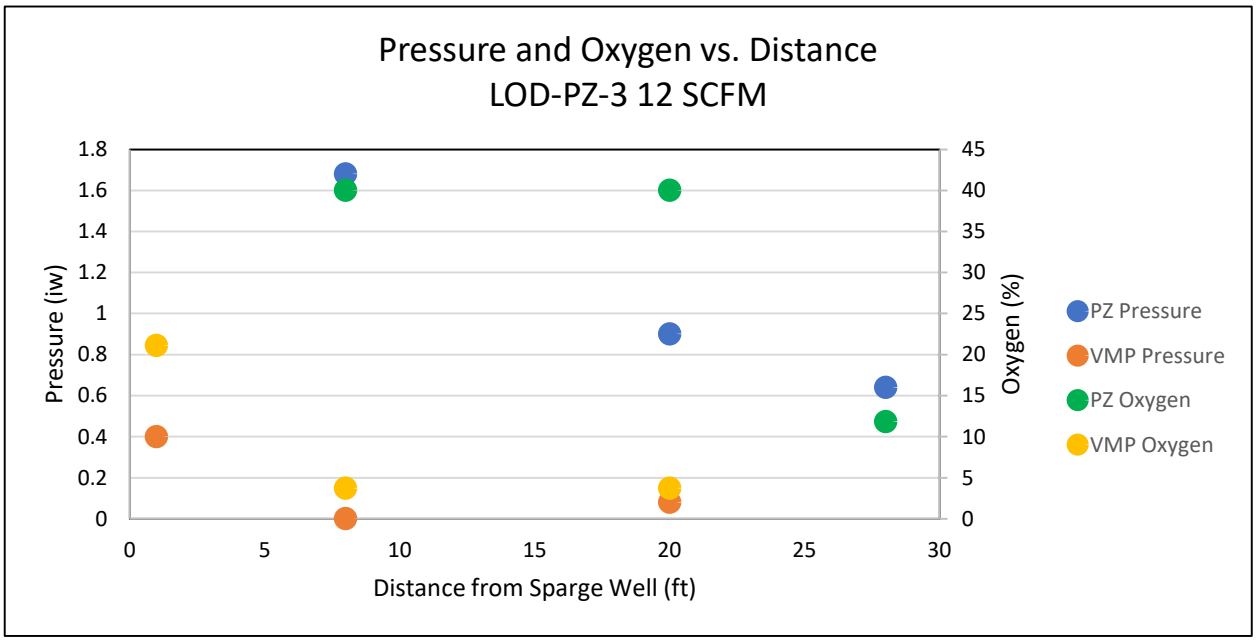
LOD Sparge Test

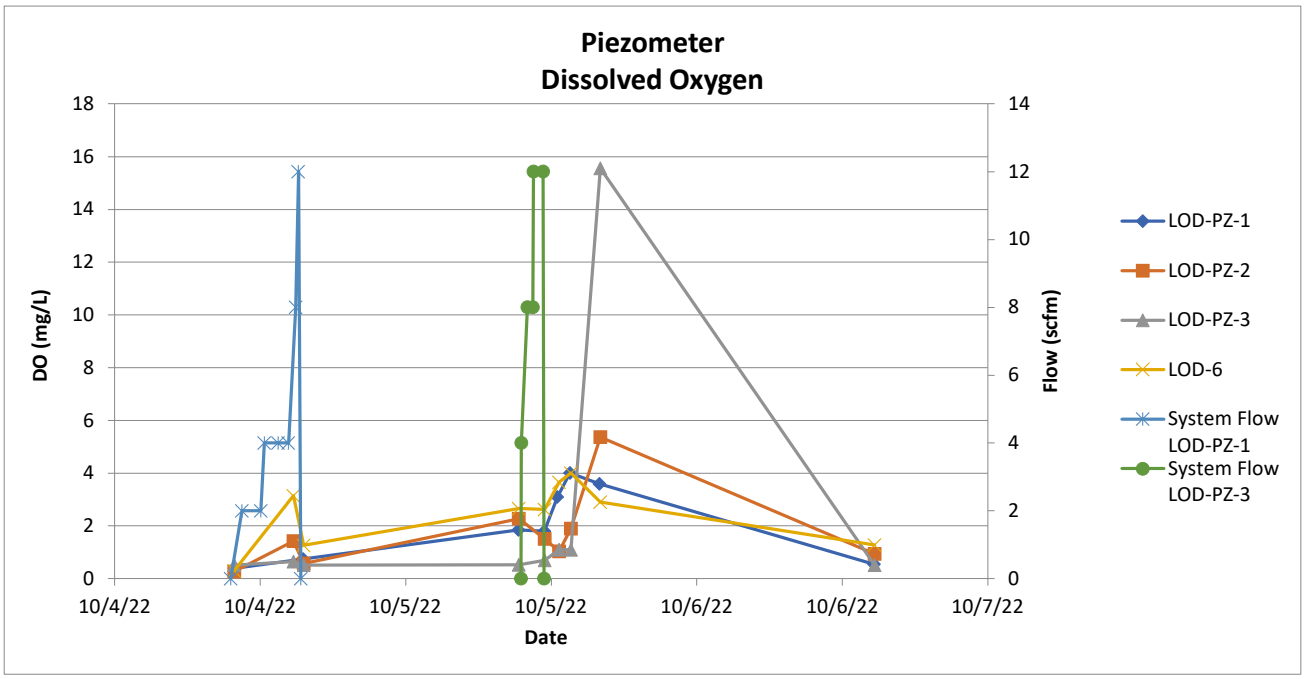
ROI Charts

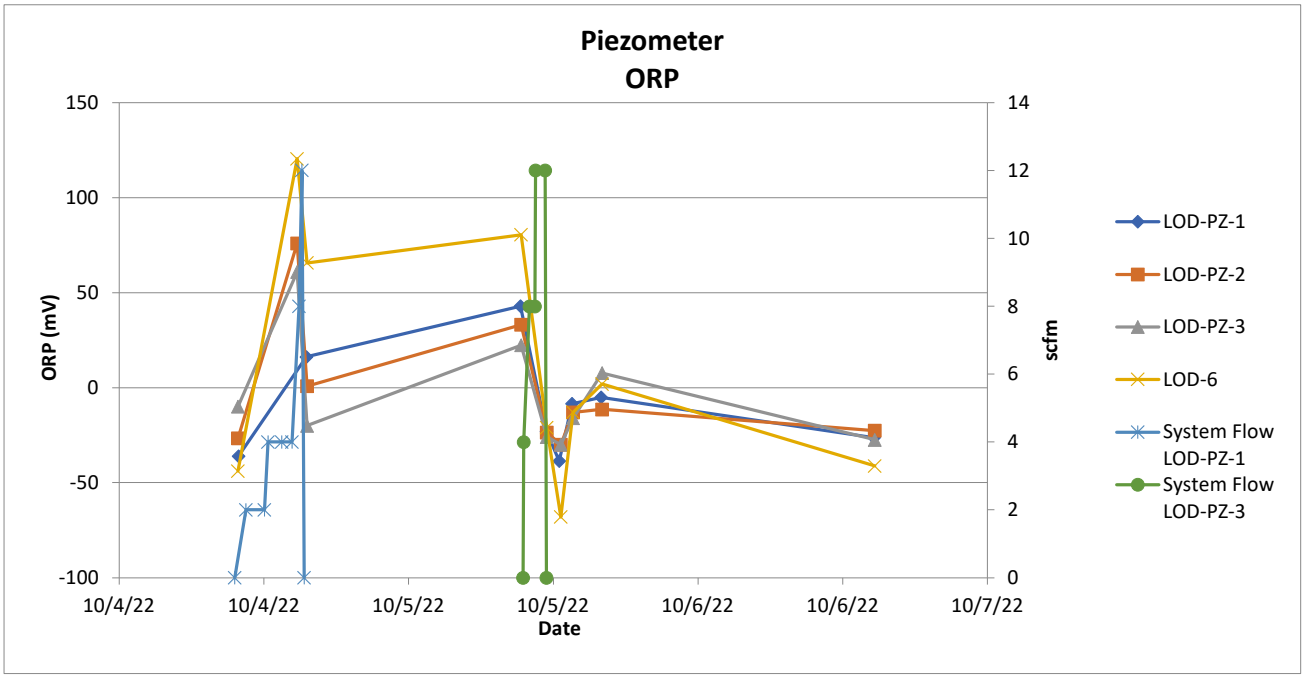


Appendix E

LOD Sparge Test

Geochemistry Graphs

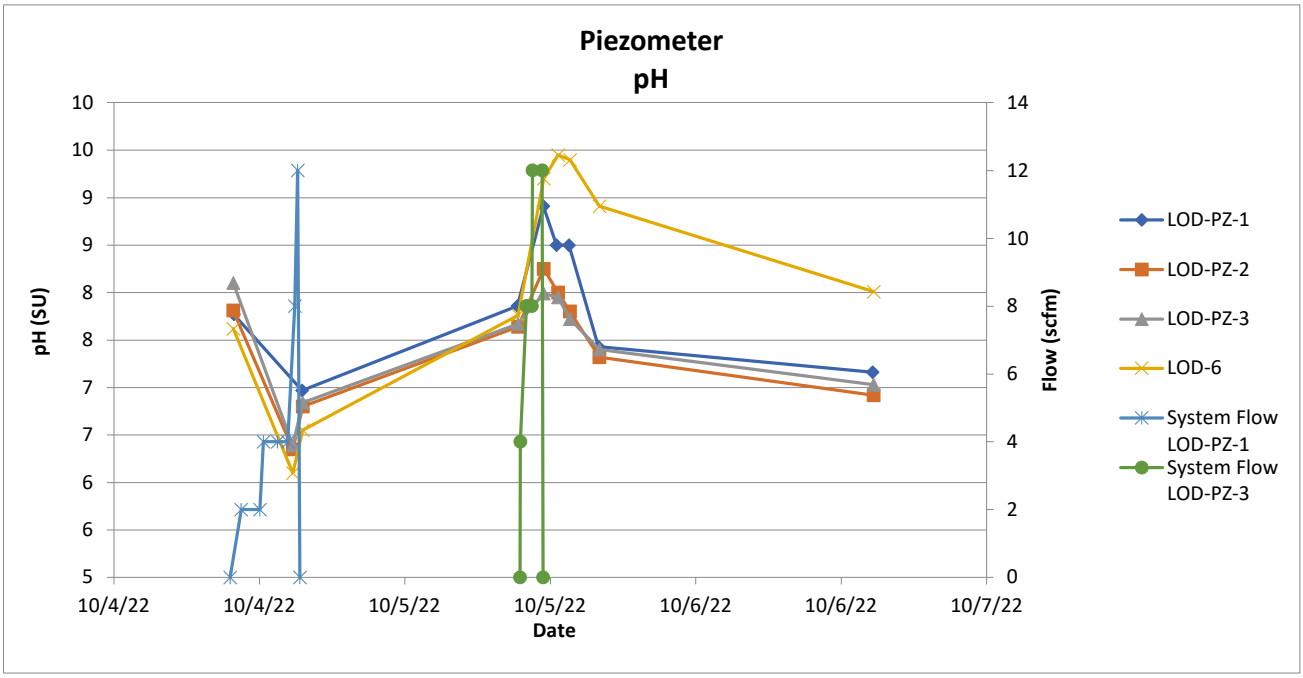


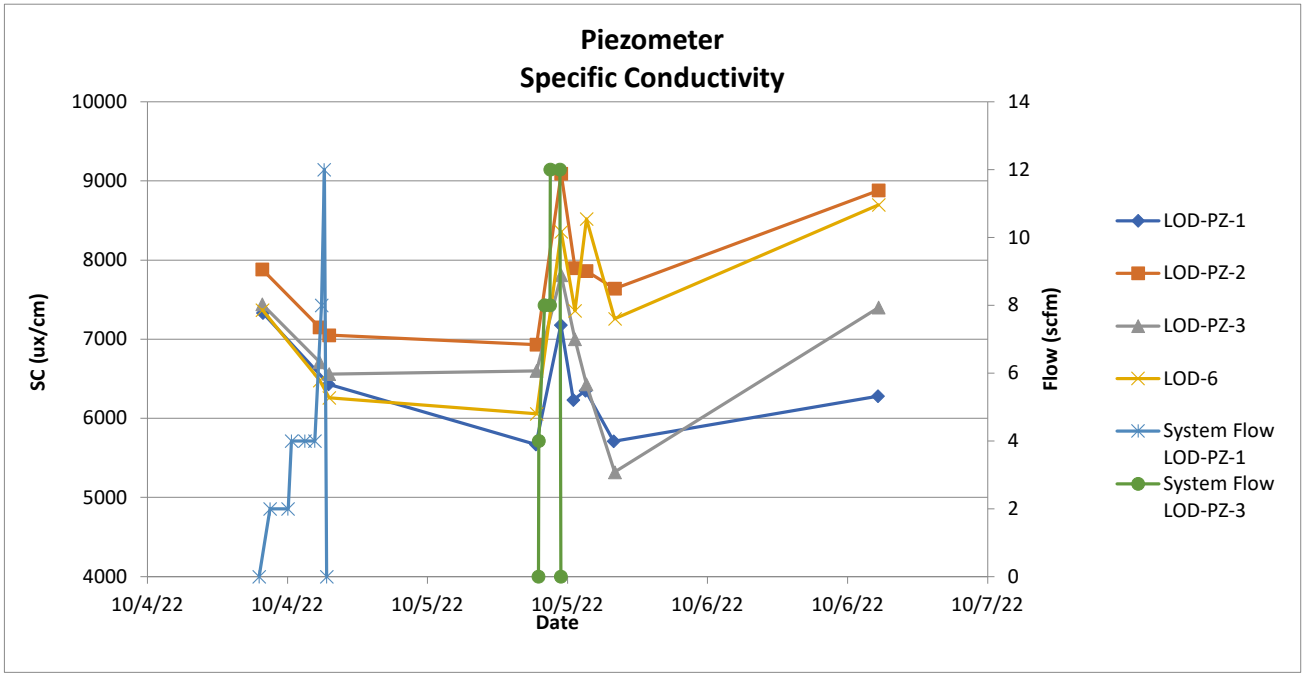


Appendix E

LOD Sparge Test

Geochemistry Graphs





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Illinois Environmental Protection Agency

Bureau of Land • 1021 North Grand Avenue East • P.O. Box 19276 • Springfield • Illinois • 62794-9276

ILLINOIS EPA RCRA CORRECTIVE ACTION CERTIFICATION

This certification must accompany any document submitted to Illinois EPA in accordance with the corrective action requirements set forth in a facility's RCRA permit. The original and two copies of all documents submitted must be provided.

1.0 Facility Identification

Name: BP Wood River Riverfront Property
County: Madison
Street Address: 301 Evans Avenue
Site No. (IEPA): 1191155009
City: Wood River
Site No. (USEPA): ILD980503106

2.0 Owner Information

Name: BP Products North America Inc.
Mail Address: 301 Evans Avenue
City: Wood River
State: IL Zip Code: 62095
Contact Name: Michelle Knapp
Contact Title: Liability Manager
Phone: 847.346.7112

3.0 Operator Information

Name: BP Products North America Inc.
Mail Address: 301 Evans Avenue
City: Wood River
State: IL Zip Code: 62095
Contact Name: Michelle Knapp
Contact Title: Liability Manager
Phone: 847.346.7112

4.0 Type of Submission (check applicable item and provide requested information, as applicable)

☐ RFI Phase I Workplan/Report
☐ RFI Phase II Workplan/Report
☐ CMP Report;
☑ Other (describe):

IEPA Permit Log No. B-145R-M-4, M-18, M-14, M-15
Date of Last IEPA Letter on Project May 3, 2023
Log No. of Last IEPA Letter on Project B-145R-CA-117

Does this submittal include groundwater information: ☑ Yes ☐ No

LOD Area Corrective Action Modification Request

Date of Submittal May 25, 2023

5.0 Description of Submittal: (briefly describe what is being submitted and its purpose)

Corrective Action Modification Request for the Light Oils Dock Area at the Riverfront Property.

6.0 Documents Submitted (identify all documents in submittal, including cover letter; give dates of all documents)

Cover letter, Corrective Action Modification Request, and this LPC 632 Form, all dated May 25, 2023.

7.0 Certification Statement

(This statement is part of the overall certification being provided by the owner/operator, professional and laboratory in Items 7.1, 7.2 and 7.3 below). The activities described in the subject submittals have been carried out in accordance with procedures approved by Illinois EPA. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

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For: LOD Area Corrective Action Modification Request

Date of Submission: 5/25/23

7.1 Owner/Operator Certification

(Must be completed for all submittals. Certification and signature requirements are set forth in 35 IAC 702.126.) All submittals pertaining to the corrective action requirements set forth in a RCRA Permit must be signed by the person designated below (or by a duly authorized representative of that person):

1. For a Corporation, by a principal executive officer of at least the level of vice president.
2. For a Partnership or Sole Proprietorship, by a general partner or the proprietor, respectively.
3. For a Governmental Entity, by either a principal executive officer or a ranking elected official.

A person is a duly authorized representative only if:

1. the authorization is made in writing by a person described above; and
2. the written authorization is provided with this submittal (a copy of a previously submitted authorization can be used).

Owner Signature: _____ Date: 5/25/23

Title: Liability Manager

Operator Signature: _____ Date: 5/25/23

Title: Liability Manager

7.2 Professional Certification (if necessary)

Work carried out in this submittal or the regulations may also be subject to other laws governing professional services, such as the Illinois Professional Land Surveyor Act of 1989, the Professional Engineering Practice Act of 1989, the Professional Geologist Licensing Act, and the Structural Engineering Licensing Act of 1989. No one is relieved from compliance with these laws and the regulations adopted pursuant to these laws. All work that falls within the scope and definitions of these laws must be performed in compliance with them. The Illinois EPA may refer any discovered violation of these laws to the appropriate regulating authority.

Any person who knowingly makes a false, fictitious, or fraudulent material statement, orally or in writing, to the Illinois EPA commits a Class 4 felony. A second or subsequent offense after conviction is a Class 3 felony. (415 ILCS 5/44(h))

Professional's Signature: _____ Date: 5/23/23

Professional's Name Michael J. Hoffman

Address 2412 W. Nebraska Ave.

City Peoria

State IL Zip Code 61604

Phone 309-696-7875

Professional's Seal:

MICHAEL J. HOFFMAN
62-0037839
REGISTERED
PROFESSIONAL
ENGINEER
OF
ILLINOIS

7.3 Laboratory Certification (if necessary)

The sample collection, handling, preservation, preparation and analysis efforts for which this laboratory was responsible were carried out in accordance with procedures approved by Illinois EPA.

Name of Laboratory _____

_____ Date: _____

Signature of Laboratory Responsible Officer

Mailing Address of Laboratory

Address _____

City _____

State _____ Zip Code _____

_____

Name and Title of Laboratory Responsible Officer

DocuSign Envelope ID: BC196DD6-26A4-41D2-9502-EB850F75373B

BP PRODUCTS NORTH AMERICA INC.

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that

BP PRODUCTS NORTH AMERICA INC., formerly known as Amoco Oil Company, and successor in interest by merger with BP Exploration & Oil Inc., a corporation organized and existing under the laws of the State of Maryland, United States of America (the "Company"), does hereby make, constitute, designate and appoint:

Bien-Curtin, Michelle	Greco, Chris	McAnulty, Mike
Bryson, Josh	Griffis, Dave	McDonald, Scott
Burmeister, Loren	Halsey, Ron	Melton, Wade
Campbell, Felton	Hanson, Lindy	Onufrak, Nicholas
Crane, Allison	Harris, Jenni	Peterson, Nick
Dippo, Ron	Hilmo, Tim	Pokorny, Luke
Dunlap, Shannon	Jackson, Michael	Schaeffer, Jim
Emmet, Lisa	Johnson, Brian	Seese, Alan
Ferry, Steve	Johnson, Paul	Skance, John C
Frankenthal, John	Knapp, Michelle	Smith, Jim L
Frisch, Greg	Larson, Eric	Wojciechowski, Mary
Gallery, Patricia	Littrell, Lori	

each, as its lawful Attorney-in-Fact (hereinafter referred to as "Attorney-in-Fact") to do and perform the activities listed below in the name of and on behalf and for the benefit of the Company, and to execute and deliver any and all of the following instruments requiring execution and delivery in the name of and on behalf of the Company:

To represent and act on behalf of the Company in all environmental remediation matters and to provide environmental investigation and support regarding any facilities for which the Company is or is alleged to be responsible as a result of the past, present or future operations, assets or holdings of the Company, or any combination thereof. This authority is limited to the following:

i. In coordination with the procurement specialist assigned by the Company or Remediation Management Services Company ("RMSC"), to enter into and deliver contracts on behalf of the Company with regard to environmental remediation, environmental investigation and related environmental support activities to be undertaken at such facilities with respect to any releases or spills alleged, suspected or confirmed to have come therefrom;

ii. In coordination with legal counsel assigned by the Company or RMSC, to correspond, communicate and negotiate with, and to settle and/or compromise claims asserted by, any claimants and with any federal, state and/or local governmental agencies with respect to any actual or alleged liability or responsibility of the Company for environmental remediation, environmental investigation and related environmental

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support at such facilities, or known, suspected or alleged releases, and the execution and delivery of any and all documents in connection with such matters, as necessary and appropriate;

iii. In coordination with the legal counsel and procurement specialists assigned by the Company or RMSC, participate in the preparation and negotiation of risk transfer agreements and contracts with qualified environmental suppliers and risk transfer insurance underwriters in support of transactions authorized by the Company; and,

iv. To execute and deliver any and all documents in connection with the conduct of environmental remediation, environmental investigation and related environmental support activities and plans with respect to any confirmed, suspected or alleged releases or spills, including:

a. Preparation, execution and submittal of all necessary applications to obtain permits and/or renewals of such permits, as may be required by state, federal or local authorities;

b. In coordination with legal counsel assigned by the Company or RMSC, prepare and execute access agreements for the right of entry to properties owned by affiliates of the Company or third parties;

c. Preparation and execution of any and all environmental reports and correspondence to be submitted to any federal, state and/or local governmental agencies, as may be required by any federal, state or local laws, regulations or ordinances;

d. Preparation and execution of agency notifications of property transfers required by federal, state or local laws, for the Company's sale of any real property interests in such facilities;

e. Preparation and execution of any and all documents relating to well disclosures;

f. Preparation, execution and submittal of applications for reimbursement to state insurance funds in accordance with any applicable laws and regulations, and handling any and all appeals from decisions of state insurance funds and/or administrators as authorized by law;

g. Preparation, execution and submittal of all applications, forms, waste profiles and other documents, as required by applicable laws, to treat or dispose of hazardous and/or non-hazardous contaminated soil, water or waste at or associated with such facilities in accordance with applicable laws and the waste disposal policies of RMSC and/or the Company.

HEREBY GIVING AND GRANTING said Attorney-in-Fact full power and authority to do and perform all acts necessary and proper to accomplish the foregoing, and hereby ratifying and confirming all that said Attorney-in-Fact shall do or cause to be done by virtue thereof.

THIS POWER OF ATTORNEY contains the following restrictions:

1. The authorities described herein are not transferable nor can they be sub-delegated to any other individuals.

2. The authorities described herein cover or pertain to lands of the United States of America or any state or territory thereof; or oil, gas, and mineral rights owned by

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the United States of America or any state or territory thereof; or Tribal and Allotted Indian Lands.

3. The authorities granted herein are granted severally and not jointly to each Attorney-in-Fact.

The power and authority granted herein is subject to the specific limitation that the exercise thereof shall be for the sole and exclusive benefit of the Company pursuant to the power and authority granted herein and shall not be on behalf of any other person in whole or in part.

THIS POWER OF ATTORNEY shall be effective as of March 1, 2023 and shall remain valid until the earlier of any of the following:

1. On and through February 28, 2024;
2. The date the Attorney-in-Fact ceases to be an employee of the Company or any wholly-owned subsidiary of BP p.l.c.; or
3. The date this Power of Attorney is formally revoked by the Company.

[Remainder of Page Intentionally Left Blank; Signature Page Follows]

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BP Products North America Inc. has caused this Power of Attorney to be executed by its duly authorized officer on this day March 1, 2023.

BP PRODUCTS NORTH AMERICA INC.

DocuSigned by:

By: Joseph Sontchi

A4B22BE145D4B1...

Name: Joseph Sontchi

Title: Vice President

EXHIBIT C

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

2520 WEST ILES AVENUE, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397

JB PRITZKER, GOVERNOR **JAMES JENNINGS**, ACTING DIRECTOR

217/524-3301

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
9589 0710 5270 0389 7041 83

MAY 21 2025

BP Products North America Inc./Riverfront Property
Attn: Ms. Michelle Knapp
301 Evans Avenue
Wood River, Illinois 62095

Re: 1191155009 -- Madison County
BP Products North America Inc/Riverfront Property
ILD980503106
Log No. B-145R-CA-78 and CA-133
Received: August 19, 2016; and May 25, 2023
RCRA Permit – 24A
Permit CA

Dear Ms. Knapp,

This letter is in response to the following submittals associated with corrective action required by the RCRA Permit for the referenced facility:

Submittal No. 1: The submittal was assigned Log No. B-145R-CA-78, a document entitled, "Response to Conditions 3 and 4", prepared and submitted by Ms. Lori Littrell of Atlantic Richfield Company on behalf of BP Products North America Inc (BP). The subject submittal is dated August 18, 2016, and was received by the Illinois EPA on August 19, 2016. The subject submittal is provided in response to Conditions 3 and 4 of the Illinois EPA letter dated May 20, 2016 (Log No. B-145R-CA-48). The purpose of this document is to: (1) demonstrate the existing groundwater monitoring wells and hydraulic control are adequate for the uppermost aquifer at Parcel B; (2) propose the recovery trench is no longer warranted based on the lack of recoverable free product; and (3) propose quarterly inspections and gauging at the pumps, plus periodic light non-aqueous phase liquid (LNAPL) removal. Submittal No. 1 is superseded by submittal No. 2; therefore, a technical review was not conducted.

Submittal No. 2: The submittal was assigned Log No. B-145R-CA-133, a document entitled, "Corrective Action Modification Request – Light Oils Dock Area", prepared and submitted by Ms. Michelle Knapp, Liability Manager, Remediation Management Services Company, which is an affiliate of BP Products North America Inc., on behalf of BP. The document was dated May 25, 2023, and was received by the Illinois EPA on May 26, 2023. The subject submittal proposes

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a biological treatment program at the light oils dock (LOD) Area and proposes collection of data for evaluation of a new remedial approach.

Based on the Illinois EPA's review of the subject submittals, the revisions to the LOD Area groundwater monitoring and corrective measures to address free product and dissolved groundwater contamination proposed in Submittal No. 2 can be approved with the following conditions and modifications:

1. The May 11, 2009 Illinois EPA letter (Log No. B-145-CA-63) outlined requirements for 14 wells to be sampled at the LOD Area. Requirements of Condition 5 of the letter continue to apply, with the exception of the due dates for reporting. Reporting dates in the current permit (Log No. B-145R2) shall be followed:

   The uppermost aquifer groundwater monitoring at the LOD Area must continue in accordance with the requirements found in the RCRA Permit and all previous Illinois EPA letters addressing the LOD Area, which includes:

   a. *Semi-annual sampling of uppermost aquifer wells LOD-1, LOD-2, LOD-3, LOD-3B, LOD-4, LOD-5, LOD-6, LOD-7, LOD-8, LOD-9, RL-17, RL-17B, and RL-18, for benzene, ethylbenzene, toluene, and xylenes (BETX), and total and dissolved arsenic and lead;*

   b. *Collection of quarterly fluid level measurements; and*

   c. *Reporting within the Riverfront Groundwater Corrective Action Semi-annual Reports.*

2. The request to remove gauging requirements for well G102 cannot be approved. Hydraulic control continues to be required for the remainder of the groundwater management zone (GMZ) and the facility has not provided adequate justification to remove this requirement for the Groundwater Corrective Action Program in Section IV of the permit.

3. The Illinois EPA cannot approve the request to remove monitoring wells LOD-1, LOD-2, LOD-5, LOD-6, LOD-7, LOD-9, and RL-17B from the LOD Area monitoring program. The Illinois EPA acknowledges these wells are required to be monitored by the site-wide groundwater corrective action program (Section IV) of the permit; therefore, gauging and monitoring for constituents of concern (COCs) for the LOD Area (benzene, toluene, ethylbenzene, total xylenes (BETX), and total and dissolved arsenic and lead) is readily available and will further support BP's ongoing demonstrations of the effectiveness of the corrective measures. Continue to use data collected at these wells to evaluate the LOD Area conditions and effectiveness of corrective action.

4. Biosparging is approved to reduce concentrations of contaminants dissolved in groundwater and create aerobic conditions. The following comments apply:

   a. Baseline monitoring for the parameters will be completed prior to system startup. It is anticipated the system will be operated for a minimum of 18 months.

   b. The following parameters and frequency must be conducted at the locations listed in the table below:

Monitoring Activity (frequency)	Description	Locations
Pressure/Soil Gas Monitoring (Monthly)	Collect pressure readings. Use pump on vapor meter to purge well and analyze for soil gases (CH_4, CO_2, O_2, VOCs). Analyze headspace in monitoring wells or piezometers.	New VMPs, monitoring wells (LOD-6, RL-17), and piezometers (LOD-PZ 1 through LOD-PZ-6)
Groundwater Geochemistry (Quarterly)	Collect field parameters including depth to water/ LNAPL, pH, DO, ORP, temperature and specific conductivity. Collect groundwater samples for analysis of dissolved gases (CH_4, CO_2, O_2, N_2), MNA parameters (iron species, nitrogen compounds, sulfate), and metals including arsenic, lead, manganese, magnesium, nickel, and chromium.	Monitoring wells (LOD-6, RL-17), and piezometers (LOD-PZ-1 through LOD-PZ-6)
Groundwater COC (Quarterly)	Collect groundwater samples for analysis of BTEX, TPH-GRO, and TPH-DRO.	Monitoring wells (LOD-6, RL-17), and piezometers (LOD-PZ-1 through LOD-PZ-6)

Notes:
VOCs: volatile organic compounds
LNAPL: light non-aqueous phase liquid
BTEX: benzene, toluene, ethylbenzene, total xylenes
TPH-GRO: total petroleum hydrocarbons as gasoline range organics
TPH-DRO: total petroleum hydrocarbons as diesel range organics
CH_4: methane, CO_2: carbon dioxide, O_2: oxygen, N_2: nitrogen compounds

c. The monitoring program will support selection of the appropriate time to transition from biosparging to natural attenuation mechanisms enhanced with passive bioventing. The transition to passive bioventing with MNA and MNSZD will be based on the criteria in the table below:

Parameter	Monitoring	Transition Point / Condition
LNAPL (if present >0.5 feet thickness)	Transmissivity (Tn) testing	Tn<0.8 ft^2/day
Dissolved phase benzene concentrations	Groundwater sampling	Stable or declining trend indicating remedial objectives will be met within 5 years
Oxygen and DO	Soil gas measurements at VMPs and dissolved gas sampling at monitoring wells	Indication of decrease in oxygen utilization or reduced source mass, e.g., consistent O_2 >10% by volume in VMPs and DO >2 mg/L in groundwater

Notes:
VMPs: vapor monitoring points
LNAPL: light non-aqueous phase liquid (also referred to as free product for the purposes of this letter)
DO: dissolved oxygen

d. Upon meeting the requirements of Comment 4.c, passive bioventing with monitored natural attenuation (MNA) and monitored natural source zone depletion (MNSZD) will include the installation of passive biovent wellheads on the 12 biosparge wells, monitoring piezometers, and deeper VMPs. The monitoring program must be implemented following the transition to passive bioventing and to demonstrate natural attenuation is occurring with no increase or migration of dissolved phase constituents:

Monitoring Activity	Description	Locations
Pressure/Soil Gas Monitoring (Quarterly)	Collect pressure readings. Use pump on vapor meter to purge well and analyze for soil gases (CH_4, CO_2, O_2, VOCs). Analyze headspace in monitoring wells or piezometers.	New VMPs, monitoring wells (LOD-6, RL-17), and piezometers (LOD-PZ-1 through LOD-PZ-6)
Groundwater Geochemistry (Semi-Annual)	Collect field parameters including depth to water/ LNAPL, pH, DO, ORP, temperature	Monitoring wells (LOD-6, RL-17), and piezometers (LOD-PZ-1 through LOD-PZ-6)

	conductivity. Collect groundwater samples for analysis of dissolved gases (CH_4, CO_2, O_2, N_2), MNA parameters (iron species, nitrogen compounds, sulfate), and metals including arsenic, lead, manganese, magnesium, nickel, and chromium.	
Groundwater COC (Semi-Annual)	Soil gas measurements at VMPs and dissolved gas sampling at monitoring wells	Monitoring wells (LOD-6, RL-17), and piezometers (LOD-PZ-1 through LOD-PZ-6)

See notes for above tables as needed to define terms

e. Reporting for the LOD Area must be submitted within Corrective Action Progress Reports in accordance with Section V (Corrective Action Section) of the permit. While the renewed RCRA permit is currently under appeal (Log No. B-145R2), no comments have been associated with reporting requirements for monitoring programs outlined in Illinois EPA letters. Therefore, this condition aligns with the reporting requirements required by Section V.

This action shall constitute Illinois EPA's final action on the subject submittals. The applicant may appeal this final decision to the Illinois Pollution Control Board pursuant to Section 40 of the Illinois Environmental Protection Act (Act) by filing a petition for a hearing within 35 days after the date of issuance of the final decision. However, the 35-day period may be extended for a period of time not to exceed 90 days by written notice from the applicant and the Illinois EPA within the initial 35-day appeal period. If the owner or operator wishes to receive a 90-day extension, a written request that includes a statement of the date the final decision was received, along with a copy of this decision, must be sent to the Illinois EPA as soon as possible.

For information regarding the request for an extension, please contact:

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Illinois Environmental Protection Agency
Division of Legal Counsel
2520 West Iles Avenue
Post Office Box 19276
Springfield, IL 62794-9276
217/782-5544

For information regarding the filing of an appeal, please contact:

Illinois Pollution Control Board
60 East Van Buren St., Suite 630
Chicago, IL 60605-1241
312/814-3620

Work required by this letter, your submittal or the regulations may also be subject to other laws governing professional services, such as the Illinois Professional Land Surveyor Act of 1989, the Professional Engineering Practice Act of 1989, the Professional Geologist Licensing Act, and the Structural Engineering Licensing Act of 1989. This letter does not relieve anyone from compliance with these laws and the regulations adopted pursuant to these laws. All work that falls within the scope and definitions of these laws must be performed in compliance with them. The Illinois EPA may refer any discovered violation of these laws to the appropriate regulating authority.

If you have any questions regarding this permit, please feel free to contact Shawntay Dial at 217/558-0177 or by email at shawntay.dial@illinois.gov for specific questions related to groundwater issues. All other questions regarding this permit should be referred to Jacob Nutt at 217/524-7048 or by email at jacob.nutt@illinois.gov.

Sincerely,

Joshua L. Rhoades, P.G.
Permit Section Manager
Division of Land Pollution Control
Bureau of Land

JLR:SDD:1191155009-RCRA-B145R-CA-78_CA-133-Approval.docx

SDD AMB JNH