

Central Valley Regional Water Quality Control Board

October 22, 2018

Mr. Kevin Garon, Senior Project Director
The Chemours Company FC, LLC
6342 Fairview Road, Suite 200
Charlotte, North Carolina 28210

NOTICE OF APPLICABILITY OF GENERAL ORDER NO. R5-2015-0012-050, PLUMES 1 AND 2 IN-SITU REMEDIATION, CHEMOURS OAKLEY SITE, 6000 BRIDGEHEAD ROAD, OAKLEY, CONTRA COSTA COUNTY

The Chemours Company FC, LLC (Discharger) submitted a completed Notice of Intent, dated July 17, 2018, requesting coverage under Order No. R5-2015-0012, *Waste Discharge Requirements General Order for In-situ Groundwater Remediation and Discharge of Treated Groundwater to Land*. Based on information in the submittal, it is our determination that this project meets the required conditions to be approved under Order No. R5-2015-0012. All of the requirements contained in the general order are applicable to this project. The project is assigned Order No. R5-2015-0012-050.

Project Location:

The project is in Contra Costa County, Township 2N, Range 2E, Sections 15 and 22, Mount Diablo Baseline & Meridian. Assessor's Parcel Numbers 037-020-015, 037-020-016, 037-020-017, 037-020-020, 037-020-021 and 037-020-022; Latitude 38°00'46" N, Longitude 121°44'45".

Project Description:

The site cleanup is being overseen by the Department of Toxic Substances Control, which has approved the Plume 1 and Plume 2 Groundwater Corrective Measures Implementation Plan. The Plan includes in-situ remediation of Plume 1 and Plume 2 source areas in the shallow Surficial Aquifer and deeper Upper Aquifer. The Surficial Aquifer is unconfined, composed of fine-grained sand typically from 5 to 20 feet thick and is present at the ground surface in the primary former manufacturing areas. Underlying the Surficial Aquifer is an aquitard consisting of finer grained units generally 10 to 20 feet thick across most of the site. The Upper Aquifer, which underlies the aquitard, is typically composed of sand, silty sand, and gravelly sands ranging from 15 to 30 feet thick.

Historical operations at the Chemours Oakley Site chlorofluorocarbon (CFC) and anti-knock compound manufacturing areas caused pollution of the groundwater in what is referred to as

Plumes 1 and 2. The primary pollutants of concern in Plume 1 are carbon tetrachloride, CFC-113, CFC-11, tetrachloroethene, and 1,2-dichloroethane. The primary pollutants of concern in Plume 2 are organolead, 1,2-dibromoethane, 1,2-dichloroethane, tetrachloroethene, and lead. Arsenic and fluoride are also present across the site but their source areas are less distinct.

Chemours is proposing using in-situ remediation for four Plume 1 and Plume 2 source areas (S1, S2, S3, and S4). Source areas S1 and S3 will include deep soil excavations to the bottom of the Surficial Aquifer. For source area S1, an estimated mixture of 310,910 pounds of macro-scale zero valent iron (ZVI) mixed with an equal weight of sand will be placed at the bottom of the excavation. For source area S3, a mixture of enhanced in situ bioremediation substrates will be placed on the bottom of the excavation. This EISB mixture is estimated to include 48 gallons of Newman Zone HRO® Emulsified Vegetable Oil, 794 pounds of Newman Zone QR® Lactic Acid, 10 gallons of Newman Zone OS® (oxygen scavenger), 5.5 liters of bioaugmentation culture, 9,680 gallons of extracted makeup groundwater, and 330 gallons of chase water.

For source areas S1, S2, and S4, Chemours plans to inject a ZVI slurry consisting of micro-scale ZVI, guar gum, and makeup water into both the Surficial and Upper Aquifers. An estimated total of 456,284 pounds of micro-scale ZVI, mixed with 12,168 pounds of guar gum, and 207,402 gallons of makeup water will be injected in these source areas using direct push technology. For source area S3, a mixture of enhanced in situ bioremediation substrates will also be injected in the surficial aquifer. This EISB mixture is estimated to include 176 gallons of Newman Zone HRO® Emulsified Vegetable Oil, 2,886 pounds of Newman Zone QR® Lactic Acid, 36 gallons of Newman Zone OS®, 1,323 gallons of Neutral Zone® pH buffer, 20 liters of bioaugmentation culture, 35,200 gallons of extracted makeup groundwater, and 1,200 gallons of chase water.

Makeup water for the in-situ remediation will consist of groundwater removed through dewatering deeper soil excavations or groundwater extracted from nearby monitoring wells. In general, makeup water for each source area will be from groundwater in the same source area. However, it may be necessary to use groundwater extracted from one source area as makeup water in another source area. This practice will be limited to areas that have similar concentrations and pollutants of concern.

The Discharger circulated a fact sheet describing the project. Comments were received from one local citizen with concerns about the possible effects of the project on the municipal water supply. Information about the local tap water quality and its sources was provided to the concerned citizen. Since groundwater beneath the project site is not used for local drinking water, the project will not have an effect on the local municipal water supply. The Discharger will be conducting sampling and reporting the results as described in the attached Monitoring and Reporting Program.

General Information:

1. The project will be operated in accordance with the requirements contained in the General Order and in accordance with the information submitted in the completed Notice of Intent.
2. The required annual fee (as specified in the annual billing you will receive from the State Water Resources Control Board) shall be submitted until this Notice of Applicability is officially revoked.

3. Placement of materials other than ZVI, guar gum, Newman Zone HRO® Emulsified Vegetable Oil, Newman Zone QR® Lactic Acid, Newman Zone OS®, Neutral Zone® pH buffer, bioaugmentation cultures and extracted groundwater into the subsurface is prohibited.,
4. Failure to abide by the conditions of the General Order could result in an enforcement action as authorized by provisions of the California Water Code.
5. The Discharger shall comply with the attached revised Monitoring and Reporting Program, Order No. R5-2015-0012-050, and any revisions thereto as ordered by the Executive Officer.

If you have any questions regarding this matter, please call Nathan Casebeer at (916) 464-4665.

ORIGINAL SIGNED BY ANDREW ALTEVOGT FOR

PATRICK PULUPA
Executive Officer

Attachment

cc: Ms. Della Kramer, Regional Water Quality Control Board, Rancho Cordova
Ms. Carolyn Tatoian-Cain, Department of Toxic Substances Control, Sacramento
Ms. Linda McGlochlin Wolff, Parsons, Walnut Creek

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2015-0012-050

FOR
IN-SITU GROUNDWATER REMEDIATION
AND DISCHARGE OF TREATED GROUNDWATER TO LAND

PLUMES 1 AND 2 IN-SITU REMEDIATION
CHEMOURS OAKLEY SITE
6000 BRIDGEHEAD ROAD
OAKLEY, CONTRA COSTA COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring in-situ groundwater remediation. This MRP is issued pursuant to Water Code Section 13267. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. As appropriate, California Regional Water Quality Control Board, Central Valley Region staff shall approve specific sample station locations prior to implementation of sampling activities.

All samples should be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each sample shall be recorded on the sample chain of custody form.

GROUNDWATER MONITORING

Monitoring wells associated with the in-situ remediation are shown on Figures 2-1 and 3-1 through 3-7 and listed in Table 1 below. The groundwater monitoring program for these wells and any treatment system wells installed subsequent to the issuance of this MRP, shall follow the schedule below. Sample collection and analysis shall follow standard EPA protocol.

The monitor wells shall be sampled according to the schedule in Table 1 and the samples analyzed by the methods in Table 2, as follows:

Table 1: Sampling Frequency

Surficial Aquifer

Well Number ¹	Frequency ^{2,3}	Monitoring Objective
S1, S2: TMW-SG-68 S3: PZ-32	Annually	Compliance ⁴
S1: S1-PMW-01, S1-PMW-02 S2: S2-PMW-01 S3: S3-PMW-01, S3-PMW-02, S3-PMW-03	Quarterly for one year then annually thereafter	Treatment Zone ⁵
S1: TMW-SG-60	Annually	Transition Zone ⁶
S1, S2, S3: MW-222R, TMW-SG-48	Once every three years	Background ⁷

Upper Aquifer

Well Number ¹	Frequency ^{2,3}	Monitoring Objective
S1, S2: MW-170 S4: MW-95	Annually	Compliance ⁴
S1: S1-PMW-03, S1-PMW-04, S1-PMW-05, S1-PMW-06 S2: S2-PMW-02, S2-PMW-03, MW-113 ⁸ S4: S4-PMW-01, S4-PMW-02, S4-PMW-03, S4-PMW-04, LF-39 ⁸ , MW-157 ⁸ , MW-159 ⁸	Quarterly for one year then annually thereafter	Treatment Zone ⁵
S1: LF-14 S2: LF-10	Annually	Transition Zone ⁶
S1, S2, S4: MW-195, MW-199	Once every three years	Background ⁷

¹ Well numbers as shown on Figures 3-1 through 3-7. S1 = Source Area 1, S2 = Source Area 2, S3 = Source Area 3, S4 = Source Area 4

² i.e., weekly, monthly, quarterly, annually, other.

³ Constituent suite components listed in Table 2.

⁴ Wells used to determine compliance with water groundwater limitations. Monitoring more frequently may be requested depending on results in treatment and transition zone wells.

⁵ Wells sampled to evaluate remediation progress inside the treatment zone.

⁶ Wells sampled to evaluate migration of pollutants within the treatment zone.

⁷ Wells used to develop background concentrations.

⁸ Wells will be monitored annually.

Table 2: Analytical Methods

Constituent	Method¹	Maximum Practical Quantitation Limit (µg/L)²
Organolead ³	HML 939-M	5.0
Volatile Organic Compounds	EPA 8260B	0.5
Dissolved Arsenic, Iron, Manganese	EPA 6010B	10
Dissolved Lead ³	EPA 6010B	100
Dissolved Organic Carbon	EPA 9060M	300
Total Dissolved Solids	EPA 160.1	10,000

¹ Or an equivalent EPA Method that achieves the maximum Practical Quantitation Limit.

² All concentrations between the Method Detection Limit and the Practical Quantitation Limit shall be reported as an estimated value.

³ Source Area 4 (S4) only.

FIELD SAMPLING

In addition to the above sampling and analysis, field sampling and analysis shall be conducted each time a monitoring well is sampled. The sampling and analysis of field parameters shall be as specified in Table 3.

Table 3: Field Sampling Requirements

Parameters	Units	Type of Sample
Groundwater Elevation	Feet, Mean Sea Level	Measurement
Oxidation-Reduction Potential	Millivolts	Grab
Electrical Conductivity	µmhos /cm	Grab
Dissolved Oxygen	mg/L	Grab
pH	pH Units (to 0.1 units)	Grab
Temperature	Degrees Celsius	Grab
Turbidity	Nephelometric Turbidity Units	Grab

Field test instruments (such as those used to test pH and dissolved oxygen) may be used provided that:

1. The operator is trained in proper use and maintenance of the instruments;
2. The instruments are calibrated prior to each monitoring event;
3. Instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are submitted as described in item (b) of the "Reporting" section of this MRP.

DISCHARGE MONITORING

The Discharger shall monitor daily during injection events the discharge of water and amendments that are injected into the groundwater according to the requirements specified in Table 4. Each amendment addition shall be recorded individually, along with information regarding the time period over which the amendment was injected into the aquifer.

Table 4: Discharge Monitoring Requirements

Parameters	Units	Type of Sample
Injected Volume	gallons per day	Meter or Measured
Amendment(s) Added	kilograms per day	Measured

AMENDMENT ANALYSIS

Prior to use, amendments shall be analyzed for the constituents listed in Table 5. The analysis should be done on the pure amendment and/or on a mixture of the amendment(s) and deionized water at the estimated concentration that would be injected during the remediation project.

Table 5: Amendment Analytical Requirements

Constituent	Method ¹	Maximum Practical Quantitation Limit (ug/L) ²
Volatile Organic Compounds	EPA 8020 or 8260B	0.5
General Minerals ³	Various	Various
Metals, Total and Dissolved ⁴	EPA 200.7, 200.8	Various
Total Dissolved Solids	EPA 160.1	10,000
pH	meter	NA
Electrical Conductivity	meter	NA

¹ Or an equivalent EPA Method that achieves the maximum Practical Quantitation Limit.

² All concentrations between the Method Detection Limit and the Practical Quantitation Limit shall be reported, and reported as an estimated value.

³ Alkalinity, bicarbonate, potassium, chloride, sulfate, total hardness, nitrate, nitrite, ammonia.

⁴ Metals include arsenic, barium, cadmium, calcium, total chromium, copper, iron, lead, manganese, magnesium, mercury, molybdenum, nickel, selenium and silica.

ESTABLISHMENT OF BACKGROUND CONCENTRATION VALUES

The Discharger shall develop background values for concentrations of dissolved iron, dissolved manganese, total dissolved solids and electrical conductivity in groundwater using historic site data and following the procedures found in CCR Section 20415(e) (10).

REPORTING

When reporting the data, the Discharger shall arrange the information in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner as to illustrate clearly the compliance with this Order. In addition, the Discharger shall notify the Regional Board within 48 hours of any unscheduled shutdown of any soil vapor and/or groundwater extraction system. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall also be reported to the Regional Board.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all reports shall be prepared by a registered professional or their subordinate and signed by the registered professional.

The Discharger shall submit quarterly electronic data reports, which conform to the requirements of the California Code of Regulations, Title 23, Division 3, Chapter 30. The quarterly reports shall be submitted electronically over the internet to the Geotracker database system by the 1st day of the second month following the end of each calendar quarter by **1 February, 1 May, 1 August, and 1 November** until such time as the Executive Officer determines that the reports are no longer necessary.

Each quarterly or semi-annual report shall include the following minimum information:

- (a) a description and discussion of the groundwater sampling event and results, including trends in the concentrations of pollutants and groundwater elevations in the wells, how and when samples were collected, and whether the pollutant plume(s) is delineated;
- (b) field logs that contain, at a minimum, water quality parameters measured before, during, and after purging, method of purging, depth of water, volume of water purged, etc.;
- (c) groundwater contour maps for all groundwater zones, if applicable;
- (d) pollutant concentration maps for all groundwater zones, if applicable;
- (e) a table showing well construction details such as well number, groundwater zone being monitored, coordinates (longitude and latitude), ground surface elevation, reference

elevation, elevation of screen, elevation of bentonite, elevation of filter pack, and elevation of well bottom;

- (f) a table showing historical lateral and vertical (if applicable) flow directions and gradients;
- (g) cumulative data tables containing the water quality analytical results and depth to groundwater;
- (h) a copy of the laboratory analytical data report, which may be submitted in an electronic format;
- (i) the status of any ongoing remediation, including an estimate of the cumulative mass of pollutant removed from or destroyed in the subsurface, system operating time, the effectiveness of the remediation system, and any field notes pertaining to the operation and maintenance of the system; and
- (j) if applicable, the reasons for and duration of all interruptions in the operation of any remediation system, and actions planned or taken to correct and prevent interruptions.

An Annual Report shall be submitted to the Regional Board by **1 February** of each year. This report shall contain an evaluation of the effectiveness and progress of the investigation and remediation, and may be substituted for the fourth quarter monitoring report. The Annual Report shall contain the following minimum information:

- (a) both tabular and graphical summaries of all data obtained during the year;
- (b) groundwater contour maps and pollutant concentration maps containing all data obtained during the previous year;
- (c) a discussion of the long-term trends in the concentrations of the pollutants in the groundwater monitoring wells;
- (d) an analysis of whether the pollutant plume is being effectively treated;
- (e) a description of all remedial activities conducted during the year, an analysis of their effectiveness in removing the pollutants, and plans to improve remediation system effectiveness;
- (f) an identification of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program; and
- (g) if desired, a proposal and rationale for any revisions to the groundwater sampling plan frequency and/or list of analytes.

MONITORING AND REPORTING PROGRAM ORDER NO. R5-2015-0012-050
PLUMES 1 AND 2 IN-SITU REMEDIATION
CHEMOURS OAKLEY SITE
6000 BRIDGEHEAD ROAD
OAKLEY, CONTRA COSTA COUNTY

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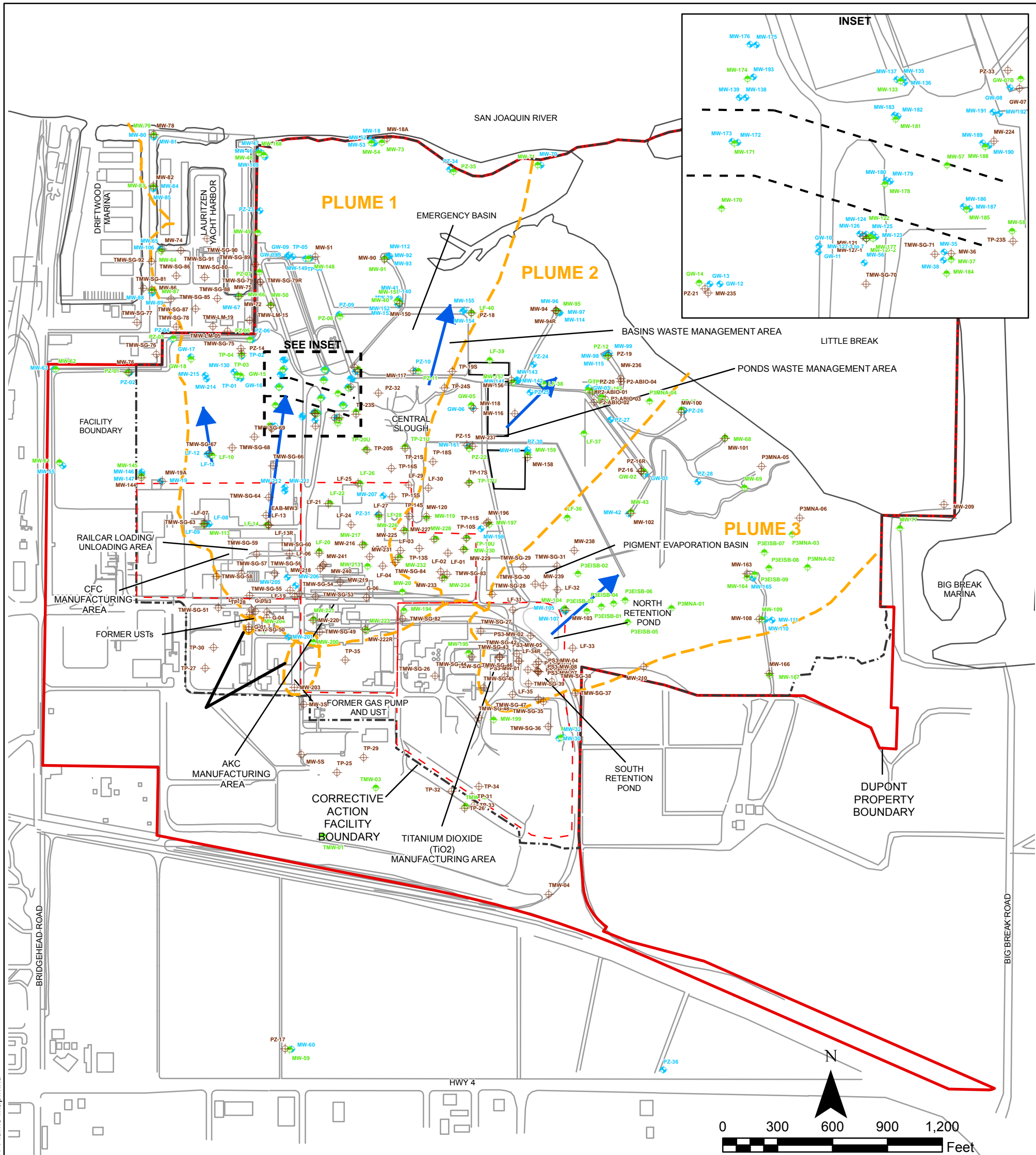
A letter transmitting the monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

The Discharger shall implement the above monitoring program on the first day of the month following adoption of this Order.

Ordered by: ***ORIGINAL SIGNED BY
ANDREW ALTEVOGT FOR***

PATRICK PULUPA, Executive Officer
10/22/18

(Date)



LEGEND

<p>--- MAXIMUM LATERAL EXTENT (FOOTPRINT) OF COPCs IN GROUNDWATER (VERTICALLY INTEGRATED PHASE 3 GROUNDWATER RFI PLUMES)</p> <p>NOTE: ARSENIC WAS NOT USED TO DEFINE THE CONCEPTUAL PLUME BOUNDARIES.</p> <p><u>2017 GROUNDWATER MONITORING PROGRAM WELLS</u></p> <ul style="list-style-type: none"> ⊕ SURFICIAL AQUIFER MONITORING WELL ● UPPER AQUIFER MONITORING WELL ⊕ LOWER AQUIFER MONITORING WELL 	<p>--- PERMEABLE REACTIVE BARRIER (PRB) WALL (UPPER AND LOWER AQUIFER)</p> <p>← GROUNDWATER TRANSPORT PATHWAY</p> <p>--- CORRECTIVE ACTION FACILITY BOUNDARY</p> <p>▭ PROPERTY BOUNDARY</p>
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Path: \\TXAUS01FS01\dupont\Oakley\GIS\2017 ANNUAL GWMR\MapXD\Figure 2-2 Site Conceptual GW Plume Map.mxd



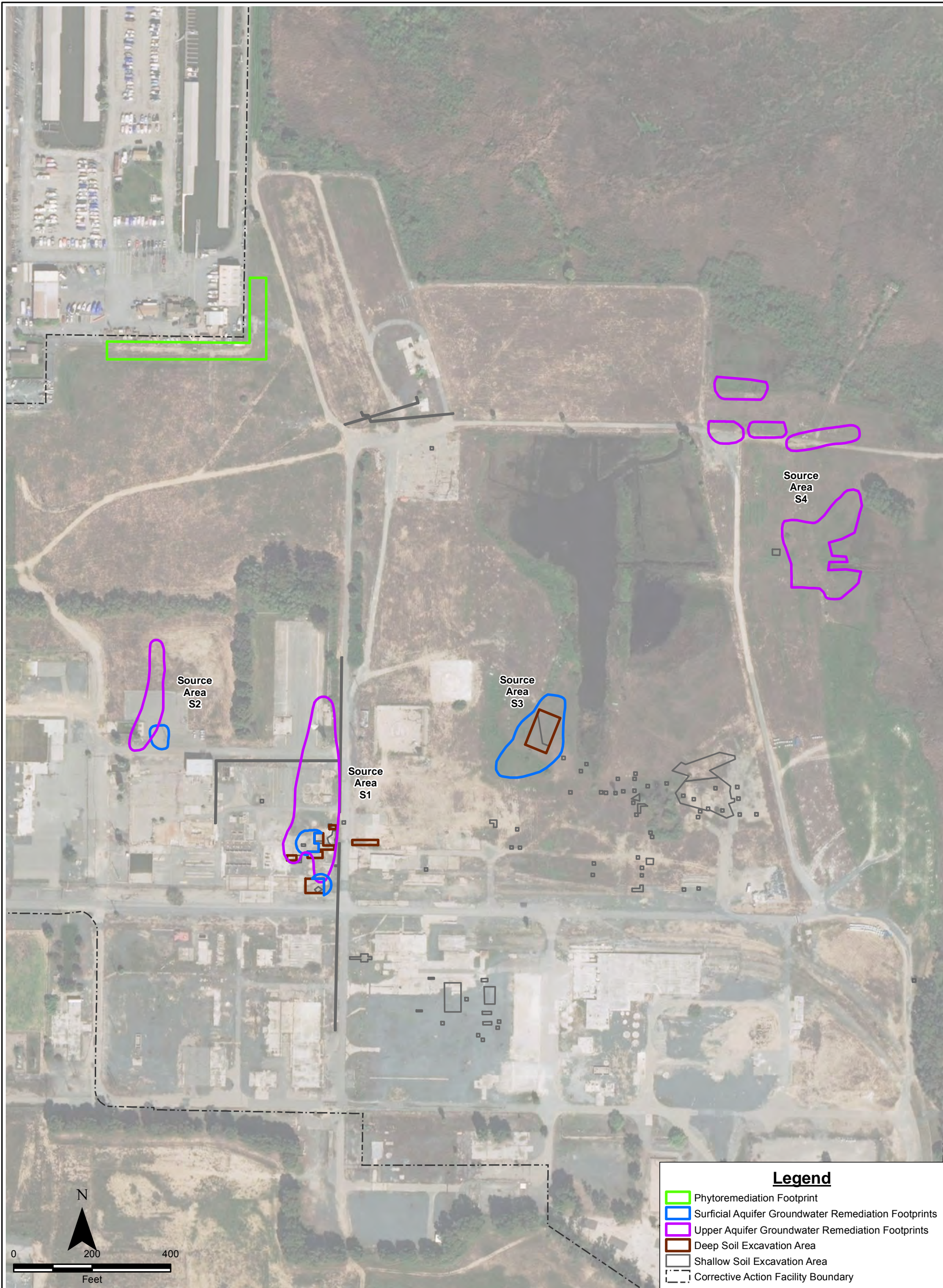
2121 North California Boulevard
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Walnut Creek, California 94596

Title:
Site Conceptual Groundwater Plume Map

Plume 1 and Plume 2 Groundwater
Corrective Measures Implementation Plan

Chemours Oakley Site

Drawn/Approved:	File Project Number:
Date:	Figure Number: 2-1
Revised:	
File Name:	



Legend	
▭	Phytoremediation Footprint
▭	Surficial Aquifer Groundwater Remediation Footprints
▭	Upper Aquifer Groundwater Remediation Footprints
▭	Deep Soil Excavation Area
▭	Shallow Soil Excavation Area
▭	Corrective Action Facility Boundary

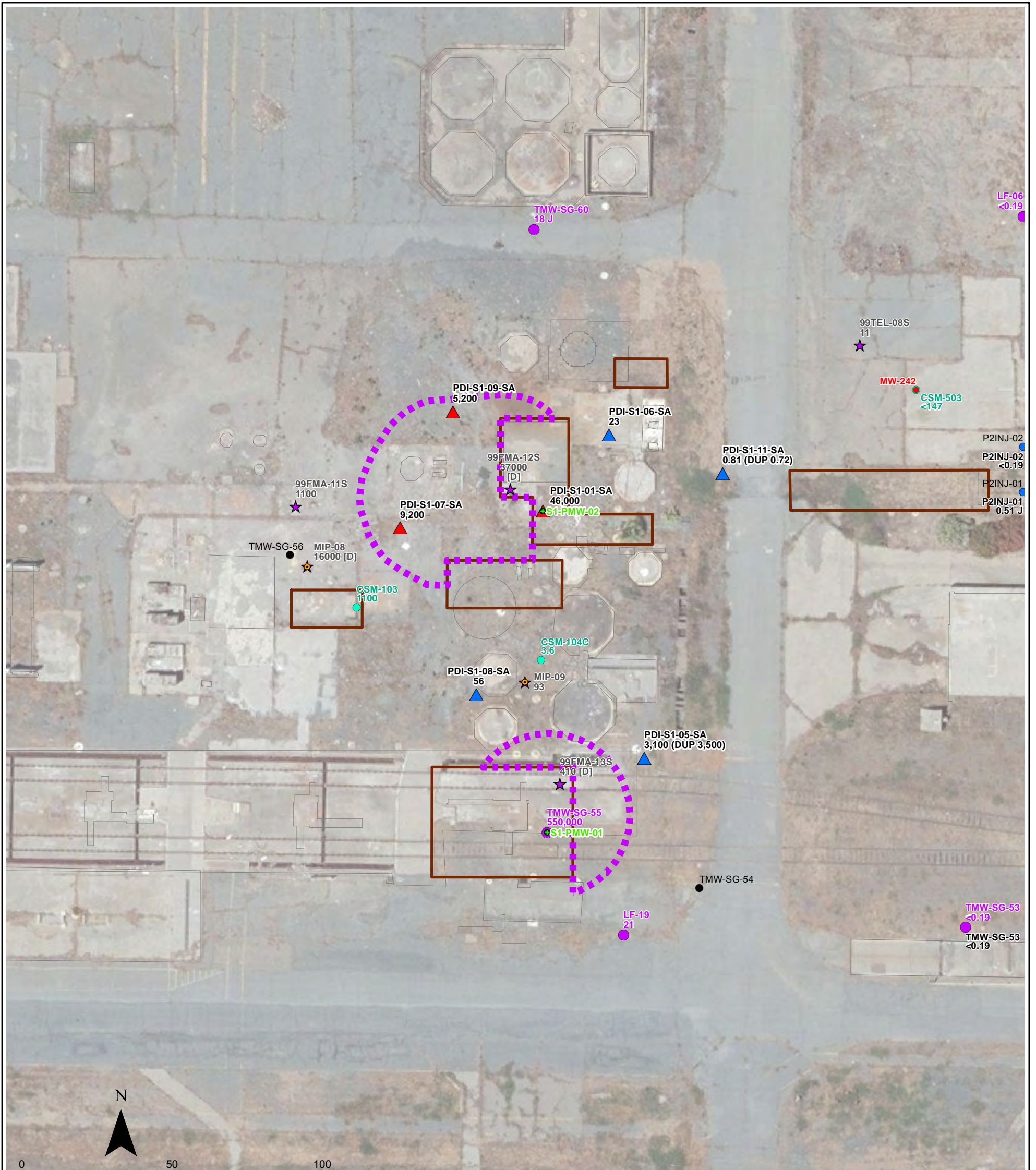
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Locations of In-Situ Groundwater Treatment and Phytoremediation Areas

Plume 1 and Plume 2 Groundwater Corrective Measures Implementation Plan
Chemours Oakley Site

Drawn/Approved: PDS/MHS	File Project Number: 450679/504687
Date: 7/10/2018	Figure Number: 2-2
Revised:	
File Name: FIGURE 2.2 Overview CMIP	



NOTES:

- 1) Concentrations posted are the primary sample result collected during 3Q16/3Q17 annual groundwater sampling or 4Q17/1Q18 PDI sampling event.
- 2) If no data is posted, this analyte was not sampled for at a given location.
- 3) A "J" qualifier indicates the value is estimated.
- 4) The Water Quality Objective for Carbon Tetrachloride is 0.5 µg/L.
- 5) Conceptual Site Model Verification July-September result collected from a temporary well.
- 6) PDI-S1-02-SA / PDI-S1-207 = Collocated Groundwater Sample ID / Soil Sample ID

Legend	
Proposed Groundwater Remediation Level = 5,000 ug/L	Groundwater Monitoring Well - Sampled 3Q 2016
PDI Groundwater Sampling Locations	Groundwater Monitoring Well
PDI Groundwater Sampling Locations (Exceeds Groundwater Remediation Level)	Conceptual Site Model Well
Active Source Area Remediation Performance Well (New)	Historical Groundwater Sample
New MNA Well	Soil Excavation
MIP Wells	Historical Features
Groundwater Monitoring Well - Sampled 3Q 2017	Corrective Action Facility
	Property Boundary

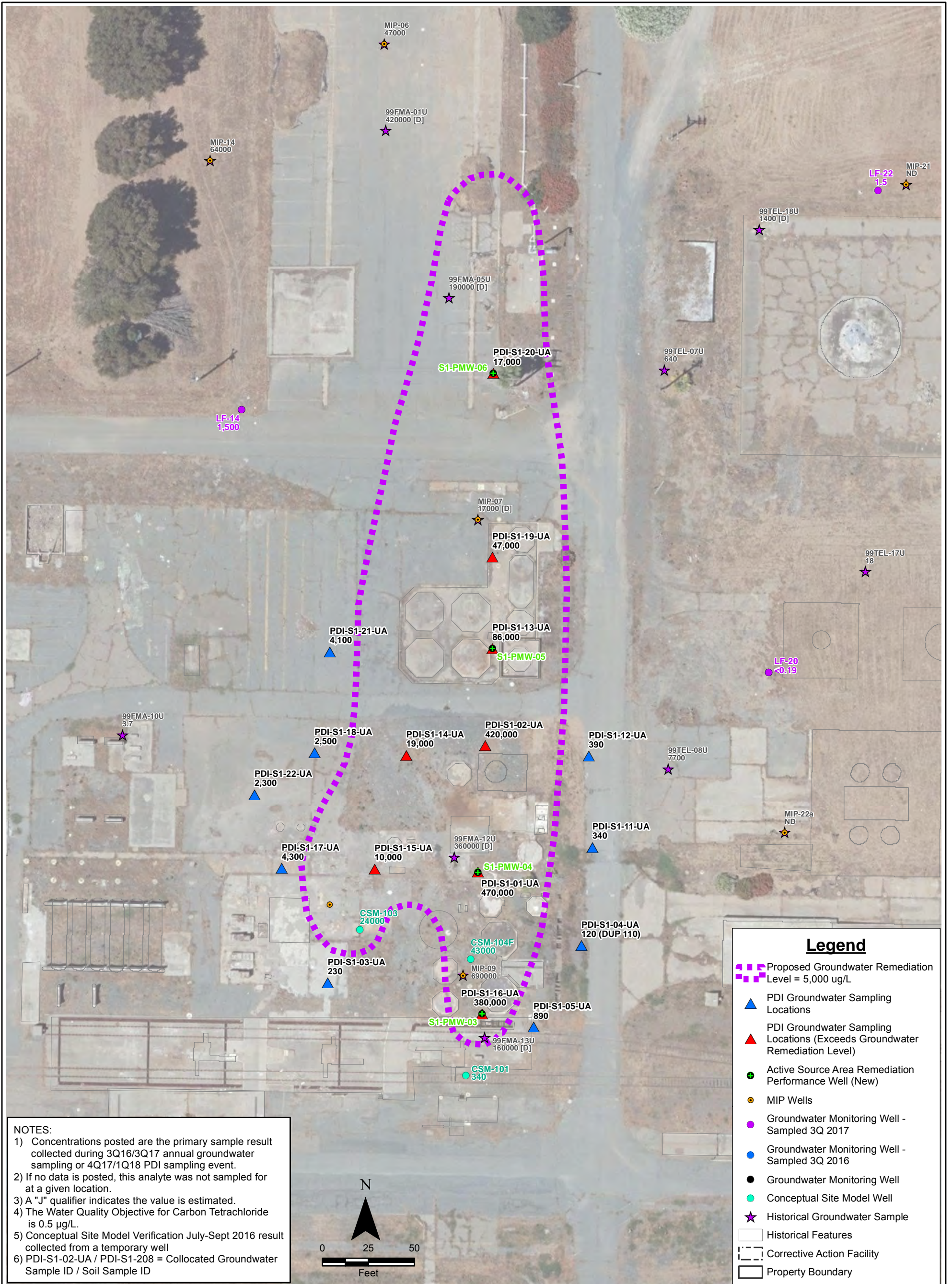
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Source Area S1, Surficial Aquifer – Proposed In-Situ Groundwater Treatment Area
Carbon Tetrachloride Concentrations in Groundwater
Plume 1 and Plume 2 Groundwater Corrective Measures Implementation Plan
Chemours Oakley Site

Drawn/Approved: PDS/MHS	File Project Number: 450679/504687
Date: 7/10/2018	Figure Number: 3-1
Revised:	
File Name: FIGURE 3.1 S1 SURF CMIP	

\\Txaus061s01\duponts\Oakley\GIS\CMIP\MXD\FIGURE 3.1 S1 SURF CMIP.mxd



NOTES:

- 1) Concentrations posted are the primary sample result collected during 3Q16/3Q17 annual groundwater sampling or 4Q17/1Q18 PDI sampling event.
- 2) If no data is posted, this analyte was not sampled for at a given location.
- 3) A "J" qualifier indicates the value is estimated.
- 4) The Water Quality Objective for Carbon Tetrachloride is 0.5 µg/L.
- 5) Conceptual Site Model Verification July-Sept 2016 result collected from a temporary well
- 6) PDI-S1-02-UA / PDI-S1-208 = Collocated Groundwater Sample ID / Soil Sample ID



Legend	
	Proposed Groundwater Remediation Level = 5,000 ug/L
	PDI Groundwater Sampling Locations
	PDI Groundwater Sampling Locations (Exceeds Groundwater Remediation Level)
	Active Source Area Remediation Performance Well (New)
	MIP Wells
	Groundwater Monitoring Well - Sampled 3Q 2017
	Groundwater Monitoring Well - Sampled 3Q 2016
	Groundwater Monitoring Well
	Conceptual Site Model Well
	Historical Groundwater Sample
	Historical Features
	Corrective Action Facility
	Property Boundary

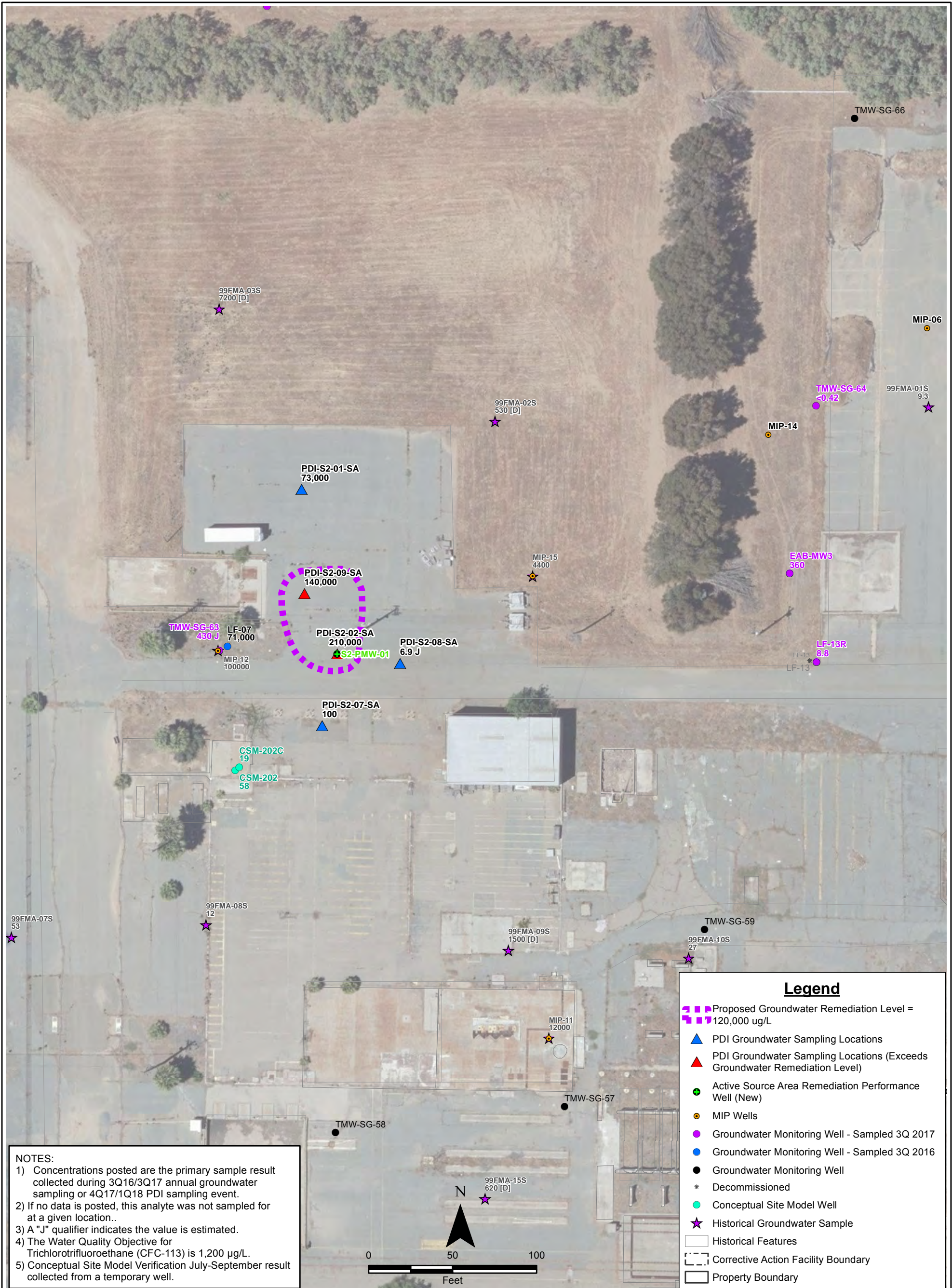
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Source Area S1, Upper Aquifer – Proposed In-Situ Groundwater Treatment Area
 Carbon Tetrachloride Concentrations in Groundwater
 Plume 1 and Plume 2 Groundwater Corrective Measures Implementation Plan
 Chemours Oakley Site

Drawn/Approved: PDS/MHS	File Project Number: 450679/504687
Date: 7/10/2018	Figure Number: 3-2
Revised:	
File Name: FIGURE 3.2 S1 UPPER CMP	

\\Txaus06\is01\duponts\Oakley\GIS\CMP\MIP\MXD\FIGURE 3.2 S1 UPPER CMP.mxd



NOTES:
 1) Concentrations posted are the primary sample result collected during 3Q16/3Q17 annual groundwater sampling or 4Q17/1Q18 PDI sampling event.
 2) If no data is posted, this analyte was not sampled for at a given location.
 3) A "J" qualifier indicates the value is estimated.
 4) The Water Quality Objective for Trichlorotrifluoroethane (CFC-113) is 1,200 µg/L.
 5) Conceptual Site Model Verification July-September result collected from a temporary well.

Legend

- Proposed Groundwater Remediation Level = 120,000 ug/L
- PDI Groundwater Sampling Locations
- PDI Groundwater Sampling Locations (Exceeds Groundwater Remediation Level)
- Active Source Area Remediation Performance Well (New)
- MIP Wells
- Groundwater Monitoring Well - Sampled 3Q 2017
- Groundwater Monitoring Well - Sampled 3Q 2016
- Groundwater Monitoring Well
- Decommissioned
- Conceptual Site Model Well
- Historical Groundwater Sample
- Historical Features
- Corrective Action Facility Boundary
- Property Boundary

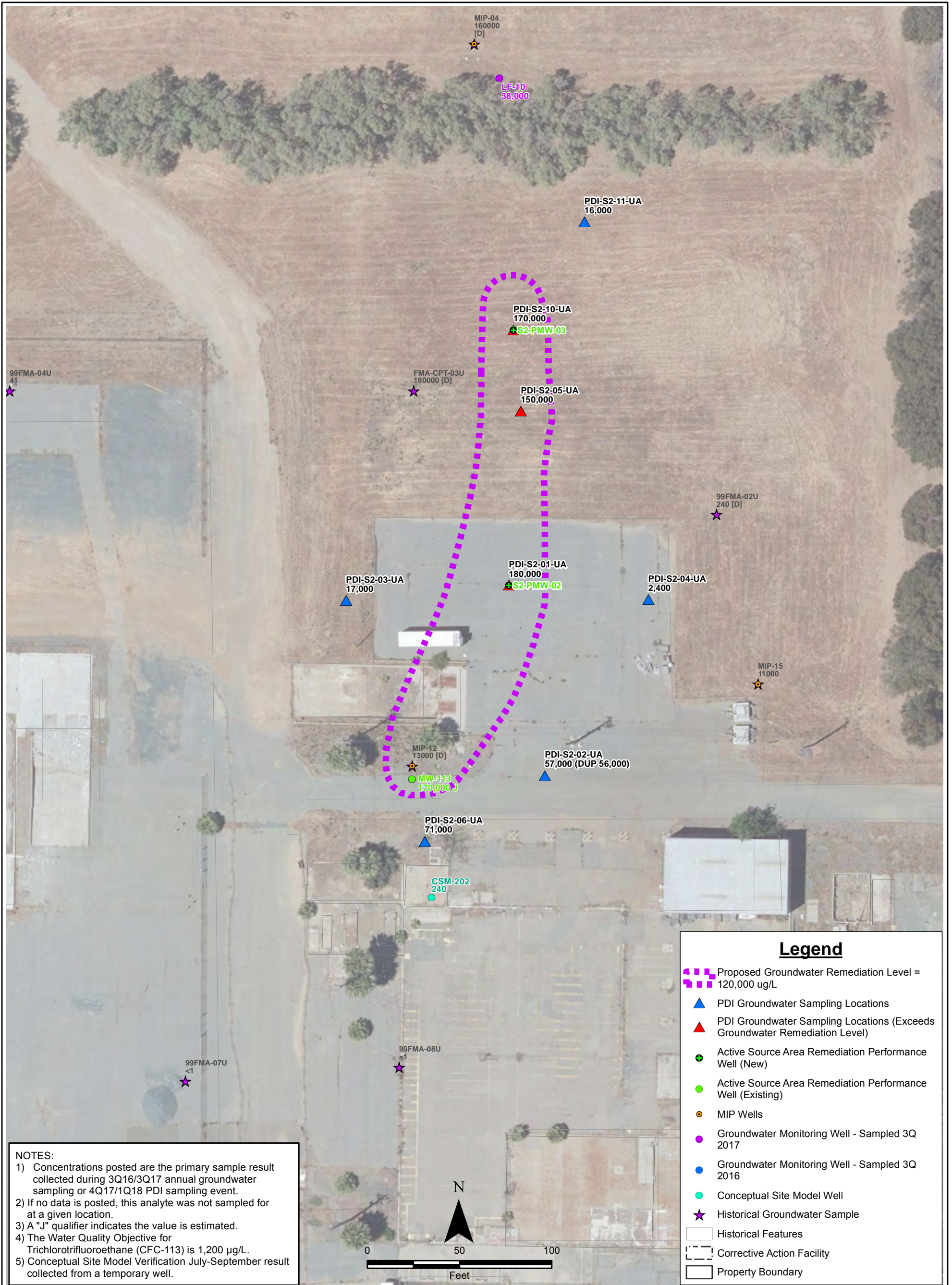
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Source Area S2, Surficial Aquifer – Proposed In-Situ Groundwater Treatment Area
 CFC-113 Concentrations in Groundwater
 Plume 1 and Plume 2 Groundwater Corrective Measures Implementation Plan
 Chemours Oakley Site

Drawn/Approved: PDS/MHS	File Project Number: 450679/504687
Date: 7/10/2018	Figure Number: 3-3
Revised:	
File Name: FIGURE 3.3 S2 SURF CMIP	

\\Txaus061\01\dupont\Oakley\GIS\CMIP\MXD\FIGURE 3.3 S2 SURF CMIP.mxd



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Source Area S2, Upper Aquifer – Proposed In-Situ Groundwater Treatment Area

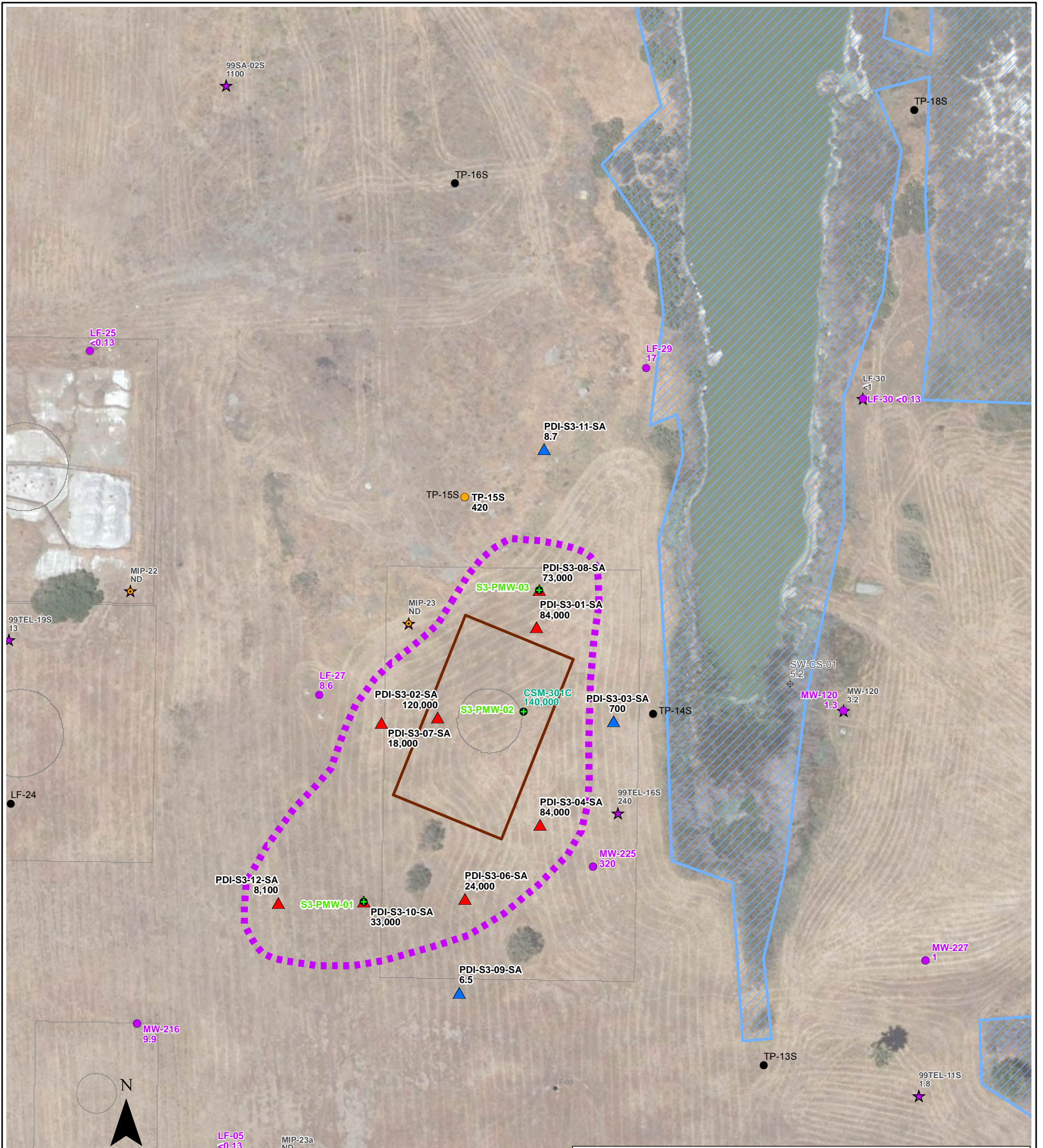
CFC-113 Concentrations in Groundwater

Plume 1 and Plume 2 Groundwater Corrective Measures Implementation Plan

Chemours Oakley Site

Drawn/Approved: PDS/MHS	File Project Number: 450679/504687
Date: 7/10/2018	Figure Number: 3-4
Revised:	
File Name: FIGURE 3.4 S2 UPPER CMIP	

\\Txaus061s01\dupont\GIS\MIP\MXD\FIGURE 3.4 S2 UPPER CMIP.mxd



NOTES:

- 1) Concentrations posted are the primary sample result collected during 3Q16/3Q17 annual groundwater sampling or 4Q17/1Q18 PDI sampling event.
- 2) If no data is posted, this analyte was not sampled for at a given location.
- 3) A "J" qualifier indicates the value is estimated.
- 4) The Water Quality Objective for 1,2-Dichloroethane (1,2-DCA) is 0.5 µg/L.
- 5) Conceptual Site Model Verification July-September result collected from a temporary well.
- 6) PDI-S3-01-SA / PDI-S3-231 = Collocated Groundwater Sample ID / Soil Sample ID

Legend

Proposed Groundwater Remediation Level = 5,000 ug/L	Groundwater Monitoring Well - Sampled 3Q 2016
PDI Groundwater Sampling Locations	Groundwater Monitoring Well
PDI Groundwater Sampling Locations (Exceeds Groundwater Remediation Level)	Surface Water
Active Source Area Remediation Performance Well (New)	Historical Groundwater Sample
MIP Wells	Soil Excavation Area
Groundwater Monitoring Well - Sampled PDI	Corrective Action Facility Boundary
Groundwater Monitoring Well - Sampled 3Q 2017	Property Boundary
	Historical Features
	Potential Jurisdictional Waters of the U.S., including Wetlands

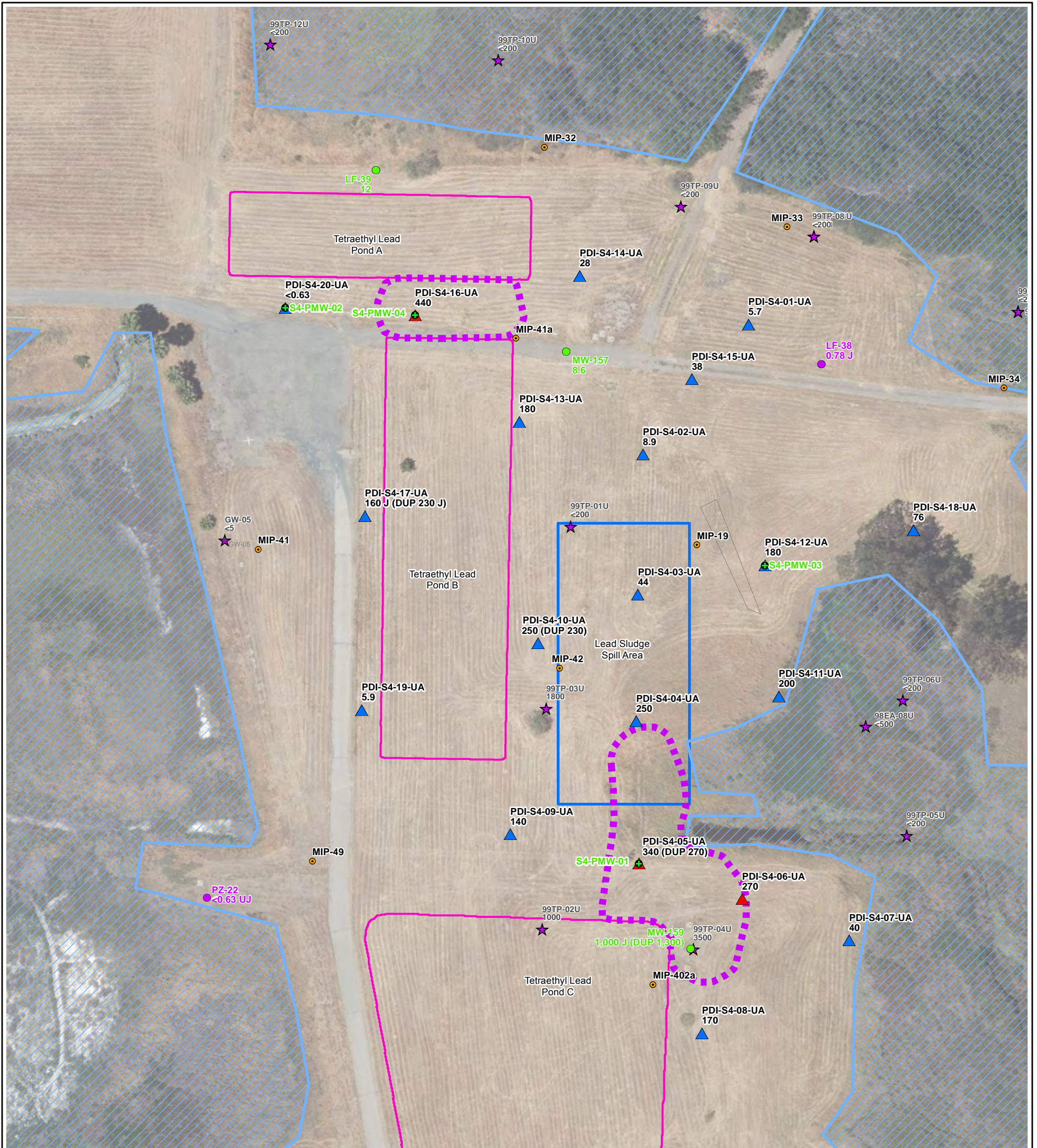
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Source Area S3, Surficial Aquifer – Proposed In-Situ Groundwater Treatment Area
1,2-DCA Concentrations in Groundwater
Plume 1 and Plume 2 Groundwater Corrective Measures Implementation Plan
Chemours Oakley Site

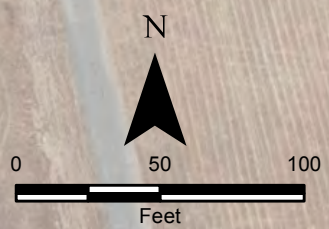
Drawn/Approved: PDS/MHS	File Project Number: 450679/504687
Date: 7/10/2018	Figure Number: 3-5
Revised:	
File Name: FIGURE 3.5 S3 SURF CMIP	

\\Txaus06\is01\dupont\Oakley\GIS\CMP\MXD\FIGURE 3.5 S3 SURF CMIP.mxd



NOTES:

- 1) Concentrations posted are the primary sample result collected during 3Q16/3Q17 annual groundwater sampling or 4Q17/1Q18 PDI sampling event.
- 2) If no data is posted, this analyte was not sampled for at a given location.
- 3) A "J" qualifier indicates the value is estimated.
- 4) The Water Quality Objective for Organolead is 0.0013 µg/L.
- 5) Results with detection limits greater than the WQO not used for current year contouring.



Legend

- Proposed Groundwater Remediation Level = 250 ug/L
- PDI Groundwater Sampling Locations
- PDI Groundwater Sampling Locations (Exceeds Groundwater Remediation Level)
- Active Source Area Remediation Performance Well (New)
- Active Source Area Remediation Performance Well (Existing)
- MIP Wells
- Groundwater Monitoring Well - Sampled 3Q 2017
- Groundwater Monitoring Well - Sampled 3Q 2016
- Groundwater Monitoring Well
- Historical Groundwater Sample
- Historical Features
- Lead Sludge Spill
- Tetraethyl Lead Ponds
- Potential Jurisdictional Waters of the U.S., including Wetlands
- Corrective Action Facility
- Property Boundary

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Source Area S4, Upper Aquifer – Proposed In-Situ Groundwater Treatment Area

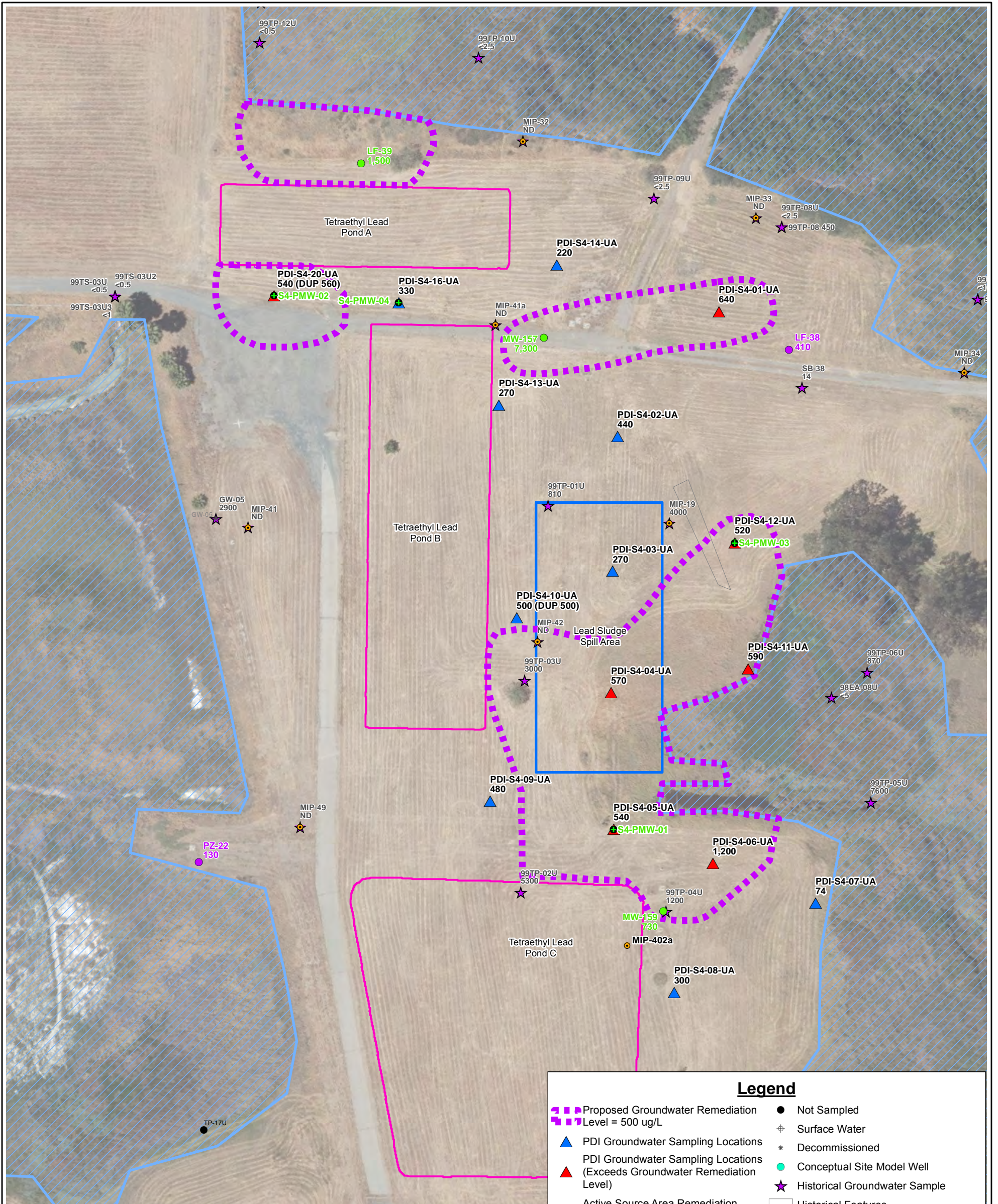
Organolead Concentrations in Groundwater

Plume 1 and Plume 2 Groundwater Corrective Measures Implementation Plan

Chemours Oakley Site

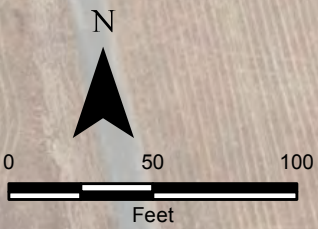
Drawn/Approved: PDS/MHS	File Project Number: 450679/504687
Date: 7/10/2018	Figure Number: 3-6
Revised:	
File Name: FIGURE 3.6 S4 UPPER CMIP	

\\Txaus06\fs01\duponts\Oakley\GIS\CMP\MIP\MXD\Figure 3.6 S4 UPPER CMIP.mxd



NOTES:

- 1) Concentrations posted are the primary sample result collected during 3Q16/3Q17 annual groundwater sampling or 4Q17/1Q18 PDI sampling event.
- 2) If no data is posted, this analyte was not sampled for at a given location.
- 3) A "J" qualifier indicates the value is estimated.
- 4) The Water Quality Objective for PCE is 5.0 ug/L
- 5) Conceptual Site Model Verification July-September result collected from a temporary well.



Legend

- Proposed Groundwater Remediation Level = 500 ug/L
- PDI Groundwater Sampling Locations
- PDI Groundwater Sampling Locations (Exceeds Groundwater Remediation Level)
- Active Source Area Remediation Performance Well (New)
- Active Source Area Remediation Performance Well (Existing)
- MIP Wells
- 3Q2017 Reported Well Concentration (ug/L):
- Groundwater Monitoring Well - Sampled 3Q 2016
- Not Sampled
- Surface Water
- Decommissioned
- Conceptual Site Model Well
- Historical Groundwater Sample
- Historical Features
- Lead Sludge Spill Area
- Tetraethyl Lead Ponds
- Potential Jurisdictional Waters of the U.S., including Wetlands
- Corrective Action Facility Boundary
- Property Boundary

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Source Area S4, Upper Aquifer – Proposed In-Situ Groundwater Treatment Area
PCE Concentrations in Groundwater
Plume 1 and Plume 2 Groundwater Corrective Measures Implementation Plan
Chemours Oakley Site

Drawn/Approved: PDS/MHS	File Project Number: 450679/504687
Date: 7/10/2018	Figure Number: 3-7
Revised:	
File Name: FIGURE 3.7 S4 UPPER CMIP	

\\Txaus061s01\duponts\Oakley\GIS\CMP\MXD\FIGURE 3.7 S4 UPPER CMIP.mxd