

received 08/05/2015
Project 8952
Remediation 2314239

TABLE 1
GROUNDWATER ANALYTICAL RESULTS
LORENZ UPRR 42-27 1, 41-27 3 TANK BATTERY
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.

Monitoring Well	Date	Depth to Water (feet btoc)	Groundwater Elevation (AMSL)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MW01	8/22/2014	6.22	4,732.91	17,800	2,920	745	11,500
	11/20/2014	9.79	4,729.34	32,900	751	673	10,500
	1/9/2015	7.87	4,731.26	30,000	190	1,300	20,000
	4/10/2015	8.72	4,730.41	25,000	220	640	13,000
	7/16/2015	6.16	4,732.97	22,000	1,800	690	11,000
MW02	8/22/2014	8.83	4,733.58	0.33	<1.0	<1.0	3.5
	11/20/2014	9.51	4,732.90	<0.50	<1.0	<1.0	<1.0
	1/9/2015	10.25	4,732.16	<1.0	<1.0	<1.0	<1.0
	4/10/2015	11.26	4,731.15	<1.0	<1.0	<1.0	<1.0
	7/16/2015	8.71	4,733.70	<1.0	<1.0	<1.0	<1.0
MW03	8/22/2014	12.74	4,729.52	<1.0	<1.0	0.68	1.4
	11/20/2014	9.29	4,732.97	<0.50	<1.0	<1.0	<1.0
	1/9/2015	10.08	4,732.18	<1.0	<1.0	<1.0	<1.0
	4/10/2015	11.50	4,730.76	1.1	<1.0	<1.0	<1.0
	7/24/2015	8.04	4,734.22	<1.0	<1.0	<1.0	<1.0
MW04	8/22/2014	9.20	4,733.02	<1.0	<1.0	<1.0	<2.0
	11/20/2014	9.89	4,732.33	<0.50	<1.0	<1.0	<1.0
	1/9/2015	10.45	4,731.77	<1.0	<1.0	<1.0	<1.0
	4/10/2015	11.50	4,730.72	<1.0	<1.0	<1.0	<1.0
	7/16/2015	8.83	4,733.39	<1.0	<1.0	<1.0	<1.0
MW05	8/22/2014	9.19	4,733.25	869	<1.0	3.7	5.0
	11/20/2014	9.81	4,732.63	7.2	<1.0	<1.0	<1.0
	1/9/2015	10.35	4,732.09	2.6	<1.0	<1.0	<1.0
	4/10/2015	11.05	4,731.39	<1.0	<1.0	<1.0	<1.0
	7/16/2015	9.72	4,732.72	220	<1.0	<1.0	<1.0
MW06	9/25/2014	6.82	4,732.38	<1.0	<1.0	<1.0	<1.0
	11/20/2014	7.10	4,732.10	<0.50	<1.0	<1.0	<1.0
	1/9/2015	7.87	4,731.33	<1.0	<1.0	<1.0	<1.0
	4/10/2015	9.00	4,730.20	<1.0	<1.0	<1.0	<1.0
	7/16/2015	6.41	4,732.79	<1.0	<1.0	<1.0	<1.0
MW07	9/25/2014	7.05	4,732.48	<1.0	<1.0	<1.0	<1.0
	11/20/2014	7.41	4,732.12	<0.50	<1.0	<1.0	<1.0
	1/9/2015	8.14	4,731.39	<1.0	<1.0	<1.0	<1.0
	4/10/2015	9.31	4,730.22	<1.0	<1.0	<1.0	<1.0
	7/16/2015	6.70	4,732.83	<1.0	<1.0	<1.0	<1.0
MW08	9/25/2014	8.10	4,732.92	117	12.6	238	4,860
	11/20/2014	8.67	4,732.35	<0.50	<1.0	<1.0	298
	1/9/2015	9.50	4,731.52	87	39	60	2,200
	4/10/2015	10.58	4,730.44	89	45	<1.0	3,300
	7/16/2015	7.33	4,733.69	<1.0	<1.0	<1.0	<1.0

TABLE 1 (Continued)

GROUNDWATER ANALYTICAL RESULTS
LORENZ UPRR 42-27 1, 41-27 3 TANK BATTERY
WELD COUNTY, COLORADO
NOBLE ENERGY, INC.

Monitoring Well	Date	Depth to Water (feet btoc)	Groundwater Elevation (AMSL)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)
MW09	9/25/2014	9.42	4,732.81	207	6,740	299	5,160
	11/20/2014	9.60	4,732.63	38.4	70.6	<1.0	782
	1/9/2015	7.90	4,731.67	34	2.7	120	5,000
	4/10/2015	11.60	4,727.97	<1.0	<1.0	<1.0	<1.0
	7/16/2015	9.32	4,730.25	14	48	<1.0	100
MW10	1/9/2015	9.17	4,731.94	<1.0	<1.0	<1.0	<1.0
	4/10/2015	10.19	4,730.92	<1.0	<1.0	<1.0	<1.0
	7/16/2015	7.65	4,733.46	<1.0	<1.0	<1.0	<1.0
MW11	1/9/2015	9.05	4,732.03	<1.0	<1.0	<1.0	2.1
	4/10/2015	10.03	4,731.05	<1.0	<1.0	<1.0	<1.0
	7/16/2015	7.80	4,733.28	<1.0	<1.0	<1.0	<1.0
MW12	1/9/2015	9.15	4,731.32	<1.0	<1.0	<1.0	<1.0
	4/10/2015	10.25	4,730.22	<1.0	<1.0	<1.0	<1.0
	7/16/2015	7.35	4,733.12	<1.0	<1.0	<1.0	<1.0
MW13	1/9/2015	9.80	4,731.35	990	220	130	3,900
	4/10/2015	10.85	4,730.30	1,100	25	<1.0	2,400
	7/16/2015	8.21	4,732.94	620	1,200	150	4,600
CDPHE WQCC Reg 41				5.0	560	700	1,400

NOTES:

AMSL - above mean sea level

btoc - below top of casing

µg/L - micrograms per liter

< - indicates result is less than the stated laboratory reporting limit

Benzene, toluene, ethylbenzene, and total xylenes analyzed by EPA Method 8260B and 8260C

Bold indicates result exceeds the applicable standardCDPHE WQCC Reg 41 - Colorado Department of Public Health and Environment-Water Quality Control Commission
Regulation 41- The Basic Standards for Ground Water

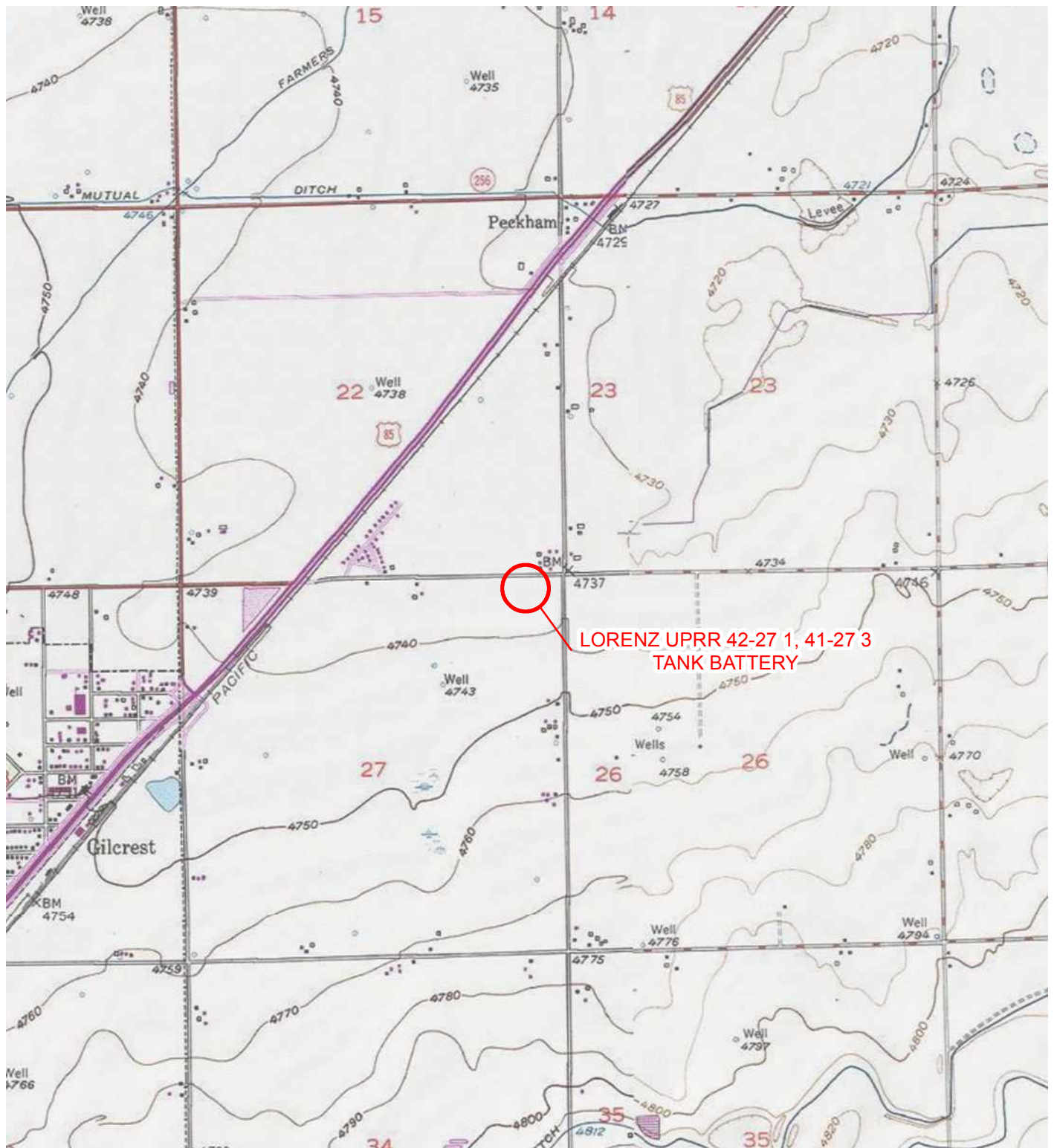


IMAGE COURTESY OF ESRI/USGS

LEGEND

○ SITE LOCATION

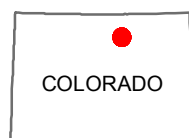
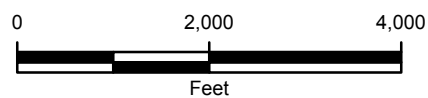
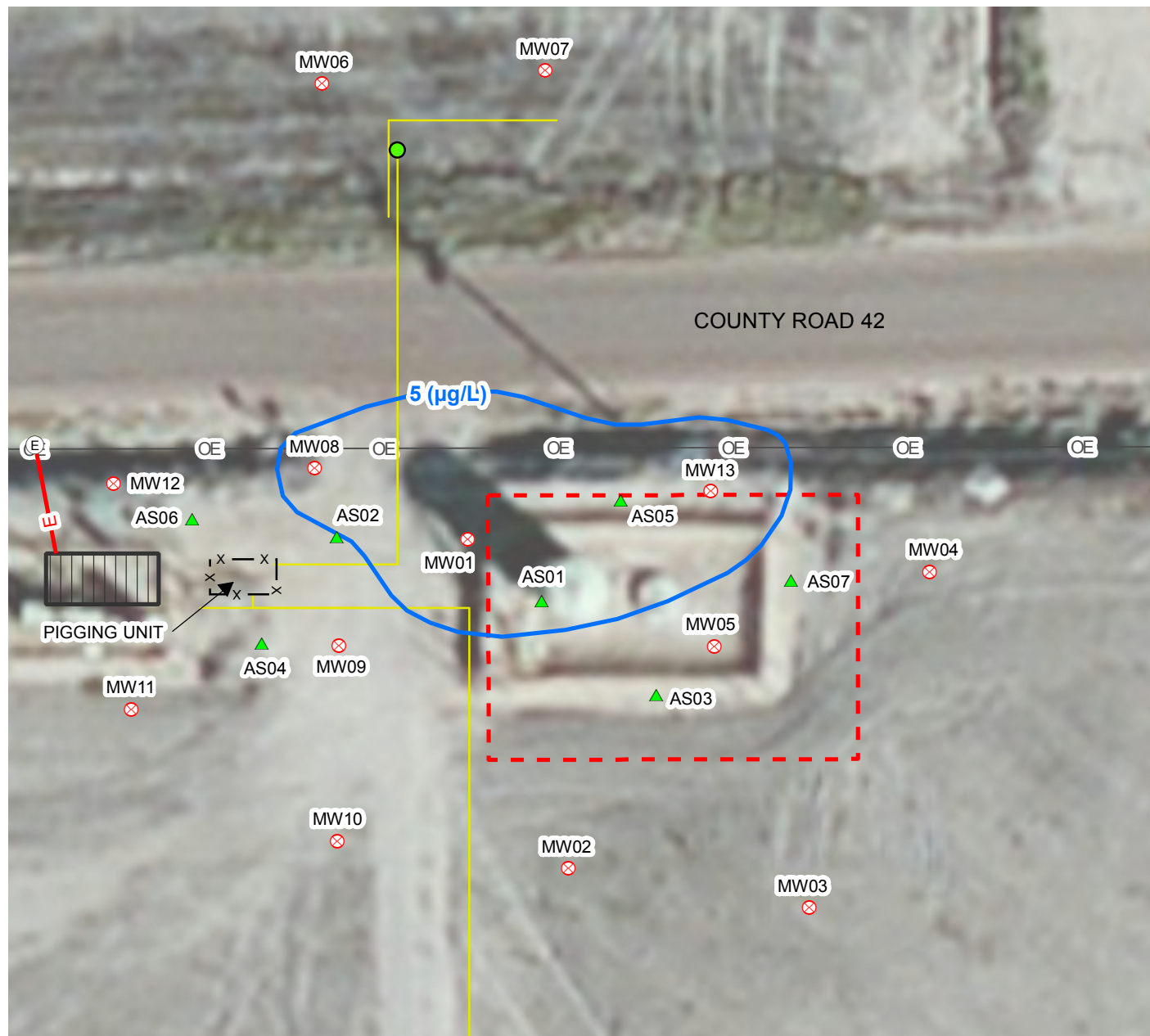


FIGURE 1
SITE LOCATION MAP
LORENZ UPRR 42-27 1, 41-27 3 TANK BATTERY
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.





LEGEND

- ▲ AIR SPARGING WELL (AS)
- ⓔ XCEL SERVICE POLE
- ⊗ MONITORING WELL
- PIPELINE MARKER
- BENZENE ISOCONCENTRATION CONTOUR
- E— ELECTRICAL RECOVERY
- UNDERGROUND UTILITIES
- OE— OVERHEAD POWER LINE
- ⌈ ⌋ EXCAVATION EXTENT
- ⌈ ⌋ TRAILER LOCATION
- ⌈ ⌋ FENCE

IMAGE COURTESY OF ESRI

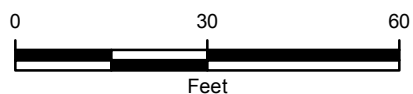


FIGURE 2
AIR SPARGING SYSTEM LAYOUT
LORENZ UPRR 42-27 1, 41-27 3 TANK BATTERY
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.



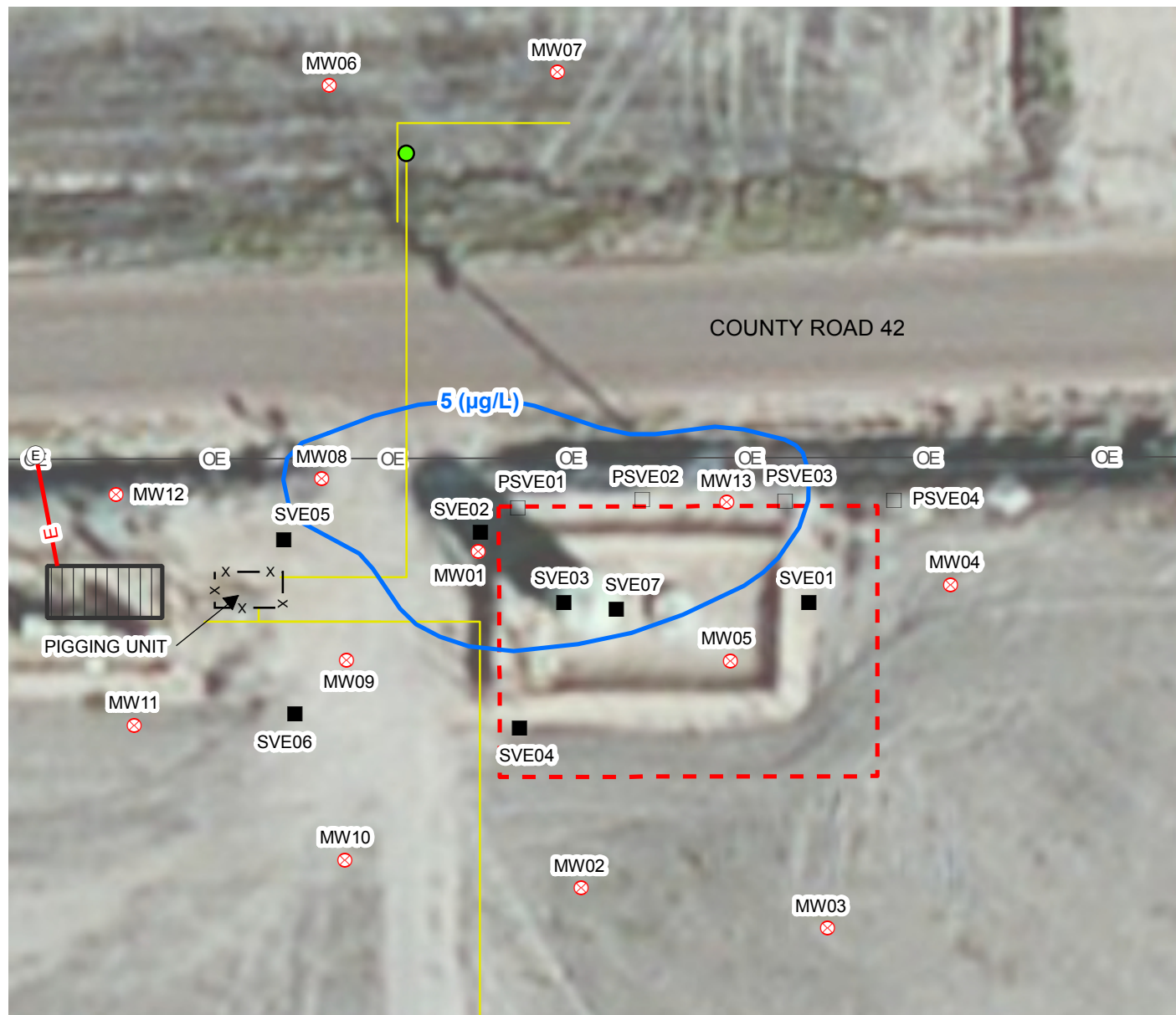


IMAGE COURTESY OF ESRI

LEGEND

- SOIL VAPOR EXTRACTION WELL (SVE)
- PASSIVE SOIL VAPOR EXTRACTION WELL (PSVE)
- ⓔ XCEL SERVICE POLE
- ⊗ MONITORING WELL
- PIPELINE MARKER
- BENZENE ISOCONCENTRATION CONTOUR
- E— ELECTRICAL RECOVERY
- UNDERGROUND UTILITIES
- OE— OVERHEAD POWER LINE
- - - EXCAVATION EXTENT
- ▭ TRAILER LOCATION
- ⊗ ⊗ ⊗ FENCE

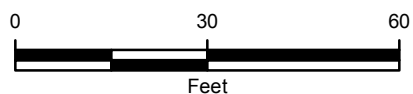


FIGURE 3
SOIL VAPOR EXTRACTION SYSTEM LAYOUT
 LORENZ UPRR 42-27 1, 41-27 3 TANK BATTERY
 WELD COUNTY, COLORADO
NOBLE ENERGY, INC.



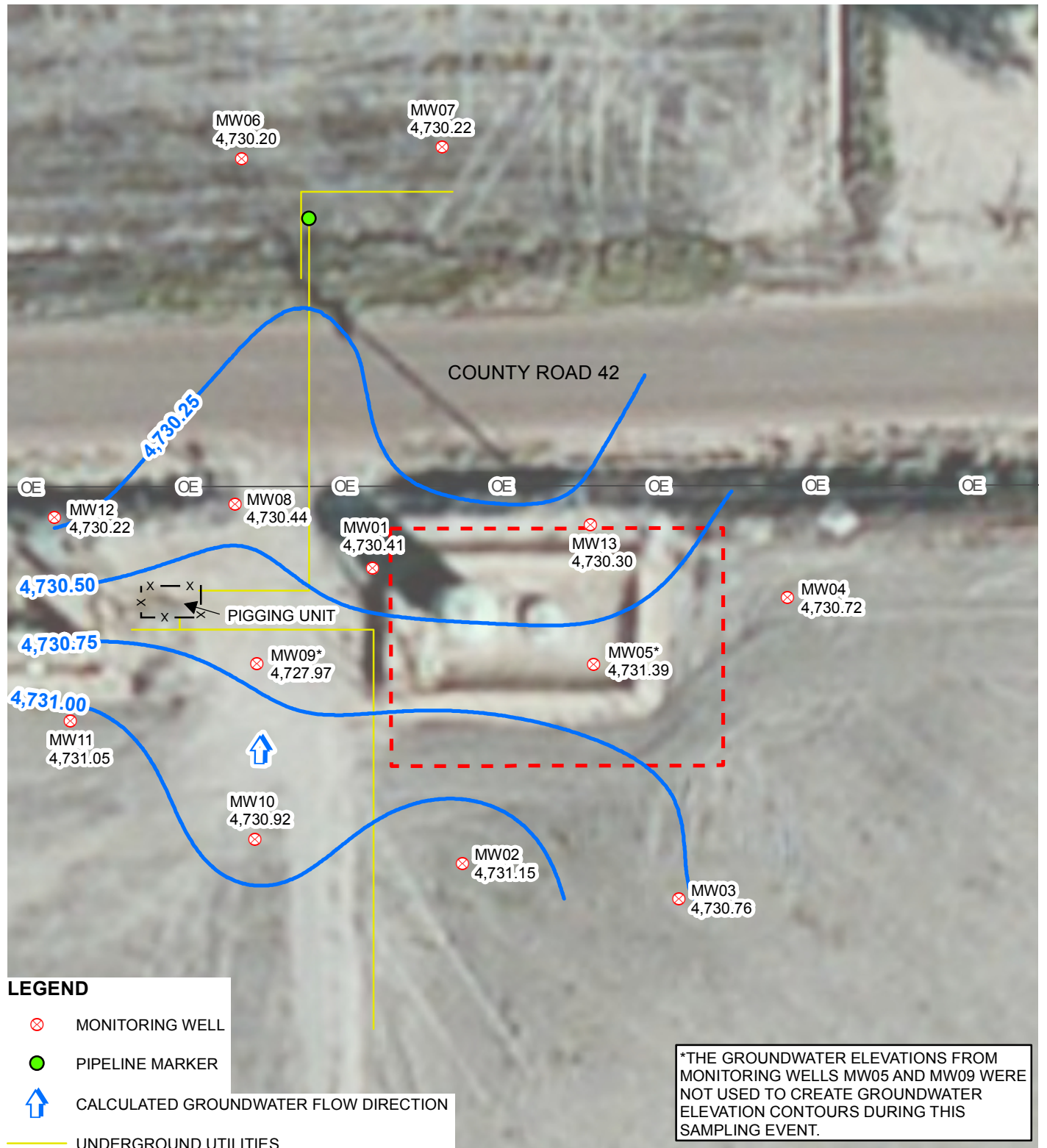


IMAGE COURTESY OF ESRI

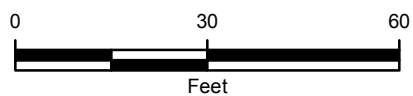


FIGURE 4
GROUNDWATER ELEVATION MAP
 APRIL 10, 2015
 LORENZ UPRR 42-27 1, 41-27 3 TANK BATTERY
 WELD COUNTY, COLORADO
 NOBLE ENERGY, INC.



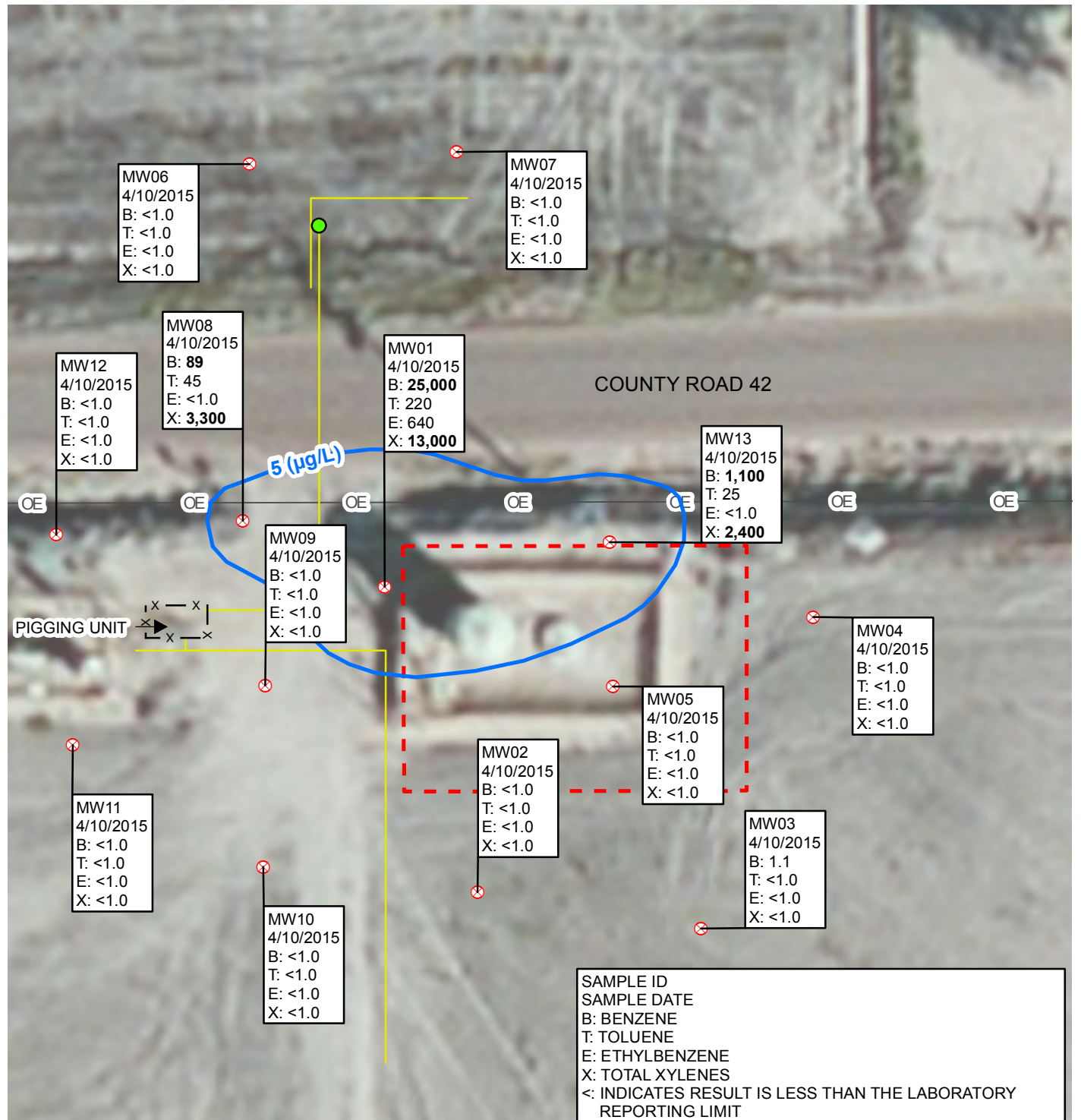


IMAGE COURTESY OF ESRI

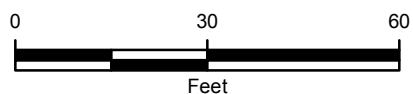
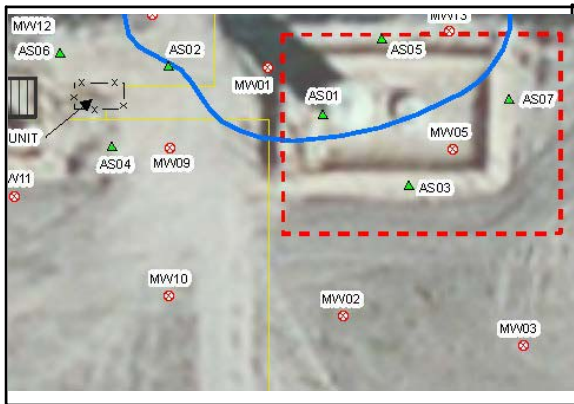


FIGURE 5
GROUNDWATER ANALYTICAL RESULTS
LORENZ UPRR 42-27 1, 41-27 3 TANK BATTERY
WELD COUNTY, COLORADO

NOBLE ENERGY, INC.





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 4600 W. 60th Avenue
 Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

BORING/WELL NO.: AS01
DATE: 12/23/14
LOGGED BY: Jesse Alexander
DRILL MTHD: Hollow-Stem Auger

PROJECT: Lorenz UPRR 42-27 1, 41-27 3
PROJECT NO.: 008314023
DRILLED BY: Elite Drilling
SAMPLE MTHD: None

DETECTOR: MiniRae 2000

GRAVEL PACK: 10-20 Silica Sand

CASING TYPE: SCH. 40 PVC

SCREEN TYPE: SCH. 40 PVC

HOLE DIA.: 8"

SEAL: Bent. Chips

CASING DIA.: 2"

SCREEN SLOT: 0.010"

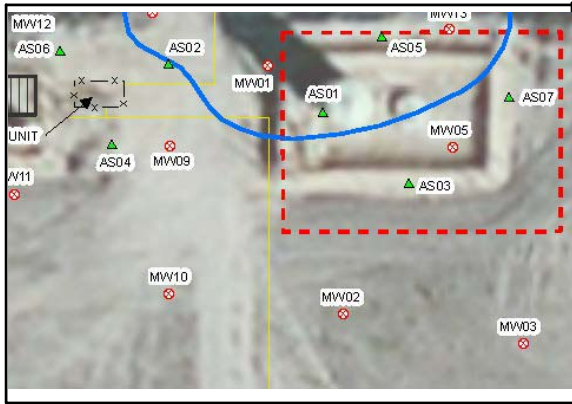
TD: 22' **DTW:** Not Measured

GROUT: Concrete-bentonite slurry

CASING LENGTH: 2'

SCREEN LENGTH: 20'

Vapor (ppm) 0.0 1000.0	Staining	Moisture Content	Sample	Sample Run (ft/ft)	Depth (ft. bgs.)	USCS	Soil Type	Lithology Description	Well Construction
					0			Impacted soil drummed by contractors, not sampled	
					5				
					10				
	NM	NM	NA	NA	15				
					20				



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

BORING/WELL NO.: AS02
DATE: 12/23/14
LOGGED BY: Jesse Alexander
DRILL MTHD: Hollow-Stem Auger

PROJECT: Lorenz UPRR 42-27 1, 41-27 3
PROJECT NO.: 008314023
DRILLED BY: Elite Drilling
SAMPLE MTHD: Cuttings

DETECTOR: MiniRae 3000

HOLE DIA.: 8"

TD: 22' **DTW:** 15'

GRAVEL PACK: 10-20 Silica Sand

SEAL: Bent. Chips

GROUT: Concrete-bentonite slurry

CASING TYPE: SCH. 40 PVC

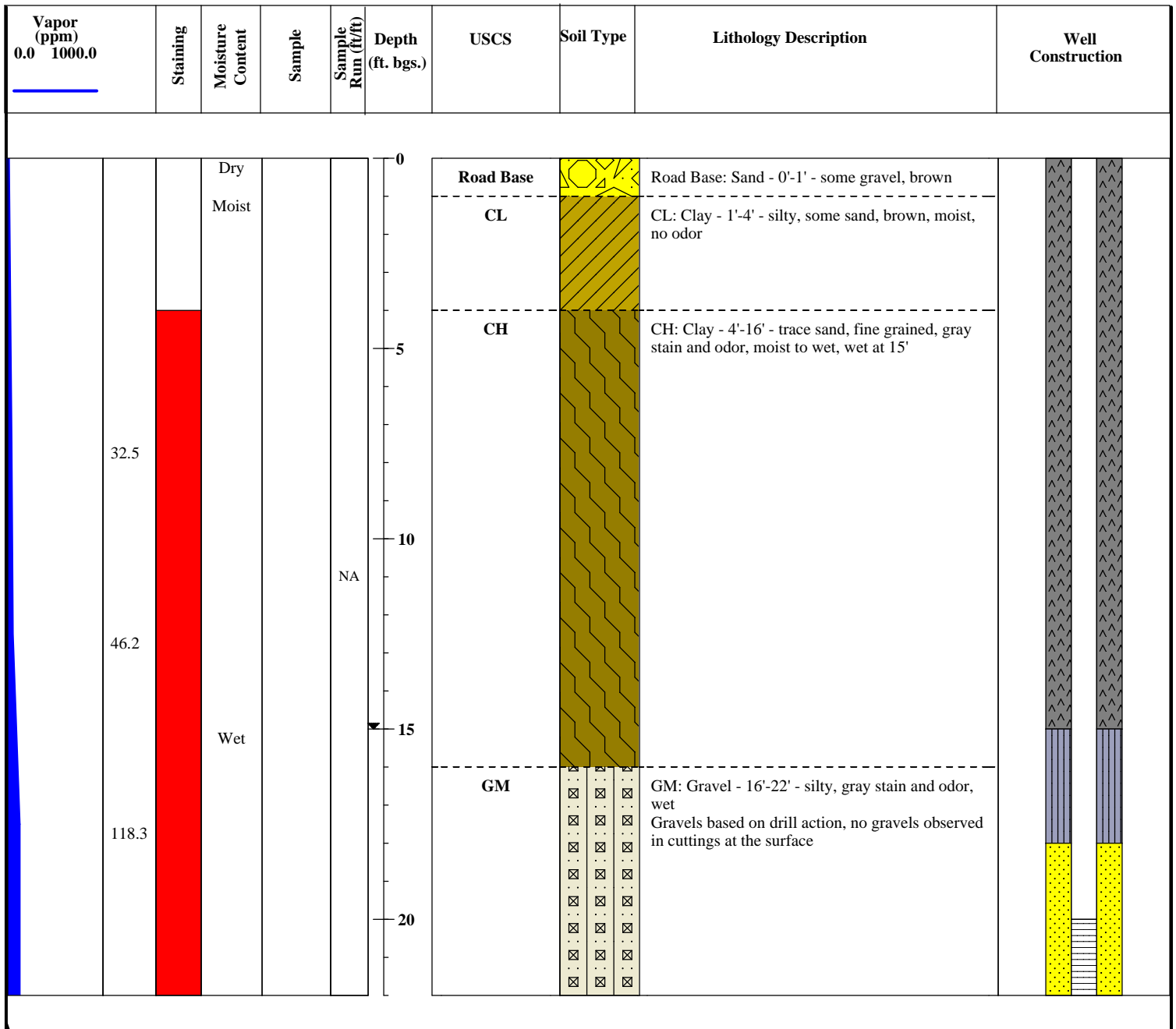
CASING DIA.: 2"

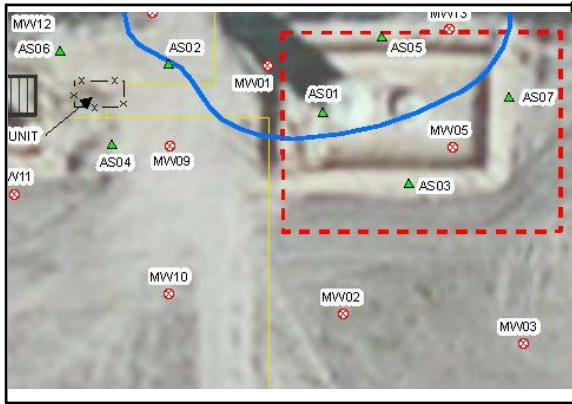
CASING LENGTH: 2'

SCREEN TYPE: SCH. 40 PVC

SCREEN SLOT: 0.010"

SCREEN LENGTH: 20'





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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

BORING/WELL NO.: AS03
DATE: 2/17/2015
LOGGED BY: Daniel Hosler
DRILL MTHD: Hollow-Stem Auger

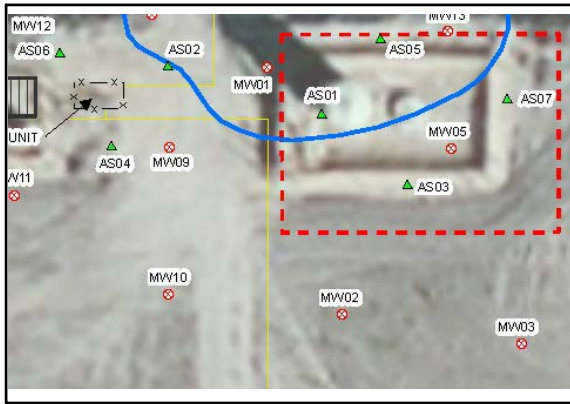
PROJECT: Lorenz UPRR 42-27 1, 42-27 3
PROJECT NO.: 008314023
DRILLED BY: Elite Drilling
SAMPLE MTHD: Drill Cuttings

DETECTOR: UltraRae 3000
GRAVEL PACK: 10-20 Silica Sand
CASING TYPE: SCH. 40 PVC
SCREEN TYPE: SCH. 40 PVC

HOLE DIA.: 8"
SEAL: Bent. Chips
CASING DIA.: 2"
SCREEN SLOT: 0.010"

TD: 22' **DTW:** Not Encountered
GROUT: Cement/Bent Mix
CASING LENGTH: 20'
SCREEN LENGTH: 2'

Vapor (ppm) 0.0 1000.0	Staining	Moisture Content	Sample	Sample Run (ft/ft)	Depth (ft. bgs.)	USCS	Soil Type	Lithology Description	Well Construction
0.00		Dry	NA		0	SC		SC: 0'-15' - dark brown, SAND, fine grained, clayey, dry, no odor	
0.00		Dry			5				
0.00		Dry		NA	10				
343.0		Moist			15			SC: 15'-22' - medium brown, SAND, fine grained, clayey, moist, no odor	
		Moist			20			GM: 22' - gravel based on drill action, no gravel observed in drill cuttings	



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

BORING/WELL NO.: AS04
DATE: 2/17/2015
LOGGED BY: Daniel Hosler
DRILL MTHD: Hollow-Stem Auger

PROJECT: Lorenz UPRR 42-27 1, 41-27 3
PROJECT NO.: 008314023
DRILLED BY: Elite Drilling
SAMPLE MTHD: Drill Cuttings

DETECTOR: UltraRae 3000

GRAVEL PACK: 10-20 Silica Sand

CASING TYPE: SCH. 40 PVC

SCREEN TYPE: SCH. 40 PVC

HOLE DIA.: 8"

SEAL: Bent. Chips

CASING DIA.: 2"

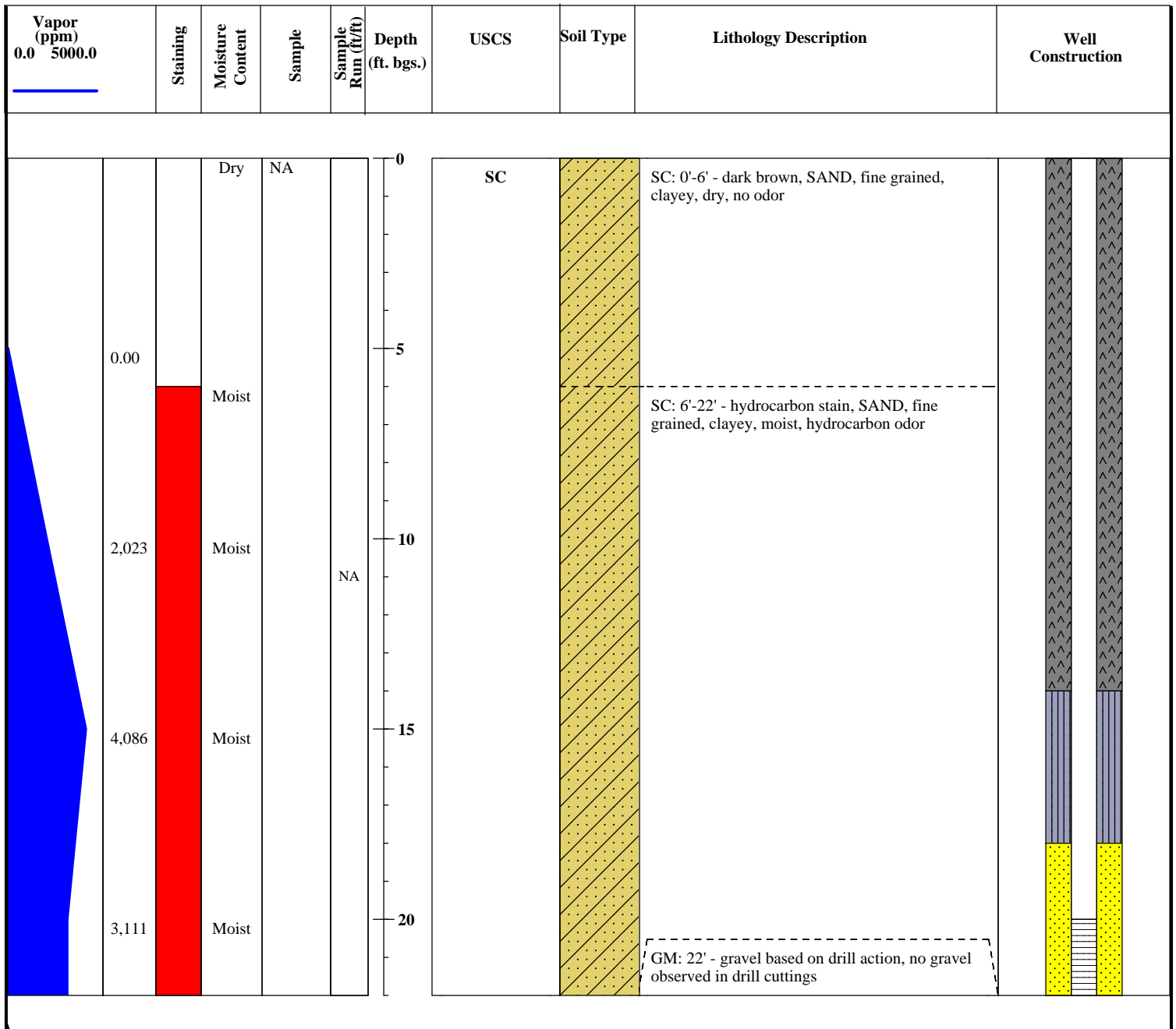
SCREEN SLOT: 0.010"

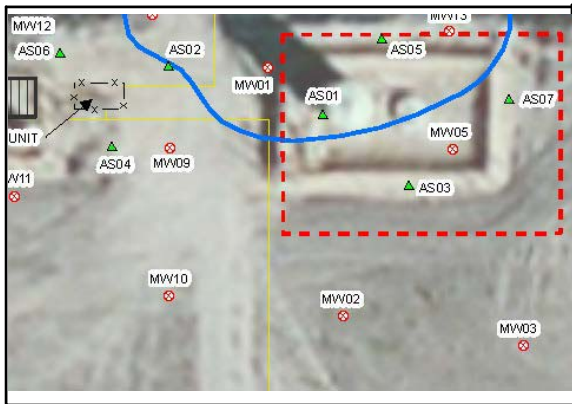
TD: 22' **DTW:** Not Encountered

GROUT: Cement/Bent Mix

CASING LENGTH: 20'

SCREEN LENGTH: 2'





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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

BORING/WELL NO.: AS05
DATE: 2/17/2015
LOGGED BY: Daniel Hosler
DRILL MTHD: Hollow-Stem Auger

PROJECT: Lorenz UPRR 42-27 1, 42-27 3
PROJECT NO.: 008314023
DRILLED BY: Elite Drilling
SAMPLE MTHD: Drill Cuttings

DETECTOR: UltraRae 3000

GRAVEL PACK: 10-20 Silica Sand

CASING TYPE: SCH. 40 PVC

SCREEN TYPE: SCH. 40 PVC

HOLE DIA.: 8"

SEAL: Bent. Chips

CASING DIA.: 2"

SCREEN SLOT: 0.010"

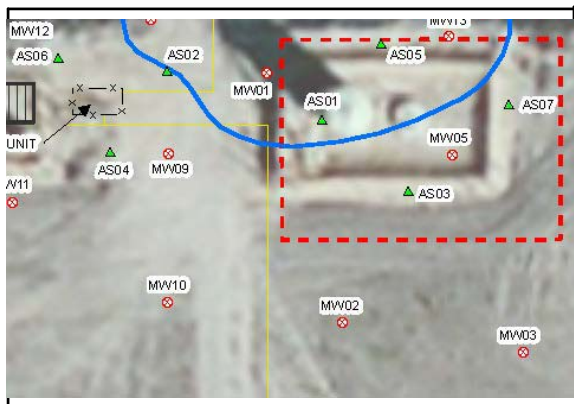
TD: 22' **DTW:** Not Encountered

GROUT: Cement/Bent Mix

CASING LENGTH: 20'

SCREEN LENGTH: 2'

Vapor (ppm) 0.0 1000.0	Staining	Moisture Content	Sample	Sample Run (ft/ft)	Depth (ft. bgs.)	USCS	Soil Type	Lithology Description	Well Construction
0.00		Dry	NA		0	SC		SC: 0'-12' - dark brown, SAND, fine grained, clayey, dry, no odor	
0.00		Dry			5				
0.00		Dry			10				
30.61		Moist			15			SC: 12'-22' - dark brown, SAND, fine grained, clayey, moist, no odor	
		Moist			20			GM: 22' - gravel based on drill action, no gravel observed in drill cuttings	



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

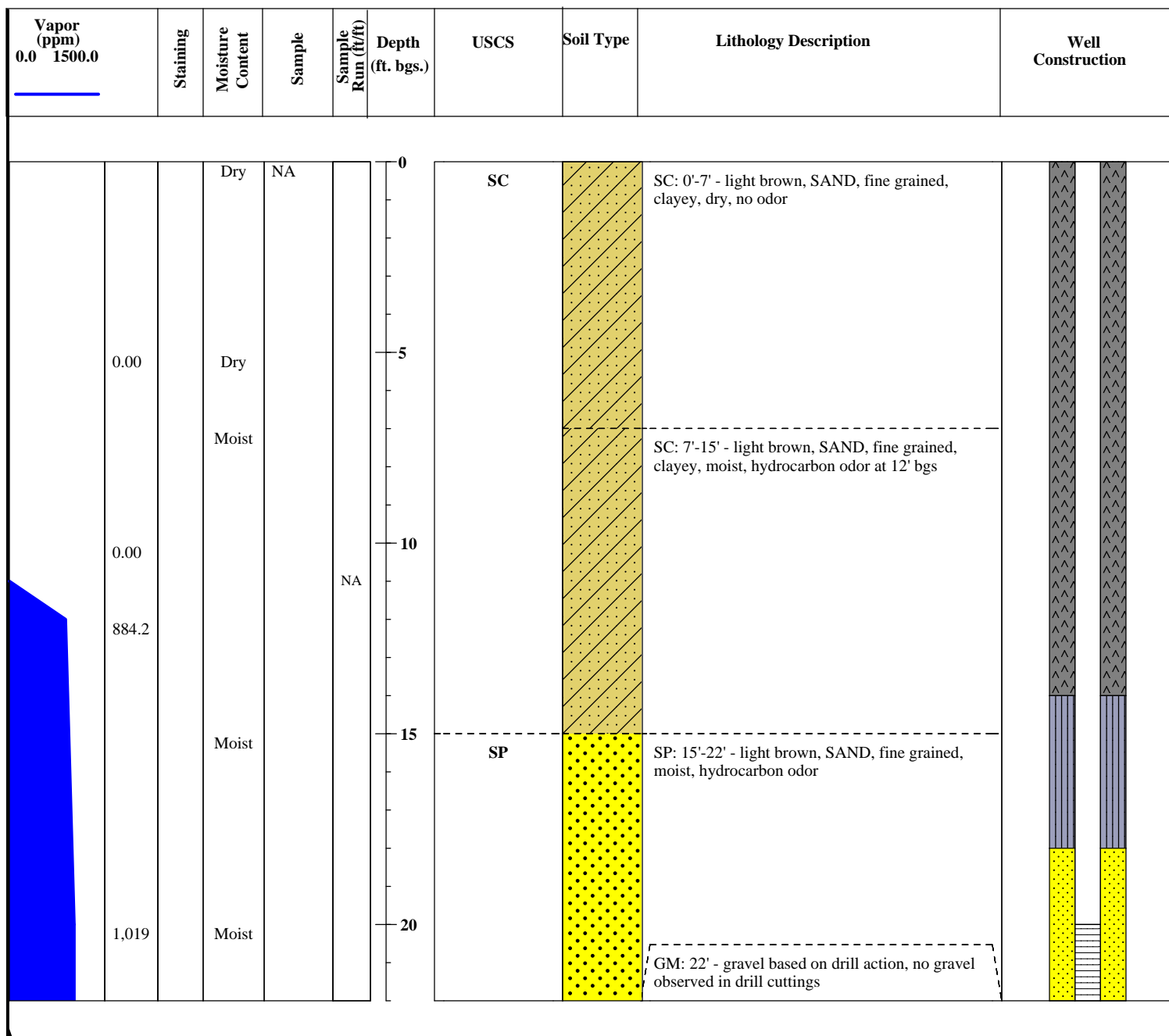
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DATE: 2/17/2015
LOGGED BY: Daniel Hosler
DRILL MTHD: Hollow-Stem Auger

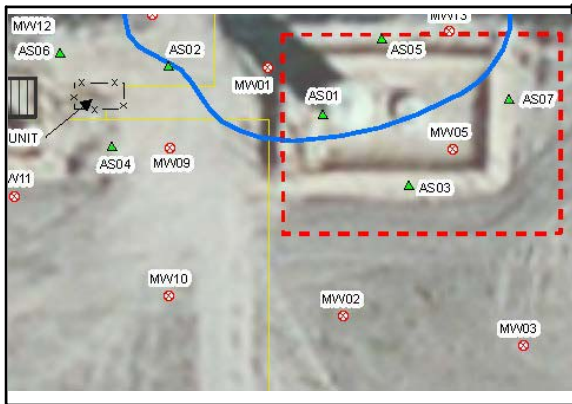
PROJECT: Lorenz UPRR 42-27 1, 42-27 3
PROJECT NO.: 008314023
DRILLED BY: Elite Drilling
SAMPLE MTHD: Drill Cuttings

DETECTOR: UltraRae 3000
GRAVEL PACK: 10-20 Silica Sand
CASING TYPE: SCH. 40 PVC
SCREEN TYPE: SCH. 40 PVC

HOLE DIA.: 8"
SEAL: Bent. Chips
CASING DIA.: 2"
SCREEN SLOT: 0.010"

TD: 22' **DTW:** Not Encountered
GROUT: Cement/Bent Mix
CASING LENGTH: 20'
SCREEN LENGTH: 2'





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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

BORING/WELL NO.: AS07
DATE: 2/18/2015
LOGGED BY: Daniel Hosler
DRILL MTHD: Hollow-Stem Auger

PROJECT: Lorenz UPRR 42-27 1, 42-27 3
PROJECT NO.: 008314023
DRILLED BY: Elite Drilling
SAMPLE MTHD: Drill Cuttings

DETECTOR: UltraRae 3000

GRAVEL PACK: 10-20 Silica Sand

CASING TYPE: SCH. 40 PVC

SCREEN TYPE: SCH. 40 PVC

HOLE DIA.: 8"

SEAL: Bent. Chips

CASING DIA.: 2"

SCREEN SLOT: 0.010"

TD: 22' **DTW:** 20'

GROUT: Cement/Bent Mix

CASING LENGTH: 20'

SCREEN LENGTH: 2'

Vapor (ppm) 0.0 1000.0	Staining	Moisture Content	Sample	Sample Run (ft/ft)	Depth (ft. bgs.)	USCS	Soil Type	Lithology Description	Well Construction
0.00		Dry	NA		0	SC		SC: 0'-12' - medium brown, SAND, fine grained, some clay, dry, moist at 10' bgs, no odor	
0.00		Dry			5				
0.00		Moist		NA	10				
246.6		Moist			15			SC: 12'-15' - hydrocarbon stain, SAND, fine grained, clayey, moist, hydrocarbon odor	
312.6		Wet			20			SC: 15'-22' - medium brown, SAND, fine grained, clayey, moist, wet at 20' bgs, hydrocarbon odor	
								GM: 22' - gravel based on drill action, no gravel observed in drill cuttings	



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

BORING/WELL NO.: SVE01
DATE: 12/23/14
LOGGED BY: Jesse Alexander
DRILL MTHD: Hollow-Stem Auger

PROJECT: Lorenz UPRR 42-27 1, 41-27 3
PROJECT NO.: 008314023
DRILLED BY: Elite Drilling
SAMPLE MTHD: Cuttings

DETECTOR: MiniRae 2000

HOLE DIA.: 8"

TD: 12'

DTW: NA

GRAVEL PACK: 10-20 Silica Sand

SEAL: Bent. Chips

GROUT: Concrete-bentonite slurry

CASING TYPE: SCH. 40 PVC

CASING DIA.: 2"

CASING LENGTH: 7'

SCREEN TYPE: SCH. 40 PVC

SCREEN SLOT: 0.010"

SCREEN LENGTH: 5'

Vapor (ppm) 0.0 1000.0	Staining	Moisture Content	Sample	Sample Run (ft/ft)	Depth (ft. bgs.)	USCS	Soil Type	Lithology Description	Well Construction
0.0		Moist			0	OL		OL: Silt - 0'-1' - organic, trace sand, fine-coarse grained, trace roots, dark brown, moist, no odor	
0.0					5	CL		CL: Clay - 1'-12' - silty, trace sand, fine-coarse grained, dark brown, moist, no odor	
0.0					10				



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

BORING/WELL NO.: SVE02
DATE: 12/23/14
LOGGED BY: Jesse Alexander
DRILL MTHD: Hollow-Stem Auger

PROJECT: Lorenz UPRR 42-27 1, 41-27 3
PROJECT NO.: 008314023
DRILLED BY: Elite Drilling
SAMPLE MTHD: Cuttings

DETECTOR: MiniRae 2000

HOLE DIA.: 8"

TD: 12'

DTW: NA

GRAVEL PACK: 10-20 Silica Sand

SEAL: Bent. Chips

GROUT: Concrete-bentonite slurry

CASING TYPE: SCH. 40 PVC

CASING DIA.: 2"

CASING LENGTH: 7'

SCREEN TYPE: SCH. 40 PVC

SCREEN SLOT: 0.010"

SCREEN LENGTH: 5'

Vapor (ppm) 0.0 1000.0	Staining	Moisture Content	Sample	Sample Run (ft/ft)	Depth (ft. bgs.)	USCS	Soil Type	Lithology Description	Well Construction
0.0		Moist			0	OL		OL: Silt - 0'-1' - organic, trace sand, fine-coarse grained, trace roots, dark brown, moist, no odor	
0.0					5	CL		CL: Clay - 1'-12' - silty, trace sand, fine-coarse grained, dark brown, moist, no odor	
0.0					10				



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LT Environmental, Inc.
 4600 W. 60th Avenue
 Arvada, Colorado 80003

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

BORING/WELL NO.: SVE03
DATE: 2/17/2015
LOGGED BY: Daniel Hosler
DRILL MTHD: Hollow-Stem Auger

PROJECT: Lorenz UPRR 42-27 1, 41-27 3
PROJECT NO.: 008314023
DRILLED BY: Elite Drilling
SAMPLE MTHD: Drill Cuttings

DETECTOR: UltraRae 3000

HOLE DIA.: 8"

TD: 10'

DTW: NA

GRAVEL PACK: 10-20 Silica Sand

SEAL: Bent. Chips

GROUT: Cement/Bent Mix

CASING TYPE: SCH. 40 PVC

CASING DIA.: 2"

CASING LENGTH: 5'

SCREEN TYPE: SCH. 40 PVC

SCREEN SLOT: 0.010"

SCREEN LENGTH: 5'

Vapor (ppm) 0.0 1000.0	Staining	Moisture Content	Sample	Sample Run (ft/ft)	Depth (ft. bgs.)	USCS	Soil Type	Lithology Description	Well Construction
0.00		Dry	NA		0	SC		SC: 0'-10' - dark brown, SAND, fine grained, clayey, dry, no odor	
0.00		Dry			5				
0.00					10				



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

BORING/WELL NO.: SVE04
DATE: 2/17/2015
LOGGED BY: Daniel Hosler
DRILL MTHD: Hollow-Stem Auger

PROJECT: Lorenz UPRR 42-27 1, 41-27 3
PROJECT NO.: 008314023
DRILLED BY: Elite Drilling
SAMPLE MTHD: Drill Cuttings

DETECTOR: UltraRae 3000

HOLE DIA.: 8"

TD: 10'

DTW: NA

GRAVEL PACK: 10-20 Silica Sand

SEAL: Bent. Chips

GROUT: Cement/Bent Mix

CASING TYPE: SCH. 40 PVC

CASING DIA.: 2"

CASING LENGTH: 5'

SCREEN TYPE: SCH. 40 PVC

SCREEN SLOT: 0.010"

SCREEN LENGTH: 5'

Vapor (ppm) 0.0 1000.0	Staining	Moisture Content	Sample	Sample Run (ft/ft)	Depth (ft. bgs.)	USCS	Soil Type	Lithology Description	Well Construction
0.00		Dry	NA		0	SC		SC: 0'-10' - dark brown, SAND, fine grained, clayey, dry, no odor	
0.00		Dry			5				
0.00					10				



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

BORING/WELL NO.: SVE05
DATE: 2/17/2015
LOGGED BY: Daniel Hosler
DRILL MTHD: Hollow-Stem Auger

PROJECT: Lorenz UPRR 42-27 1, 41-27 3
PROJECT NO.: 008314023
DRILLED BY: Elite Drilling
SAMPLE MTHD: Drill Cuttings

DETECTOR: UltraRae 3000

HOLE DIA.: 8"

TD: 10'

DTW: NA

GRAVEL PACK: 10-20 Silica Sand

SEAL: Bent. Chips

GROUT: Cement/Bent Mix

CASING TYPE: SCH. 40 PVC

CASING DIA.: 2"

CASING LENGTH: 5'

SCREEN TYPE: SCH. 40 PVC

SCREEN SLOT: 0.010"

SCREEN LENGTH: 5'

Vapor (ppm) 0.0 1000.0	Staining	Moisture Content	Sample	Sample Run (ft/ft)	Depth (ft. bgs.)	USCS	Soil Type	Lithology Description	Well Construction
0.00		Dry	NA		0	SC		SC: 0'-10' - dark brown, SAND, fine grained, clayey, dry, no odor	
0.00		Dry			5				
0.00					10				



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

BORING/WELL NO.: SVE06
DATE: 2/17/2015
LOGGED BY: Daniel Hosler
DRILL MTHD: Hollow-Stem Auger

PROJECT: Lorenz UPRR 42-27 1, 41-27 3
PROJECT NO.: 008314023
DRILLED BY: Elite Drilling
SAMPLE MTHD: Drill Cuttings

DETECTOR: UltraRae 3000

GRAVEL PACK: 10-20 Silica Sand

CASING TYPE: SCH. 40 PVC

SCREEN TYPE: SCH. 40 PVC

HOLE DIA.: 8"

SEAL: Bent. Chips

CASING DIA.: 2"

SCREEN SLOT: 0.010"

TD: 10'

DTW: NA

GROUT: Cement/Bent Mix

CASING LENGTH: 5'

SCREEN LENGTH: 5'

Vapor (ppm) 0.0 1000.0	Staining	Moisture Content	Sample	Sample Run (ft/ft)	Depth (ft. bgs.)	USCS	Soil Type	Lithology Description	Well Construction
0.00		Dry	NA		0	SC		SC: 0'-10' - light brown, SAND, fine grained, clayey, dry, no odor	
0.00		Dry			5				
0.00					10				



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BORING LOG/MONITORING WELL COMPLETION DIAGRAM

BORING/WELL NO.: SVE07
DATE: 2/18/2015
LOGGED BY: Daniel Hosler
DRILL MTHD: Hollow-Stem Auger

PROJECT: Lorenz UPRR 42-27 1, 41-27 3
PROJECT NO.: 008314023
DRILLED BY: Elite Drilling
SAMPLE MTHD: Drill Cuttings

DETECTOR: UltraRae 3000

GRAVEL PACK: 10-20 Silica Sand

CASING TYPE: SCH. 40 PVC

SCREEN TYPE: SCH. 40 PVC

HOLE DIA.: 8"

SEAL: Bent. Chips

CASING DIA.: 2"

SCREEN SLOT: 0.010"

TD: 10'

DTW: NA

GROUT: Cement/Bent Mix

CASING LENGTH: 5'

SCREEN LENGTH: 5'

Vapor (ppm) 0.0 1000.0	Staining	Moisture Content	Sample	Sample Run (ft/ft)	Depth (ft. bgs.)	USCS	Soil Type	Lithology Description	Well Construction
0.00		Dry	NA		0	SC		SC: 0'-10' - dark brown, SAND, fine grained, clayey, dry, moist at 5' bgs no odor	
23.62		Moist			5				
					10				

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

April 17, 2015

Charles Greeson

LT Environmental, Inc.

4600 West 60th Avenue

Arvada, CO 80003

RE: NEP - Lorenz UPRR 42 27-1, 41-27-3

Enclosed are the results of analyses for samples received by Summit Scientific on 04/10/15 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury
President



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: NEP - Lorenz UPRR 42 27-1, 41-27-3

Project Number: 0083-14023
Project Manager: Charles Greeson

Reported:
04/17/15 15:42

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW02	1504133-01	Water	04/10/15 09:00	04/10/15 16:30
MW03	1504133-02	Water	04/10/15 09:10	04/10/15 16:30
MW04	1504133-03	Water	04/10/15 09:20	04/10/15 16:30
MW06	1504133-04	Water	04/10/15 09:30	04/10/15 16:30
MW07	1504133-05	Water	04/10/15 09:40	04/10/15 16:30
MW10	1504133-06	Water	04/10/15 10:00	04/10/15 16:30
MW11	1504133-07	Water	04/10/15 10:10	04/10/15 16:30
MW12	1504133-08	Water	04/10/15 10:20	04/10/15 16:30
MW05	1504133-09	Water	04/10/15 10:30	04/10/15 16:30
MW09	1504133-10	Water	04/10/15 10:40	04/10/15 16:30
MW08	1504133-11	Water	04/10/15 10:50	04/10/15 16:30
MW13	1504133-12	Water	04/10/15 11:00	04/10/15 16:30
MW01	1504133-13	Water	04/10/15 11:10	04/10/15 16:30

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: NEP - Lorenz UPRR 42-27-1, 41-27-3

Project Number: 0083-14023
Project Manager: Charles Greeson

Reported:
04/17/15 15:42

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S₂

1504133.1

741 Corporate Circle, Suite J&K ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933

Page 1 of 2

Client: LT Environmental, Inc. Project Manager: Chuck Greeson
Address: 4600 West 60th Ave E-Mail: C.greeson@ltenv.com
City/State/Zip: Arvada, CO 80003
Phone: 303-433-9788 Fax: 303-433-1432 Project Name: Lorenz UPRR 42-27-1, 41-27-3
Sampler Name: B. Fin Project Number: 008314023

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested				Special Instructions	
					HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)					
1	MW02	04/10/2015	0910	3			X		X								
2	MW03		0910														Lab Filter Decant
3	MW04		0920														
4	MW06		0930														
5	MW07		0940														
6	MW10		1000														
7	MW11		1010														
8	MW12		1020														
9	MW05		1030														
10	MW09		1040														

Relinquished by: <u>B. Fin</u> Date/Time: <u>04/10/2015 16:30</u>	Received by: <u>MA</u> Date/Time: <u>4/10/15 1630</u>	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 hours 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 hours <input type="checkbox"/>	Notes:
Relinquished by: <u>MA</u> Date/Time: <u>4/10/15 1730</u>	Received by: <u>MA</u> Date/Time: <u>4-10 1730</u>	Sample Integrity: Temperature Upon Receipt: <u>5.6C</u>	
Relinquished by:	Received by:	Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: NEP - Lorenz UPRR 42-27-1, 41-27-3

Project Number: 0083-14023
Project Manager: Charles Greeson

Reported:
04/17/15 15:42

Summit Scientific

S₂

1504133.2

741 Corporate Circle, Suite J&K ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933

Page 2 of 2

Client: LT Environmental, Inc.

Project Manager: Chuck Greeson

Address: 4600 West 60th Ave

E-Mail: cgreson@lternv.com

City/State/Zip: Arvada, CO 80003

Phone: 303-433-9788

Fax: 303-433-1432

Project Name: Lorenz UPRR 42-27-1, 41-27-3

Sampler Name:

Project Number: 008314023

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested				Special Instructions
					HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)					
1	MW08	04/10/15	1050	1			X		X					X			Lab Filter Decant
2	MW13	↓	1100	↓			↓		↓				↓				↓
3	MW01		1110														
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Relinquished by: <u>B. F.</u>	Date/Time: <u>04/10/15 1630</u>	Received by: <u>MD</u>	Date/Time: <u>4/10/15 1630</u>	Turn Around Time (Check)	Notes:
				Same Day <input type="checkbox"/> 72 hours <input type="checkbox"/>	
				24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/>	
				48 hours <input type="checkbox"/>	
Relinquished by: <u>MD</u>	Date/Time: <u>4/10/15 1730</u>	Received by: <u>MD</u>	Date/Time: <u>4-10 1730</u>	Sample Integrity:	
				Temperature Upon Receipt: <u>5.6°C</u>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: NEP - Lorenz UPRR 42-27-1, 41-27-3

Project Number: 0083-14023
Project Manager: Charles Greeson

Reported:
04/17/15 15:42

Sample Receipt Checklist

S2 Work Order: 1504133

Client: LT

Client Project ID: Lorenz UPRR 42-27-1, 41-27-3

Shipped Via: _____
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Airbill #: _____

Matrix (check all that apply): ☐ Air ☐ Soil/Solid ☒ Water ☐ Other: _____
(Describe)

Cooler ID					
Temp (°C)	<u>5.4</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.				
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		<input checked="" type="checkbox"/>		
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, etc.				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				
⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.				

Ben Strowsbury
Custodian Printed Name

[Signature]
Signature or Initials of Custodian

4/13/15 2016
Date/Time

[Signature]



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: NEP - Lorenz UPRR 42 27-1, 41-27-3

Project Number: 0083-14023
Project Manager: Charles Greeson

Reported:
04/17/15 15:42

MW02
1504133-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/10/15 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1504145	04/14/15	04/14/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/10/15 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		94.3 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		98.3 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		110 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: NEP - Lorenz UPRR 42 27-1, 41-27-3
Project Number: 0083-14023
Project Manager: Charles Greeson

Reported:
04/17/15 15:42

MW03
1504133-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/10/15 09:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	1.1	1.0	ug/l	1	1504145	04/14/15	04/14/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/10/15 09:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		103 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		97.4 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	45-146		"	"	"	"	

Summit Scientific

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: NEP - Lorenz UPRR 42 27-1, 41-27-3
Project Number: 0083-14023
Project Manager: Charles Greeson

Reported:
04/17/15 15:42

MW04
1504133-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/10/15 09:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	1504145	04/14/15	04/14/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/10/15 09:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		96.6 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		98.0 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		111 %	45-146		"	"	"	"	

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: NEP - Lorenz UPRR 42 27-1, 41-27-3
Project Number: 0083-14023
Project Manager: Charles Greeson

Reported:
04/17/15 15:42

MW06
1504133-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/10/15 09:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	1504145	04/14/15	04/14/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/10/15 09:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		94.9 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		97.0 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		114 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: NEP - Lorenz UPRR 42 27-1, 41-27-3
Project Number: 0083-14023
Project Manager: Charles Greeson

Reported:
04/17/15 15:42

MW07
1504133-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/10/15 09:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	1504145	04/14/15	04/14/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/10/15 09:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		93.8 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		96.5 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		112 %	45-146		"	"	"	"	

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: NEP - Lorenz UPRR 42 27-1, 41-27-3

Project Number: 0083-14023
Project Manager: Charles Greeson

Reported:
04/17/15 15:42

MW10
1504133-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/10/15 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1504145	04/14/15	04/14/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/10/15 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		95.4 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		98.6 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		111 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: NEP - Lorenz UPRR 42 27-1, 41-27-3

Project Number: 0083-14023
Project Manager: Charles Greeson

Reported:
04/17/15 15:42

MW11
1504133-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/10/15 10:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	1504145	04/14/15	04/14/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/10/15 10:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		93.8 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		98.4 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	45-146		"	"	"	"	

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LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: NEP - Lorenz UPRR 42 27-1, 41-27-3
Project Number: 0083-14023
Project Manager: Charles Greeson

Reported:
04/17/15 15:42

MW12
1504133-08 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/10/15 10:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	1504145	04/15/15	04/15/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/10/15 10:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		93.1 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		96.9 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		112 %	45-146		"	"	"	"	

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Arvada CO, 80003

Project: NEP - Lorenz UPRR 42 27-1, 41-27-3

Project Number: 0083-14023
Project Manager: Charles Greeson

Reported:
04/17/15 15:42

MW05
1504133-09 (Water)

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Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/10/15 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1504145	04/15/15	04/15/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/10/15 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		95.2 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		98.6 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		112 %	45-146		"	"	"	"	

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Arvada CO, 80003

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Project Number: 0083-14023
Project Manager: Charles Greeson

Reported:
04/17/15 15:42

MW09
1504133-10 (Water)

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Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/10/15 10:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	1504145	04/15/15	04/15/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/10/15 10:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		94.2 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		91.2 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		111 %	45-146		"	"	"	"	

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Project Number: 0083-14023
Project Manager: Charles Greeson

Reported:
04/17/15 15:42

MW08
1504133-11 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/10/15 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	89	1.0	ug/l	1	1504145	04/15/15	04/15/15	EPA 8260B	
Toluene	45	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	3300	10	"	10	"	"	"	"	

Date Sampled: **04/10/15 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		95.3 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		113 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		104 %	45-146		"	"	"	"	

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Project: NEP - Lorenz UPRR 42 27-1, 41-27-3

Project Number: 0083-14023
Project Manager: Charles Greeson

Reported:
04/17/15 15:42

MW13
1504133-12 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/10/15 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	1100	10	ug/l	10	1504145	04/15/15	04/15/15	EPA 8260B	
Toluene	25	1.0	"	1	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	2400	10	"	10	"	"	"	"	

Date Sampled: **04/10/15 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		92.7 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		107 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	45-146		"	"	"	"	

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4600 West 60th Avenue
Arvada CO, 80003

Project: NEP - Lorenz UPRR 42 27-1, 41-27-3

Project Number: 0083-14023
Project Manager: Charles Greeson

Reported:
04/17/15 15:42

MW01
1504133-13 (Water)

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Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/10/15 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	25000	100	ug/l	100	1504145	04/15/15	04/15/15	EPA 8260B	
Toluene	220	100	"	"	"	"	"	"	
Ethylbenzene	640	100	"	"	"	"	"	"	
Xylenes (total)	13000	100	"	"	"	"	"	"	

Date Sampled: **04/10/15 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		95.8 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		103 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		107 %	45-146		"	"	"	"	

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Arvada CO, 80003

Project: NEP - Lorenz UPRR 42 27-1, 41-27-3

Project Number: 0083-14023
Project Manager: Charles Greeson

Reported:
04/17/15 15:42

Volatile Organic Compounds by EPA Method 8260B - Quality Control

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Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1504145 - EPA 5030 Water MS

Blank (1504145-BLK1)

Prepared & Analyzed: 04/14/15

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	12.0		"	13.2		90.9	37-154			
Surrogate: Toluene-d8	13.0		"	13.3		97.7	45-149			
Surrogate: 4-Bromofluorobenzene	14.8		"	13.3		111	45-146			

LCS (1504145-BS1)

Prepared & Analyzed: 04/14/15

Benzene	28.9	1.0	ug/l	33.3		86.7	51-132			
Toluene	29.2	1.0	"	33.3		87.5	51-138			
Ethylbenzene	29.4	1.0	"	33.1		88.9	58-146			
m,p-Xylene	60.7	2.0	"	66.5		91.3	57-144			
o-Xylene	28.9	1.0	"	32.8		88.1	53-146			
Surrogate: 1,2-Dichloroethane-d4	13.0		"	13.2		98.5	37-154			
Surrogate: Toluene-d8	13.2		"	13.3		98.9	45-149			
Surrogate: 4-Bromofluorobenzene	13.7		"	13.3		103	45-146			

Matrix Spike (1504145-MS1)

Source: 1504133-01

Prepared & Analyzed: 04/14/15

Benzene	29.9	1.0	ug/l	33.3	ND	89.7	34-141			
Toluene	29.5	1.0	"	33.3	ND	88.5	27-151			
Ethylbenzene	30.8	1.0	"	33.1	ND	93.1	29-160			
m,p-Xylene	62.8	2.0	"	66.5	ND	94.4	20-166			
o-Xylene	30.0	1.0	"	32.8	ND	91.6	33-159			
Surrogate: 1,2-Dichloroethane-d4	12.5		"	13.2		94.8	37-154			
Surrogate: Toluene-d8	13.2		"	13.3		98.7	45-149			
Surrogate: 4-Bromofluorobenzene	14.3		"	13.3		107	45-146			

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Project: NEP - Lorenz UPRR 42 27-1, 41-27-3

Project Number: 0083-14023
Project Manager: Charles Greeson

Reported:
04/17/15 15:42

Volatile Organic Compounds by EPA Method 8260B - Quality Control
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Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch 1504145 - EPA 5030 Water MS

Matrix Spike Dup (1504145-MSD1)	Source: 1504133-01			Prepared & Analyzed: 04/14/15						
Benzene	29.2	1.0	ug/l	33.3	ND	87.7	34-141	2.33	32	
Toluene	28.6	1.0	"	33.3	ND	85.7	27-151	3.17	25	
Ethylbenzene	31.2	1.0	"	33.1	ND	94.3	29-160	1.23	50	
m,p-Xylene	63.3	2.0	"	66.5	ND	95.1	20-166	0.746	36	
o-Xylene	30.2	1.0	"	32.8	ND	92.2	33-159	0.597	26	
Surrogate: 1,2-Dichloroethane-d4	13.3		"	13.2		101	37-154			
Surrogate: Toluene-d8	12.7		"	13.3		95.2	45-149			
Surrogate: 4-Bromofluorobenzene	14.7		"	13.3		110	45-146			

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4600 West 60th Avenue
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Project: NEP - Lorenz UPRR 42 27-1, 41-27-3

Project Number: 0083-14023
Project Manager: Charles Greeson

Reported:
04/17/15 15:42

Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference

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A handwritten signature in black ink, appearing to be 'MSM'.