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WILLIAMS AIR FORCE BASE

Site LF004 Landfill Remedial Action

BCT Conference Call
25 July 2019

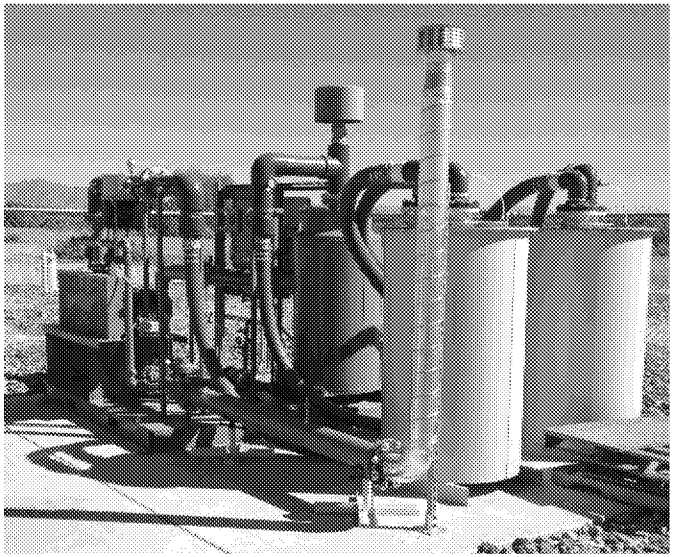
LF004 Recent and Upcoming Activities

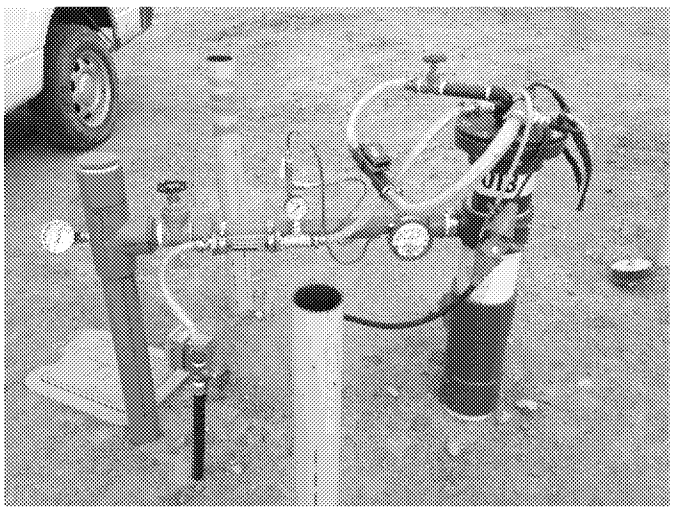
- Post remediation soil gas sampling is complete
- Preliminary PDB groundwater sampling results for May 2019 have been received and are undergoing data validation
- Draft annual landfill inspection report submitted 17 Jun 2019

ED_005025_00014627-00002

Site LF004
LF01-W17 Area IWAS System Update

- **Preliminary May 2019 PDB results indicate all monitoring wells below the TCE MCL with the exception of LF01-W17S (9.0 µg/l) and LF01-W30M (12 µg/l)**
- **Previous 2018 PDB for LF01-W17S (May 4.2 µg/l and Nov 6.4 µg/l) and LF01-W30M (May 4.9 µg/l and Nov 1.5 µg/l)**
- **Residual oxidant measured in May 2019 (0.06 mg/l at W17S; 0.1 mg/l at W30M) remains to degrade residual PCE concentrations.**
- **Monitoring wells upgradient and downgradient of LF01-W17S and LF01-W30 M are below TCE MCL**





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Site LF004
Southern Area SVE and Oxidant Injection

- Preliminary May PDB results indicate only two PCE MCL exceedances: W19S at 8.1 µg/l (dup 9.1 µg/l), W24S at 10 µg/l. Previous 2018 PDB results for W19S (May 2.8 µg/l and Nov 6.6 µg/l) and W24S (May 7.9 µg/l and Nov 13 µg/l).
- Residual oxidant measured in May 2019 (0.1 mg/l at W19; 0.7 mg/l at W24) remains to degrade residual PCE concentrations.
- Upgradient wells in the vicinity of W19S and downgradient wells in the vicinity of W24S are below the PCE MCL

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Site FT002
Fire Training Area Remedial Action

BCT Conference Call
25 July 2019

Site FT002 Update

- AF approved keeping the DEUR in place Nov 2018
- AF will prepare Explanation of Significant Differences (ESD) document to add the land use control to the ROD
- Responses to EPA and ADEQ comments on Remedial Action Completion Report under final AF review
- Report is being revised in accordance with the responses to comments
- If necessary, a technical conference call with regulatory agencies to resolve comments can be scheduled

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Site SS017

Old Pesticide/Paint Shop

BCT Conference Call

25 July 2019

Battle Ready…Built Right!

ED_005025_00014627-00007

Site SS017 Groundwater Monitoring Update Path Forward

- Reissued hard copy May 2018 data summary report on 5 July 2019
- Aug 2018 data summary report submitted 12 Apr 2019 is under regulatory review
- Nov (Annual) 2018 groundwater report submitted 18 Apr 2019. Reissued hard copy reports on 30 Apr 2019. Report is under regulatory review.
- Contract modification for 2019/2020 groundwater sampling in process

Parcel K-1-2 Property Transfer

- Draft FOST and SEBS issued 30 November 2018
- ADEQ comments received 3 and 7 January 2019
- Draft final FOST and SEBS including RTC to ADEQ comments posted for public comment. Comment period end 25 Mar 2019; no comments received.
- EPA comments received 11 Mar 2019
- Draft final FOST and SEBS issued to ASU for coordination
- Revised Draft Final FOST to be issued for regulatory concurrence
- Final FOST to be routed for AF signature after regulatory concurrence
- Draft DEUR and deed to be prepared

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Site ST035
Former Building 760

BCT Conference Call
25 July 2019

ST035 Update

- SVE system and enclosure decommissioning completed in July. ASU has indicated that the concrete pad, walls, and fencing will be retained for use by facilities management.
- Procurement of monitoring well abandonment in progress. Well abandonment tentatively scheduled in the Aug-Sep 2019 time frame.

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Partial Deletion

BCT Conference Call

25 July 2019

PARTIAL DELETION UPDATE

- Draft table and figure submitted for regulatory review on 29 Sep 2014
- Comments received by ADEQ during Sep 2014 BCT meeting addressed in follow on email. No comments received from EPA.
- Deletion on hold during SS017 and ST012 informal disputes
- Final deletion tables and figure ready for submittal and provided to BCT in April 2019 BCT meeting
- Draft NOIPD submittal under AF review
- Draft NOIPD submittal for ADEQ/EPA review scheduled for Aug 2019

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Site ST012

Former Liquid Fuel Storage Area

BCT Conference Call

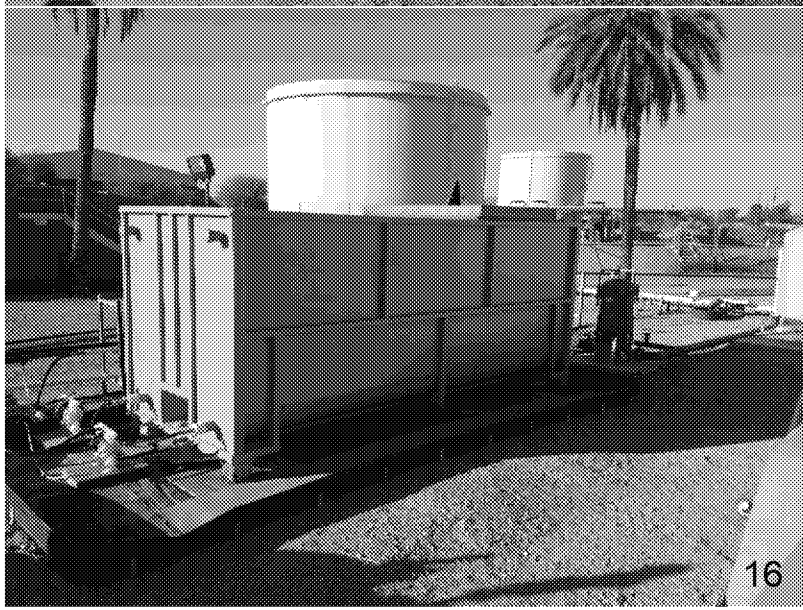
25 July 2019

Site ST012 Outline

- Summary of activities since Jun BCT call
- Update on SVE system (JP-4 equivalent of methane)
- LNAPL monitoring/removal update
- Pilot study extraction/injection update
- Path forward

Site ST012 Activities Since Jun

- **Continued SVE operation**
- **LNAPL screening in select wells**
- **Operation of Extraction and Treatment**
  - **CZ23 pipeline, electrical and pump installation**
    - CZ23 extraction initiated on 11 Jul 2019
  - **Treatment system maintenance**
    - Replacement influent flow meter commissioned
    - Piping work to accommodate subphase 3&4 injections
- **Sodium sulfate injections (detail on later slides)**



SVE Update

Site ST012 SVE System Update

- **Apr – Jun 2019**
  - **94.37% operational uptime CAT2**
  - **Total petroleum hydrocarbon (TPH) removed – 5,704 pounds or 868 gallons**

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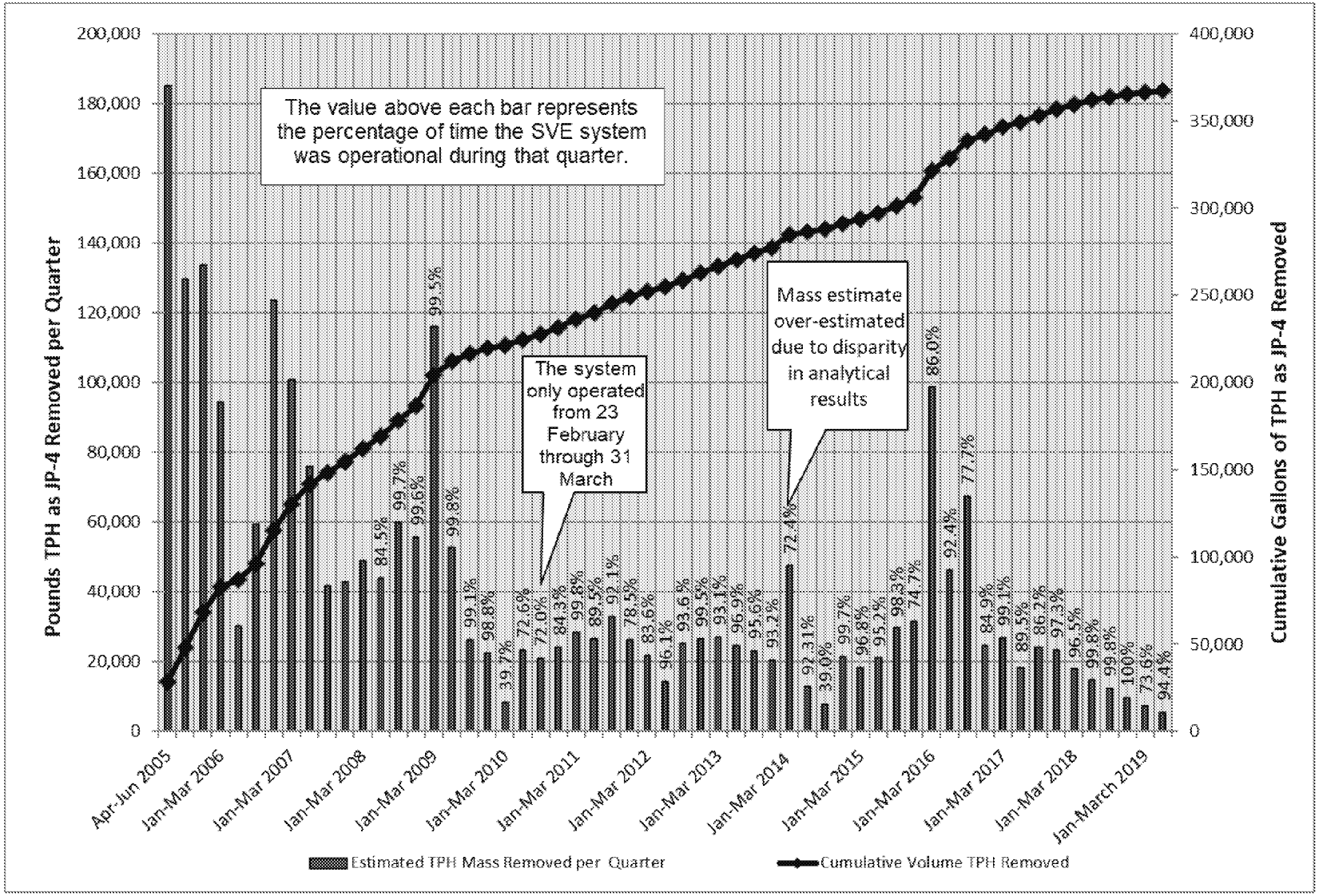
Site ST012 SVE System Performance



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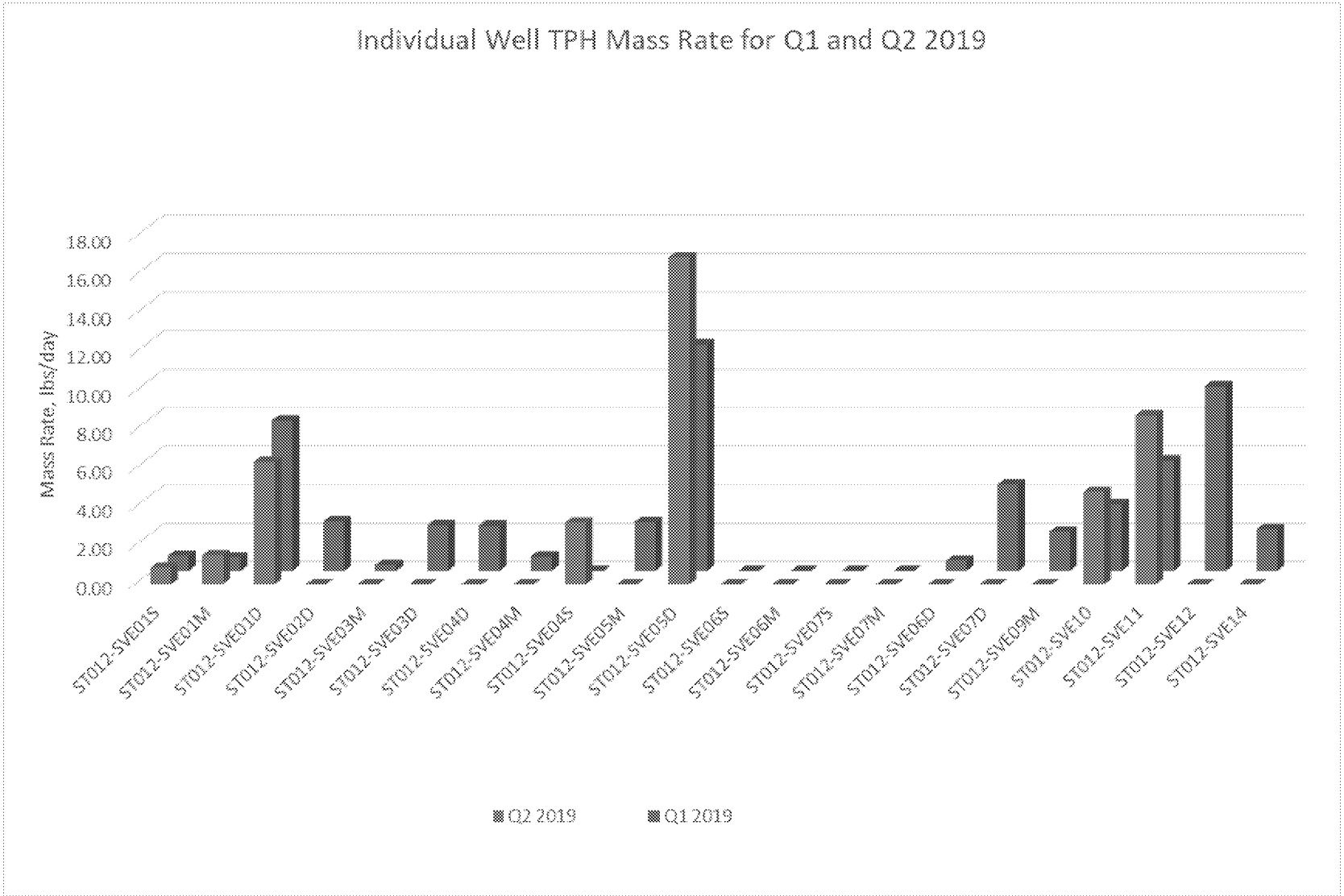
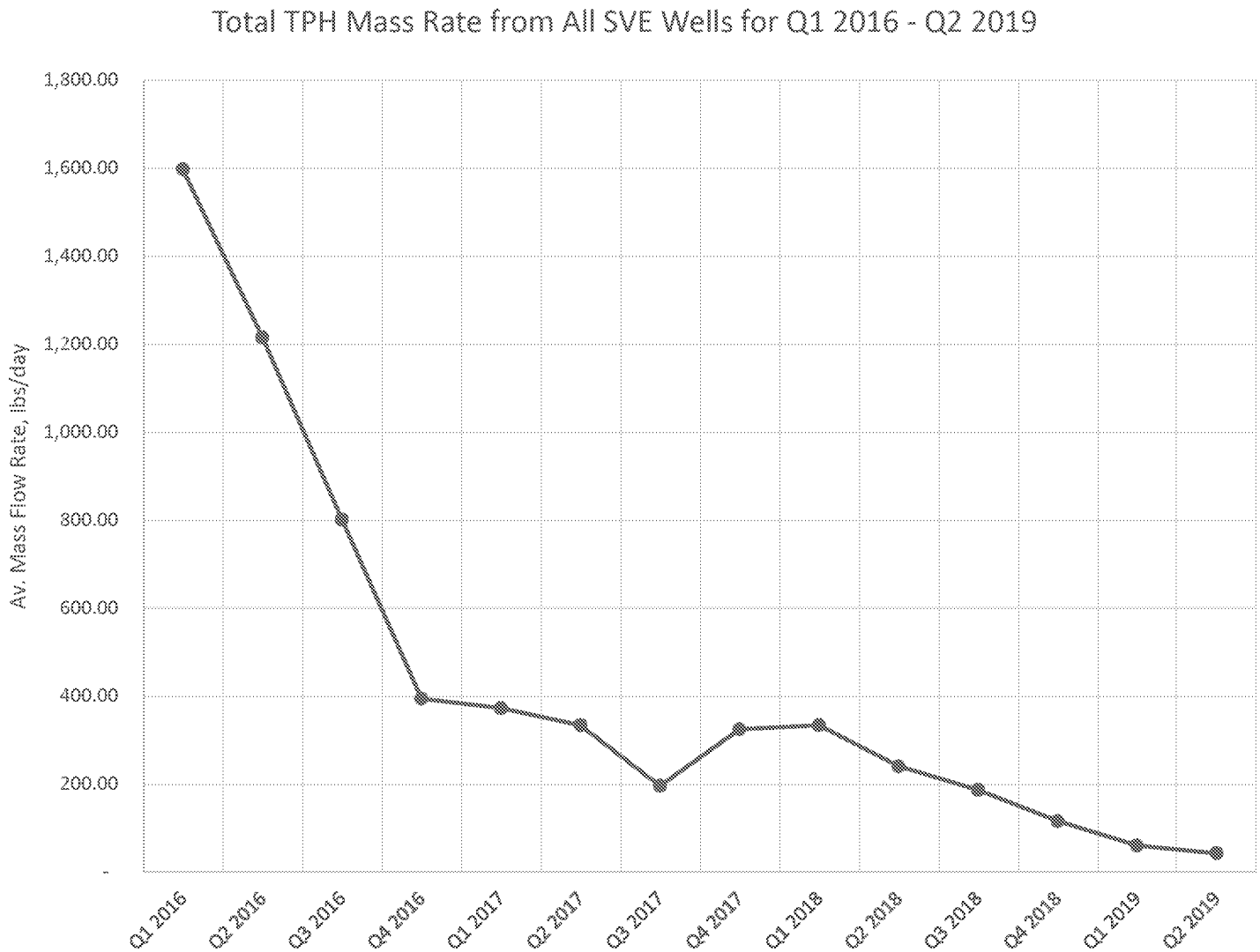
Site ST012 SVE System Performance



*Injection pipe installed in SVE04D. Flow rate averaged based on wellhead vacuum.

Site ST012 SVE System Performance



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Site ST012 SVE System Performance

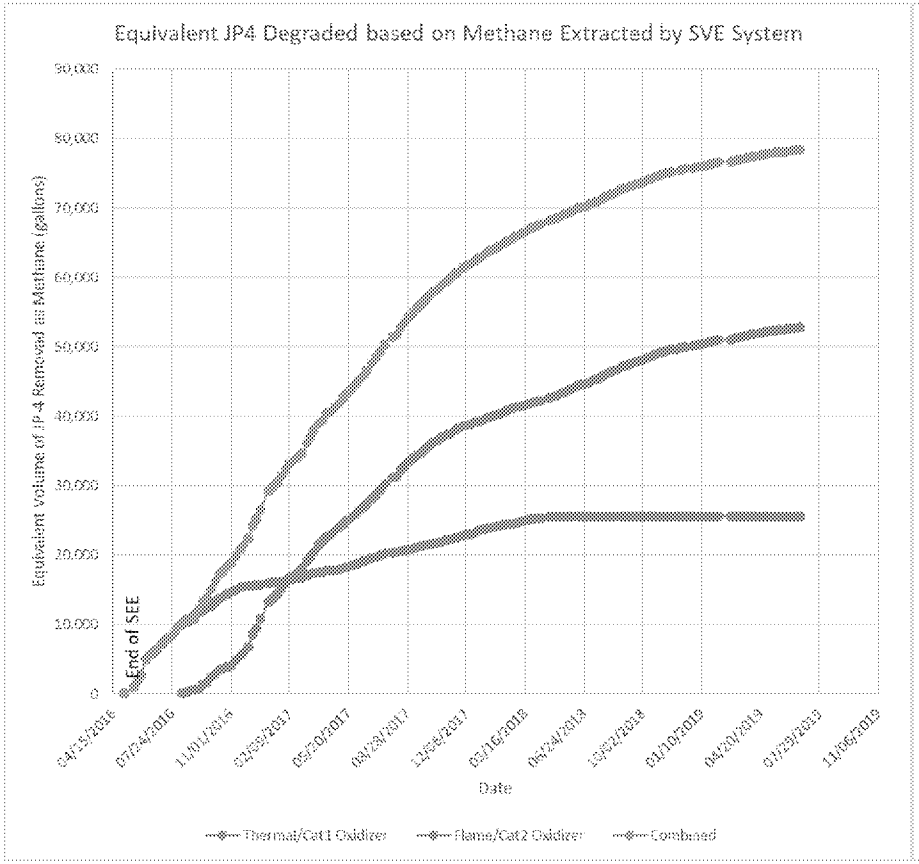
Mass removal rates generally from middle and deep intervals

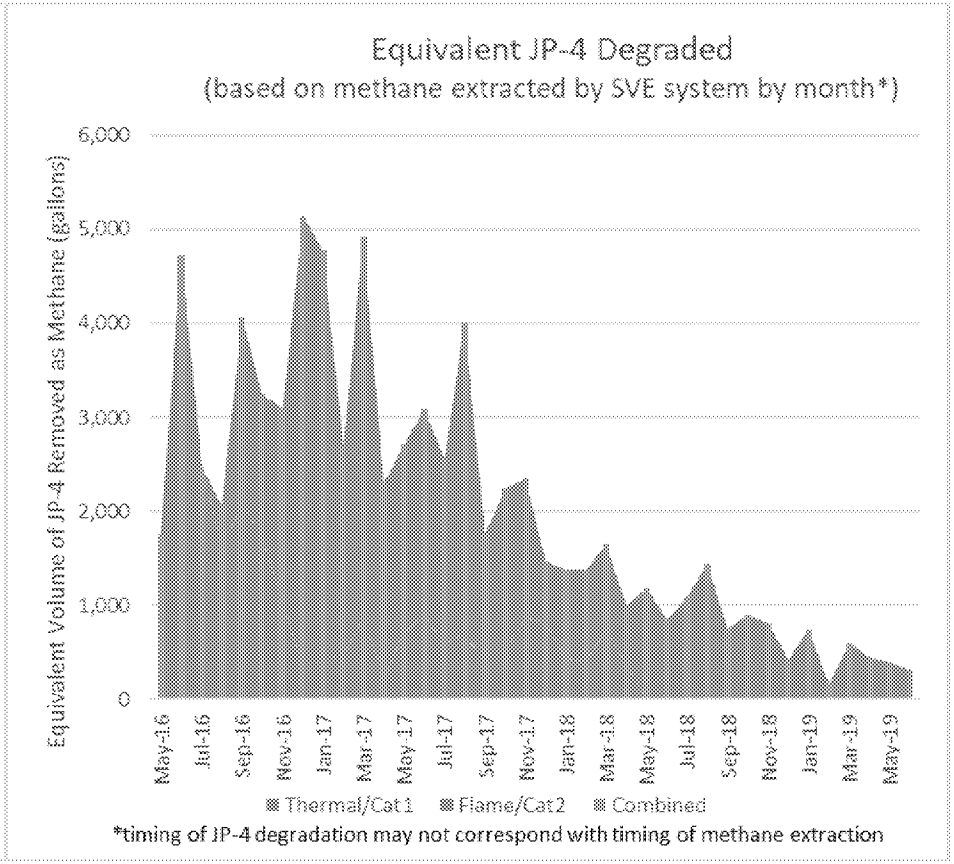
Legend

- Soil Vapor Extraction Well Location (Installed in 2013/2014)
- Nested Soil Vapor Extraction Well Location
- Decommissioned Nested Vapor Monitoring Point Location
- Groundwater Monitoring Well Location
- Decommissioned Groundwater Monitoring Well Location
- Fence Line
- ST012 Site Boundary
- S/M/D — Average Mass Flow Rate (lbs/d) in shallow/medium/deep intervals
- X — Interval Closed or Venting Throughout the Period

SVE well open to venting

Site ST012 SVE System Equivalent JP-4 Degradation Based on Methane Removed





- Estimates through 27 Jun 2019
- Estimated JP-4 degradation as methane is in addition to JP-4 removal reported for SVE
- Thermal/Cat1 oxidizer changed from SVE to groundwater treatment end of Apr
- Flame oxidizer treating combined SVE and air stripper intermittently in Nov 2018 – Jan 2019
- Flame oxidizer replaced by catalytic oxidizer (Cat2) 7 Feb to 26 Feb 2019

LNAPL Monitoring Update (through 11 Jul)

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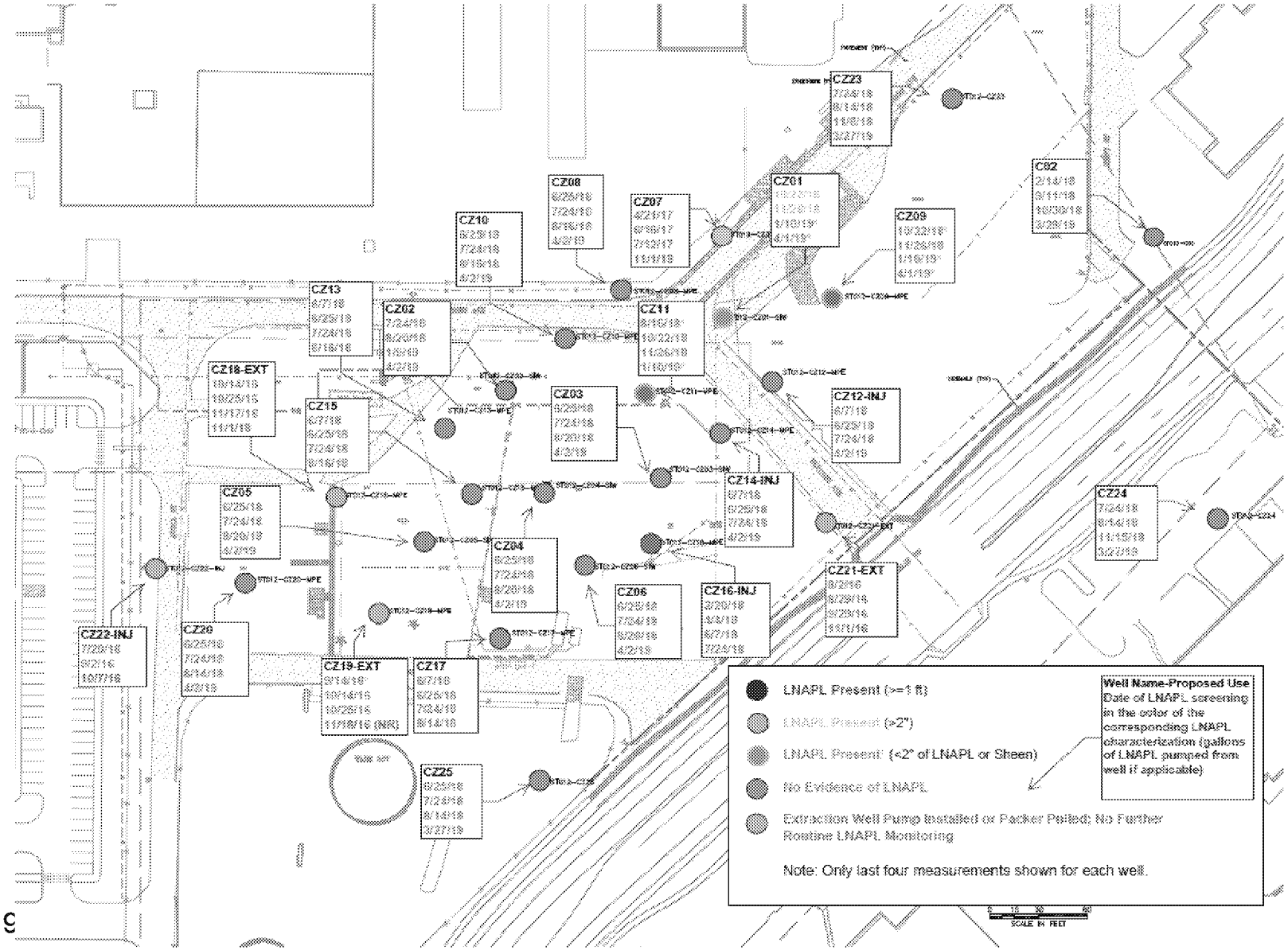
LNAPL Monitoring/Removal Status
Cobble Zone



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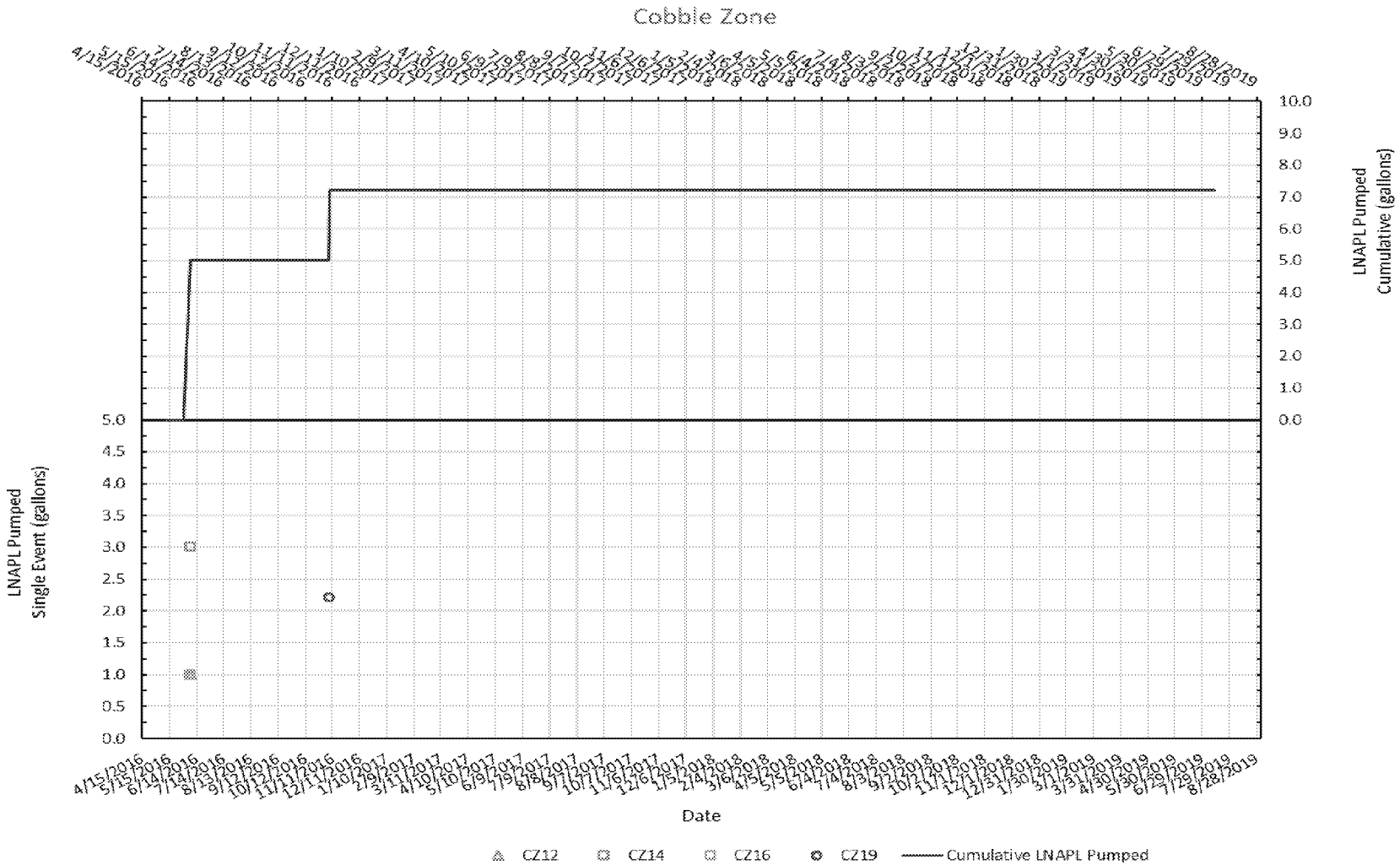
LNAPL Monitoring/Removal Status
Cobble Zone



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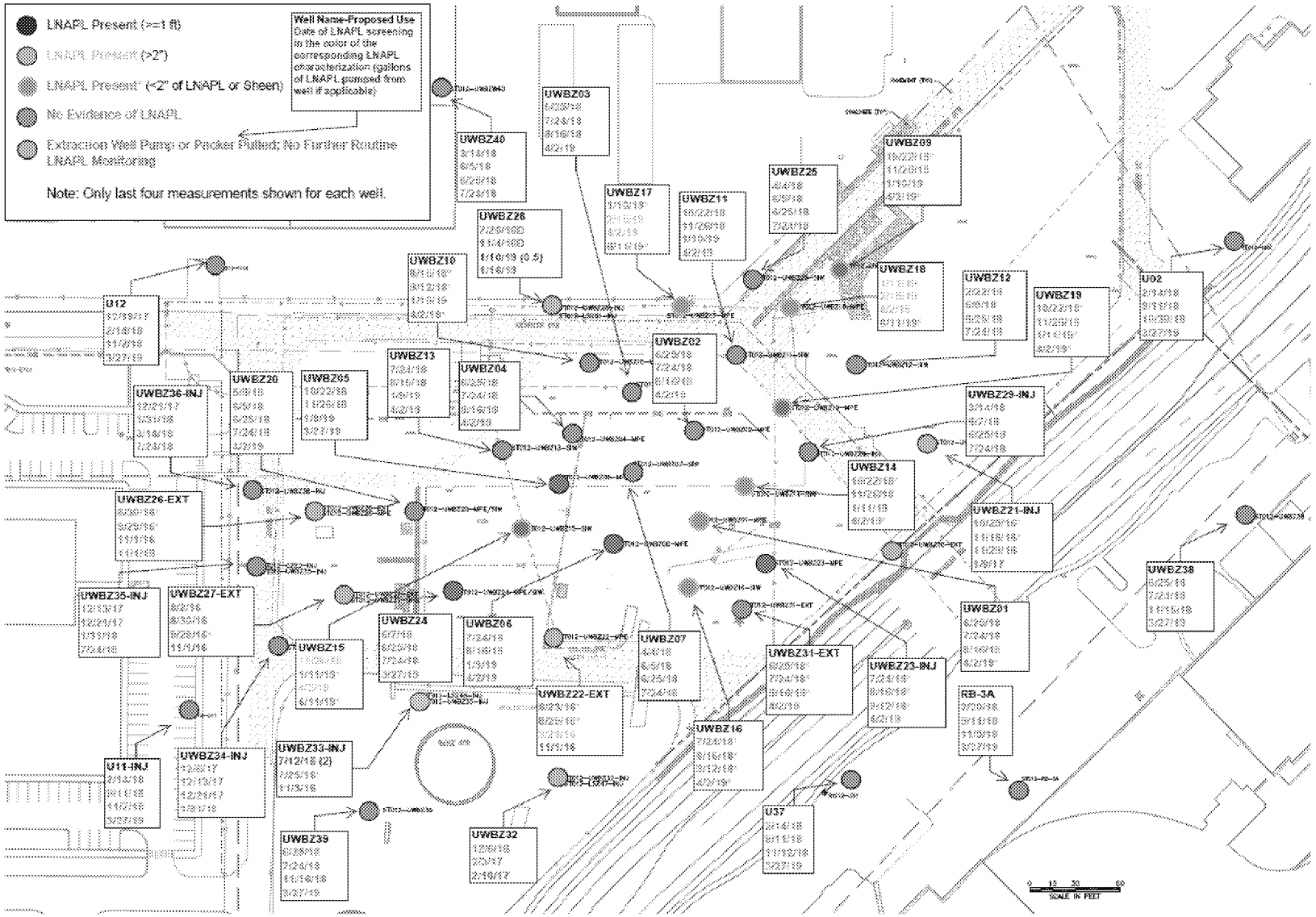
LNAPL Monitoring/Removal Status
Upper Water Bearing Zone



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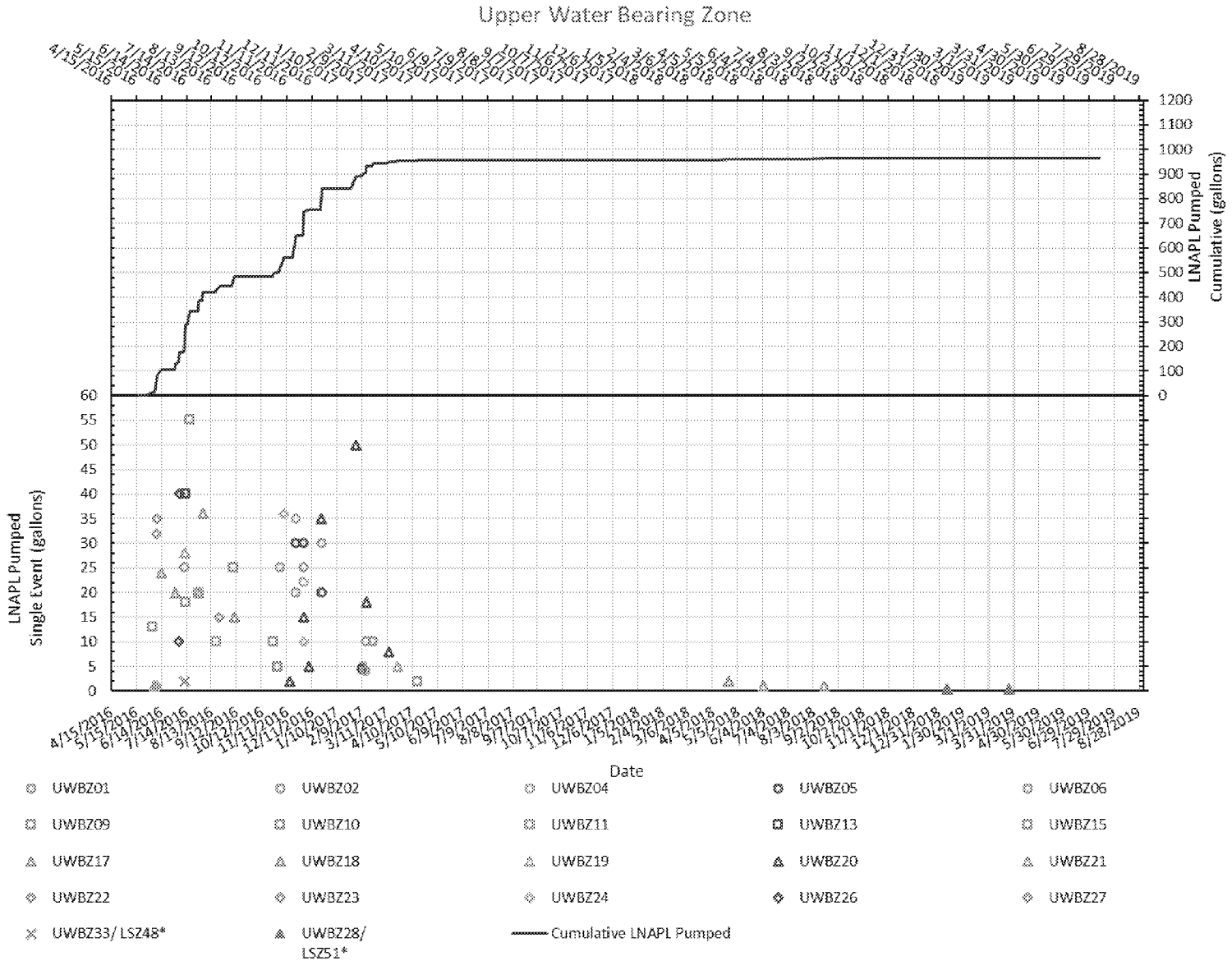
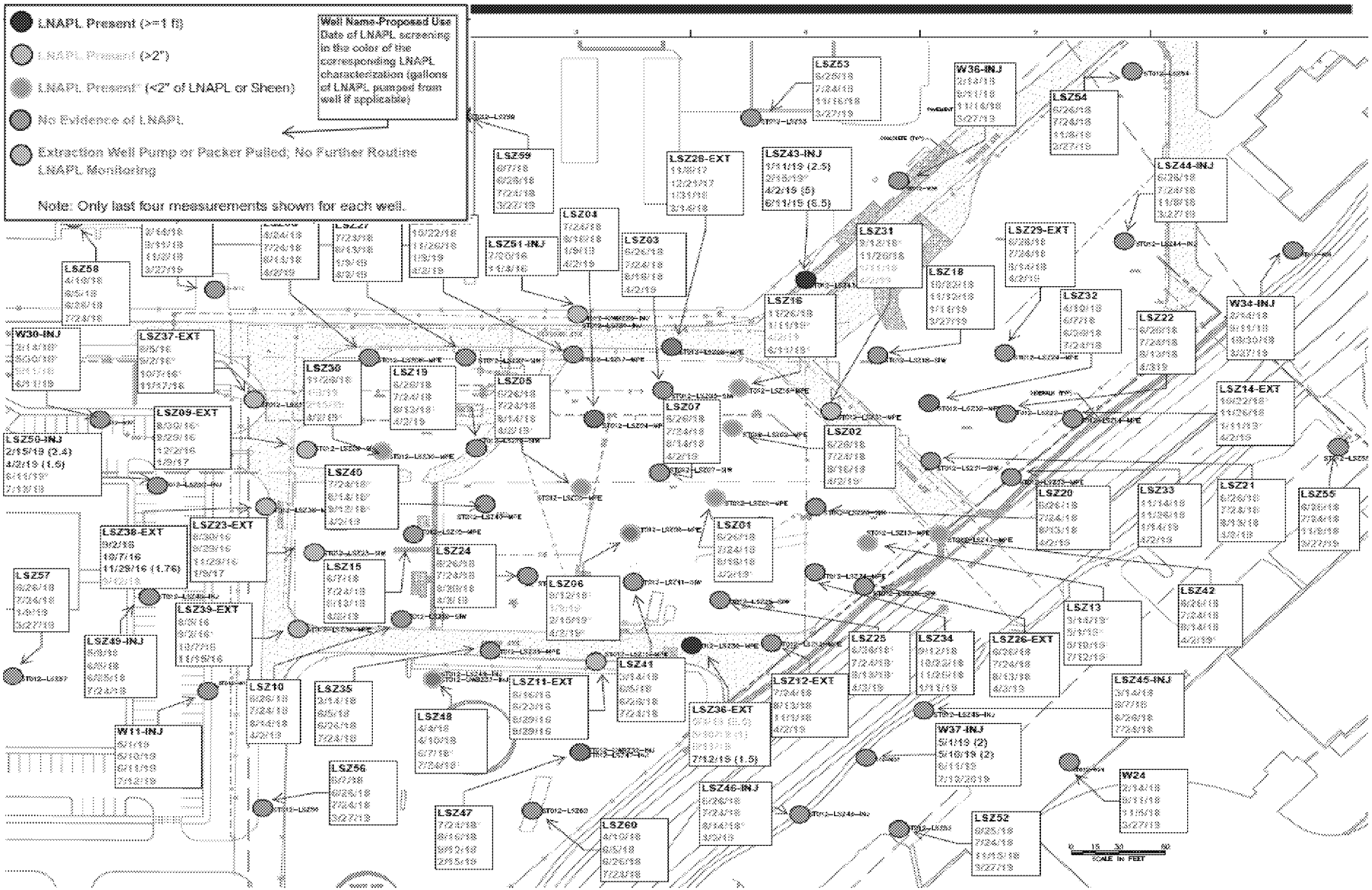
LNAPL Monitoring/Removal Status
Upper Water Bearing Zone



LNAPL Monitoring/Removal Status
Lower Saturated Zone



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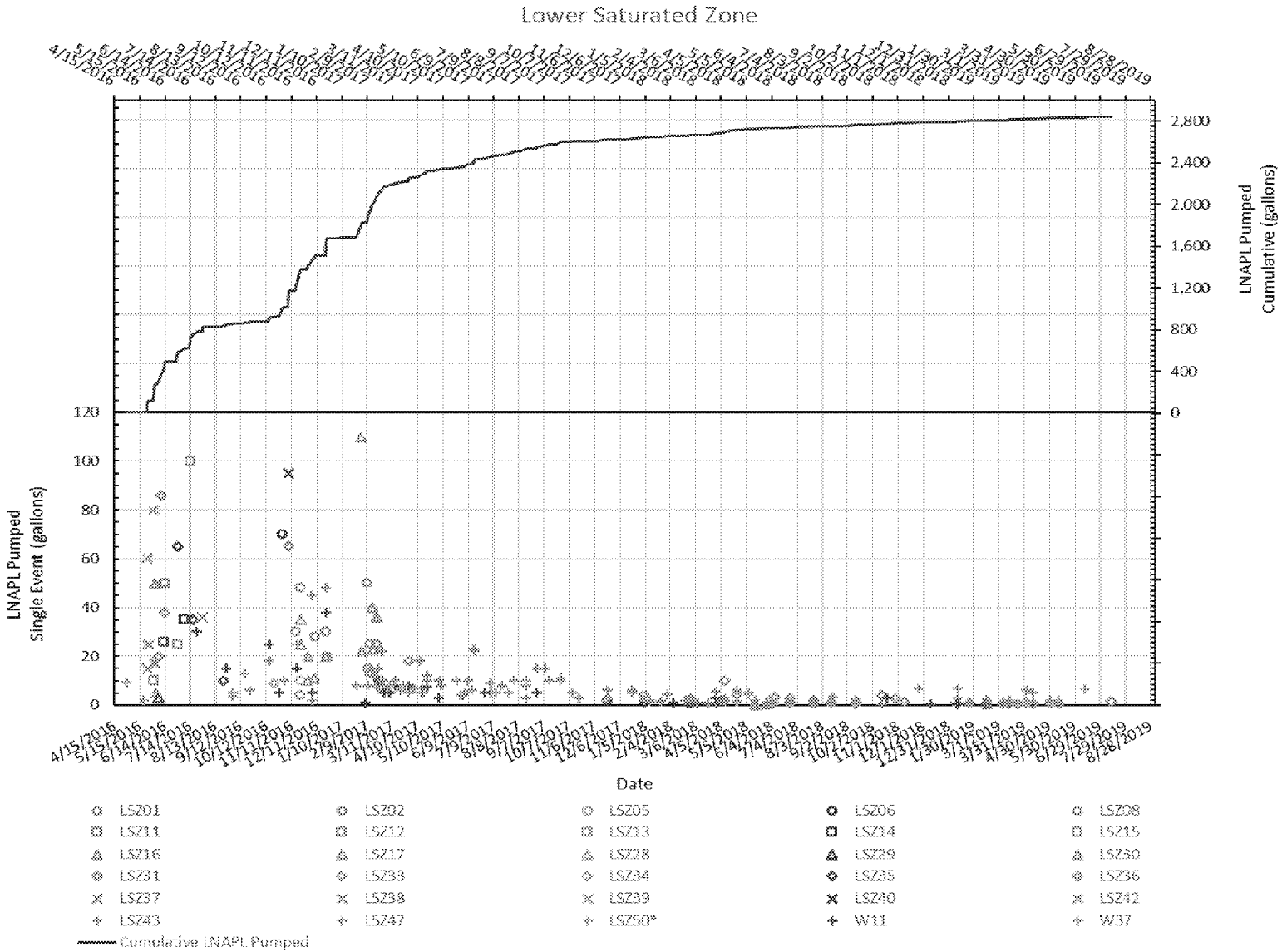
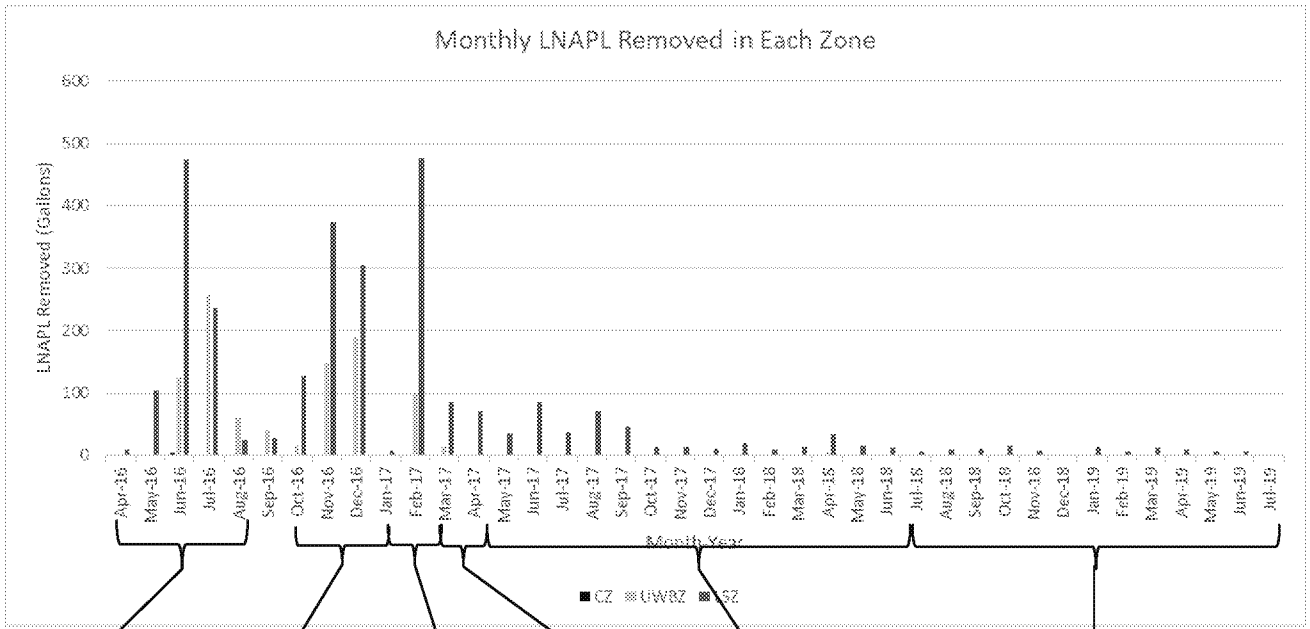
LNAPL Monitoring/Removal Status
Lower Saturated Zone



25 July 2019

ST012 LNAPL Monitoring/Removal Summary

- CZ – 7 gallons of LNAPL removed. None since Nov 2016
- UWBZ - 963 gallons of LNAPL removed. None since Apr update.
- LSZ - 2,841 gallons of LNAPL removed. 2 gallons removed since Jun update (LSZ36).



Removal following initial eductor removals

Removal following remaining eductor removals

Diminished removal due to pump failure

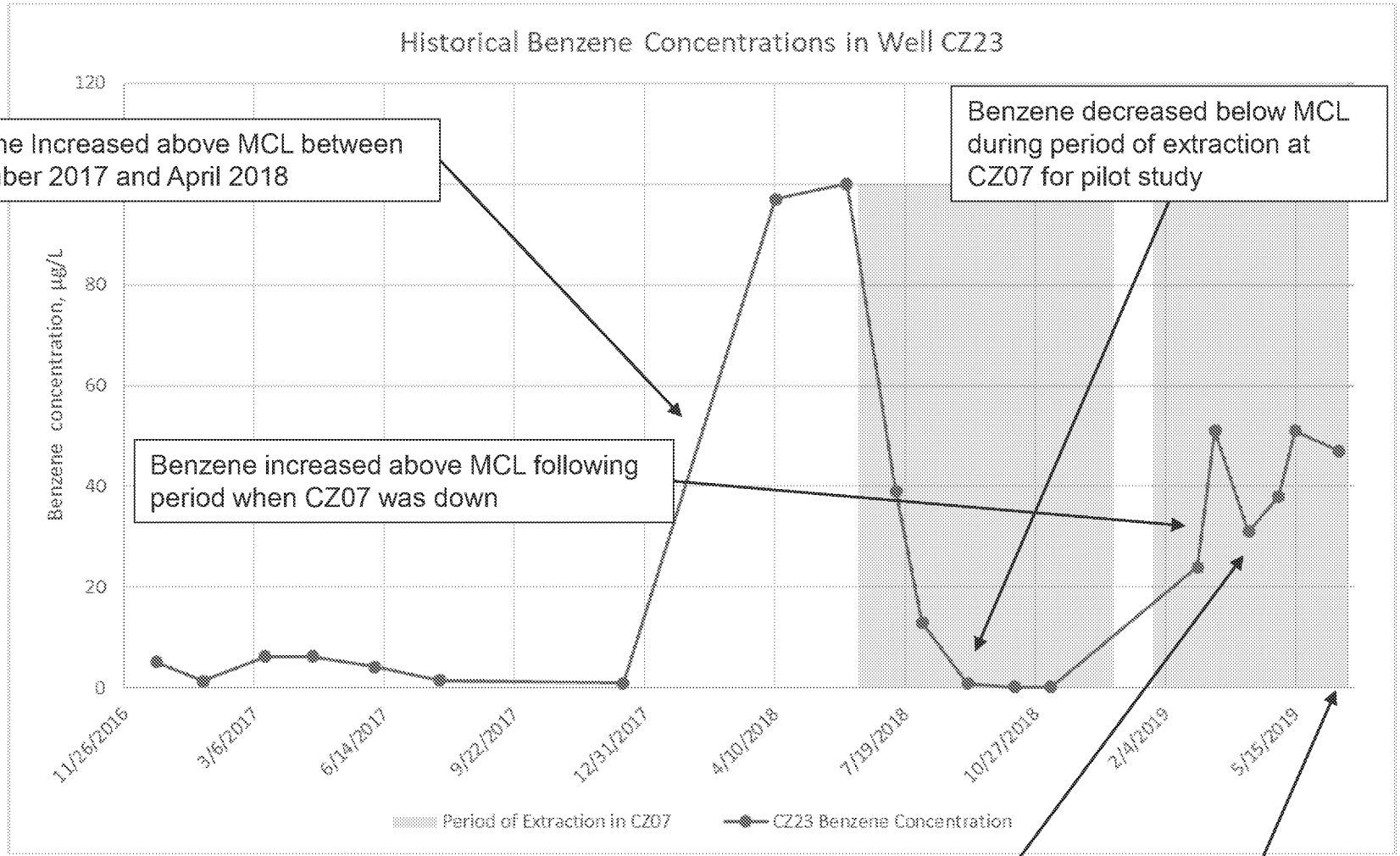
Recovery following pump replacement

<100 gal/mo

<20 gal/mo

Update on Benzene Concentration in ST012-CZ23 (includes preliminary results from 17 June 2019)

CZ23 Sampling Summary



Benzene Increased above MCL between December 2017 and April 2018

Benzene decreased below MCL during period of extraction at CZ07 for pilot study

Benzene increased above MCL following period when CZ07 was down

Benzene concentration has fluctuated from ~30 to 50 µg/L since restoration of pumping from CZ07

Extraction at CZ23 initiated 11 Jul 2019

CZ23 Actions

- Installation of extraction pipeline and electrical conduit/wire between existing header and CZ23 has been completed
- Electric submersible pump installed in CZ23 and well pump tied into existing extraction and treatment system
- CZ23 pumping initiated on 11 Jul 2019
- CZ23 sampled on 12 Jul 2019

Preliminary Second Quarter Groundwater Sampling Results

Sampling Summary

- **Sampling included:**
  - Extraction Wells
  - Injection Wells (where injections took place)
  - Monitoring Wells (in areas where injections took place)
  - Perimeter Wells
- **General Observations**
  - Increase in benzene at perimeter well UWBZ38 slightly above MCL
  - Highest sulfate increases in western (upgradient) LSZ. Some sulfate increases in western UWBZ.

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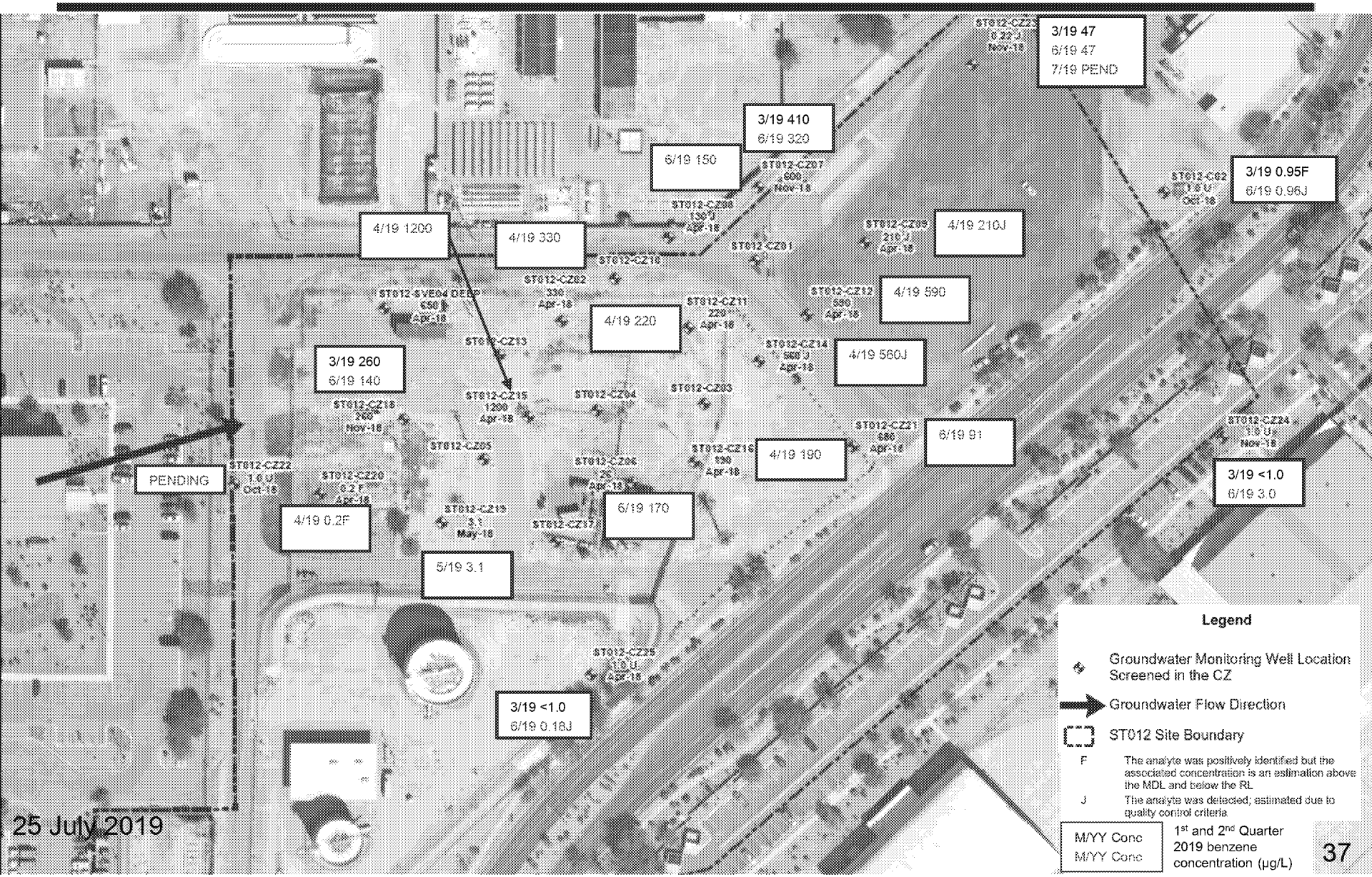
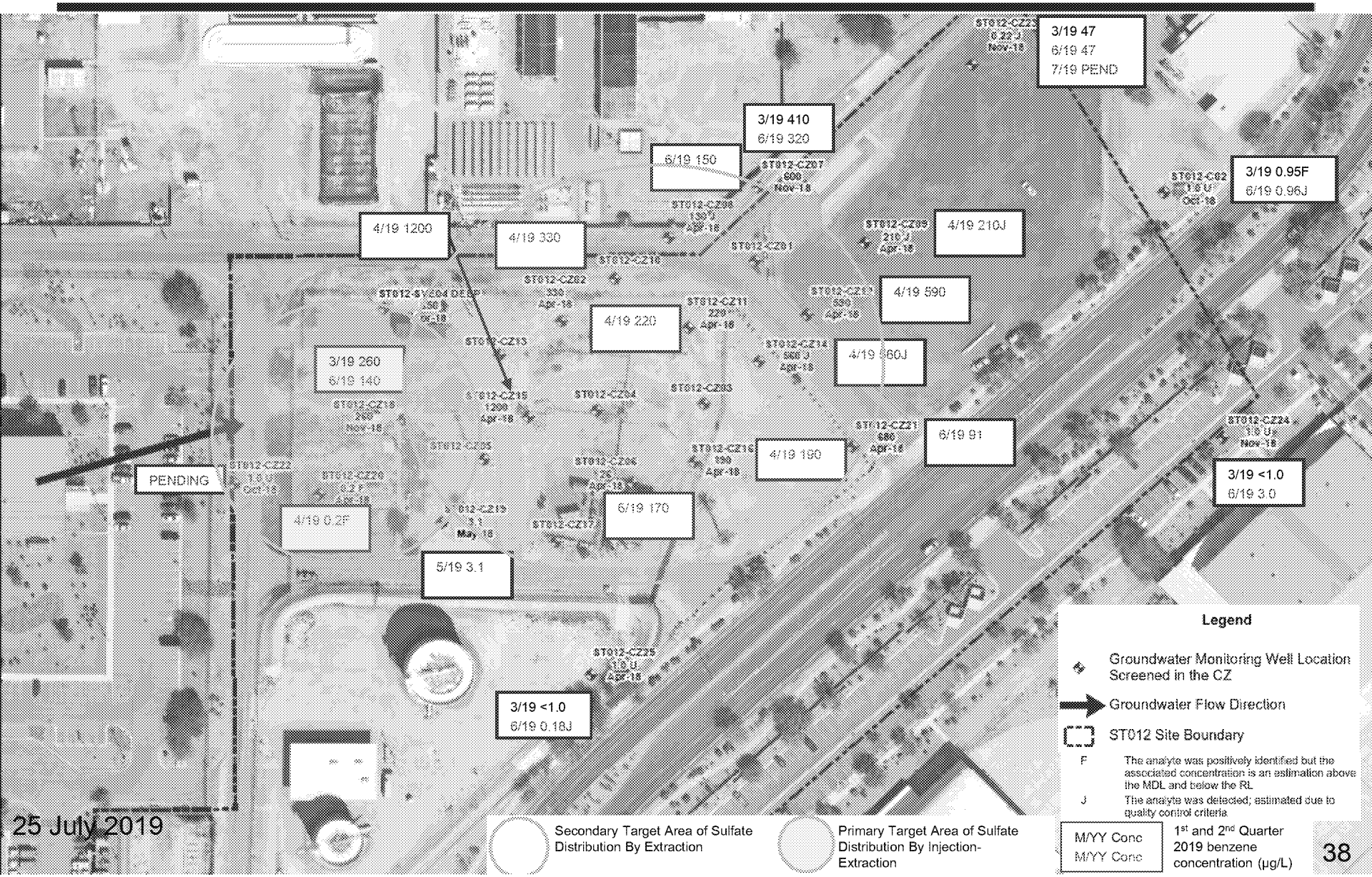
Site ST012 Benzene (µg/L) in CZ

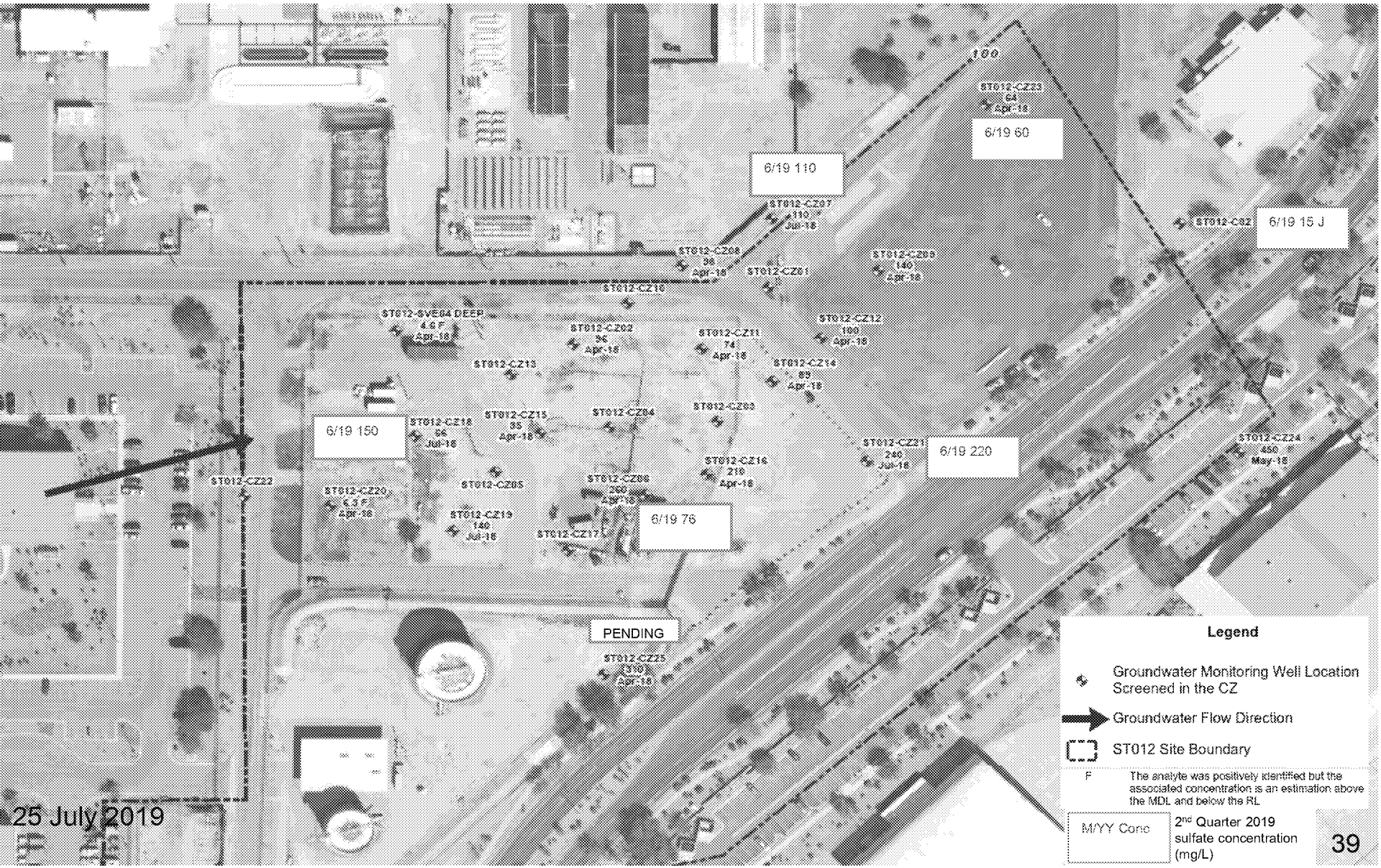


Site ST012 Benzene (µg/L) in CZ with Target Sulfate Distribution Areas

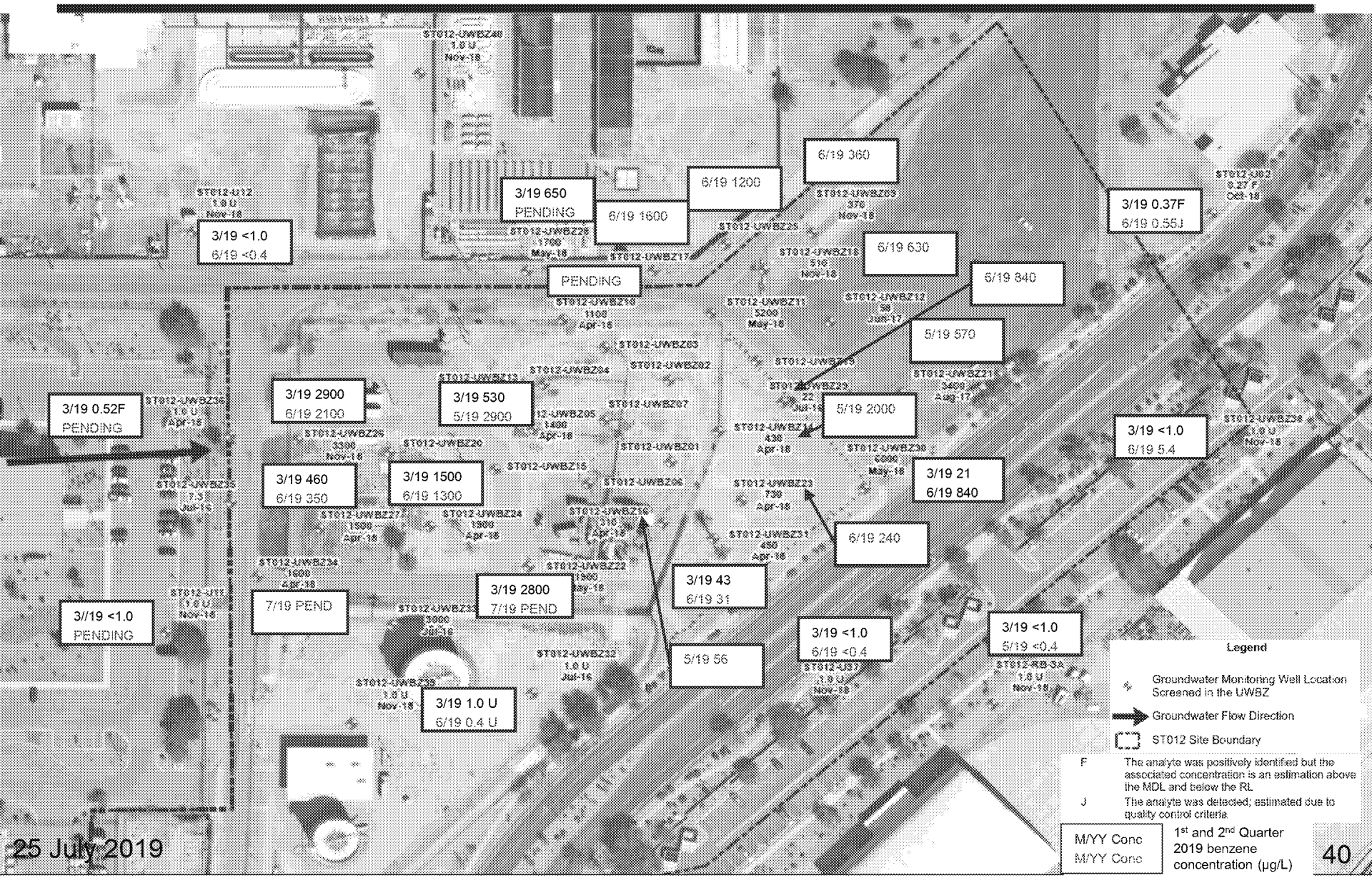


25 July 2019

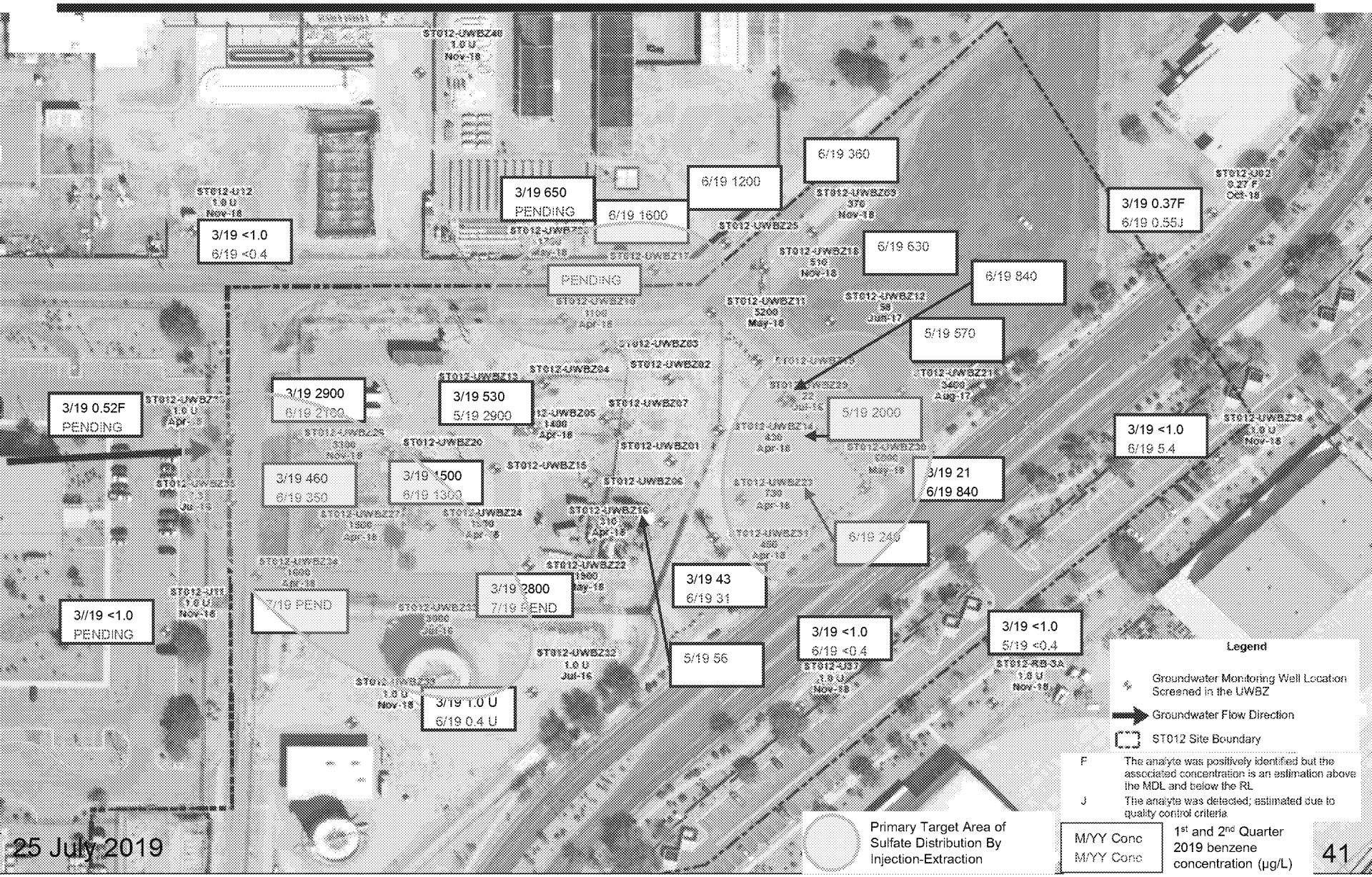
Site ST012 Sulfate (mg/L) in CZ



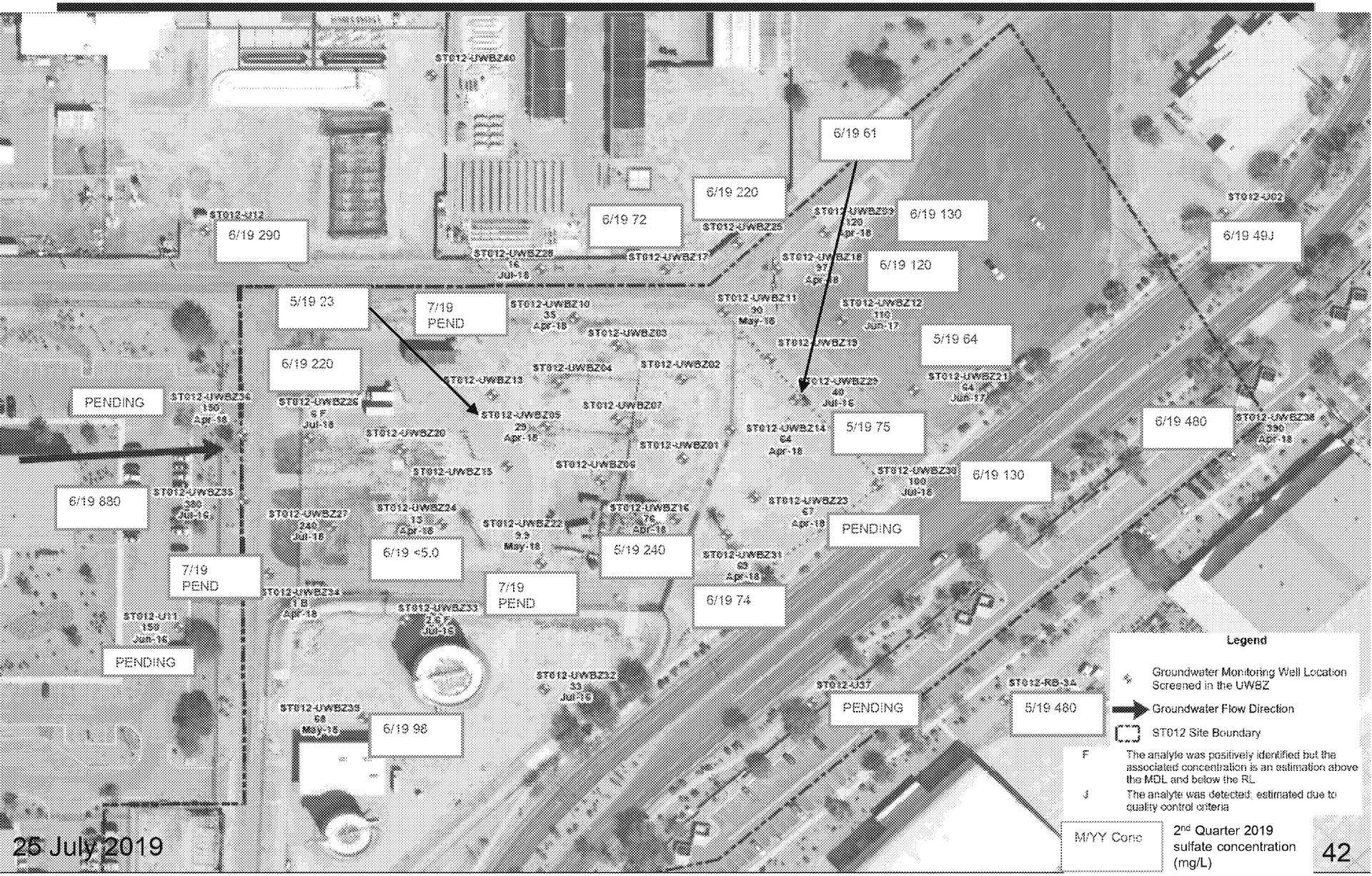
Site ST012 Benzene (µg/L) in UWBZ



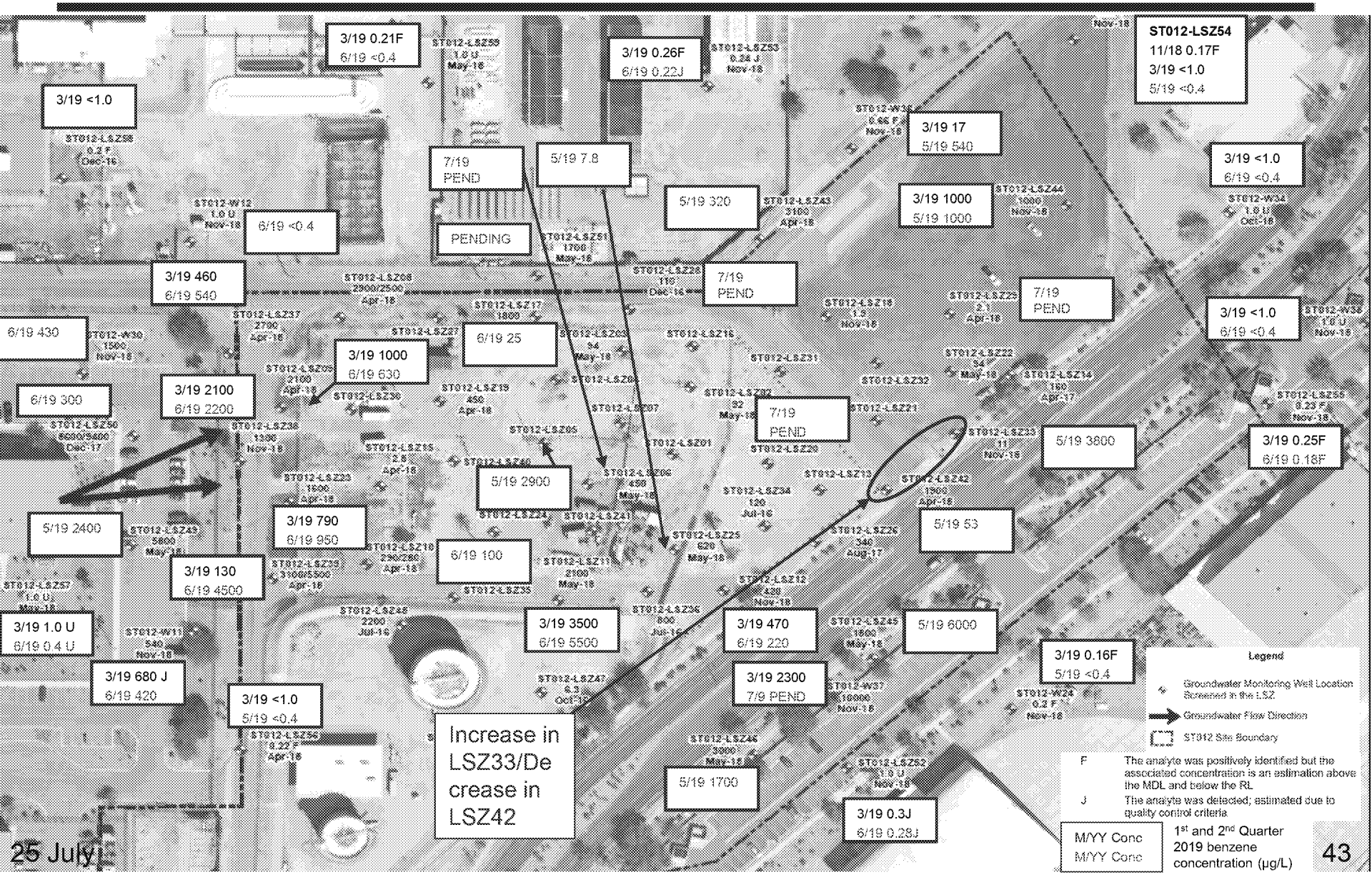
Site ST012 Benzene (µg/L) in UWBZ with Target Sulfate Distribution Areas



Site ST012 Sulfate (mg/L) in UWBZ



Site ST012 Annual Benzene (µg/L) in LSZ



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Site ST012 Annual Benzene (µg/L) in LSZ

3/19 0.21F
6/19 <0.4

3/19 <1.0

3/19 0.26F
6/19 0.22J

ST012-LSZ54
11/18 0.17F
3/19 <1.0
5/19 <0.4

3/19 17
5/19 540

3/19 <1.0
6/19 <0.4

7/19
PEND

5/19 7.8

6/19 <0.4

PENDING

5/19 320

3/19 1000
5/19 1000

3/19 460
5/19 540

7/19
PEND

7/19
PEND

3/19 <1.0
6/19 <0.4

6/19 430

6/19 25

3/19 1000
6/19 630

3/19 2100
6/19 2200

6/19 360

7/19
PEND

5/19 3800

3/19 0.25F
6/19 0.18F

5/19 2900

5/19 2400

3/19 790
6/19 950

5/19 53

3/19 130
6/19 4500

6/19 100

3/19 1.0 U
6/19 0.4 U

3/19 3500
6/19 5500

3/19 470
6/19 220

5/19 6000

3/19 0.16F
5/19 <0.4

3/19 680 J
6/19 420

3/19 2300
7/19 PEND

3/19 <1.0
5/19 <0.4

Increase in LSZ33/Decrease in LSZ42

5/19 1700

3/19 0.3J
6/19 0.28J

Legend

Groundwater Monitoring Well Location Screened in the LSZ

Groundwater Flow Direction

ST012 Site Boundary

F The analyte was positively identified but the associated concentration is an estimation above the MDL and below the RL

J The analyte was detected; estimated due to quality control criteria

M/YY Conc
M/YY Conc

1st and 2nd Quarter 2019 benzene concentration (µg/L)

Primary Target Area of

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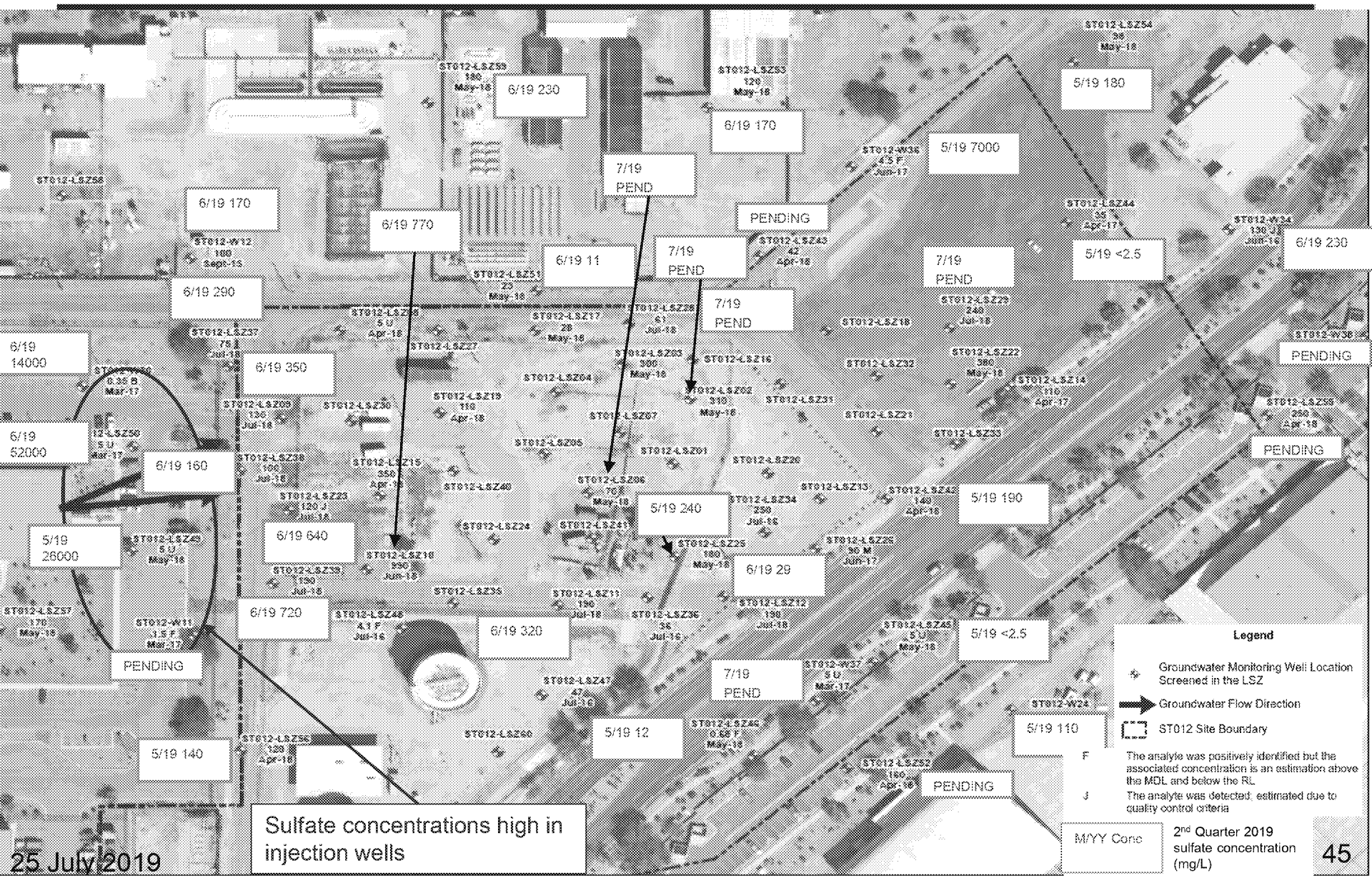
Site ST012 Annual Sulfate (µg/L) in LSZ



Sulfate concentrations high in injection wells

Pilot Study Injection/Extraction Update

Site ST012 Extraction System Performance

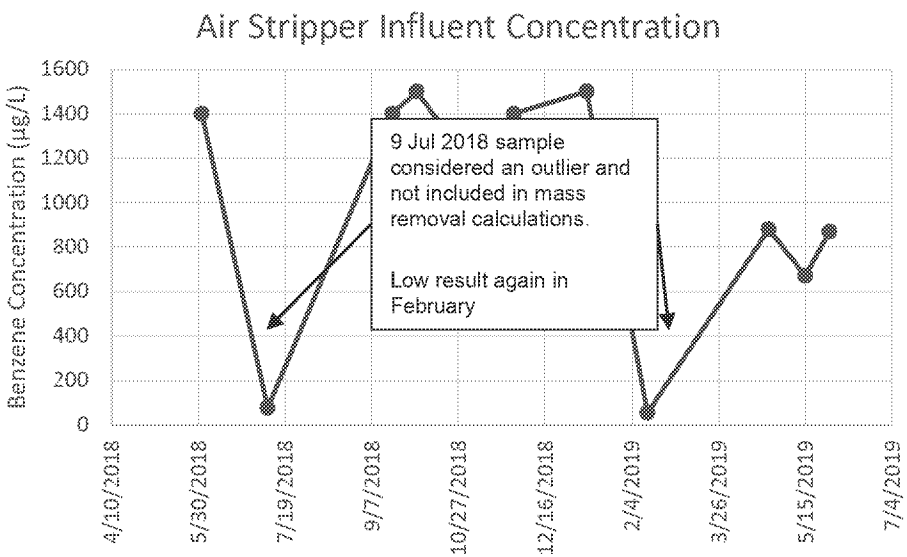
Extraction Well	Recent Instantaneous Measured Extraction Rate gpm	Calculated Average Extraction Rate in Period gpm	Maximum Temperature °F	Most Recent Temperature °F	Cumulative Extraction gallons	Note
ST012-CZ07	5	5.6	175	144	3,133,146	
ST012-CZ18	10.6	11.0	136	124	2,168,082	
ST012-CZ19						Eliminated as an extraction well by FVM#7
ST012-CZ21	12		150	142	304,162	Totalizer reading suspect
CZ Subtotal					5,605,391	
ST012-UWBZ21		0.0	162	90	591,193	Pneumatic pump
ST012-UWBZ22	10.1	0.0	146	124	416,909	Totalizer reading suspect
ST012-UWBZ26	4.4	3.9	133	120	2,179,293	
ST012-UWBZ27			128	94	129,197	Extraction stopped due to sulfate presence
ST012-UWBZ30		0.0	172	134	1,397,184	Pneumatic pump, pumping intermittently
UWBZ Subototal*					5,879,681	
ST012-LSZ09	4.5	2.8	140	136	1,988,372	
ST012-LSZ11	14.8	11.8	139	100	1,649,544	Flow meter troubleshooting
ST012-LSZ12	4.8	4.6	130	108	1,441,515	
ST012-LSZ23	9.6	9.2	113	96	3,204,689	
ST012-LSZ28			162		18,899	Eliminated as an extraction well by FVM#7
ST012-LSZ29			>170		17	Eliminated as an extraction well by FVM#7
ST012-LSZ37	13.8	13.0	132	92	4,781,224	
ST012-LSZ38	---	1.3	160	90	741,687	
ST012-LSZ39			92	78	1,250,933	Extraction stopped due to sulfate presence
ST012-UWBZ28/LSZ51	6.9	6.0	146	128	2,331,810	
LSZ Subtotal*					16,242,784	
Total of Wells		69.3			27,727,856	
Treatment System		38.7			20,334,589	

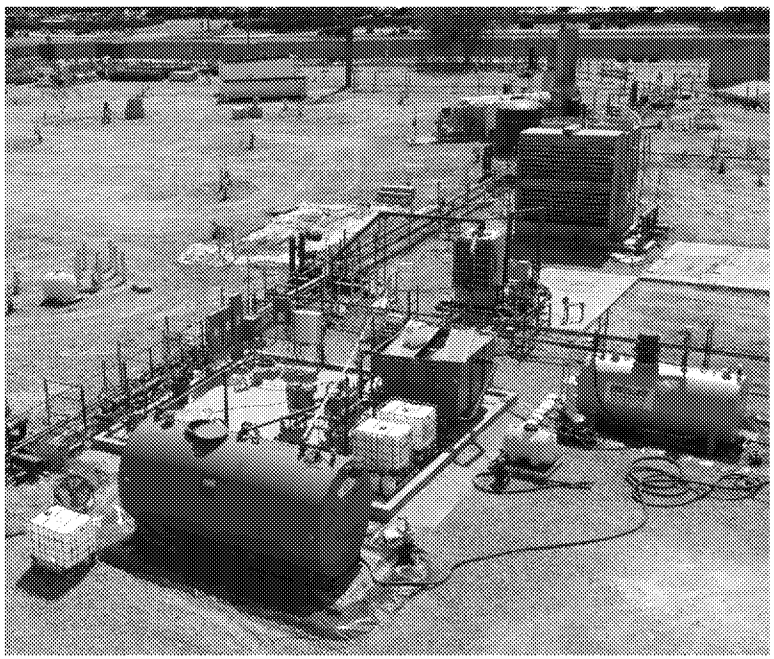
Data is preliminary

* Includes 1/2 of ST012-UWBZ28/LSZ51

Site ST012 Extraction System Performance

- No LNAPL has been recovered since extraction started up
- All extraction pumps operating
- Extraction at CZ23 added
- Benzene air stripper influent at 870 µg/L for May sample





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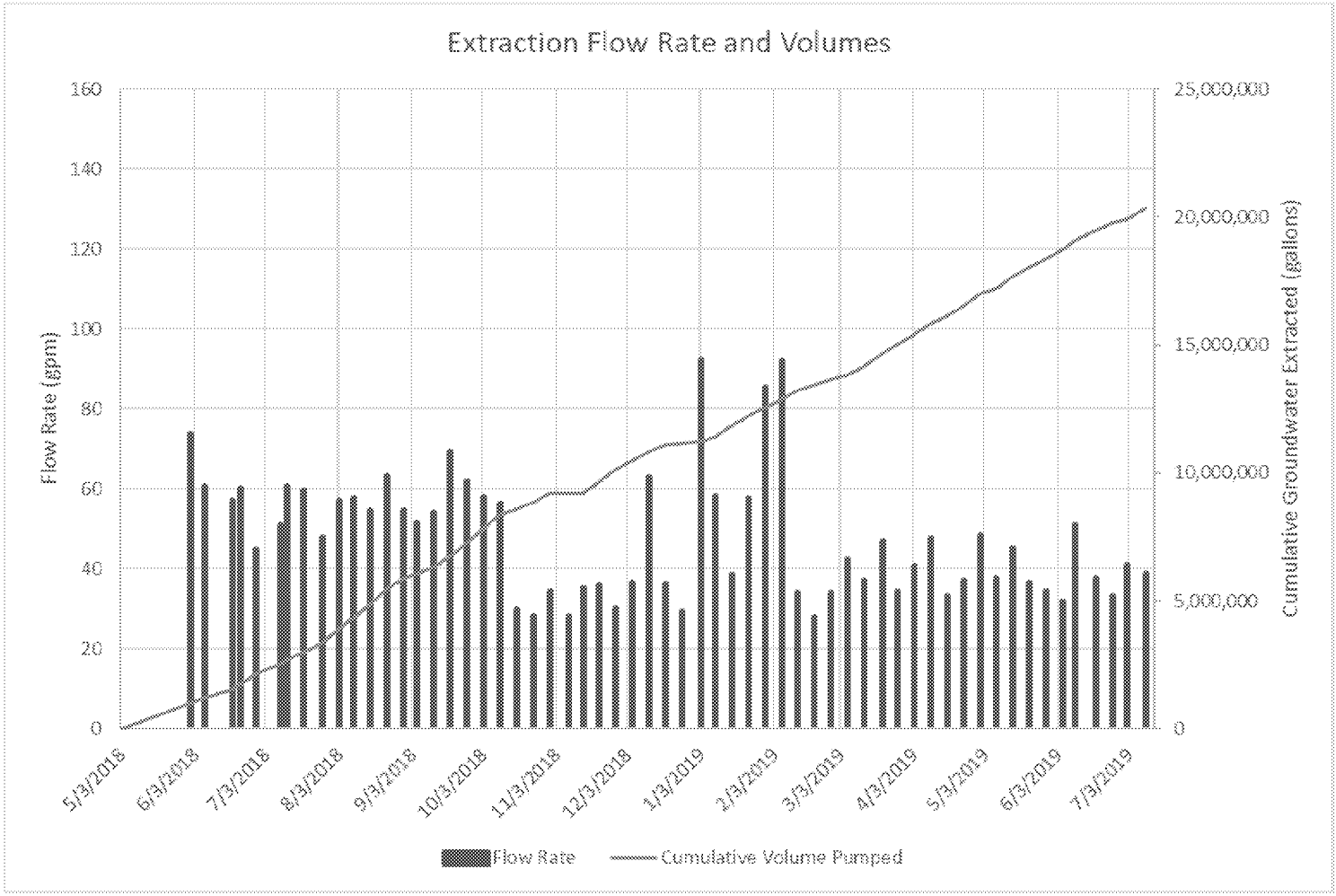
Site ST012 Extraction System Performance

- **Overall Extraction Rates and Cumulative Volume Extracted**



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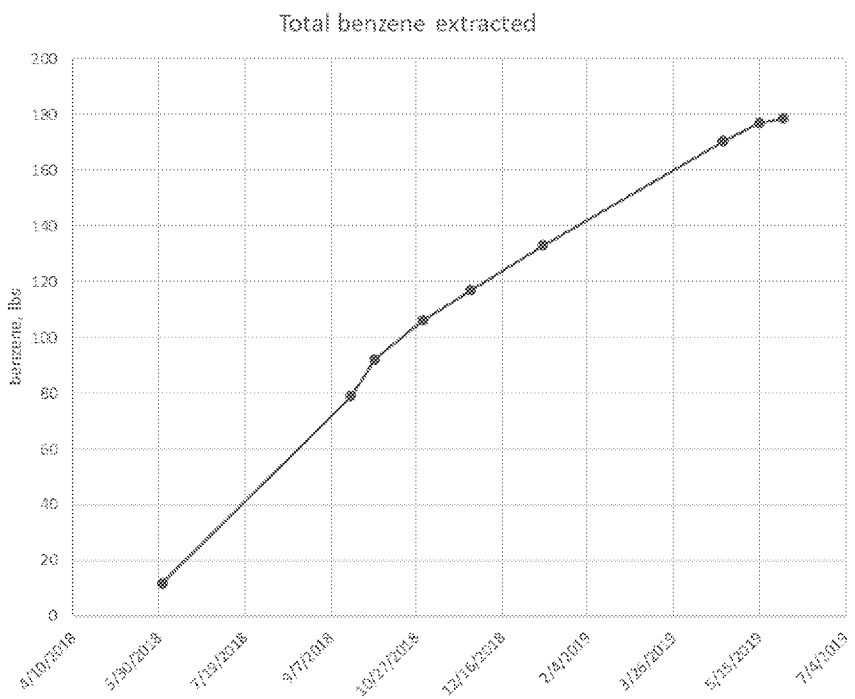
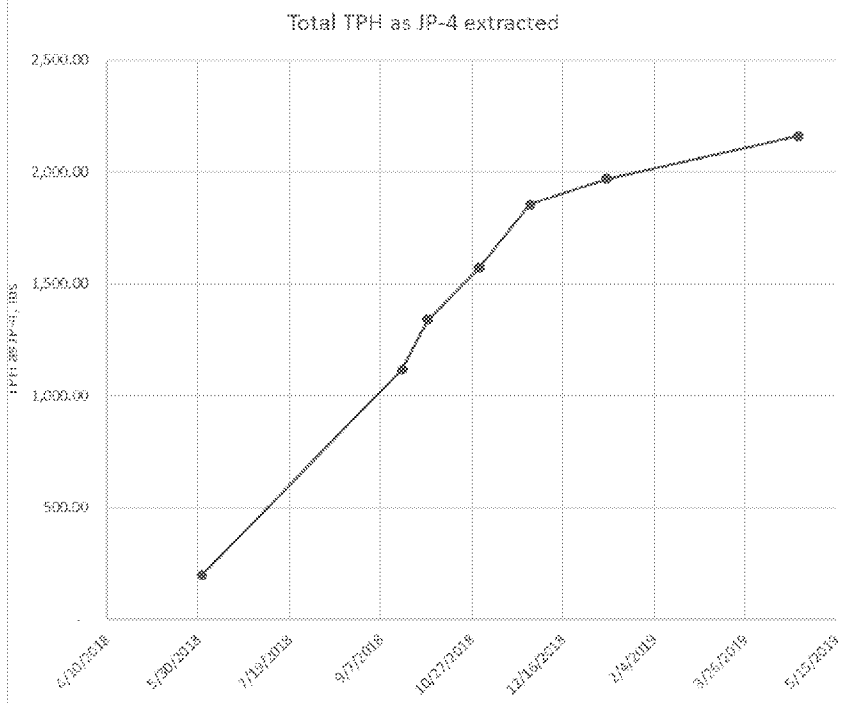
Site ST012 Extraction System Performance

- **Estimated Mass Removal by Extraction**
- **Benzene and TPH analytical results for July sample are still pending**





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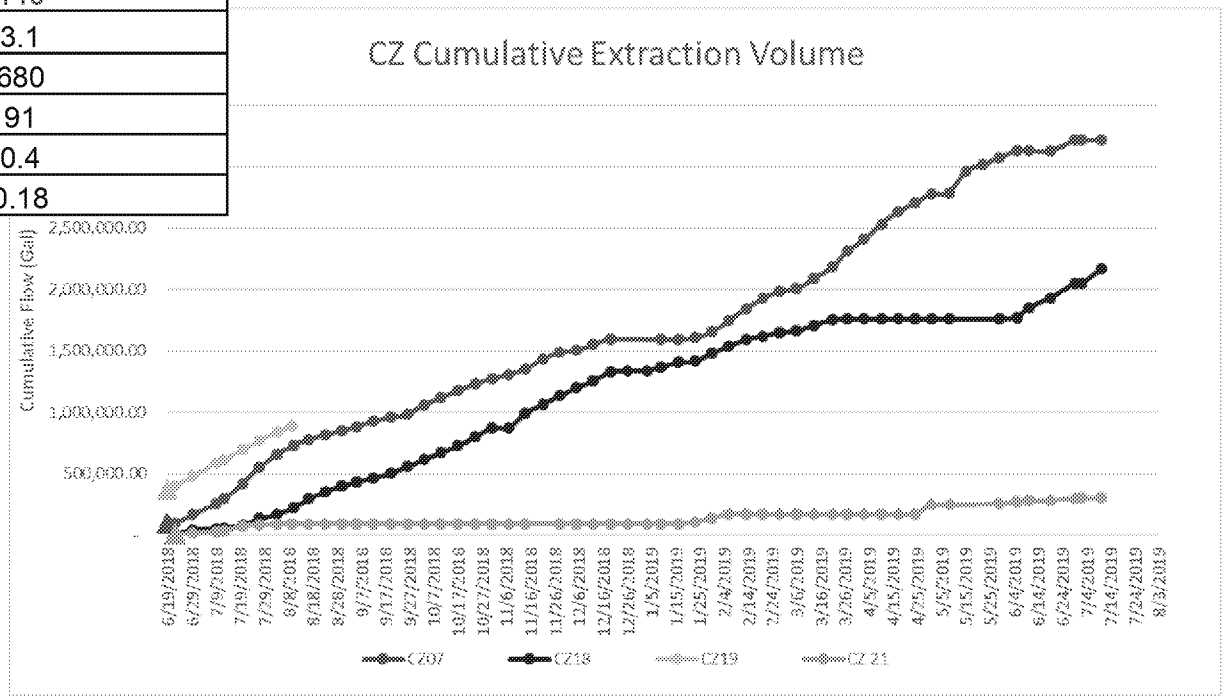
Cumulative Extraction Volume and Analytical Data by Well - Cobble Zone

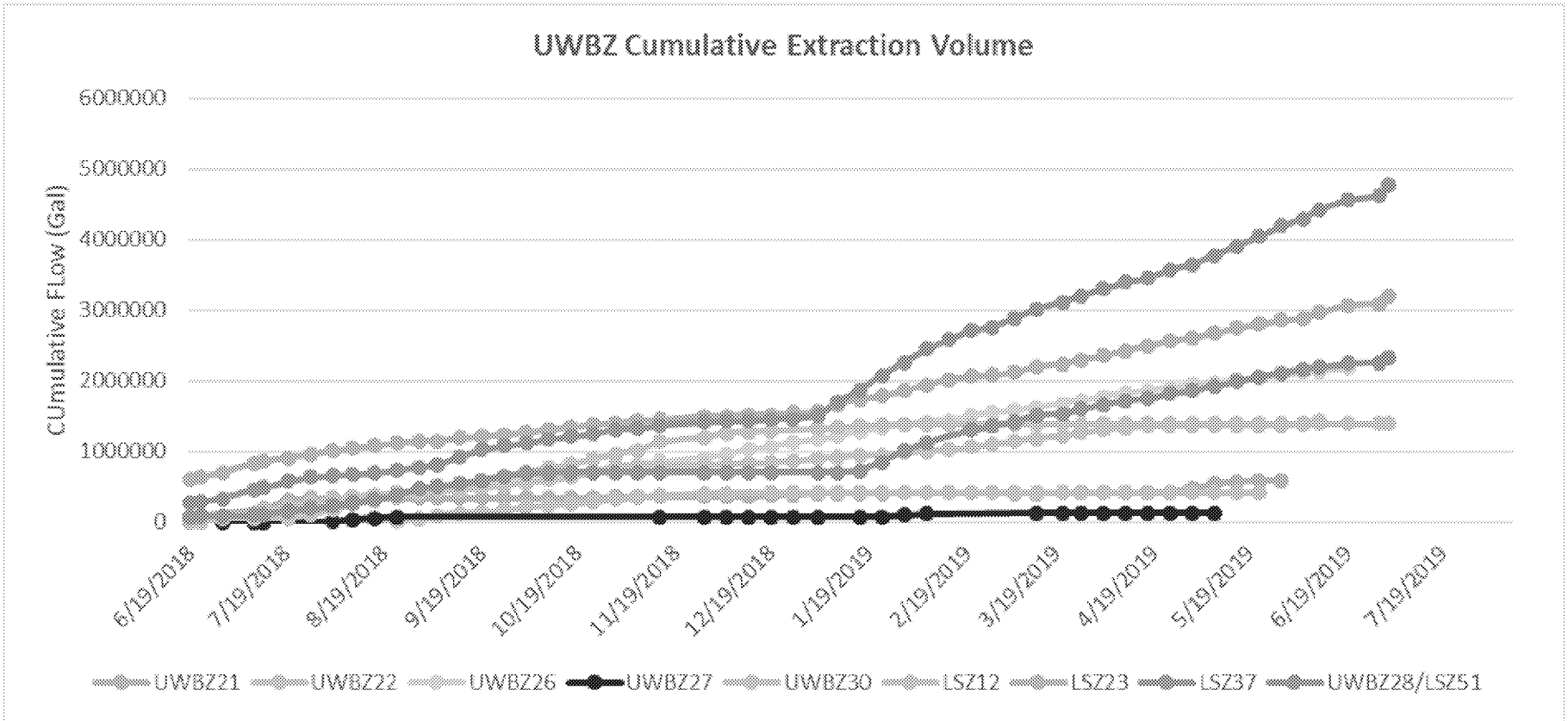
Well ID	Date Sampled	Benzene Concentration, µg/L
ST012-CZ07	4/30/2018	230
	11/1/2018	600
	2/11/2019	410
	6/18/2019	320
ST012-CZ18	4/3/2018	1200
	11/1/2018	260
	2/11/2019	260
	6/14/2019	140
ST012-CZ19	5/9/2018	3.1
ST012-CZ21	4/12/2018	680
	6/17/2019	91
ST012-CZ25	3/25/2019	0.4
	6/18/2019	0.18

- Most recent baseline and operating (when available) benzene analytical result listed (Jun 2019 added)



ED_005025_00014627-00051

Cumulative Extraction Volume and Analytical Data by Well - Upper Water Bearing Zone

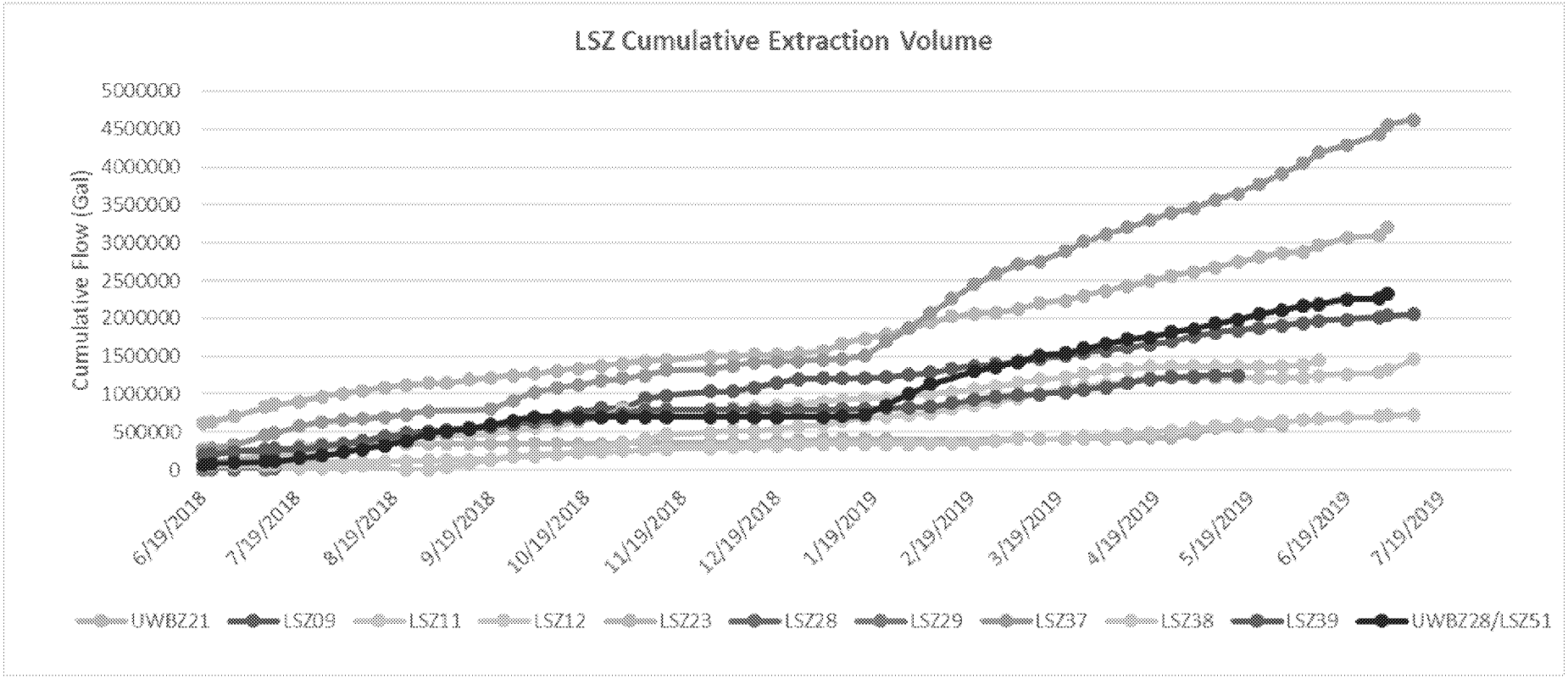


ED_005025_00014627-00052

Cumulative Extraction Volume and Analytical Data by Well - Upper Water Bearing Zone

Well ID	Date Sampled	Benzene Concentration, µg/L
ST012-UWBZ14	5/23/2019	2000
ST012-UWBZ21	8/9/2017	3400
ST012-UWBZ22	5/9/2018	1900
	2/11/2019	2800
ST012-UWBZ26	4/3/2018	3500
	4/3/2018	3700
	2/12/2019	2900
	6/14/2019	2100
ST012-UWBZ27	4/3/2018	1500
	2/12/2019	460
	6/14/2019	350
ST012-UWBZ28/LSZ51	5/9/2018	1700
	3/25/2019	650
ST012-UWBZ30	5/9/2018	6000
	2/13/2019	21
	6/14/2019	720
ST012-UWBZ39	3/25/19	0.4
	6/4/2019	0.4

Cumulative Extraction Volume by Well
Lower Saturated Zone



ED_005025_00014627-00054

Analytical Data by Extraction Well
Lower Saturated Zone

Well ID	Date Sampled	Benzene Concentration, µg/L
ST012-LSZ09	4/3/2018	2100
	2/12/2019	1000
	6/14/2019	630D
ST012-LSZ11	5/9/2018	2100
	2/12/2019	3500
ST012-LSZ12	5/9/2018	1400
	11/1/2018	420
	2/12/2019	470
	6/19/2019	220
ST012-LSZ23	4/3/2018	1600
	2/12/2019	790
	6/14/2019	950
ST012-LSZ28	12/1/2016	110
ST012-LSZ29	4/10/2018	2.1
ST012-LSZ33	5/30/2019	3800
ST012-LSZ37	4/12/2018	2700
	2/12/2019	460
	6/14/2019	540
ST012-LSZ38	4/3/2018	3000
	11/1/2018	1300
	2/12/2019	2100
	6/14/2019	2200
ST012-LSZ39	4/12/2018	3100/5500
	2/12/2019	130
	6/17/2019	4200
ST012-LSZ43	5/24/2019	320
ST012-LSZ49	5/24/2019	2400
ST012-UWBZ28/LSZ51	5/9/2018	1700
	3/25/2019	650
ST012-LSZ53	3/25/2019	0.26
ST012-LSZ56	5/23/2019	0.4

Site ST012 Injection Progress

- Injections continued in Jun-Jul
- 245 tons injected through 11 Jul 2019 (322 tons planned through subphase 2)
- 74 tons injected since last update
- Subphase 2 injections nearly complete
- Initiating subphase 3 injections soon

Date	Volume (gallons)	Number of Bags of Sulfate Added	Calculated Na2SO4 Conc. g/L	Calculated SO4 Conc. g/L	Locations(% of volume if multiple locations)
6/6/2019	4,000	2	113	76	
6/7/2019	8,000	4	113	76	---
6/10/2019	6,000	3	113	76	UWBZ34 (3.9 tons), UWBZ36 (3.0 tons)
6/14/2019	4,000	2	113	76	UWBZ34 (1.3 tons), UWBZ36 (1.5 tons)
6/17/2019	6,000	3	113	76	
6/17/2019	6,000	3	113	76	UWBZ34 (1.5 tons), UWBZ36 (1.5 tons)
6/18/2019	6,000	3	113	76	UWBZ34 (2.0 tons), UWBZ37 (0.7 tons)
6/19/2019	6,000	3	113	76	UWBZ34 (2.9 tons)
6/20/2019	6,000	3	113	76	
6/20/2019	6,000	3	113	76	UWBZ34 (2.7 tons), UWBZ35 (1.2 tons)
6/21/2019	4,000	2	113	76	UWBZ35 (4.0 tons)
6/24/2019	8,000	4	113	76	UWBZ35 (1.9 tons)
6/25/2019	6,000	3	113	76	UWBZ35 (3.3 tons), W11 (1.7 tons)
6/26/2019	8,000	4	113	76	UWBZ35 (1.7 tons), W11 (1.6 tons)
6/27/2019	8,000	4	113	76	UWBZ35 (1.5 tons), W11 (14.2 tons)
6/28/2019	4,000	2	113	76	UWBZ35 (0.9 tons), W11 (0.8 tons)
7/1/2019	6,000	3	113	76	UWBZ35 (1.8 tons)
7/2/2019	8,000	4	113	76	UWBZ35 (2.0 tons)
7/3/2019	4,000	2	113	76	LSZ47 (0.2 tons), LSZ48 (0.8 tons)
7/8/2019	8,000	4	113	76	LSZ47 (0.3 tons), LSZ48 (1.5 tons)
7/9/2019	8,000	4	113	76	LSZ47 (5.3 tons), LSZ48 (1.0 tons)
7/10/2019	8,000	4	113	76	LSZ47 (0.2 tons), LSZ48 (1.0 tons)
7/11/2019	9,900	5	114	77	LSZ47 (2.3 tons), LSZ48 (3.6 tons)

Note:
1. blue text indicates subphase 2 injections.

Site ST012 Sulfate Field Screening

- **Sulfate field tests completed ~weekly in wells in proximity to injections**
- **Extraction pumps turned off in UWBZ27 and LSZ39 in response to obtaining adequate sulfate concentration in groundwater**
- **Sampled each extraction well after shutdown for baseline post extraction**

Parameter	UWBZ27	LSZ39
Benzene (µg/L)	350	4,200
Sulfate (mg/L)	880	720
SRB Bart Test Kit (cfu/ml)	~27,000	~27,000

Site ST012 Sulfate Field Screening

Date	Sulfate Concentration (mg/L)																					
	CZ02	CZ07	CZ20	CZ21	UWBZ15	UWBZ21	UWBZ22	UWBZ24	UWBZ26	UWBZ27	UWBZ28/LSZ51	UWBZ30	LSZ09	LSZ10	LSZ11	LSZ12	LSZ23	LSZ35	LSZ37	LSZ38	LSZ39	LSZ47
12/17/2018	---	---	---	---	---	---	30	---	---	15	---	---	---	---	---	---	---	---	---	---	---	---
12/21/2018	---	---	---	---	---	---	45	---	---	30	---	---	---	---	---	---	---	---	---	---	---	---
12/26/2018	---	---	---	---	---	---	146	---	---	>150	---	---	---	---	---	---	---	---	---	---	---	---
1/15/2019	---	---	---	---	---	---	45	---	---	71	---	---	---	---	---	---	---	---	---	---	---	---
1/18/2019	---	---	---	---	---	---	40	---	---	57	---	---	---	---	---	---	---	---	---	---	---	---
1/21/2019	---	---	---	---	---	---	38	---	---	66	---	---	---	---	---	---	---	---	---	---	---	---
1/24/2019	---	---	---	---	---	---	41	---	---	48	---	---	---	---	---	---	---	---	---	---	---	---
1/25/2019	---	---	---	---	---	---	250	---	---	50	---	---	---	---	---	---	---	---	---	---	---	---
1/28/2019	---	---	---	---	---	---	10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1/29/2019	---	---	---	---	---	---	35	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1/31/2019	---	---	---	---	---	---	89	---	22	---	---	---	---	---	---	---	---	---	---	---	---	---
2/1/2019	---	---	---	---	---	---	57	---	9	---	---	---	---	---	---	---	---	---	---	---	---	---
2/5/2019	---	---	---	---	---	---	37	---	25	---	---	---	---	---	---	---	---	---	---	---	---	---
2/11/2019	---	---	---	---	---	---	37	---	10	54	---	---	---	---	---	---	---	---	---	---	---	---
2/15/2019	---	---	---	---	---	---	36	---	12	48	---	---	---	---	---	---	---	---	---	---	---	---
2/18/2019	---	---	---	---	---	---	40	---	16	---	---	---	---	---	---	---	---	---	---	---	---	---
2/22/2019	---	---	---	---	---	---	---	---	22	---	---	---	---	---	---	---	---	---	---	---	---	---
2/25/2019	---	---	---	---	---	---	---	---	38	---	---	---	---	---	---	---	---	---	---	---	---	---
3/1/2019	---	---	---	---	---	---	---	---	66	94	---	---	---	---	---	---	---	---	---	---	---	---
3/4/2019	---	---	---	---	---	---	---	---	67	112	---	---	---	---	---	---	---	---	---	---	---	---
3/8/2019	---	---	---	---	---	---	---	---	104	---	---	---	---	---	---	---	---	---	---	---	---	---
3/11/2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3/15/2019	---	---	---	---	---	---	---	---	101	119	---	---	---	---	---	---	---	---	---	---	---	---
3/20/2019	---	---	---	---	---	---	---	---	---	97	---	---	---	---	---	---	---	---	---	---	---	---
3/29/2019	---	---	---	---	---	---	---	---	99	350	---	---	---	---	---	---	---	---	---	---	850	---
4/8/2019	---	---	---	---	---	---	---	---	81	297	---	---	---	---	---	---	---	---	---	---	153	---
4/16/2019	---	---	---	---	---	---	---	---	150	520	---	---	---	---	---	---	---	---	---	---	210	---
4/23/2019	---	---	---	---	---	---	---	---	---	1140	6	---	---	---	---	---	---	---	---	20	1220	---
4/26/2019	---	---	---	---	---	---	---	---	---	570	18	---	---	---	---	---	---	---	---	70	1230	---
5/1/2019	---	---	---	---	---	---	---	---	---	1110	12	---	---	---	---	---	---	---	---	77	1180	630
5/8/2019	---	---	---	26	---	---	---	---	---	720	---	---	---	---	---	---	---	---	---	---	1430	---
5/13/2019	1	11	0	---	4	7	---	1	17	---	1	10	20	90	4	21	---	59	---	12	---	---
5/15/2019	---	---	---	---	---	---	---	---	---	1190	---	---	---	---	---	---	---	---	---	---	1425	---
5/16/2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
5/22/2019	---	---	---	---	---	---	---	---	---	1450	0	---	---	---	160	---	---	---	170		1420	---
5/29/2019	10	60	0	230	10	30	---	10	270	2000	20	110	2000	1010	90	30	610	0	200	130	1430	---
6/5/2019	---	80	---	280	180	---	0	---	160	1240	---	180	320	830	100	---	630	0	290	100	---	0
6/11/2019	0	---	0	230	---	30	---	0	280	---	0	120	320	830	---	0	740	---	410	150	1410	---
6/13/2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6/18/2019	---	110	---	250	10	---	20	---	280	1080	---	120	570	1020	250	---	670	10	400	240	---	
6/25/2019	100	---	80	240	---	610	---	0	370	---	0	110	450	860	---	10	630	---	200	90	90	---
6/26/2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7/2/2019	---	140	---	180		---	270	---	650	1270	---	150	470	870	230	---	540	40	370	350	---	0
7/9/2019	100	---	510	600	---	540	---	0	640	---	10	150	450	870	---	200	750	---	420	350	1220	---
7/16/2019	---	10	---	250	0	---	0	---	640	290	---	100	220	820	280	---	630	10	430	430	---	0

CZ07 — Screening location is and extraction location

CZ20 — Screening location is a monitoring well

UWBZ27 extraction shut down

LSZ39 extraction shut down

Site ST012 Sulfate Field Screening

- CZ20 – recent result shows potential sulfate from injections at CZ22
- CZ21 – one recent result (9 Jul) shows potential sulfate from injections but other results are consistent with background at that well
- UWBZ26 - recent result shows potential sulfate from injections at UWBZ35 and UWBZ36. Considering extraction shut down
- LSZ09 – had indications of sulfate from injections but recently decreasing
- LSZ10 – downgradient of LSZ39 where extraction was stopped
- LSZ11 and LSZ12 – increasing sulfate but still within range of the aquifer background
- LSZ23, LSZ38, LSZ39 - recent results shows potential sulfate from injections at LSZ49 and LSZ50. Considering extraction shut down

Site ST012 Path Forward Jul-Aug

- Continued SVE operation
- Continue pump repairs
- Pilot Study Implementation
  - Continue mixing sulfate batches and inject according to plan (FVM7) Phase 1 subphase 3 injections with the modifications previously presented

Air Force Civil Engineer Center

BCT GENERAL UPDATE

BCT Conference Call

25 July 2019

Air Force Civil Engineer Center

2019 BCT MEETINGS/CONFERENCE CALLS SCHEDULE DELIVERABLE TRACKING

BCT Conference Call

25 July 2019

ACTION ITEMS

BCT Conference Call
25 July 2019