

Glenn Springs Holdings, Inc.

A subsidiary of Occidental Petroleum

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May 27, 2011

Reference No. 001431

Mr. Gregory P. Sutton New York State Department of Environmental Conservation 270 Michigan Avenue Region 9 Buffalo, NY 14203-2999

Dear Mr. Sutton:

Re: Analytical Results and QA/QC Review Semiannual Groundwater Sampling – April 2011 102nd Street Landfill Site, Niagara Falls, New York

Pursuant to the requirements of the Consent Decree and the Operations and Maintenance (O&M) Manual, Glenn Springs Holdings, Inc. (GSH) is submitting the Analytical Results and Quality Assurance/Quality Control (QA/QC) Review for the Semiannual Groundwater Sampling performed at the 102nd Street Landfill Site (Site) in April 2011. An electronic copy is provided on the enclosed CD.

The quarterly groundwater quality monitoring that was required for the first 2 years of operation in accordance with the approved O&M Manual was completed in April 2004. As per the O&M Manual, monitoring is to be performed semiannually for the following 8 years after completion of the quarterly monitoring. Therefore, semiannual groundwater quality monitoring will continue through 2012.

A figure showing the orientation of the Site and the locations of the monitoring wells is included in this submittal as Figure 1.

Please contact me at 231-670-6809 should you have any questions or concerns.

Very truly yours,

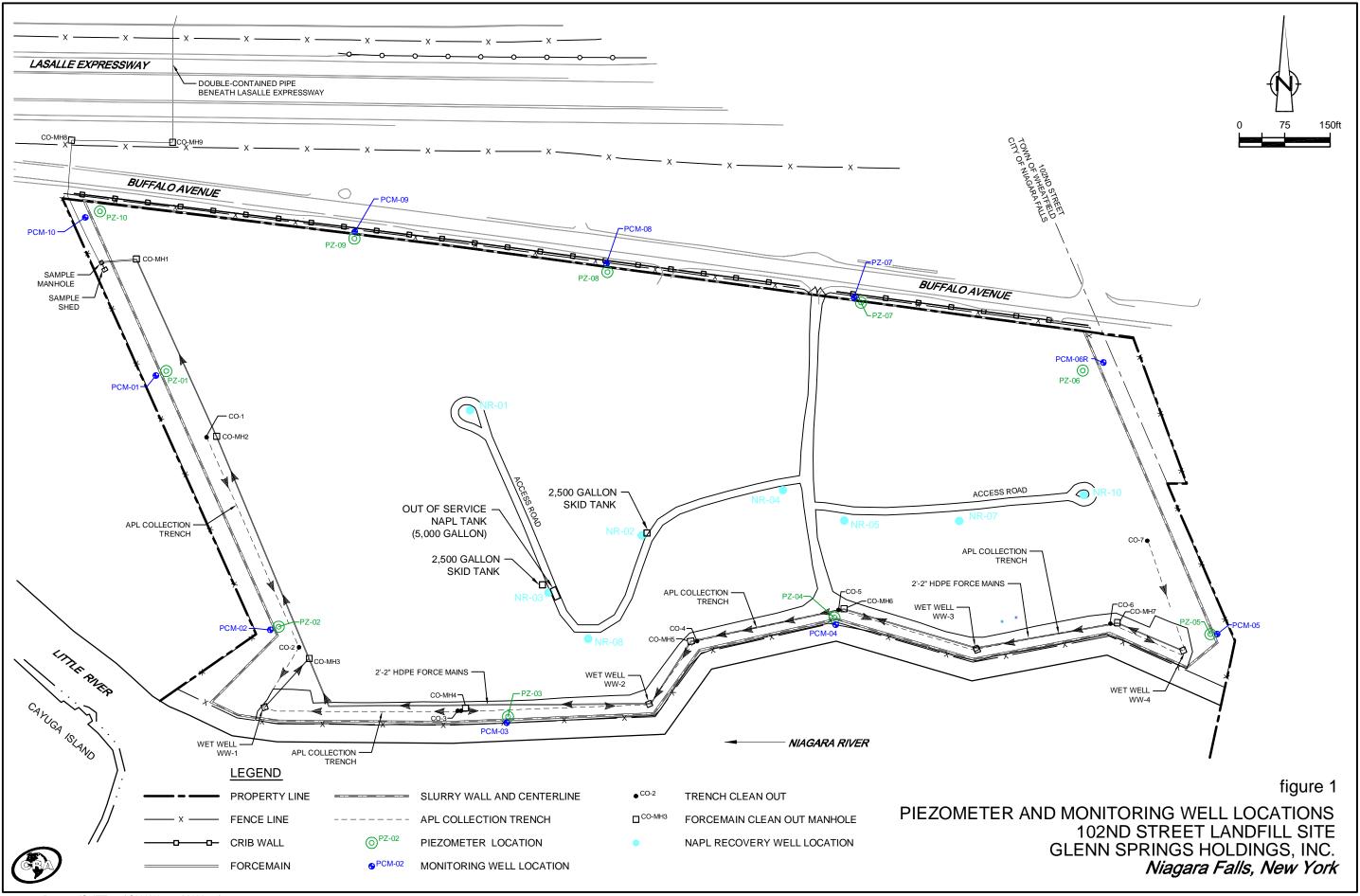
GLENN SPRINGS HOLDINGS, INC.

Dranch

Joseph Branch Project Manager 231-670-6809

JB/EG/adh/10 Encl.

c.c.: C. Babcock, GSH M. Bellotti, Olin P. Olivo, USEPA J. Pentilchuk, CRA J. Polovich, CRA B. Sadowski, NYSDEC (email) S. Radon, NYSDEC (email)



01431-D23101(SUTT010)GN-WA001 MAY 24/2011



E-Mail Date: E-Mail To: May 13, 2011 Mike Bellotti; Clint Babcock; Dennis Hoyt; Jane Polovich; Shawn McEvoy; Joseph Branch Paul McMahon **E-Mail and Hard Copy If Requested**

c.c.:

ANALYTICAL RESULTS AND QA/QC REVIEW SEMI-ANNUAL GROUNDWATER SAMPLING 102ND STREET LANDFILL NIAGARA FALLS, NEW YORK APRIL 2011

PREPARED BY:

CONESTOGA-ROVERS & ASSOCIATES

2055 Niagara Falls Blvd., Suite #3 Niagara Falls, New York 14304 Telephone: 716-297-6150 Fax: 716-297-2265 Contact: Paul McMahon [bjw] Date: May 13, 2011 www.CRAworld.com

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1.0 INTRODUCTION

Groundwater samples were collected in support of the Operation and Maintenance Program at the 102nd Street Landfill (Site) in Niagara Falls, New York. The samples were collected in April 2011 and delivered to TestAmerica in Pittsburgh, Pennsylvania (TA) for analysis. Samples were analyzed for Site-Specific Parameter List (SSPL) volatile organic compounds (VOCs), SSPL semi-volatile organic compounds (SVOCs), SSPL pesticides, total mercury, and total arsenic. A sampling and analysis summary is presented in Table 1. The analytical results are summarized in Table 2 and the analytical methods used are summarized in Table 3. Copies of the Chain of Custody documents are included in Attachment A.

The final sample results and supporting quality assurance/quality control (QA/QC) results were reported by the laboratory in accordance with the requested deliverables. The QA/QC criteria by which these data were assessed are outlined in the analytical methods used and the following guidance documents:

- i) "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", October 1999
- ii) "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review", February 1994

All data were reviewed for the QA/QC information detailed in Section 2.0 by Paul McMahon of CRA, Inc.

A graphical presentation of the concentration of chemical constituents versus time for wells PCM-03, PCM-04, and PCM-05 is located in Attachment B.

2.0 <u>QA/QC REVIEW</u>

Holding Times

The sample holding time criteria are specified in Table 3. All holding time criteria were met. All samples were properly preserved and received chilled.

Surrogate Spike Recoveries -VOCs/SVOCs/Pesticides

All samples and blanks analyzed for VOCs, SVOCs, and pesticides were spiked with surrogate compounds prior to sample extraction and/or analysis. Per the "Guidelines",

it is acceptable for one SVOC surrogate recovery per fraction to be outside of the limits provided the recovery is greater than 10 percent.

All surrogate spike recoveries were acceptable per the "Guidelines", indicating good analytical efficiency.

Laboratory Method Blank Analyses

Method blanks were extracted and/or analyzed with the investigative samples for all parameters. All method blank results were non-detect for the analytes of interest.

Matrix Spike/Matrix Spike Duplicate/Duplicate (MS/MSD/Duplicate) Analyses

One sample was selected for MS/MSD analyses as specified in Table 1. Most recoveries and relative percent differences (RPDs) were acceptable, demonstrating good analytical accuracy and precision. Low MSD recoveries and high RPDs were reported for two pesticides, and the associated sample results were qualified as estimated (see Table 4).

Laboratory Control Sample (LCS) Analyses

LCSs were analyzed for all parameters. All recoveries were acceptable, indicating good analytical accuracy.

Field Duplicate Analysis

One field duplicate sample was submitted "blind" to the laboratory for analyses as summarized in Table 1.

All field duplicate results showed acceptable reproducibility, indicating good laboratory and sampling protocol precision.

Trip Blanks

Three trip blanks were collected for the program. The trip blanks were analyzed for VOCs, and all results were non-detect.

3.0 <u>CONCLUSION</u>

Based on this QA/QC review, the data presented in Table 2 are acceptable with the noted qualifications.

SAMPLE COLLECTION AND ANALYSIS SUMMARY SEMI-ANNUAL GROUNDWATER SAMPLING **102ND STREET LANDFILL** NIAGARA FALLS, NEW YORK APRIL 2011

		Analysis/Parameters													
Sample ID	Location I.D. ⁽¹⁾	Collection Date	Collection Time	BHCs	VOCs	Metals	SVOCs	Depth to Water ⁽²⁾ (ft. BTOC)	Comment						
PCBM-01-0411	PCBM-01	04/13/11	10:25	Х	Х	Х	х	12.96							
PCBM-02-0411	PCBM-02	04/13/11	13:40	Х	Х	Х	Х	12.21							
PCM-03-0411	PCM-03	04/13/11	09:15	Х	Х	Х	Х	13.71	MS/MSD/Duplicate						
PCM-04-0411	PCM-04	04/13/11	12:20	Х	Х	Х	Х	12.44	· · · ·						
PCM-05-0411	PCM-05	04/13/11	14:35	Х	Х	Х	Х	10.41							
102NDTRIP-041311	-	04/13/11	-		Х			-	Trip Blank						
PCBM-03-0411	PCBM-03	04/14/11	12:45	Х	Х	Х	Х	15.82	-						
PCM-12-0411	PCBM-03	04/14/11	13:00	Х	Х	Х	Х	15.82	Duplicate of PCBM-03-0411						
PCM-01-0411	PCM-01	04/14/11	14:50	Х	Х	Х	Х	10.38	-						
PCM-07R-0411	PCM-07R	04/14/11	10:10	Х	Х	Х	Х	13.35							
PCM-08-0411	PCM-08	04/14/11	11:30	Х	Х	Х	Х	8.72							
PCM-09-0411	PCM-09	04/14/11	13:40	Х	Х	Х	Х	5.78							
102NDTRIP-041411	-	04/14/11	-		Х			-	Trip Blank						
PCM-02-0411	PCM-02	04/15/11	10:30	Х	Х	Х	Х	9.19	1 I						
PCM-10-0411	PCM-10	04/15/11	09:15	Х	Х	Х	Х	10.93							
102NDTRIP-041511	-	04/15/11	-		Х			-	Trip Blank						

Notes:

(1) Well PCM-06 was dry.

- (2) Niagara River water level for March 16, 2011 was 562.91 feet.
- Not applicable. -

Benzene Hexachlorides. BHCs

ft. BTOC Feet Below Top of Casing.

Matrix Spike. MS

Matrix Spike Duplicate. MSD

SVOCs Semi-Volatile Organic Compounds.

Volatile Organic Compounds. VOCs

ANALYTICAL RESULTS SUMMARY SEMI-ANNUAL GROUNDWATER SAMPLING 102ND STREET LANDFILL NIAGARA FALLS, NEW YORK APRIL 2011

	Sample Location: Sample ID: Sample Date:	PCBM-01 PCBM-01-0411 4/13/2011	PCBM-02 PCBM-02-0411 4/13/2011	PCBM-03 PCBM-03-0411 4/14/2011	PCBM-03 PCM-12-0411 4/14/2011 (Duplicate)	PCM-01 PCM-01-0411 4/14/2011	PCM-02 PCM-02-0411 4/15/2011	PCM-03 PCM-03-0411 4/13/2011
Parameters	Units							
Volatile Organic Compounds								
1,2,3-Trichlorobenzene	μg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	120 U
1,2,4-Trichlorobenzene	μg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	120 U
1,2-Dichlorobenzene	μg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	61 J
1,4-Dichlorobenzene	μg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	310
2-Chlorotoluene	μg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	120 U
Benzene	μg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	62 J
Chlorobenzene	μg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3400
Semi-volatile Organic Compound	ls							
1,2,4,5-Tetrachlorobenzene	μg/L	9.4 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U
2,4,5-Trichlorophenol	μg/L	9.4 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U
2,4-Dichlorophenol	μg/L	9.4 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U
2,5-Dichlorophenol	μg/L	9.4 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U	13
2-Chlorophenol	μg/L	9.4 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U	9.0 J
4-Chlorophenol	μg/L	9.4 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U	16
Phenol	μg/L	9.4 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U	0.91 J
Pesticides								
alpha-BHC	μg/L	0.048 U	0.047 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
beta-BHC	μg/L	0.048 U	0.047 U	0.048 U	0.048 U	0.048 U	0.048 U	0.059
delta-BHC	μg/L	0.048 U	0.047 UJ	0.048 U	0.048 U	0.048 U	0.048 U	0.075
gamma-BHC (lindane)	μg/L	0.048 U	0.047 UJ	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U
Metals								
Arsenic	μg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Mercury	μg/L μg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
mercury	μ6/ Ц	0.20 0	0.20 0	0.20 0	0.20 0	0.20 0	0.20 0	0.20 0

ANALYTICAL RESULTS SUMMARY SEMI-ANNUAL GROUNDWATER SAMPLING 102ND STREET LANDFILL NIAGARA FALLS, NEW YORK APRIL 2011

	Sample Location: Sample ID: Sample Date:	PCM-04 PCM-04-0411 4/13/2011	PCM-05 PCM-05-0411 4/13/2011	PCM-07R PCM-07R-0411 4/14/2011	PCM-08 PCM-08-0411 4/14/2011	PCM-09 PCM-09-0411 4/14/2011	PCM-10 PCM-10-0411 4/15/2011
Parameters	Units						
Volatile Organic Compounds							
1,2,3-Trichlorobenzene	μg/L	500 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	μg/L	500 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	μg/L	500 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	μg/L	220 J	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Chlorotoluene	μg/L	500 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzene	μg/L	500 U	2.4 J	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	μg/L	8400	87	0.18 J	1.0 U	1.0 U	1.0 U
Semi-volatile Organic Compoun	ıds						
1,2,4,5-Tetrachlorobenzene	μg/L	9.5 U	9.5 U	9.6 U	9.6 U	9.5 U	9.5 U
2,4,5-Trichlorophenol	μg/L	9.5 U	9.5 U	9.6 U	9.6 U	9.5 U	9.5 U
2,4-Dichlorophenol	μg/L	0.90 J	9.5 U	9.6 U	9.6 U	9.5 U	9.5 U
2,5-Dichlorophenol	μg/L	9.5 Ú	9.5 U	9.6 U	9.6 U	9.5 U	9.5 U
2-Chlorophenol	μg/L	12	9.5 U	9.6 U	9.6 U	9.5 U	9.5 U
4-Chlorophenol	μg/L	28	1.7 J	9.6 U	9.6 U	9.5 U	9.5 U
Phenol	μg/L	9.5 U	9.5 U	9.6 U	9.6 U	9.5 U	9.5 U
Pesticides							
alpha-BHC	μg/L	0.048 U	0.048 U	0.033 J	0.048 U	0.048 U	0.047 U
beta-BHC	μg/L	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U
delta-BHC	μg/L	0.13	0.048 U	0.032 J	0.048 U	0.048 U	0.047 U
gamma-BHC (lindane)	μg/L	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.047 U
Metals							
Arsenic	μg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Mercury	μg/L	0.11 J	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
·	F-6/ 2	·· ,					

Notes:

J - Estimated concentration.

U - Not present at or above the associated value.

ANALYTICAL METHOD SUMMARY SEMI-ANNUAL GROUNDWATER SAMPLING 102ND STREET LANDFILL NIAGARA FALLS, NEW YORK APRIL 2011

Analyses	Methodology ⁽¹⁾	Holding Time to Extraction (Days)	Holding Time to Analyses (Days)
VOCs	SW-846 8260B	-	14
SVOCs	SW-846 8270C	7	40
Pesticides	SW-846 8081A	7	40
Arsenic	SW-846 6010B	-	180
Mercury	SW-846 7470A	-	28

Notes:

- ⁽¹⁾ Referenced from "Test Methods for Evaluating Solid Waste", USEPA OSW, 3rd Edition, 1986.
- SVOCs Semi-Volatile Organic Compounds.
- VOCs Volatile Organic Compounds.

QUALIFIED SAMPLE RESULTS DUE TO OUTLYING MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERIES SEMI-ANNUAL GROUNDWATER SAMPLING 102ND STREET LANDFILL NIAGARA FALLS, NEW YORK APRIL 2011

			MS	MSD		Contro	l Limits			
Parameter	Sample ID	Analyte	Recovery (percent)	Recovery (percent)	RPD (percent)	Recovery (percent)	RPD (percent)	Sample Result	Units	Qualifier
Pesticides	PCBM-02-0411	gamma-BHC	78	59	27	63-123	0-21	0.047 U	μg/L	UJ
		delta-BHC	37	20	57	30-137	0-26	0.047 U	µg∕L	UJ

Notes:

J Estimated.

U Non-detect at the associated value.

MS Matrix Spike.

MSD Matrix Spike Duplicate.

RPD Relative Percent Difference.

UJ Not detected, estimated reporting limit.

ATTACHMENT A

CHAIN OF CUSTODY DOCUMENTS

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EVENT COMPLETE

CHAIN-OF-CUSTODY/Analytical Request Document The Chain-of-Chained is a LEGAL DOCLMENT. All relevant fields must be carefulded secondary.

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	Client Information	·					ab Informa		Event externation
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Love Canal				PIT	rsburg	H, PA-162	38		
Niagara Falis, NY 14304	invoice To:PM	mahon	gcraworld.com	-			AVID DUN		Sampler Name: Charles David 1
Phone: 716-283-0111	PO:					ue Date:		T: 10	Sampler Name: Sym Andreh
Fax:	Project Name:			(en	QC Requ	irementz	;		
Email: PMcmahon@craw	orid.com Project Numbe	r: 63710	-05-03	/	÷				
Sample identification	Valid Matrix Code WG Groundwater WB Borehole Water WS Surtace Water SO Soli SE Sediment	Matrix Code	Date Collected	Time Collected	A#MeC(HNC3)	BHC(none)	SVOC=(none)	VOC=(HCI)	Sample Condition Temp in C Received on ice Y/N Sealed Cooler Y/N Samples Intact Y/N Remarks Y/N Y/N Y/N
PCM-02-0411		WG	04/15/2011	10:30	1	2	2	3	
PCM-10-0411		WG	04/15/2011	09:15	1	2	2	3	
102NDTRIP-041511		WG	04/15/2011	00:00	-	-	-	2	
Total Bottles			· · ·		2	4	4	8	Grand Total:18
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· · · ·	Valid Matr WG Groun WB Borehe WS Surfac SO Soil SE Sedime	dwater Ne Water e Water	Matrix Code	Date Collected	Time Collected	AumeC(HNO3)	BHC(none)	BVOCs(nons)	VOC=(HCI)		Sample C Temp in C Received on ic Sealed Cooler Samples Intact	e Y/N Y/N		· ·		• ·	•	
Sample Identification			<u> </u>	Å	۴.	2	ă.	6	<u> </u>	Remarks			•	- ·				
PCBM-03-0411			WG	04/14/2011	12:45	1	2	2	3									
PCM-01-0411			WG	04/14/2011	14:50	1 .	2	2	3									
PCM-07R-0411			WG	04/14/2011	10:10	1	1	1	3				. •		· ·	•		
PCM-08-0411		·	WG	04/14/2011	11:30	1	2	2	3						به	•		
PCM-09-0411			WG	04/14/2011	13:40	1	2	2	3				```				,	
PCM-12-0411			WG	04/14/2011	13:00	1	2	2.	3].				
102NDTRIP-041411			WG	04/14/2011	00:00	-	-		2	•	· .]	*.			
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805 97th Street		Copy To:			Lab	oratory L	ocation:	301 ALPI	A DRIVE	·	SSOW Ref#:						
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Email: PMcmahon@craw	ona.com	Project Number	r; 53/10	-05-03	/												
Sample Identification	Valid Matr WG Groum WB Boreho WS Surfac SO Soil SE Sedime	dwater bie Water e Water	Methix Code	Date Collected	Time Collected	AnimeC(HNOS)	BHC(none)	SVOCe(none)	Voce(HCI)	R S	Sample Con Femp in C Received on Ice Sealed Cooler Ramples Intact	ſ	.s]4	1		• • •	
102NDTRIP-041311			WG	04/13/2011	00:00	0	0	0	2								
PCBM-01-0411			WG	04/13/2011	10:25	1	2	2.	3		·					•	
PCBM-02-0411		· .	WG	04/13/2011	13:40	3	6	6	9	MS/MSD			·				
PCM-03-0411	*		WG	04/13/2011	09:15	1	2	2	3								
PCM-04-0411			WG	04/13/2011	12:20	1	2	2	3								
PCM-05-0411	· .	•••	WG	04/13/2011	14:35	1	2	2	3			,					
Total Bottles						7	14	14	2 3	Grand Total:5							
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ATTACHMENT B

GRAPHICAL PRESENTATION CHEMICAL CONCENTRATION VERSUS TIME

