CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 1 of 11

FIELD LOCATION OF BORING:	CLIENT/LOCATION:	PLANNED USE:	BORING DEPTH:	BORING/WELL NO.:
B-A; Frmr. UST; N; Central	Pico/ Mckinelyville	Investigative	25'	B-A
	DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: Hollow Stem	WELL DEPTH: N/A	BORING DIAMETER: 8"
	DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: N/A	FILTER PACK: N/A	SCREEN SLOT SIZE: N/A
	WELL SEAL: Borings sealed w/ cement-bentonite grout			

SAMPLING METHOD: Split spoon

MONITORING INSTRUMENT: Mini Rae Photoionization Detector

FIRST ENCOUNTERED WATER DEPTH: Approx. 15'

STATIC WATER DEPTH - DATE:

DRILLING/WELL CONSTRUCTION: START 10:00 FINISH 11:00

LOGGED BY: Andrew Locicero

APPROVED BY:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	Description
						1						Gravel
						2						
						3		20	20	60		Silty Clay (MH) Lite Brown, Low plasticity, moist no odor, Sub ang ular gravel >0.5"
						4						
	5	6	4									Organic layer (OL) Dark Brown, moist, no odor
	6	6	6	x		5						
	6	6	6				9.5	10	20	70		Sub ang ular gravel >0.5"
						6						
						7						Silty Clay (MH) Lite-Brown, moderate plasticity, moist, no odor
						8						
						9						
	5	6	6									
	8	6	6	x		0	9.0		10	90		
	16	6	6									
						1						
						2						Sandy Clay (SC) Brown w/ Red mottling, moderate to high plasticity, moist, no odor
						3						
						4						
	8	6	6									
	10	6	6	x	▼	5	11.6		30	70		
	5	6	6									
						6						
						7						
						8						
						9						
	10	6	6									
	13	6	6	x		0	11.5		30	70		
	8	6	6									
						1						
						2						
						3						
						4						
	6		0									
	14		0			5						
	18		0									
						6						
						7						
						8						
						9						
						0						

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 2 of 11

FIELD LOCATION OF BORING:	CLIENT/LOCATION:	PLANNED USE:	BORING DEPTH:	BORING/WELL NO.:
B-B (Frmr. UST) N Central	Pico/ Mckinelyville	Investigative	25'	B-B
	DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: Hollow Stem	WELL DEPTH: N/A	BORING DIAMETER: 8"
	DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: N/A	FILTER PACK: N/A	SCREEN SLOT SIZE:
	WELL SEAL: Borings sealed w/ cement-bentonite grout			

SAMPLING METHOD: Split spoon

MONITORING INSTRUMENT: Mini Rae Photoionization Detector

FIRST ENCOUNTERED WATER DEPTH: Approx. 15'

STATIC WATER DEPTH - DATE:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
						1						Gravel
						2						
						3		20	20	60		Silty Clay (MH) Lite Brown, Low plasticity, moist no odor, Sub ang ular gravel >0.5"
	6	6	4			4						
	6	6	6	x		5						Organic layer (OL) Dark Brown, moist, no odor Sub ang ular gravel >0.5"
	6	0	6				5.9		20	80		
						6						
						7						Sandy Clay (SC) Brown Gray w/ dark org . mottling, moderate to high plasticity, moist, no odor
						8						
						9						
	6	6	6									
	7	6	6	x		0	7.7		50	50		
	16	6	6									
						1						
						2						
						3						
						4						
	10	6	6									
	13	6	6	x	▼	5	1340		50	50		Sandy Clay (SC) Brown w/ Red mottling, moderate to high plasticity, moist, strong HC odor
	17	6	6									
						6						
						7						
						8						
						9						
	8	6	6			0	109.0		50	50		
	11	6	6	x								
	14	6	0			1						
						2						
						3						
						4						
						5						
						6						
						7						
						8						
						9						
						0						

DRILLING/WELL CONSTRUCTION: START 11:00 FINISH 12:00

LOGGED BY: Andrew Locicero

APPROVED BY:

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 3 of 11

FIELD LOCATION OF BORING:	CLIENT/LOCATION:	PLANNED USE:	BORING DEPTH:	BORING/WELL NO.:
B-C ● Frmr. UST → [ ] N Central	Pico/ Mckinelyville	Investigative	25'	B-C
	DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: Hollow Stem	WELL DEPTH: N/A	BORING DIAMETER: 8"
	DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: N/A	FILTER PACK: N/A	SCREEN SLOT SIZE:
	WELL SEAL: Borings sealed w/ cement-bentonite grout			

SAMPLING METHOD: Split spoon

MONITORING INSTRUMENT: Mini Rae Photoionization Detector

FIRST ENCOUNTERED WATER DEPTH: Approx. 15'

STATIC WATER DEPTH - DATE:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
						1						Gravel
						2						Organic layer (OL) Dark Brown, moist, no odor
						3			40	60		
	6	6	6			4						
	5	6	6	x		5						
	6	6	6				5.7		40	60		
						6						
						7						Silty Clay w/ Sand (MH) Lite-Brown, organic mottling, moderate plasticity, moist, no odor
						8						
						9						
	7	6	6									
	11	6	6	x		0	10.4					
	14	6	6									Sandy Clay (SC) Lite Brown to Gray w/ organic mottling, moderate to high plasticity, moist, no odor
						1						
						2						
						3						
						4						
	8	6	6									
	10	6	6	x	▼	5	1994		50	50		
	17	6	4									Sandy Clay (SC) Lite Brown to Gray w/ organic mottling, moderate to high plasticity, moist, strong HC odor
						6						
						7						
						8						
						9						
	11	6	6									
	13	6	6	x		0	1043		30	70		
	16	6	0									
						1						
						2						
						3						
						4						
						5						
						6						
						7						
						8						
						9						
						0						

DRILLING/WELL CONSTRUCTION: START 1:00 FINISH 2:00

LOGGED BY: Andrew Locicero

APPROVED BY:

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 5 of 11

FIELD LOCATION OF BORING:	CLIENT/LOCATION:	PLANNED USE:	BORING DEPTH:	BORING/WELL NO.:
Frmr. UST → ; B-E ; N ; Central	Pico/ Mckinelyville	Monitoring	25'	B-E
	DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: Hollow Stem	WELL DEPTH: N/A	BORING DIAMETER: 8"
	DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: N/A	FILTER PACK: N/A	SCREEN SLOT SIZE: N/A
	WELL SEAL: Bentonite			

SAMPLING METHOD: Split spoon

MONITORING INSTRUMENT: Mini Rae Photoionization Detector

FIRST ENCOUNTERED WATER DEPTH: Approx. 15'

STATIC WATER DEPTH - DATE:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
						1						Gravel / Sub grade fill
						2						Organic layer (OL) Dark Brown, moist, no odor moderate plasticity
						3			20	80		
	7	6	6			4						
	7	6	6	x		5						
	7	6	6				17.2		20	80		Silty Clay w/ Sand (MH) Lite-Brown, organge mottling, moderate plasticity, moist, no odor
						6						
						7						
						8						
	7	6	6			9						
	12	6	6	x		0	20.9					
	16	6	0			1						
						2						
						3						
	8	6	6			4						Silty Clay w/ Sand (MH) Lite-Brown, organic mottling, high plasticity, moist, no odor
	11	6	6	x	▼	5	75.5		20	80		
	18	6	0			6						
						7						
						8						
						9						
	10	6	6			0	79.0		20	80		
	11	6	6	x		1						Silty Clay w/ Sand (MH) Lite-Brown, organic mottling, low plasticity, moist, HC odor
	15	6	6			2						
						3						
						4						
						5						
						6						
						7						
						8						
						9						
						0						

DRILLING/WELL CONSTRUCTION: START 2:00 FINISH 3:00

LOGGED BY: Andrew Locicero

APPROVED BY:

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 6 of 11

FIELD LOCATION OF BORING:	CLIENT/LOCATION:	PLANNED USE:	BORING DEPTH:	BORING/WELL NO.:
Frmr. UST → ; B-F ; N ; Central	Pico/ Mckinelyville	Investigative	25'	B-F
	DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: Hollow Stem	WELL DEPTH: N/A	BORING DIAMETER: 8"
	DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: N/A	FILTER PACK: N/A	SCREEN SLOT SIZE: N/A
	WELL SEAL: Borings sealed w/ cement-bentonite grout			

SAMPLING METHOD: Split spoon

MONITORING INSTRUMENT: Mini Rae Photoionization Detector

FIRST ENCOUNTERED WATER DEPTH: Approx. 15'

STATIC WATER DEPTH - DATE:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
						1						Gravel / Subgrade fill
						2						
						3						Organic layer (OL) Dark Brown, moist, no odor
						4						
	3	6	6									
	5	6	6	x		5						
	5	6	6				10.7		30	70		Silty Clay w/ Sand (MH) Lite Brown w/ orange mottling, low to moderate plasticity, moist, no odor,
						6						
						7						
						8						
						9						
	8	6	6									
	11	6	6	x		0	62.5		30	70		
	16	6	6									
						1						
						2						Sandy Clay (SC) Brown - Gray w/ orange mottling moderate to high plasticity, moist, HC odor
						3						
						4						
	11	6	6									
	14	6	6	x	▼	5	1710		50	50		
	19	6	6									
						6						Silty Clay w/ Sand (MH) Green - Gray low to moderate plasticity, moist, HC odor,
						7						
						8						
						9						
	9	6	6				323		40	60		
	13	6	6	x		0						
	18	6	6									
						1						
						2						
						3						
						4						
						5						
						6						
						7						
						8						
						9						
						0						

DRILLING/WELL CONSTRUCTION: START 3:00 FINISH 4:00

LOGGED BY: Andrew Locicero

APPROVED BY:

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 7 of 11

FIELD LOCATION OF BORING:	CLIENT/LOCATION:	PLANNED USE:	BORING DEPTH:	BORING/WELL NO.:
B-G ● Frmr. UST; N; Central	Pico/ Mckinelyville	Investigative	25'	B-G
	DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: Hollow Stem	WELL DEPTH: N/A	BORING DIAMETER: 8"
	DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: N/A	FILTER PACK: N/A	SCREEN SLOT SIZE: N/A
	WELL SEAL: Borings sealed w/ cement-bentonite grout			

SAMPLING METHOD: Split spoon

MONITORING INSTRUMENT: Mini Rae Photoionization Detector

FIRST ENCOUNTERED WATER DEPTH: Approx. 15'

STATIC WATER DEPTH - DATE:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
						1						Gravel / Subgrade fill
						2						
						3						Organic layer (OL) Dark Brown, moist, no odor
						4						
	5	6	6									
	5	6	6	x		5						
	5	6	5				11.4		30	70		Silty Clay w/ Sand (MH) Lite Brown w/ orange mottling, moderate plasticity, moist, no odor,
						6						
						7						
						8						
						9						Sandy Clay (SC) Brown w/ orange mottling moderate plasticity, moist, HC odor
	5	6	6									
	6	6	6	x		0	11.5		30	70		
	13	6	6									
						1						
						2						
						3						
						4						
	7	6	6		▼							
	10	6	6	x		5	747		50	50		Sandy Clay (SC) Brown - Gray w/ orange mottling moderate plasticity, moist, HC odor
	15	6	6									
						6						
						7						
						8						
						9						
	10	6	6									
	12	6	6	x		0	26.3		40	60		
	16	6	6									
						1						
						2						
						3						
						4						
						5						
						6						
						7						
						8						
						9						
						0						

DRILLING/WELL CONSTRUCTION: START 8:00 FINISH 9:00

LOGGED BY: Andrew Locicero

APPROVED BY:

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 11 of 11

FIELD LOCATION OF BORING:	CLIENT/LOCATION:	PLANNED USE:	BORING DEPTH:	BORING/WELL NO.:
Frmr. UST → B-H ● Central (N)	Pico/ Mckinelyville	Investigative	25'	B-H
	DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: Hollow Stem	WELL DEPTH: N/A	BORING DIAMETER: 8"
	DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: N/A	FILTER PACK: N/A	SCREEN SLOT SIZE:
	WELL SEAL: Borings sealed w/ cement-bentonite grout			

SAMPLING METHOD: Split spoon

MONITORING INSTRUMENT: Mini Rae Photoionization Detector

FIRST ENCOUNTERED WATER DEPTH: Approx. 15'

STATIC WATER DEPTH - DATE:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
												Gravel
						1						
						2						Organic layer (OL) Dark Brown, moist, no odor
						3			40	60		
	4	6	6			4						
	5	6	6	x		5	5.7		40	60		
	6	6	0									
						6						
						7						
						8						
						9						
	8	6	6			0	15.5					
	13	6	6	x								
	16	6	6			1						Sandy Clay (SC) Lite Brown to Gray w/ organic mottling, moderate to high plasticity, moist, no odor
						2						
						3						
						4						
	10	6	6			5	45.5		50	50		
	15	6	6	x	▼							
	19	6	6			6						
						7						
						8						Sandy Clay (SC) Lite Brown to Gray w/ organic mottling, moderate to high plasticity, moist, strong HC odor
						9						
	11	6	6			0	44.0		30	70		
	13	6	6	x								
	16	6	0			1						
						2						
						3						
						4						
						5						
						6						
						7						
						8						
						9						
						0						

DRILLING/WELL CONSTRUCTION: START 9:00 FINISH 10:00

LOGGED BY: Andrew Locicero

APPROVED BY:

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 8 of 11

FIELD LOCATION OF BORING:		CLIENT/LOCATION:	PLANNED USE:	BORING DEPTH:	BORING/WELL NO.:
MW-4	N	Pico/ Mckinelyville	Monitoring	25'	MW-4
Frmr. UST	Central	DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: Hollow Stem	WELL DEPTH: 25'	BORING DIAMETER: 8"
		DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: PVC	FILTER PACK: 2/12	SCREEN SLOT SIZE: 0.20
		WELL SEAL: Bentonite			

SAMPLING METHOD: Split spoon

MONITORING INSTRUMENT: Mini Rae Photoionization Detector

FIRST ENCOUNTERED WATER DEPTH: Approx. 15'

STATIC WATER DEPTH - DATE:

DRILLING/WELL CONSTRUCTION: START 10:00 FINISH 11:00

LOGGED BY: Andrew Locicero

APPROVED BY:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
						1						Gravel
						2						Organic layer (OL) Dark Brown, moist, no odor moderate plasticity
						3						
						4						
	7	6	6									
	7	6	6	x		5						
	7	6	0				10.1		60	40		
						6						Sandy Clay (SC) Lite-Brown, orange mottling, moderate plasticity, moist, no odor
						7						
						8						
						9						
	5	6	6									
	8	6	6	x		0	10.7					
	13	6	6									
						1						
						2						
						3						
						4						
	6	6	6									
	9	6	6	x	▼	5	16.8		30	70		
	16	6	6									
						6						Sandy Clay (SC) Lite-Brown, orange-gray mottling, moderate plasticity, moist, no odor
						7						
						8						
						9						
	9	6	6									
	15	6	6	x		0	10.5		40	60		
	16	6	6									
						1						
						2						
						3						
						4						
						5						
						6						
						7						
						8						
						9						
						0						

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 9 of 11

FIELD LOCATION OF BORING:	CLIENT/LOCATION:	PLANNED USE:	BORING DEPTH:	BORING/WELL NO.:
MW-5 (Frmr. UST) — N — Central	Pico/ Mckinelyville	Monitoring	25'	MW-5
	DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: Hollow Stem	WELL DEPTH: 25'	BORING DIAMETER: 8"
	DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: PVC	FILTER PACK: 2/12	SCREEN SLOT SIZE: 0.20
	WELL SEAL: Bentonite			

SAMPLING METHOD: Split spoon

MONITORING INSTRUMENT: Mini Rae Photoionization Detector

FIRST ENCOUNTERED WATER DEPTH: Approx. 15'

STATIC WATER DEPTH - DATE:

DRILLING/WELL CONSTRUCTION: START 11:00 FINISH 12:00

LOGGED BY: Andrew Locicero

APPROVED BY:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
						1						Gravel
						2						
						3			10	90		Organic layer (OL) Dark Brown, moist, no odor moderate plasticity
	6	6	6			4						
	7	6	6	x		5						
	10	6	2				10.3		30	70		
						6						
						7						Silty Clay w/ Sand (MH) Lite Brown w/orange mottling, moderate to low plasticity, moist, no odor
						8						
	8	6	6			9						
	12	6	6	x		0	10.5					
	15	6	6									
						1						
						2						
						3						
						4						
	8	6	6									
	11	6	6	x	▼	5	556		40	60		
	17	6	6									
						6						
						7						Silty Clay w/ Sand (MH) Lite Brown - gray mottling, moderate to low plasticity, moist, no odor
						8						
						9						
	11	6	6			0	322					
	15	6	6	x								
	19	6	6			1						
						2						
						3						
						4						
						5						
						6						
						7						
						8						
						9						
						0						

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 10 of 11

FIELD LOCATION OF BORING:		CLIENT/LOCATION:	PLANNED USE:	BORING DEPTH:	BORING/WELL NO.:
MW-6 Frmr. UST	N Central	Pico/ Mckinelyville	Monitoring	25'	MW-6
		DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: Hollow Stem	WELL DEPTH: 25'	BORING DIAMETER: 8"
		DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: PVC	FILTER PACK: 2/12	SCREEN SLOT SIZE: 0.20
		WELL SEAL: Bentonite			

SAMPLING METHOD: Split spoon

MONITORING INSTRUMENT: Mini Rae Photoionization Detector

FIRST ENCOUNTERED WATER DEPTH: Approx. 15'

STATIC WATER DEPTH - DATE:

DRILLING/WELL CONSTRUCTION: START 2:00 FINISH 3:00

LOGGED BY: Andrew Locicero

APPROVED BY:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
						1						Gravel
						2						
						3						Silty Sand (SM) Lite Brown, Low plasticity, moist no odor,
						4						
	4	6	6									
	4	6	6	x		5						Organic layer (OL) Dark Brown, moist, no odor
	6	6	4				10.4		30	70		
						6						
						7						Sandy Clay (SC) Brown , Low plasticity, moist, no odor
						8						
						9						
	7	6	6									
	9	6	6	x		0	30.7					
	14	6	6									
						1						
						2						Silty Clay (MH) Lite-Brown, moderate plasticity, moist, HC odor
						3						
						4						
	9	6	6									
	12	6	6	x	▼	5	27.5		40	60		
	17	6	6									
						6						
						7						Sandy Clay (SC) Gray , Low plasticity, moist, HC odor
						8						
						9						
	11	6	6									
	13	6	6	x		0	23.5					
	20	6	6									
						1						
						2						
						3						
						4						
						5						
						6						
						7						
						8						
						9						
						0						

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 4 of 11

FIELD LOCATION OF BORING:	CLIENT/LOCATION:	PLANNED USE:	BORING DEPTH:	BORING/WELL NO.:
Frmr. UST → B-D; N; Central	Pico/ Mckinelyville	Monitoring	25'	MW-7 (B-D)
	DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: Hollow Stem	WELL DEPTH: 25'	BORING DIAMETER: 8"
	DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: PVC	FILTER PACK: 2/12	SCREEN SLOT SIZE: 0.20
	WELL SEAL: Bentonite			

SAMPLING METHOD: Split spoon

MONITORING INSTRUMENT: Mini Rae Photoionization Detector

FIRST ENCOUNTERED WATER DEPTH: Approx. 15'

STATIC WATER DEPTH - DATE:

DRILLING/WELL CONSTRUCTION: START 9:45 FINISH 9:00

LOGGED BY: Andrew Locicero

APPROVED BY:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
						1						Gravel
						2						Organic layer (OL) Dark Brown, moist, no odor moderate plasticity
						3			40	60		
	6	6	6			4						
	4	6	6	x		5						
	5	6	6				7.7	20	10	70		
						6						
						7						Silty Clay w/ Sand (MH) Lite-Brown, organic mottling, moderate plasticity, moist, no odor Sub-angular gravel >0.5"
						8						
						9						
	7	6	6									
	11	6	6	x		0	72.4					
	15	6	6									
						1						
						2						
						3						
						4						
	12	6	6									Silty Clay w/ Sand (MH) Lite-Brown, organic mottling, moderate plasticity, moist, HC odor,
	14	6	6	x	▼	5	1023		30	70		
	19	6	6									
						6						
						7						
						8						
						9						
	12	6	6			0	206		40	60		
	12	6	6	x								
	15	6	6			1						Silty Clay w/ Sand (MH) Lite-Brown, organic mottling, low plasticity, moist, HC odor
						2						
						3						
						4						
						5						
						6						
						7						
						8						
						9						
						0						

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 1 of 5

FIELD LOCATION OF BORING: MW-8

CLIENT/LOCATION: PICO	PLANNED USE: Monitoring	BORING DEPTH: 25'	BORING/WELL NO.: MW-8
DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: CME-60	WELL DEPTH: 23'	BORING DIAMETER: 8"
DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: PVC	FILTER PACK: 2/12	SCREEN SLOT SIZE: 0.020'
WELL SEAL: Concrete / Bentonite			

SAMPLING METHOD: Split Spoon

MONITORING INSTRUMENT: ovm

FIRST ENCOUNTERED WATER DEPTH: 17'

STATIC WATER DEPTH - DATE:

FINISH

DRILLING/WELL CONSTRUCTION: START

LOGGED BY:

APPROVED BY:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
						1						Base Rock Organic layer
						2						(SM)-Light brown silty sand, fine-grained sand, moist, no odor, moderate plasticity
						3						
	5					4						
	5											
	6					5	0.9					
						6						(SM)-Light brown silty sand, fine-grained sand, moist, no odor, moderate to low plasticity, inconsistent sand
						7						
						8						
	5											
	7					9						
	10											
						0	0.5					
						11						(SM)-Light brown silty sand, fine-grained sand, moist, no odor, low plasticity, inconsistent sand
						12						
						13						
	12					14						
	15											
	20			x		15	0.0					
						16						(SM)-Light brown silty sand, fine-grained sand, moist, no odor, low plasticity, inconsistent sand
					▼	17						
						18						
	12					19						
	15											
	23			x		20						(SM)-Light brown silty sand, fine-grained sand, moist, no odor, low plasticity, inconsistent sand
						21						
						22						
						23						
						24						
						25						
						26						
						27						
						28						
						29						
						30						

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 3 of 5

FIELD LOCATION OF BORING:

MW-9●

CLIENT/LOCATION:	PLANNED USE:	BORING DEPTH:	BORING/WELL NO.:
PICO	Monitoring	20'	MW-9
DRILLING CONTRACTOR:	DRILL RIG TYPE:	WELL DEPTH:	BORING DIAMETER:
MDE	CME-60	20'	8"
DRILL RIG OPERATOR:	WELL MATERIAL:	FILTER PACK:	SCREEN SLOT SIZE:
Ed Mitchell	PVC	2/12	0.020'
WELL SEAL: Concrete / Bentonite			

SAMPLING METHOD: Split Spoon

MONITORING INSTRUMENT: ovm

FIRST ENCOUNTERED WATER DEPTH: 18'

STATIC WATER DEPTH - DATE:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
						1						Asphalt Base Rock
						2						(SM)-Light brown silty sand, fine-grained sand, moist, no odor, moderate plasticity
						3						
	5					4						
	6											
	10					5	0.3					
						6						(SM)-Light brown silty sand, fine-grained sand, moist, no odor, moderate plasticity
						7						
						8						
	8					9						
	14											
	18					0	0.3					
						11						(SM)-Light brown silty sand, fine-grained sand, moist, no odor, moderate to low plasticity
						12						
						13						
	10					14						
	18											
	22			x		15	0.4					
						16						(SM)-Light brown silty sand, fine-grained sand, moist, no odor, low plasticity
						17						
					▼	18						
	12					19						x
	15											
	19			x		20	0.3					
						21						
						22						
						23						
						24						
						25						
						26						
						27						
						28						
						29						
						30						

FINISH

DRILLING/WELL CONSTRUCTION: START

LOGGED BY:

APPROVED BY:

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 4 of 5

FIELD LOCATION OF BORING:

● MW-10

CLIENT/LOCATION:	PLANNED USE:	BORING DEPTH:	BORING/WELL NO.:
PICO	Monitoring	25'	MW-10
DRILLING CONTRACTOR:	DRILL RIG TYPE:	WELL DEPTH:	BORING DIAMETER:
MDE	CME-60	25'	8"
DRILL RIG OPERATOR:	WELL MATERIAL:	FILTER PACK:	SCREEN SLOT SIZE:
Ed Mitchell	PVC	2/12	0.020'

WELL SEAL: Concrete / Bentonite

SAMPLING METHOD: Split Spoon

MONITORING INSTRUMENT: ovm

FIRST ENCOUNTERED WATER DEPTH: 16'

STATIC WATER DEPTH - DATE:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
						1						Gravel Organic layer
						2						(SM)-Light brown silty sand, fine-grained sand, moist, no odor, moderate plasticity
						3						
	5					4						
	6											
	10					5	0.1					
						6						(SM)-Light brown silty sand, fine-grained sand, moist, no odor, moderate plasticity
						7						
						8						
	9					9						
	15											
	19					10	0.0					
						11						(SM)-Light brown silty sand, fine-grained sand, moist, no odor, moderate plasticity
						12						
						13						
	12					14						
	15											
	26			x	▼	15	0.3					
						16						(SM)-Light brown silty sand, fine-grained sand, moist, no odor, moderate to low plasticity
						17						
						18						
	16					19						
	19											
	24			x		20	0.0					
						21						(SM)-Light brown silty sand, fine-grained sand, moist, no odor, moderate to low plasticity
						22						
						23						
						24						
						25						
						26						
						27						
						28						
						29						
						30						

FINISH

DRILLING/WELL CONSTRUCTION: START

LOGGED BY:

APPROVED BY:

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 5 of 5

FIELD LOCATION OF BORING: MW-11

CLIENT/LOCATION: PICO	PLANNED USE: Monitoring	BORING DEPTH: 25'	BORING/WELL NO.: MW-11
DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: CME-60	WELL DEPTH: 25'	BORING DIAMETER: 8"
DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: PVC	FILTER PACK: 2/12	SCREEN SLOT SIZE: 0.020'
WELL SEAL: Concrete / Bentonite			

SAMPLING METHOD: Split Spoon

MONITORING INSTRUMENT: ovm

FIRST ENCOUNTERED WATER DEPTH: 17.5'

STATIC WATER DEPTH - DATE:

FINISH

DRILLING/WELL CONSTRUCTION: START

LOGGED BY:

APPROVED BY:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
												Gravel Base Rock Organic layer
						1						(ML)-Gray silt with clay, moist, no odor, moderate to high plasticity,
						2						
						3						
	5					4						
	5											
	7					5	0.1					(SM)-Gray silty sand, fine-grained sand, moist, no odor, low plasticity, inconsistent sand
						6						
						7						
						8						
	9					9						
	13											
	20					10	0.0					
						11						(SM)-Light brown silty sand, fine-grained sand, moist, no odor, low plasticity, inconsistent sand
						12						
						13						
	13					14						
	15											
	25			x		15	0.7					
						16						(SM)-Light brown silty sand, fine-grained sand, moist, no odor, low plasticity, inconsistent sand
					▼	17						
						18						
						19						
				x		20	0.5					
						21						(SM)-Light brown silty sand, fine-grained sand, moist, no odor, low plasticity, inconsistent sand
						22						
						23						
						24						
						25						
						26						
						27						
						28						
						29						
						30						

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 2 of 5

FIELD LOCATION OF BORING: MW-12 ●

CLIENT/LOCATION: PICO	PLANNED USE: Monitoring	BORING DEPTH: 20'	BORING/WELL NO.: MW-12
DRILLING CONTRACTOR: Ed Mitchell	DRILL RIG TYPE: CME-60	WELL DEPTH: 20'	BORING DIAMETER: 8"
DRILL RIG OPERATOR: CME-60	WELL MATERIAL: PVC	FILTER PACK: 2/12	SCREEN SLOT SIZE: 0.020'
WELL SEAL: Concrete / Bentonite			

SAMPLING METHOD: Split Spoon

MONITORING INSTRUMENT: ovm

FIRST ENCOUNTERED WATER DEPTH: 14.5'

STATIC WATER DEPTH - DATE:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
						1						(SM)-Light brown silty sand, fine-grained sand, moist, no odor, moderate plasticity
						2						
						3						
	8					4						
	9											
	12					5	1.5					
						6						(ML)-Gray silt with clay, moist, no odor, moderate to high plasticity,
						7						
						8						
	8					9						
	15											
	19					10	0.7					
						11						(ML)-Silty sand with clay, organic mottled
						12						
						13						
	10					14						
	12				▼							
	17			x		15	0.6					
						16						(SM)-Light brown silty sand, fine-grained sand, moist, no odor, moderate plasticity
						17						
						18						
	11					19						
	15											
	20			x		20	1.0					
						21						(SM)-Light brown silty sand, fine-grained sand, moist, no odor, moderate to low plasticity
						22						
						23						
						24						
						25						
						26						
						27						
						28						
						29						
						30						

FINISH

DRILLING/WELL CONSTRUCTION: START

LOGGED BY:

APPROVED BY:

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 1 of 3

FIELD LOCATION OF BORING:	CLIENT/LOCATION:	PLANNED USE:	BORING DEPTH:	BORING/WELL NO.:
Frmr. UST → SVB-2 ; N ; Central	Pico/ Mckinelyville	Monitoring	15'	SVB-2
	DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: Hollow Stem	WELL DEPTH: N/A	BORING DIAMETER: 8"
	DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: N/A	FILTER PACK: N/A	SCREEN SLOT SIZE: N/A
	WELL SEAL:			

SAMPLING METHOD: Split spoon / Continuous core

MONITORING INSTRUMENT:

FIRST ENCOUNTERED WATER DEPTH: Approx. 10'

STATIC WATER DEPTH - DATE:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
						1						Gravel / Sub grade fill
						2						Silty sand with clay (SM / SC) Lite-Brown, organge mottling, moderate to low plasticity, moist,
						3						
						4						
	P			x		5						
						6						
						7						
						8						
						9						Clayey sand with silt (SC / SM) gray, orange mottling, moderate plasticity, wet,
	P			x	▽	0						
						1						
						2						
						3						Silty sand with clay (SM / SC) gray, moderate to low plasticity, wet,
						4						
	P			x		5						
						6						
						7						
						8						
						9						
						0						
						1						
						2						
						3						
						4						
						5						
						6						
						7						
						8						
						9						
						0						

DRILLING/WELL CONSTRUCTION: START 1/30/03 900 FINISH 1000

LOGGED BY: Andrew Locicero

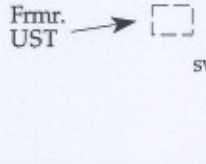
APPROVED BY:

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 1 of 3

FIELD LOCATION OF BORING:



CLIENT/LOCATION:	PLANNED USE:	BORING DEPTH:	BORING/WELL NO.:
Pico/ Mckinelyville	Monitoring	15'	SVB-1
DRILLING CONTRACTOR:	DRILL RIG TYPE:	WELL DEPTH:	BORING DIAMETER:
MDE	Hollow Stem	N/A	8"
DRILL RIG OPERATOR:	WELL MATERIAL:	FILTER PACK:	SCREEN SLOT SIZE:
Ed Mitchell	N/A	N/A	N/A
WELL SEAL:			

SAMPLING METHOD: Split spoon / Continuous core

MONITORING INSTRUMENT:

FIRST ENCOUNTERED WATER DEPTH: Approx. 10'

STATIC WATER DEPTH - DATE:

DRILLING/WELL CONSTRUCTION: START 1/30/03 8:00 FINISH 9:00

LOGGED BY: Andrew Locicero

APPROVED BY:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
						1						Gravel / Sub grade fill
						2						
						3						Silty sand with clay (SM / SC) Lite-Brown, organge mottling, moderate to low plasticity, moist,
						4						
	P			x		5						
						6						
						7						
						8						
						9						Clayey sand with silt (SC / SM) Lite-Brown, organic mottling, moderate plasticity, wet,
	P			x	▽	0						
						1						
						2						
						3						Silty sand with clay (SM / SC) gray, moderate to low plasticity, wet,
						4						
	P			x		5						
						6						
						7						
						8						
						9						
						0						
						1						
						2						
						3						
						4						
						5						
						6						
						7						
						8						
						9						
						0						

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 1 of 3

FIELD LOCATION OF BORING:	CLIENT/LOCATION:	PLANNED USE:	BORING DEPTH:	BORING/WELL NO.:
Frmr. UST → SVB-3 (N; Central)	Pico/ Mckinelyville	Monitoring	15'	SVB-3
	DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: Hollow Stem	WELL DEPTH: N/A	BORING DIAMETER: 8"
	DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: N/A	FILTER PACK: N/A	SCREEN SLOT SIZE: N/A
	WELL SEAL:			

SAMPLING METHOD: Split spoon / Continuous core

MONITORING INSTRUMENT:

FIRST ENCOUNTERED WATER DEPTH: Approx. 10'

STATIC WATER DEPTH - DATE:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
						1						Gravel / Sub grade fill
						2						
						3						Silty sand with clay (SM / SC) Lite-Brown, organge mottling, moderate to low plasticity, moist to wet below 10 feet bgs.
						4						
	P			x		5						
						6						
						7						
						8						
						9						
	P			x	▽	0						
						1						
						2						
						3						
						4						
	P			x		5						
						6						
						7						
						8						
						9						
						0						
						1						
						2						
						3						
						4						
						5						
						6						
						7						
						8						
						9						
						0						

DRILLING/WELL CONSTRUCTION: START 1/30/03 1000 FINISH 1045

LOGGED BY: Andrew Locicero

APPROVED BY:

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 1 of 11

FIELD LOCATION OF BORING: VEW-1

CLIENT/LOCATION:	PLANNED USE:	BORING DEPTH:	BORING/WELL NO.:
PICO	Vapor ext.	20'	VEW-1
DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: CME-60	WELL DEPTH: 20'	BORING DIAMETER: 8"
DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: 2" dia.PVC	FILTER PACK: 2/12	SCREEN SLOT SIZE: 0.020'
WELL SEAL: Concrete / Bentonite			

SAMPLING METHOD: Split Spoon

MONITORING INSTRUMENT: ovm

FIRST ENCOUNTERED WATER DEPTH: 18.5'

STATIC WATER DEPTH - DATE:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
						1						Base Rock Organic layer
						2						(SM-SC)-Silty sand with clay, orange mottled, med dense
						3						
	7	6	0			4						
	4	6	0									
	9	6	0			5						
						6						
						7						
						8						
						9						
	29	6	6									
	32	6	6			0	105					
	35	6	6	x								(SM)-Grey silty sand, fine-grained sand, moist, HC odor, low plasticity, medium dense
						11						
						12						
						13						
	6	6	6			14						
	14	6	6				654					
	17	6	6	x		15						
						16						
						17						
						18						
	12	6	6		▽	19						
	14	6	6				68					
	25	6	6			20						
						21						
						22						
						23						
						24						
						25						
						26						
						27						
						28						
						29						
						30						

DRILLING/WELL CONSTRUCTION: START 9:00 FINISH 10:00 9/24/03

LOGGED BY: Andrew Locicero

APPROVED BY:

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 2 of 11

FIELD LOCATION OF BORING: VEW-2

CLIENT/LOCATION: PICO	PLANNED USE: Vapor ext.	BORING DEPTH: 20'	BORING/WELL NO.: VEW-2
DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: CME-60	WELL DEPTH: 20'	BORING DIAMETER: 8"
DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: 2" dia.PVC	FILTER PACK: 2/12	SCREEN SLOT SIZE: 0.020'
WELL SEAL: Concrete / Bentonite			

DRILLING/WELL CONSTRUCTION: START 9/24/03 10:00 FINISH 11:00

LOGGED BY: Andrew Locicero

APPROVED BY:

SAMPLING METHOD: Split Spoon

MONITORING INSTRUMENT: ovm

FIRST ENCOUNTERED WATER DEPTH: 18.5'

STATIC WATER DEPTH - DATE:

DEPTH (FEET)	BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	OVM READING (PPM)	GRAPHIC LOG	
							Base Rock
1							
2							(MH)-Brown sandy silt , orange mottled, moderate plasticity, no odor
3							
4	13	6	6		0		
	13	6	6				
5	13	6	6	x			
6							
7							
8							
9	9	6	6				
10	11	6	6		186		
	25	6	6	x			
11							(SM)-Grey silty sand, fine-grained sand, moist, HC odor, low plasticity, medium dense
12							
13							
14	11	6	6		557		
	14	6	6				
15	21	6	6	x			
16							
17							
18							
19	10	6	6		147		
	12	6	6				
20	17	6	6	x			
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

WELL CONSTRUCTION DETAIL

WATER LEVEL

ESTIMATED PERCENT: GRAVEL, SAND, FINES

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 3 of 11

FIELD LOCATION OF BORING: VEW-3

CLIENT/LOCATION:	PLANNED USE:	BORING DEPTH:	BORING/WELL NO.:
PICO	Vapor ext.	20'	VEW-3
DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: CME-60	WELL DEPTH: 20'	BORING DIAMETER: 8"
DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: 2" dia.PVC	FILTER PACK: 2/12	SCREEN SLOT SIZE: 0.020'
WELL SEAL: Concrete / Bentonite			

SAMPLING METHOD: Split Spoon

MONITORING INSTRUMENT: ovm

FIRST ENCOUNTERED WATER DEPTH: 18.5'

STATIC WATER DEPTH - DATE:

DRILLING/WELL CONSTRUCTION: START 9/24/03 12:00 FINISH 11:00

LOGGED BY: Andrew Locicero

APPROVED BY:

DEPTH (FEET)	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	Description
										Base Rock
1										
2										(SM)-Brown silty sand, fine-grained sand, moist, HC odor, low plasticity, inconsistent sand, medium dense
3										
4	15	6	6		0					
	8	6	6							
	9	6	6	x						
5										
6										
7										(SC)-Gray clayey sand, orange mottled, HC odor med dense, moderate plasticity
8										
9	4	6	6							
	8	6	6		30					
0	4	6	6	x						
11										(SM)-Brown silty sand, fine-grained sand, moist, HC odor, low plasticity, inconsistent sand, medium dense
12										
13										
14	5	6	6							
	10	6	6		420					
15	18	6	6	x						
16										
17										
18										
19	11	6	6							
	23	6	6		58					
20	25	6	6							
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 4 of 11

FIELD LOCATION OF BORING:	CLIENT/LOCATION:	PLANNED USE:	BORING DEPTH:	BORING/WELL NO.:
VEW-4 ●	PICO	Vapor ext.	20'	VEW-4
	DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: CME-60	WELL DEPTH: 20'	BORING DIAMETER: 8"
	DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: 2" dia.PVC	FILTER PACK: 2/12	SCREEN SLOT SIZE: 0.020'
	WELL SEAL: Concrete / Bentonite			

SAMPLING METHOD: Split Spoon

MONITORING INSTRUMENT: ovm

FIRST ENCOUNTERED WATER DEPTH: 18.5'

STATIC WATER DEPTH - DATE:

DRILLING/WELL CONSTRUCTION: START 9/24/03 12:00 FINISH 13:00

LOGGED BY: Andrew Locicero

APPROVED BY:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
						1						Base Rock
						2						Organic layer
	5	6	6			3						
	6	6	6			4	0					
	6	6	6	x		5						
						6						(SM)-Grey silty sand, fine-grained sand, moist, HC odor, low plasticity, inconsistent sand, medium dense
						7						
						8						
	6	6	6			9						
	8	6	6			0	273					
	12	6	6	x		11						
						12						
						13						
	8	6	6			14	339					
	12	6	6									
	13	6	6	x		15						
						16						
						17						
					▽	18						
	14	6	6			19	125					
	23	6	6									
	30	6	6			20						
						21						
						22						
						23						
						24						
						25						
						26						
						27						
						28						
						29						
						30						

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 5 of 11

FIELD LOCATION OF BORING: VEW-5

CLIENT/LOCATION: PICO	PLANNED USE: Vapor ext.	BORING DEPTH: 20'	BORING/WELL NO.: VEW-5
DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: CME-60	WELL DEPTH: 20'	BORING DIAMETER: 8"
DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: 2" dia.PVC	FILTER PACK: 2/12	SCREEN SLOT SIZE: 0.020'
WELL SEAL: Concrete / Bentonite			

SAMPLING METHOD: Split Spoon

MONITORING INSTRUMENT: ovm

FIRST ENCOUNTERED WATER DEPTH: 18.5'

STATIC WATER DEPTH - DATE:

DRILLING/WELL CONSTRUCTION: START 14:00 FINISH 16:00 9/24/03

LOGGED BY: Andrew Locicero

APPROVED BY:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
												Base Rock
						1						
						2						(SM)-Brown silty sand, fine-grained sand, moist, no odor, low plasticity, medium dense
						3						
	7	6	6			4						
	7	6	6				0					
	9	6	6	x		5						
						6						
						7						(SC)-Brown clayey sand, orange mottled, med dense, moderate plasticity, no odor
						8						
						9						
	7	6	6									
	10	6	6			0	0					
	16	6	6	x								
						11						(SM)-Brown silty sand, fine-grained sand, moist, HC odor, low plasticity, medium dense
						12						
						13						
	9	6	6			14						
	12	6	6				50					
	16	6	6	x		15						
						16						
						17						
						18						
	11	6	6		▽	19						
	14	6	6				63					
	23	6	6	x		20						
						21						
						22						
						23						
						24						
						25						
						26						
						27						
						28						
						29						
						30						

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

FIELD LOCATION OF BORING: SW-1

CLIENT/LOCATION:	PLANNED USE:	BORING DEPTH:	BORING/WELL NO.:
PICO	Air sparge	20'	SW-1
DRILLING CONTRACTOR:	DRILL RIG TYPE:	WELL DEPTH:	BORING DIAMETER:
MDE	CME-60	20'	8"
DRILL RIG OPERATOR:	WELL MATERIAL:	FILTER PACK:	SCREEN SLOT SIZE:
Ed Mitchell	2" dia.PVC	2/12	0.020'
WELL SEAL: Concrete / Bentonite			

SAMPLING METHOD:

MONITORING INSTRUMENT:

FIRST ENCOUNTERED WATER DEPTH: 18.5'

STATIC WATER DEPTH - DATE:

DRILLING/WELL CONSTRUCTION: START 9/25/03 9:00 FINISH 8:00

LOGGED BY: M. Richard

APPROVED BY:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	Description
												Base Rock
						1						
						2						(MH)-Brown sandy silt w/ clay , orange mottled, moderate plasticity, no odor
						3						
						4						
						5						
						6						(SM)-Brown / grey silty sand, fine-grained sand, moist, HC odor, low plasticity, medium dense
						7						
						8						
						9						
						0						
						11						
						12						
						13						
						14						
						15						
						16						
						17						
					▽	18						
						19						
						20						
						21						
						22						
						23						
						24						
						25						
						26						
						27						
						28						
						29						
						30						

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 7 of 11

DRILLING/WELL CONSTRUCTION: START 9:00 FINISH 10:30 9/25/03

LOGGED BY: M. Richard

APPROVED BY:

FIELD LOCATION OF BORING: SW-2

CLIENT/LOCATION: PICO	PLANNED USE: Air sparge	BORING DEPTH: 20'	BORING/WELL NO.: SW-2
DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: CME-60	WELL DEPTH: 20'	BORING DIAMETER: 8"
DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: 2" dia.PVC	FILTER PACK: 2/12	SCREEN SLOT SIZE: 0.020'
WELL SEAL: Concrete / Bentonite			

SAMPLING METHOD:

MONITORING INSTRUMENT:

FIRST ENCOUNTERED WATER DEPTH: 18.5'

STATIC WATER DEPTH - DATE:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	SAMPLING: DRIVE	SAMPLING: RECOVERY	SAMPLING: ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	ESTIMATED PERCENT: SAND	ESTIMATED PERCENT: FINES	GRAPHIC LOG	
						1						Base Rock
						2						(MH)-Brown sandy silt w/ clay, orange mottled, moderate plasticity, no odor
						3						
						4						
						5						
						6						(SW)-Brown / grey sand, moist, no odor, low plasticity, medium dense
						7						
						8						
						9						
						0						
						11						
						12						
						13						
						14						
						15						
						16						(SM)-Brown / grey silty sand, fine-grained sand, moist, HC odor, low plasticity, medium dense
						17						
					▽	18						
						19						
						20						
						21						
						22						
						23						
						24						
						25						
						26						
						27						
						28						
						29						
						30						

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

FIELD LOCATION OF BORING:	CLIENT/LOCATION:	PLANNED USE:	BORING DEPTH:	BORING/WELL NO.:
SW-3	PICO	Air sparge	20'	SW-3
	DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: CME-60	WELL DEPTH: 20'	BORING DIAMETER: 8"
	DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: 2" dia.PVC	FILTER PACK: 2/12	SCREEN SLOT SIZE: 0.020'
	WELL SEAL: Concrete / Bentonite			

SAMPLING METHOD:

MONITORING INSTRUMENT:

FIRST ENCOUNTERED WATER DEPTH: 18.5'

STATIC WATER DEPTH - DATE:

DRILLING/WELL CONSTRUCTION: START 9/25/03 12:15 FINISH 11:00

LOGGED BY: M. Richard

APPROVED BY:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
												Base Rock
						1						
						2						(MH)-Brown sandy silt w/ clay , orange mottled, moderate plasticity, no odor
						3						
						4						
						5						
						6						
						7						
						8						
						9						
						0						
						11						
						12						
						13						
						14						
						15						
						16						(SM)-Brown / grey silty sand, fine-grained sand, moist, HC odor, low plasticity, medium dense
						17						
					▽	18						
						19						
						20						
						21						
						22						
						23						
						24						
						25						
						26						
						27						
						28						
						29						
						30						

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 9 of 11

FIELD LOCATION OF BORING: SW-4 ●

CLIENT/LOCATION: PICO	PLANNED USE: Air sparge	BORING DEPTH: 20'	BORING/WELL NO.: SW-4
DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: CME-60	WELL DEPTH: 20'	BORING DIAMETER: 8"
DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: 2" dia.PVC	FILTER PACK: 2/12	SCREEN SLOT SIZE: 0.020'
WELL SEAL: Concrete / Bentonite			

SAMPLING METHOD:

MONITORING INSTRUMENT:

FIRST ENCOUNTERED WATER DEPTH: 18.5'

STATIC WATER DEPTH - DATE:

DRILLING/WELL CONSTRUCTION: START 9/25/03 14:30 FINISH 13:00

LOGGED BY: M. Richard

APPROVED BY:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	Description
												Base Rock
						1						
						2						(MH)-Brown sandy silt w/ clay , orange mottled, moderate plasticity, no odor
						3						
						4						
						5						
						6						(SM)-Brown / grey silty sand, moist, HC odor, low plasticity, medium dense
						7						
						8						
						9						
						0						
						11						
						12						
						13						
						14						
						15						
						16						
						17						
					▽	18						
						19						
						20						
						21						
						22						
						23						
						24						
						25						
						26						
						27						
						28						
						29						
						30						

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 6 of 11

FIELD LOCATION OF BORING: SW-5

CLIENT/LOCATION: PICO	PLANNED USE: Air sparge	BORING DEPTH: 20'	BORING/WELL NO.: SW-5
DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: CME-60	WELL DEPTH: 20'	BORING DIAMETER: 8"
DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: 2" dia.PVC	FILTER PACK: 2/12	SCREEN SLOT SIZE: 0.020'
WELL SEAL: Concrete / Bentonite			

DRILLING/WELL CONSTRUCTION: START 9/25/03 15:00 FINISH 9/25/03 16:00

LOGGED BY: M. Richard

APPROVED BY:

SAMPLING METHOD:

MONITORING INSTRUMENT:

FIRST ENCOUNTERED WATER DEPTH: 18.5'

STATIC WATER DEPTH - DATE:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
												Base Rock
						1						
						2						(GW)-Well sorted gravel (remedial excavation backfill) no odor
						3						
						4						
						5						
						6						
						7						
						8						
						9						
						0						
						11						
						12						
						13						
						14						
						15						
						16						
						17						
					▽	18						
						19						
						20						
						21						
						22						
						23						
						24						
						25						
						26						
						27						
						28						
						29						
						30						

CGI - FIELD EXPLORATORY SOIL BORING LOG

Project No. ZE167C

Sheet 6 of 11

DRILLING/WELL CONSTRUCTION: START 9:00 9/25/03 FINISH 8:00

LOGGED BY: M. Richard

APPROVED BY:

FIELD LOCATION OF BORING: SW-6 ●

CLIENT/LOCATION:	PLANNED USE:	BORING DEPTH:	BORING/WELL NO.:
PICO	Air sparge	20'	SW-6
DRILLING CONTRACTOR: MDE	DRILL RIG TYPE: CME-60	WELL DEPTH: 20'	BORING DIAMETER: 8"
DRILL RIG OPERATOR: Ed Mitchell	WELL MATERIAL: 2" dia.PVC	FILTER PACK: 2/12	SCREEN SLOT SIZE: 0.020'
WELL SEAL: Concrete / Bentonite			

SAMPLING METHOD:

MONITORING INSTRUMENT:

FIRST ENCOUNTERED WATER DEPTH: 18.5'

STATIC WATER DEPTH - DATE:

WELL CONSTRUCTION DETAIL	SAMPLING: BLOWS/6" INTERVAL	DRIVE	RECOVERY	ANALYTICAL	WATER LEVEL	DEPTH (FEET)	OVM READING (PPM)	ESTIMATED PERCENT: GRAVEL	SAND	FINES	GRAPHIC LOG	
												Base Rock
						1						
						2						(MH)-Brown sandy silt w/ clay , orange mottled, moderate plasticity, no odor
						3						
						4						
						5						
						6						
						7						
						8						
						9						
						0						
						11						(SM)-Brown / grey silty sand, fine-grained sand, moist, HC odor, low plasticity, medium dense
						12						
						13						
						14						
						15						
						16						
						17						
					▽	18						
						19						
						20						
						21						
						22						
						23						
						24						
						25						
						26						
						27						
						28						
						29						
						30						

APPENDIX B

Calculation of Pre Remediation Residual Sorbed-Phase TPHg Contaminant Mass
Former Central BP Station, Mckinleyville, CA

Volume 1 - West dispenser island area from south side of former remedial excavation

Mean TPHg conc. (mg/kg)	A (ft2)	h (ft)	V (ft3)	p (lbs/ft3)	TPHg mass (lb)
1,334	572	10	5,719.50	100	763
			Total TPHg (gals)		125

Volume 2 - Remaining contaminated soil - remedial excavation and volume 1

Mean TPHg conc. (mg/kg)	A (ft2)	h (ft)	V (ft3)	p (lbs/ft3)	TPHg mass (lb)
1,116	6,288	15	94,323	100	10,521
			Total TPHg (gals)		1,725

Total TPHg Mass (lbs)	**11,284**

A = Area (ft2)
h = thickness (ft)
V = volume (ft3) = A * h
p = soil density (assume 100 lbs/ft3)
TPHg mass (lbs) = V (ft3) * p (lbs/ft3) * Mean TPHg conc. (mg/kg) * (1kg/1,0000,000 mg)

APPENDIX C

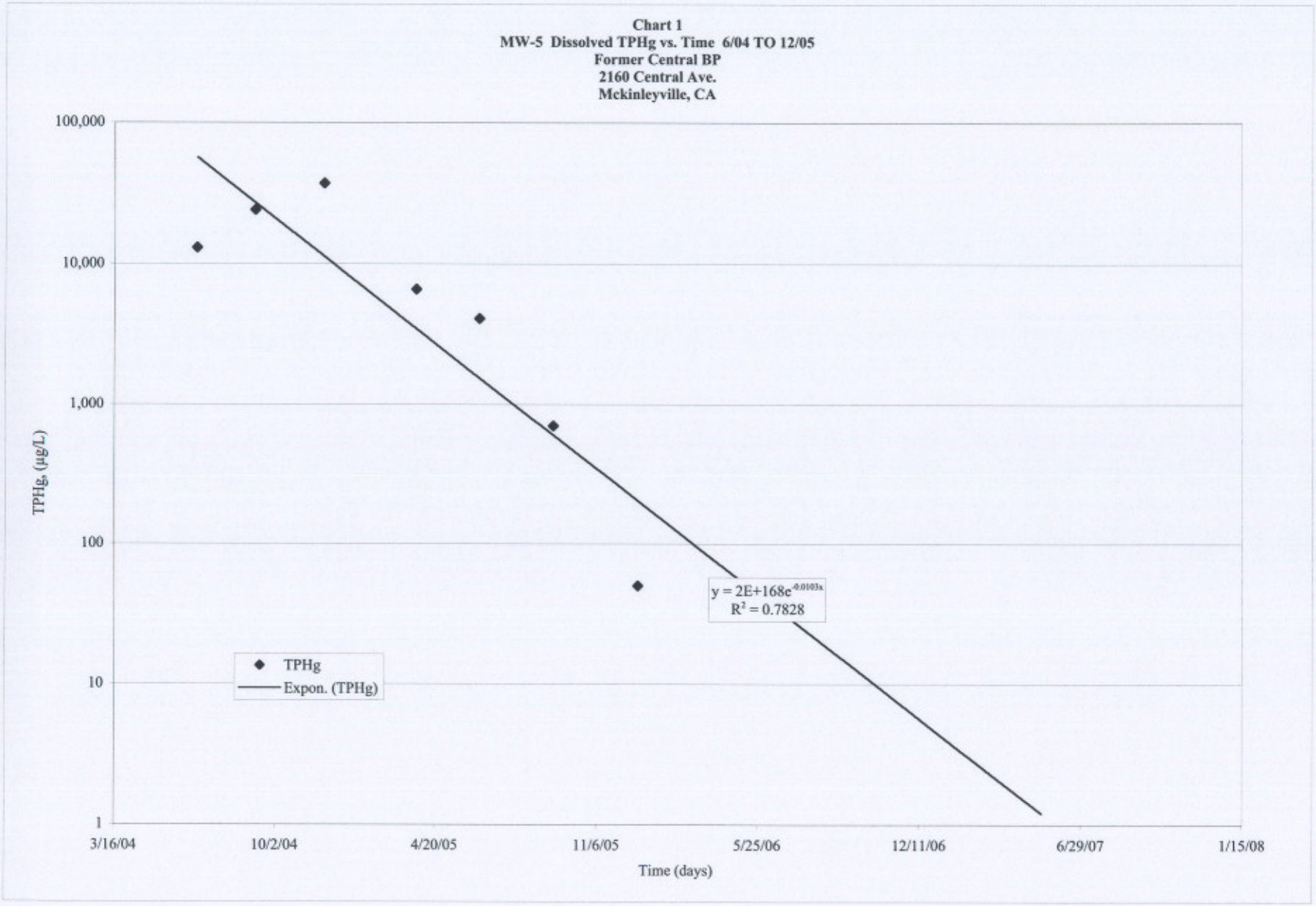


Chart 1
MW-5 Dissolved TPHg vs. Time 6/04 TO 12/05
Former Central BP
2160 Central Ave.
Mckinleyville, CA
100,000
10,000
1,000
100
10
1
TPHg, (µg/L)
3/16/04
10/2/04
4/20/05
11/6/05
5/25/06
12/11/06
6/29/07
1/15/08
Time (days)
y = 2E+168e^-0.0103x
R² = 0.7828
TPHg
Expon. (TPHg)

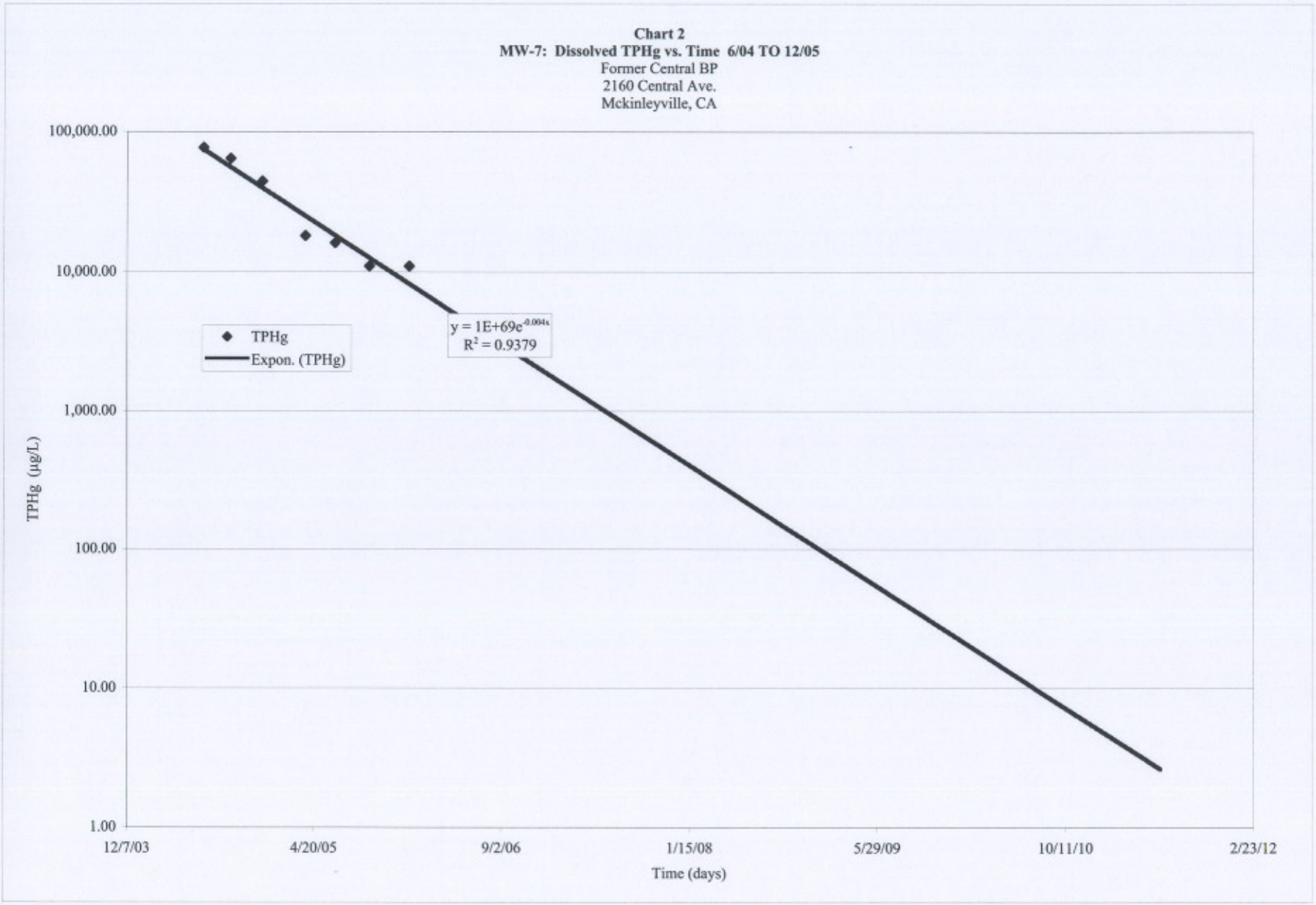


Chart 2
MW-7: Dissolved TPHg vs. Time 6/04 TO 12/05
Former Central BP
2160 Central Ave.
Mckinleyville, CA
100,000.00
10,000.00
1,000.00
100.00
10.00
1.00
TPHg (µg/L)
TPHg
Expon. (TPHg)
y = 1E+69e^-0.004x
R² = 0.9379
12/7/03
4/20/05
9/2/06
1/15/08
5/29/09
10/11/10
2/23/12
Time (days)

Chart 3
MW-7: Dissolved TPHg vs. Time 9/00 TO 12/05
Former Central BP
2160 Central Ave.
Mckinleyville, CA

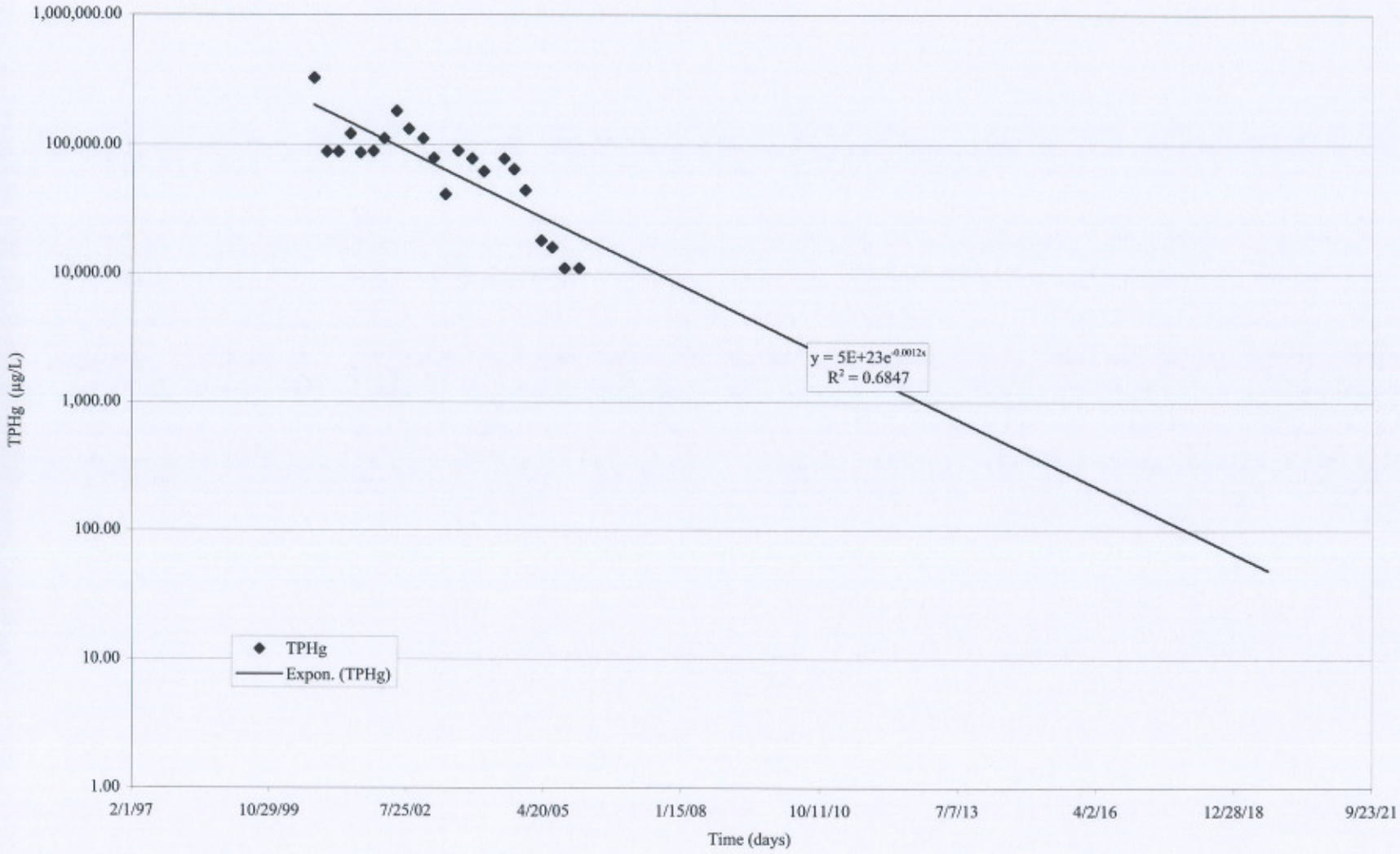


Chart 4
MW-5: Dissolved TPHg vs. Time 9/00 TO 12/05
Former Central BP
2160 Central Ave.
Mckinleyville, CA

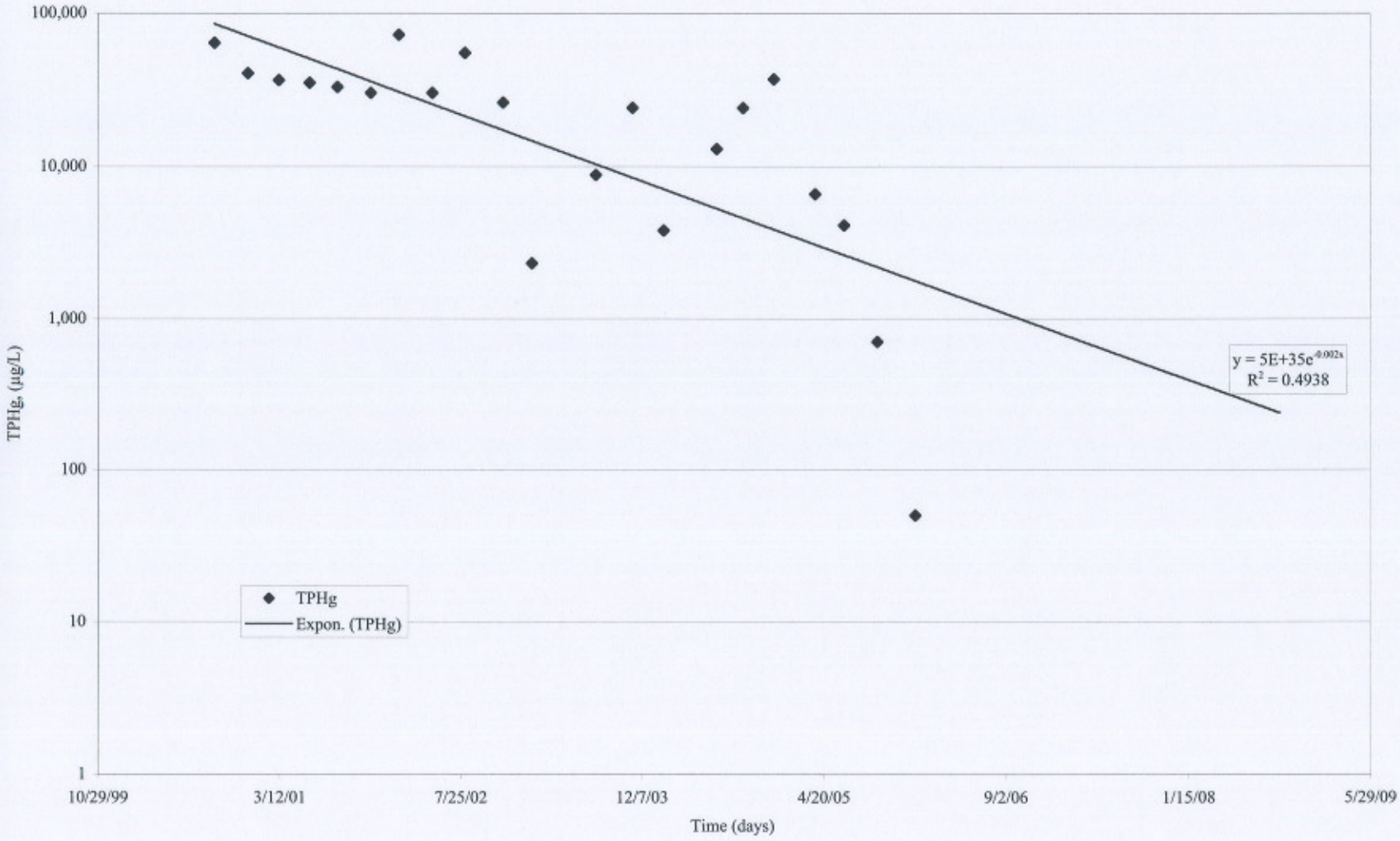


Chart 5
MW-7: Dissolved Benzene vs. Time 6/04 TO 12/05
Former Central BP
2160 Central Ave.
Mckinleyville, CA

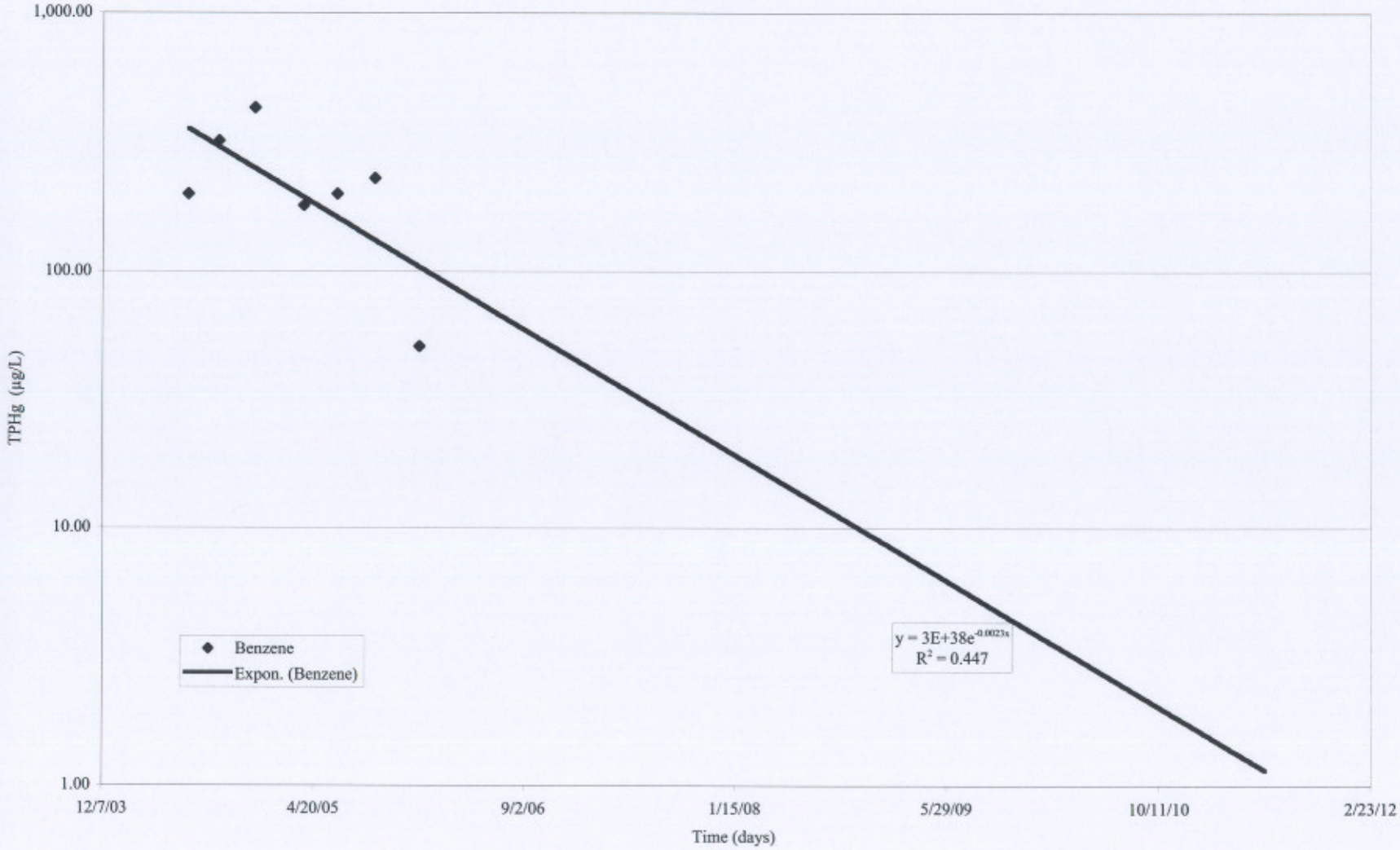
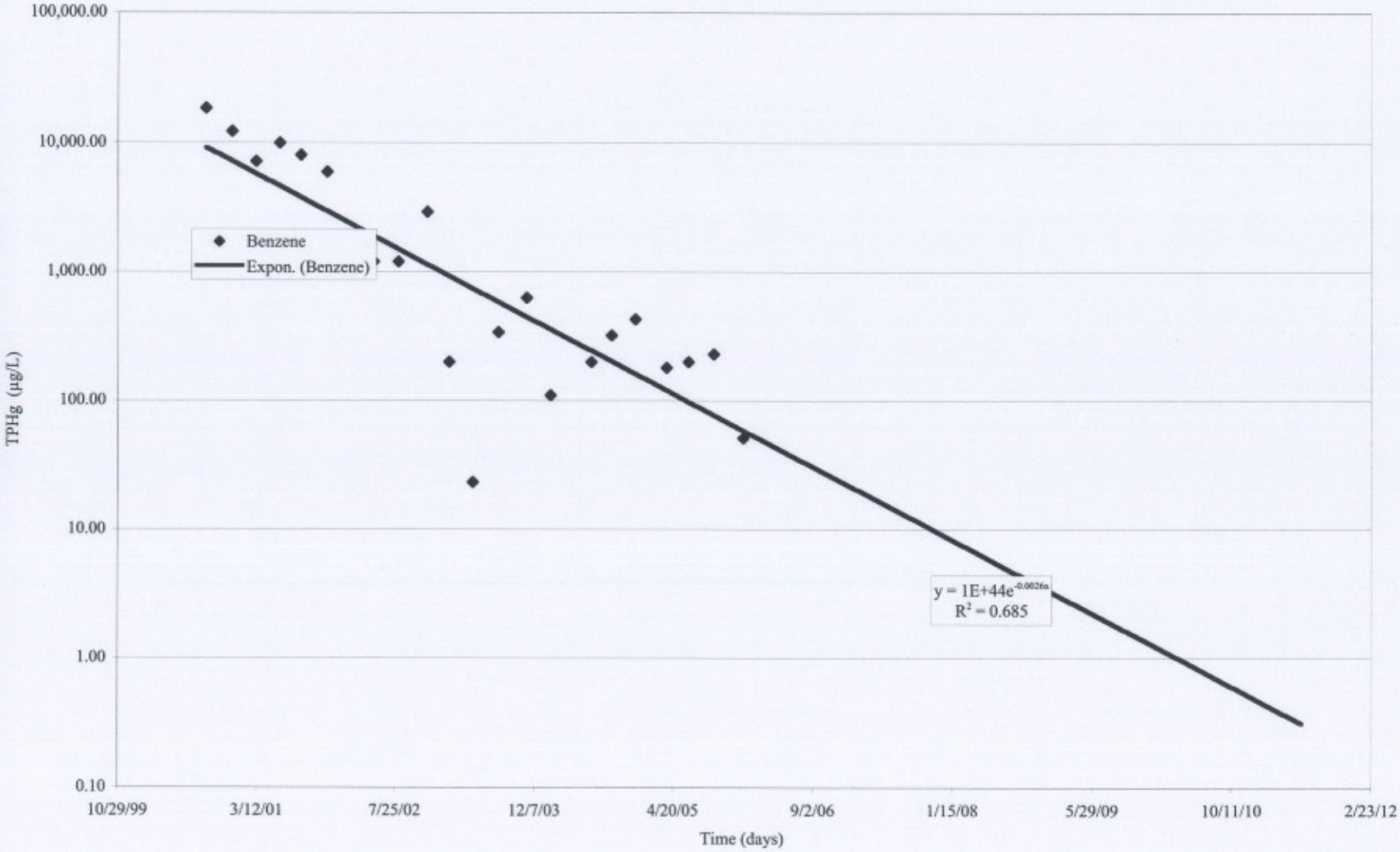
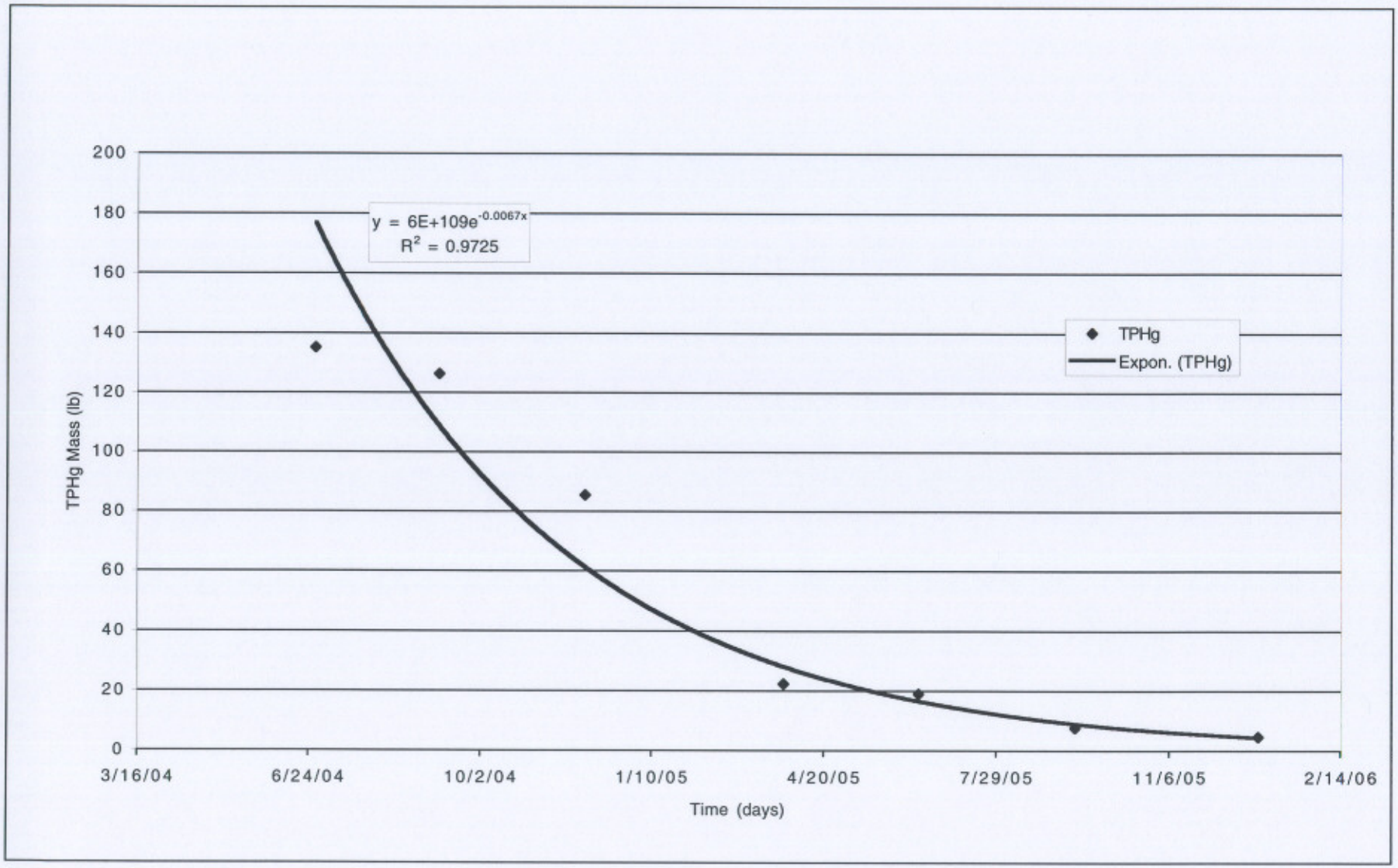


Chart 6
MW-7: Dissolved Benzene vs. Time 9/00 TO 12/05
Former Central BP
2160 Central Ave.
Mckinleyville, CA



APPENDIX D

Chart 7
Dissolved-Phase TPHg Mass vs. Time
Former Central BP
2160 Central Ave.
Mckinleyville, CA



Calculation of Residual Dissolved-Phase Contaminant Mass December 2005
Former Central BP, Mckinleyville, CA
Project # NC-24

Residual TPHg

Zone 1

TPHg mean (mg/L)	A (ft^2)	h (ft)	n	V (ft^3)	TPHg mass (ft^3-mg/L)	TPHg mass (lb)
11	469	20	0.35	3,283	36,113.0	2.2
				Total TPHg (lb)		2.2
				Total TPHg (gals)		0.37

Zone 2

TPHg mean (mg/L)	A (ft^2)	h (ft)	n	V (ft^3)	TPHg mass (ft^3-mg/L)	TPHg mass (lb)
3.2	1,401	20	0.35	9,807	31,382.4	2.0
				Total TPHg (lb)		2.0
				Total TPHg (gals)		0.32

Zone 3

TPHg mean (mg/L)	A (ft^2)	h (ft)	n	V (ft^3)	TPHg mass (ft^3-mg/L)	TPHg mass (lb)
0.32	2,777	20	0.35	19,439	6,220.5	0.39
				Total TPHg (lb)		0.39
				Total TPHg (gals)		0.06

Total TPHg (lb.)	4.6
Total TPHg (gal.)	0.75

A = Area (ft2)
h = thickness (ft)
V = volume (ft3) = A * h
n = soil porosity (assume 35%)
TPHg mass = V (ft3) * n * TPH conc. (mg/L) * (0.0000022 lbs/mg) * (28.31 L/ft3)
TPHg = Total petroleum hydrocarbons as gasoline
lb = pound
mg/L = milligrams per liter
gal. = gallons
ft. = foot
assume gasoline density of 6.1 lbs/gal.

Calculation of Residual Dissolved-Phase Contaminant Mass September 2005
Former Central BP, Mckinleyville, CA
Project # NC-24

Residual TPHg

Zone 1

TPHg mean (mg/L)	A (ft^2)	h (ft)	n	V (ft^3)	TPHg mass (ft^3-mg/L)	TPHg mass (lb)
11	750	20	0.35	5,250	57,750.0	3.6
				Total TPHg (lb)		3.6
				Total TPHg (gals)		0.59

Zone 2

TPHg mean (mg/L)	A (ft^2)	h (ft)	n	V (ft^3)	TPHg mass (ft^3-mg/L)	TPHg mass (lb)
3.2	2,061	20	0.35	14,427	46,166.4	2.9
				Total TPHg (lb)		2.9
				Total TPHg (gals)		0.47

Zone 3

TPHg mean (mg/L)	A (ft^2)	h (ft)	n	V (ft^3)	TPHg mass (ft^3-mg/L)	TPHg mass (lb)
0.32	7,992	20	0.35	55,944	17,902.1	1.1
				Total TPHg (lb)		1.1
				Total TPHg (gals)		0.18

Total TPHg (lb.)	7.6
Total TPHg (gal.)	1.2

A = Area (ft2)
h = thickness (ft)
V = volume (ft3) = A * h
n = soil porosity (assume 35%)
TPHg mass = V (ft3) * n * TPH conc. (mg/L) * (0.0000022 lbs/mg) * (28.31 L/ft3)
TPHg = Total petroleum hydrocarbons as gasoline
lb = pound
mg/L = milligrams per liter
gal. = gallons
ft. = foot
assume gasoline density of 6.1 lbs/gal.

Calculation of Residual Dissolved-Phase Contaminant Mass June 2005
Former Central BP, Mckinleyville, CA
Project # NC-24

Residual TPHg

Zone 1

TPHg mean (mg/L)	A (ft^2)	h (ft)	n	V (ft^3)	TPHg mass (ft^3-mg/L)	TPHg mass (lb)
16	1,794	20	0.35	12,558	200,928.0	13
				Total TPHg (lb)		13
				Total TPHg (gals)		2.1

Zone 2

TPHg mean (mg/L)	A (ft^2)	h (ft)	n	V (ft^3)	TPHg mass (ft^3-mg/L)	TPHg mass (lb)
3.2	3,917	20	0.35	27,419	87,740.8	5.5
				Total TPHg (lb)		5.5
				Total TPHg (gals)		0.90

Zone 3

TPHg mean (mg/L)	A (ft^2)	h (ft)	n	V (ft^3)	TPHg mass (ft^3-mg/L)	TPHg mass (lb)
0.32	7,270	20	0.35	50,890	16,284.8	1.0
				Total TPHg (lb)		1.0
				Total TPHg (gals)		0.17

Total TPHg (lb.)	19.0
Total TPHg (gal.)	3.1

A = Area (ft2)
h = thickness (ft)
V = volume (ft3) = A * h
n = soil porosity (assume 35%)
TPHg mass = V (ft3) * n * TPH conc. (mg/L) * (0.0000022 lbs/mg) * (28.31 L/ft3)
TPHg = Total petroleum hydrocarbons as gasoline
lb = pound
mg/L = milligrams per liter
gal. = gallons
ft. = foot
assume gasoline density of 6.1 lbs/gal.

Calculation of Residual Dissolved-Phase Contaminant Mass March 2005
Former Central BP, Mckinleyville, CA
Project # NC-24

Residual TPHg

Zone 1

TPHg mean (mg/L)	A (ft^2)	h (ft)	n	V (ft^3)	TPHg mass (ft^3-mg/L)	TPHg mass (lb)
18	1,794	20	0.35	12,558	226,044.0	14
				Total TPHg (lb)		14
				Total TPHg (gals)		2.3

Zone 2

TPHg mean (mg/L)	A (ft^2)	h (ft)	n	V (ft^3)	TPHg mass (ft^3-mg/L)	TPHg mass (lb)
3.2	5,197	20	0.35	36,379	116,412.8	7.3
				Total TPHg (lb)		7.3
				Total TPHg (gals)		1.2

Zone 3

TPHg mean (mg/L)	A (ft^2)	h (ft)	n	V (ft^3)	TPHg mass (ft^3-mg/L)	TPHg mass (lb)
0.32	7,170	20	0.35	50,190	16,060.8	1.0
				Total TPHg (lb)		1.0
				Total TPHg (gals)		0.16

Total TPHg (lb.)	22.3
Total TPHg (gal.)	3.7

A = Area (ft2)
h = thickness (ft)
V = volume (ft3) = A * h
n = soil porosity (assume 35%)
TPHg mass = V (ft3) * n * TPH conc. (mg/L) * (0.0000022 lbs/mg) * (28.31 L/ft3)
TPHg = Total petroleum hydrocarbons as gasoline
lb = pound
mg/L = milligrams per liter
gal. = gallons
ft. = foot
assume gasoline density of 6.1 lbs/gal.

Calculation of Residual Dissolved-Phase Contaminant Mass December 2004
Former Central BP, Mckinleyville, CA
Project # NC-24

Residual TPHg

Zone 1

TPHg mean (mg/L)	A (ft^2)	h (ft)	n	V (ft^3)	TPHg mass (ft^3-mg/L)	TPHg mass (lb)
44	4,172	20	0.35	29,204	1,284,976.0	80
				Total TPHg (lb)		80
				Total TPHg (gals)		13

Zone 2

TPHg mean (mg/L)	A (ft^2)	h (ft)	n	V (ft^3)	TPHg mass (ft^3-mg/L)	TPHg mass (lb)
3.2	3,299	20	0.35	23,093	73,897.6	4.6
				Total TPHg (lb)		4.6
				Total TPHg (gals)		0.8

Zone 3

TPHg mean (mg/L)	A (ft^2)	h (ft)	n	V (ft^3)	TPHg mass (ft^3-mg/L)	TPHg mass (lb)
0.32	6,143	20	0.35	43,001	13,760.3	0.86
				Total TPHg (lb)		0.86
				Total TPHg (gals)		0.14

Total TPHg (lb.)	85.5
Total TPHg (gal.)	14.0

A = Area (ft2)
h = thickness (ft)
V = volume (ft3) = A * h
n = soil porosity (assume 35%)
TPHg mass = V (ft3) * n * TPH conc. (mg/L) * (0.0000022 lbs/mg) * (28.31 L/ft3)
TPHg = Total petroleum hydrocarbons as gasoline
lb = pound
mg/L = milligrams per liter
gal. = gallons
ft. = foot
assume gasoline density of 6.1 lbs/gal.

Calculation of Residual Dissolved-Phase Contaminant Mass September 2004
Former Central BP, Mckinleyville, CA
Project # NC-24

Residual TPHg

Zone 1

TPHg mean (mg/L)	A (ft^2)	h (ft)	n	V (ft^3)	TPHg mass (ft^3-mg/L)	TPHg mass (lb)
64	4,277	20	0.35	29,939	1,916,096	119
				Total TPHg (lb)		119
				Total TPHg (gals)		19.6

Zone 2

TPHg mean (mg/L)	A (ft^2)	h (ft)	n	V (ft^3)	TPHg mass (ft^3-mg/L)	TPHg mass (lb)
3.2	4,211	20	0.35	29,477	94,326	5.87
				Total TPHg (lb)		5.87
				Total TPHg (gals)		0.96

Zone 3

TPHg mean (mg/L)	A (ft^2)	h (ft)	n	V (ft^3)	TPHg mass (ft^3-mg/L)	TPHg mass (lb)
0.32	8,107	20	0.35	56,749	18,160	1.13
				Total TPHg (lb)		1.13
				Total TPHg (gals)		0.19

Total TPHg (lb.)	126
Total TPHg (gal.)	20.7

A = Area (ft2)
h = thickness (ft)
V = volume (ft3) = A * h
n = soil porosity (assume 35%)
TPHg mass = V (ft3) * n * TPH conc. (mg/L) * (0.0000022 lbs/mg) * (28.31 L/ft3)
TPHg = Total petroleum hydrocarbons as gasoline
lb = pound
mg/L = milligrams per liter
gal. = gallons
ft. = foot
assume gasoline density of 6.1 lbs/gal.

Calculation of Residual Dissolved-Phase Contaminant Mass June 2004
Former Central BP, Mckinleyville, CA
Project # NC-24

Residual TPHg

Zone 1

TPHg mean (mg/L)	A (ft^2)	h (ft)	n	V (ft^3)	TPHg mass (ft^3-mg/L)	TPHg mass (lb)
77	3,807	20	0.35	26,649	2,051,973	128
				Total TPHg (lb)		128
				Total TPHg (gals)		21.0

Zone 2

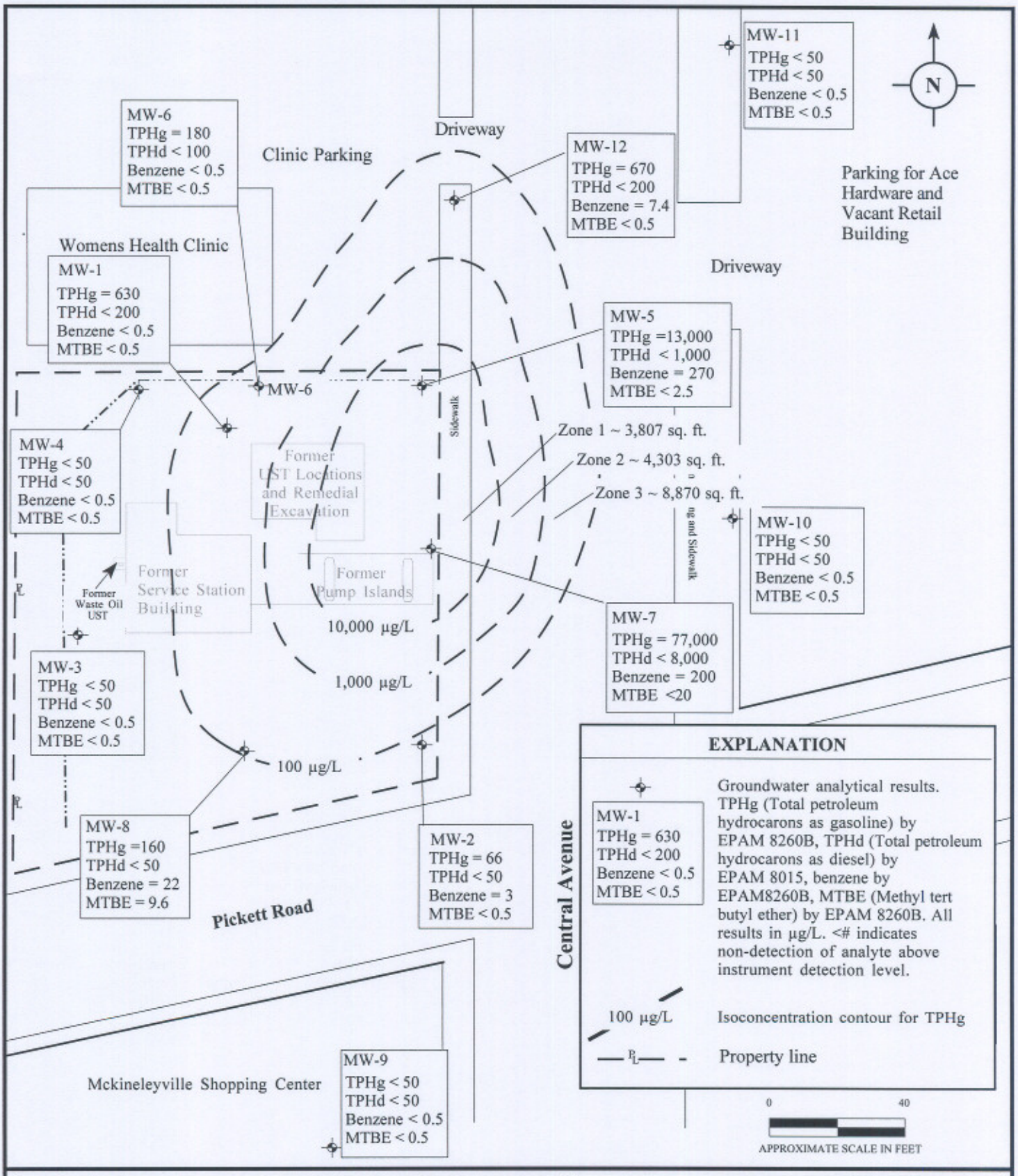
TPHg mean (mg/L)	A (ft^2)	h (ft)	n	V (ft^3)	TPHg mass (ft^3-mg/L)	TPHg mass (lb)
3.2	4,303	20	0.35	30,121	96,387	6.0
				Total TPHg (lb)		6.0
				Total TPHg (gals)		0.98

Zone 3

TPHg mean (mg/L)	A (ft^2)	h (ft)	n	V (ft^3)	TPHg mass (ft^3-mg/L)	TPHg mass (lb)
0.32	8,870	20	0.35	62,090	19,869	1.2
				Total TPHg (lb)		1.2
				Total TPHg (gals)		0.20

Total TPHg (lb.)	135
Total TPHg (gal.)	22.1

A = Area (ft2)
h = thickness (ft)
V = volume (ft3) = A * h
n = soil porosity (assume 35%)
TPHg mass = V (ft3) * n * TPH conc. (mg/L) * (0.0000022 lbs/mg) * (28.31 L/ft3)
TPHg = Total petroleum hydrocarbons as gasoline
lb = pound
mg/L = milligrams per liter
gal. = gallons
ft. = foot
assume gasoline density of 6.1 lbs/gal.

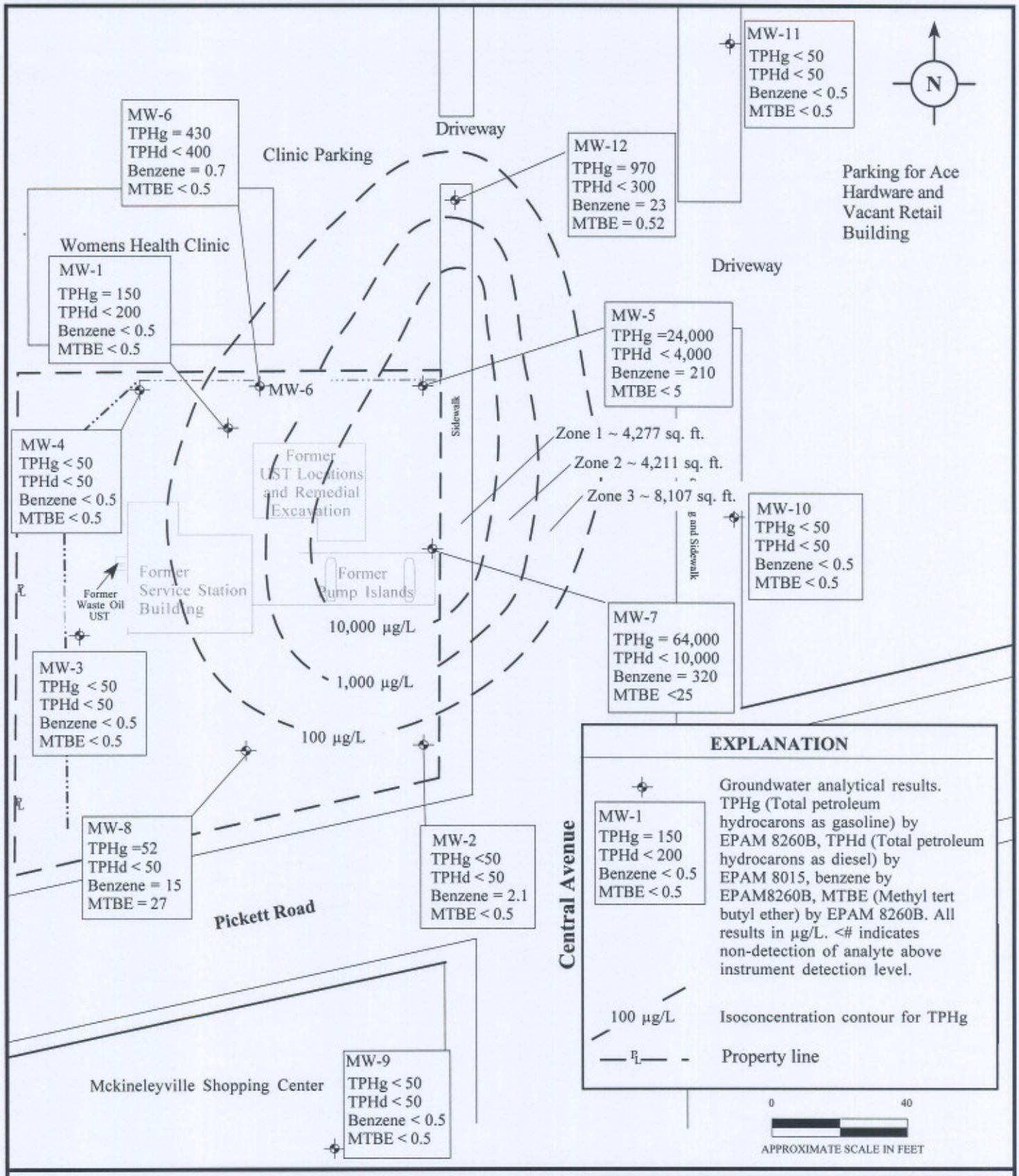


Dissolved-Phase Hydrocarbon (TPHg) Distribution 6/28/04

Former Central BP Station
2160 Central Avenue
McKinleyville, California

BLUE ROCK ENVIRONMENTAL, INC.

Project No.	Report Date	Figure
NC-24	7/04	

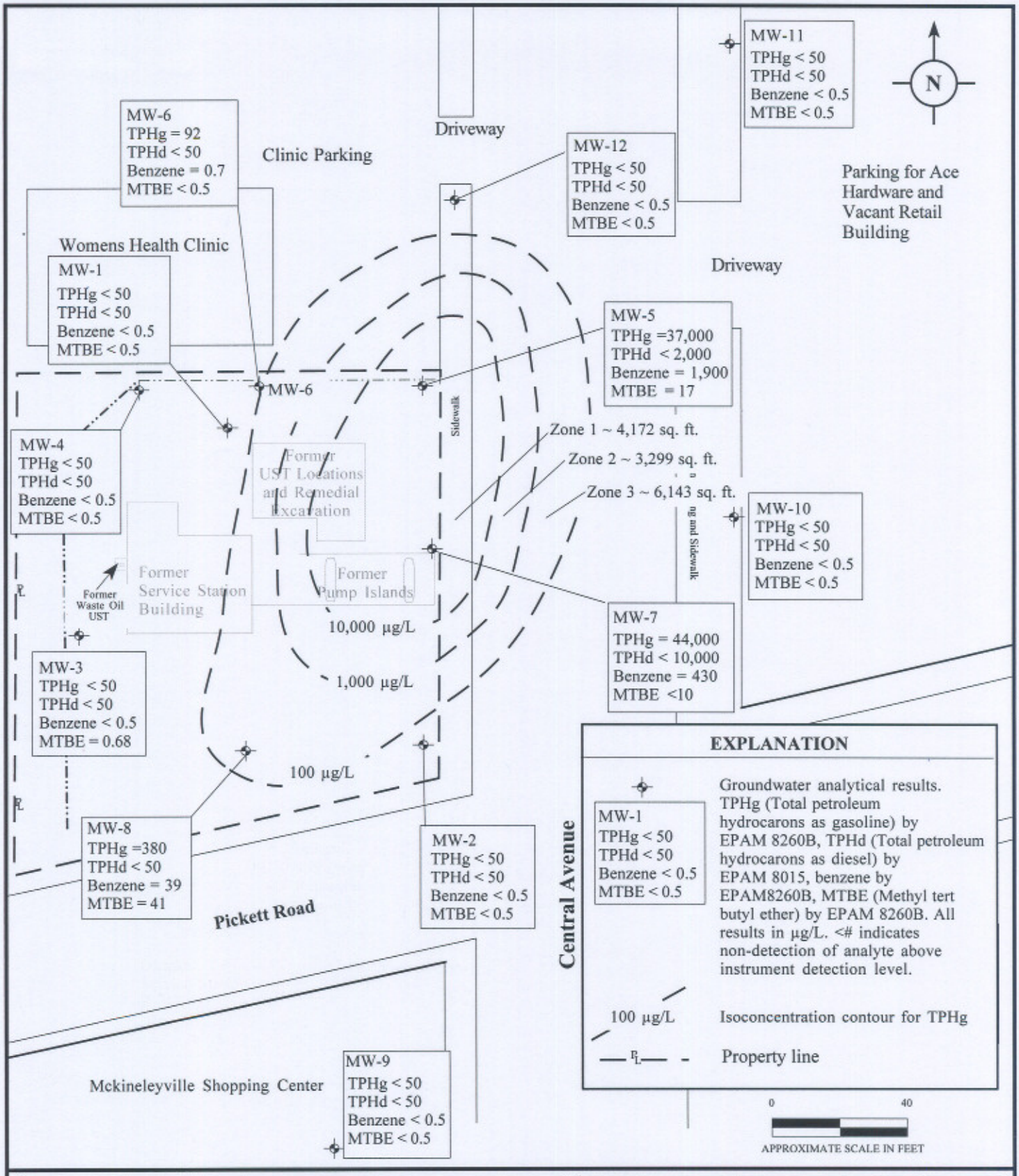


Dissolved-Phase Hydrocarbon (TPHg) Distribution 9/8/04

Former Central BP Station
2160 Central Avenue
McKinleyville, California

BLUE ROCK ENVIRONMENTAL, INC.

Project No.	Report Date	Figure
NC-24	10/04	

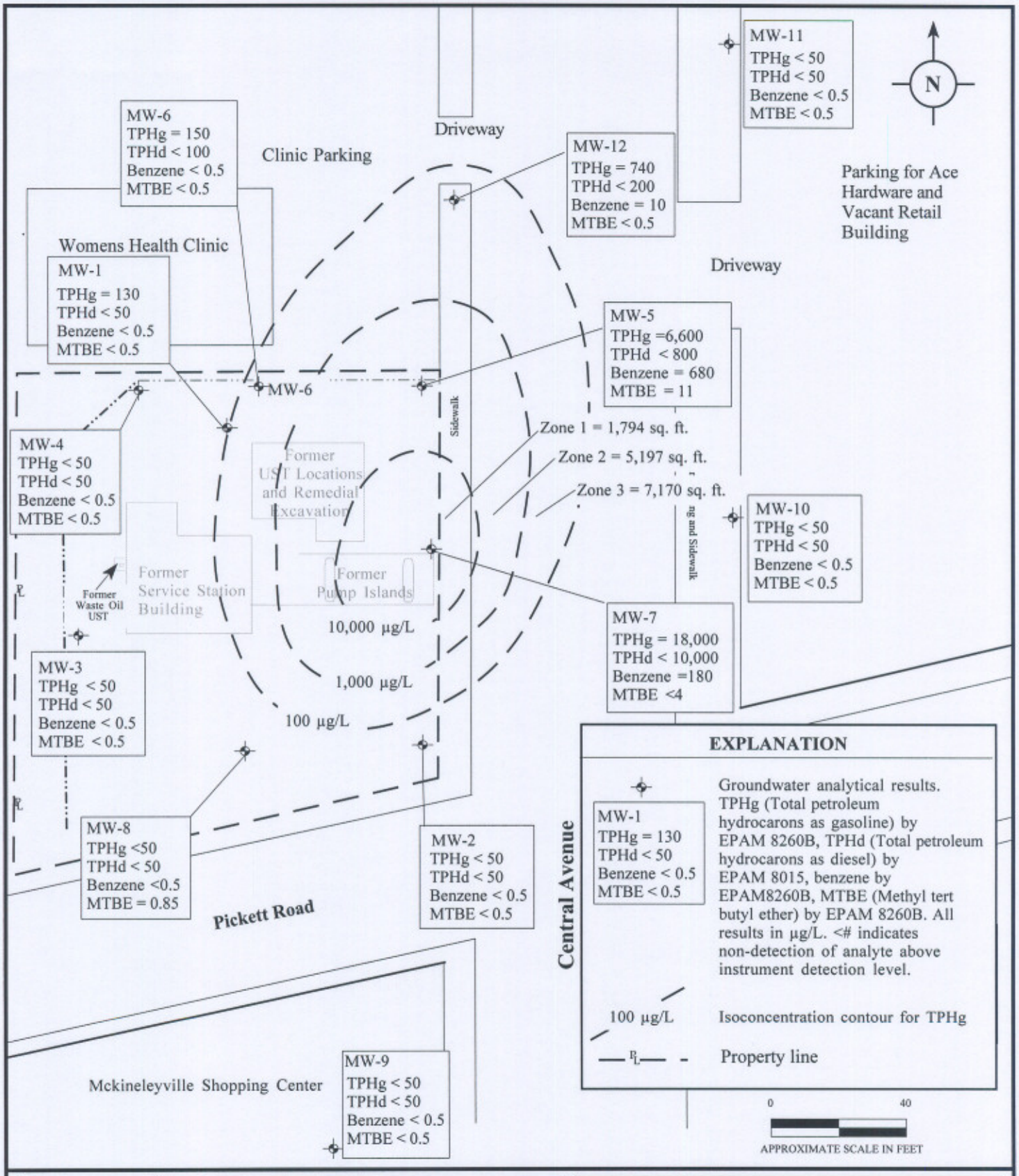


Dissolved-Phase Hydrocarbon (TPHg) Distribution 12/2/04

Former Central BP Station
2160 Central Avenue
McKinleyville, California

BLUE ROCK ENVIRONMENTAL, INC.

Project No.	Report Date	Figure
NC-24	1/05	

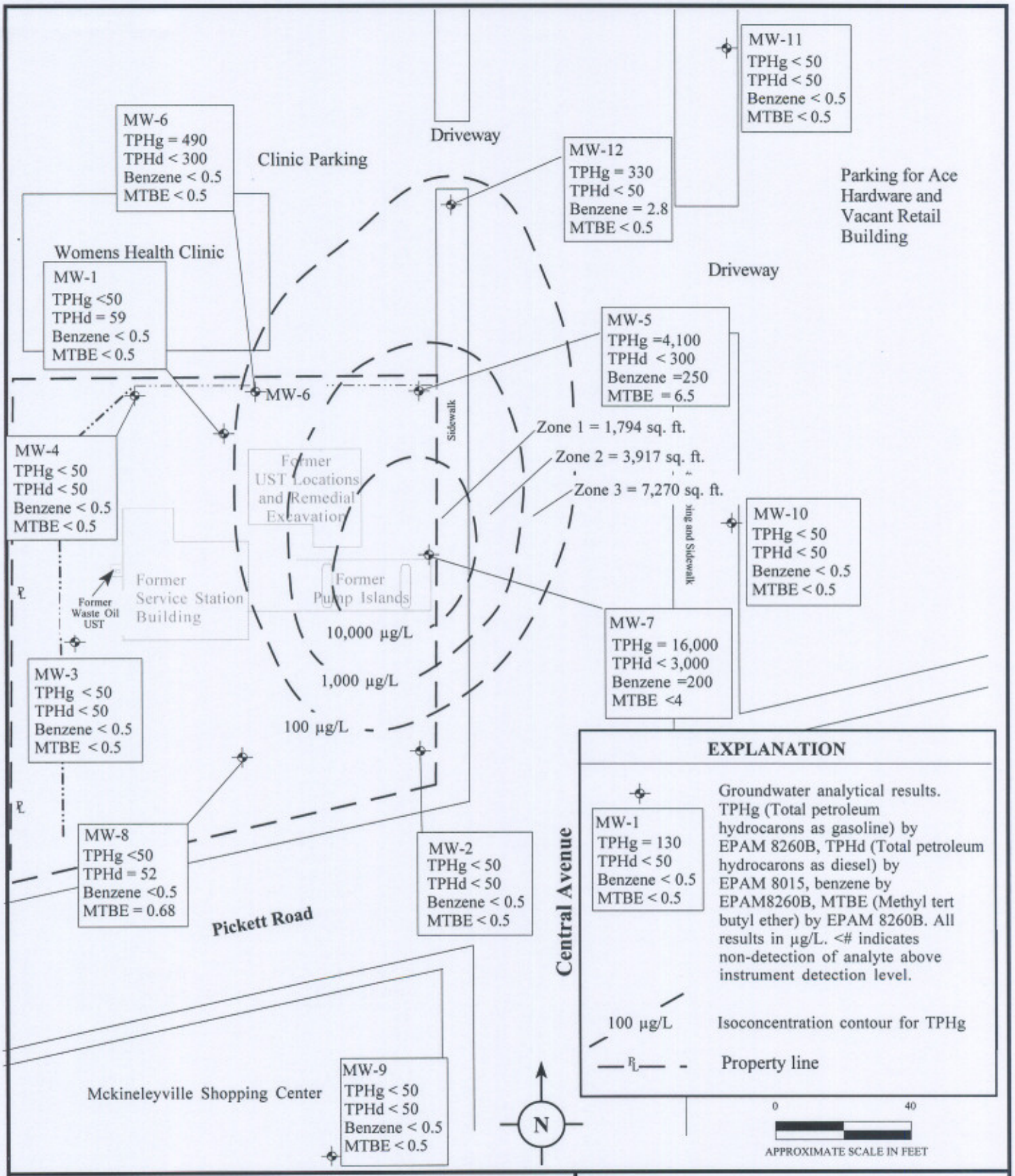


Dissolved-Phase Hydrocarbon (TPHg) Distribution 3/27/05 - 3/28/05

Former Central BP Station
2160 Central Avenue
McKinleyville, California

BLUE ROCK ENVIRONMENTAL, INC.

Project No.	Report Date	Figure
NC-24	4/05	

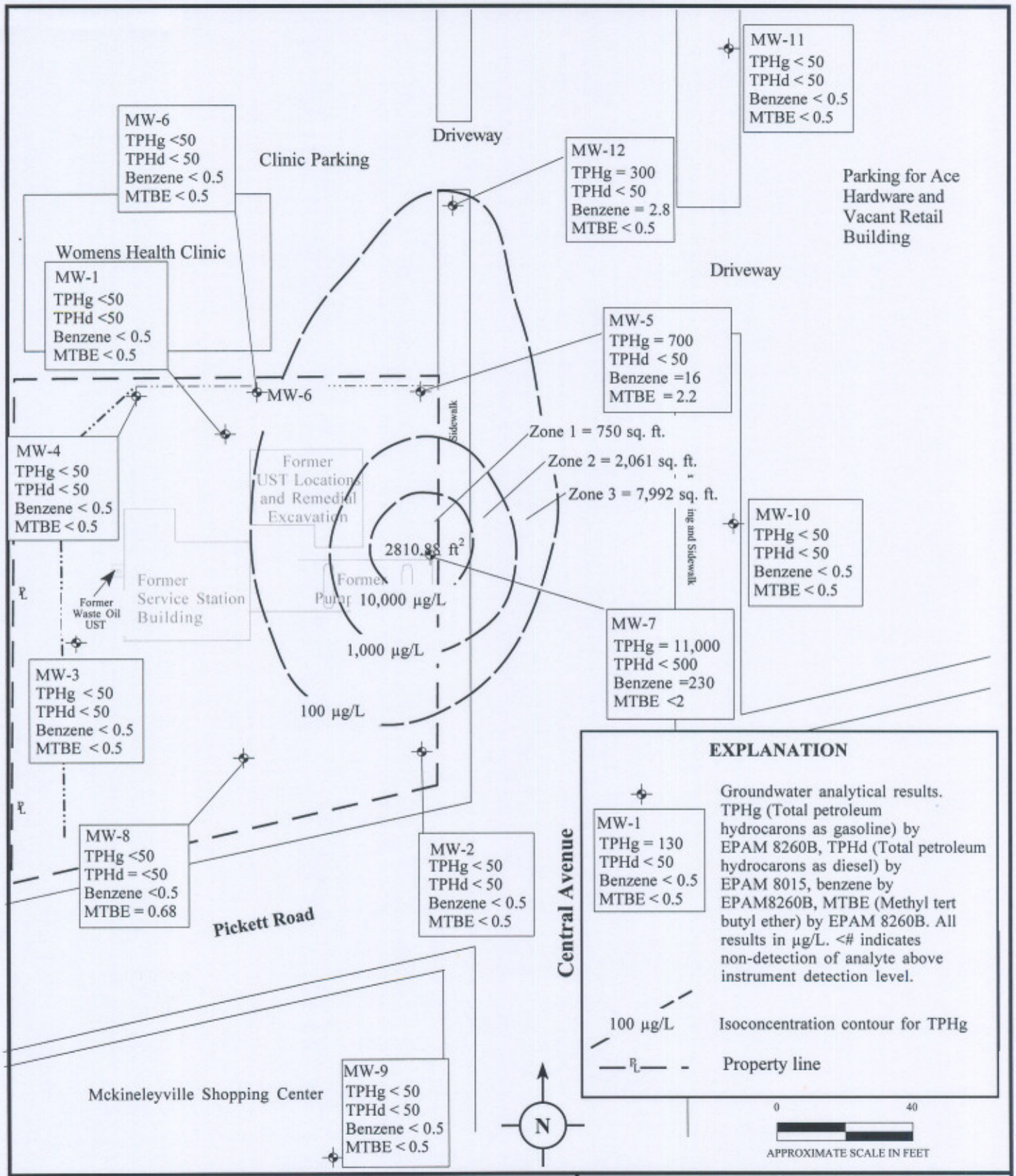


Dissolved-Phase Hydrocarbon (TPHg) Distribution 6/14/05

Former Central BP Station
2160 Central Avenue
McKinleyville, California

BLUE ROCK ENVIRONMENTAL, INC.

Project No.	Report Date	Figure
NC-24	7/05	



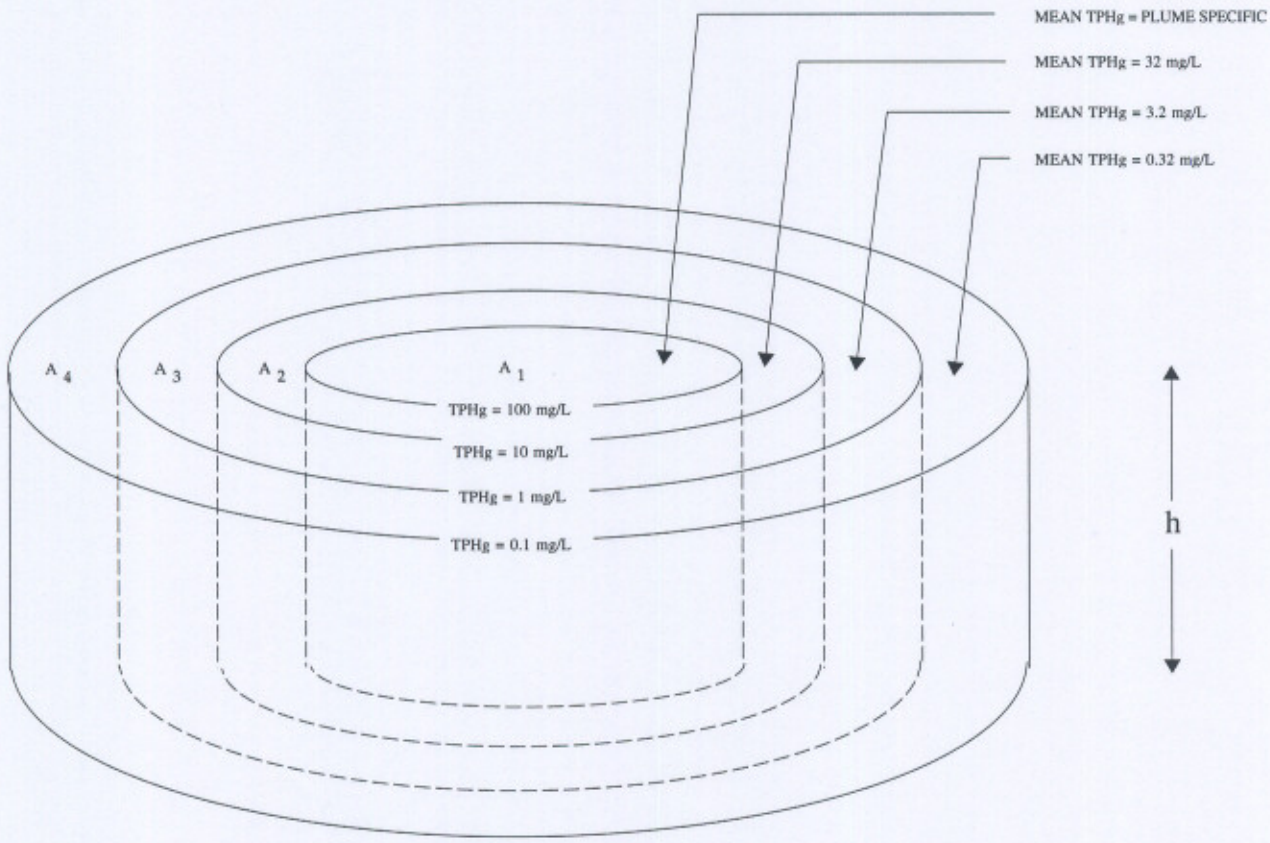
Dissolved-Phase Hydrocarbon (TPHg) Distribution 9/13/05

Former Central BP Station
2160 Central Avenue
McKinleyville, California

BLUE ROCK ENVIRONMENTAL, INC.

Project No.	Report Date	Figure
NC-24	9/05	

MODEL FOR CALCULATING RESIDUAL DISSOLVED CONTAMINANT MASS (TPHg)



$$\text{TPHg mass } (ft^3\text{-mg/L}) = \sum_{1}^{n} V_X (\text{mean TPHg concentration}_X)$$

Convert TPHg mass to (lbs) = $(ft^3\text{-mg/L})\ (28.31\ L/ft^3)\ (0.000001\ kg/mg)\ (2.2\ lbs/kg)$

where,

$V_X = A_X (h)\, n$

A_X = Area between isoconcentrations measured by planimeter

h = Thickness of dissolved contaminant plume

n = Porosity of saturated zone soil

Model assumes that contaminant concentrations decrease logarithmically from source. Thus, log based formula was used to calculate mean contaminant concentrations.