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June 8, 2011

Mr. Mark Shields
Indiana Department of Transportation
Office of Facilities Management
100 North Senate Avenue
Mail Code 66-22
Indianapolis, Indiana 46204-2251

Re: **Site Update Letter**
INDOT Rushville
Highway 52
Rushville, Indiana
ATC Project No. 86.30800.0079

Dear Mr. Shields:

ATC Associates Inc. is pleased to provide the Indiana Department of Transportation (INDOT) with this Site Update Letter associated with the above-referenced site. A Site Plan is provided as **Figure 1**.

Site History

Based on historical information provided by the INDOT, road salt, comprised mainly of sodium (Na) and chloride (Cl), was stored at the site between the years 1975 and 1985. Due to the road salt being stored in a pile behind the facility building and at an elevation slightly higher than the remainder of the site, NaCl leached into the surrounding subsurface through surface runoff and infiltration, thus contaminating the soil and groundwater. In addition, road salt being transported by INDOT highway trucks to and from the site likely resulted in spillage of road salt along vehicle travel pathways and also potentially contributed to the NaCl contamination beneath the site.

From 1987 to 1990, a series of investigations, which included the advancement of numerous test holes and the installation of two monitoring wells (MW-1 and MW-2), were performed at the site to provide baseline data for the extent of contamination. Additionally, in 1991 seven monitoring wells (MW-3 through MW-9) were installed at the site in attempt to delineate the distribution of NaCl in the soil samples onsite, as well as identify the NaCl concentrations in groundwater. Of the monitoring well network installed at the site, monitoring well MW-2 was installed to a depth of 80 feet, into the limestone bedrock. The remaining 8 wells were set shallower, ranging in depths between 17 to 34 feet below ground surface (ft-bgs). Reportedly, the difference in well depths was to allow for monitoring the groundwater conditions for two different aquifers. In October and November 1988, the INDOT also excavated the former salt pile area to a depth of 6 feet below ground surface (ft-bgs) and backfilled the excavation with

clean fill (pea gravel). It is unclear how many tons of soil were removed during the excavation activities.

Groundwater sampling was performed on the monitoring well network monthly from 1991 to 1992. Monitoring continued at frequent intervals from 1993 to 1999. Additionally, the last known sampling event was performed at the site in August 2001. Groundwater samples were collected from each well location and submitted for laboratory analysis of Na and Cl. According to historical groundwater analytical results, Cl concentrations were found to be greater than the Environmental Protection Agency's (EPA) National Secondary Maximum Contaminant Level (MCL) of 250 parts per million (ppm) in all the monitoring wells at the site.

To provide a more current update on Na and Cl concentrations beneath the site, ATC mobilized to the site on May 12, 2011 to perform a groundwater sampling event per the INDOT request. The results and findings from the sampling event are presented in the following section of this letter.

Groundwater Sampling

On May 12, 2011, ATC personnel mobilized to the site to gauge and collect groundwater samples from the entire monitoring well network (MW-1 through MW-9). The wells were opened and allowed to equilibrate to atmospheric pressure before gauging. The wells were subsequently gauged with an electronic water level indicator, which measures depth to groundwater to the nearest 0.01-foot. The observed depth to groundwater during the groundwater sampling event ranged from 3.10 to 7.92 feet below the top of the monitoring well casings. The apparent groundwater flow direction appears to be in a radial direction from monitoring well MW-6, located in the central portion of the site. A potentiometric surface map from the March 2011 groundwater sampling event is presented in **Figure 1**. The current and historical quarterly gauging groundwater data are presented in **Table 1**.

After the groundwater level measurements were obtained from the monitoring well network and prior to collecting groundwater samples for laboratory analysis, a minimum of three well volumes of groundwater were extracted from the monitoring wells. The extraction of groundwater from the monitoring wells was accomplished by lowering a new dedicated disposable bailer attached to disposable polypropylene rope into the monitoring well and removing three well volumes of water. The groundwater purged from the monitoring wells was placed in a 55-gallon drum and disposed off-site.

The groundwater samples were placed into the laboratory supplied containers, packed in a cooler filled with ice, and shipped to Pace Analytical Services (Pace) for analysis of Cl and Bromide (Br) using US EPA SW-846 Method IC 300 and for Na using US EPA SW-846 Method 6010.

Cl concentrations were detected above the EPA National Secondary MCL of 250 parts per million (ppm) in groundwater samples collected from monitoring well MW-1, MW-3, MW-7, MW-8 and MW-9.

The EPA has established a Drinking Water Equivalency Level (DWEL or guidance level) of 20 ppm for Na. However, Na is not currently subject to enforceable regulatory standards for drinking water. Sodium was detected at concentrations greater than 20 ppm in the groundwater samples collected from the monitoring wells sampled (MW-1 and MW-3 through MW-9).

A summary of the groundwater analytical results is presented in **Table 2**. The most recent groundwater analytical data are depicted on **Figure 2**. The groundwater sampling log and a copy of the laboratory results and chain-of-custody document are presented in **Attachment A**.

Conclusions

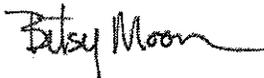
Based on the results of this sampling event, it appears the Na and Cl concentrations have decreased since the August 30, 2001 sampling event. Groundwater samples analyzed from monitoring wells MW-1, MW-3 and MW-7 through MW-9 resulted in concentrations of Cl above the EPA MCL of 250 ppm. The remaining wells did not contain Cl concentrations above laboratory detection limits or the EPA MCL. Sodium concentrations were detected above the EPA guidance level of 20 ppm in the groundwater samples collected from the monitoring wells sampled during this event.

Based on cursory review of previous reports for the site, exceedances of Na and Cl appear to have fluctuated in groundwater samples collected from monitoring wells MW-3, MW-7, MW-8 and MW-9. These fluctuations in concentrations are likely associated with seasonal precipitation events. Based on the results from the most recent groundwater sampling event, it appears that concentrations of Cl and Na remain in several monitoring wells above the MCL of 250 ppm or guidance level of 20 ppm, respectively. It is also likely that the Na and Cl plume has migrated offsite based on concentrations in monitoring wells near the property boundaries.

If you have any questions or comments, please contact either of the undersigned at (317) 849-4990.

Sincerely,

ATC Associates Inc.



Betsy Moon
Project Geologist



John Schilling, LPG
Senior Project Geologist

TABLES

Table 1
Summary of Monitoring Well Gauging Data
 INDOT Rushville
 Highway 52
 Rushville, IN
 ATC Project No. 86.30800.0079

Well ID	Screen Interval (ft bgs)	Gauging Date	Top of Casing Elevation (ft MSL)	Depth to Water (ft TOC)	Groundwater Elevation (ft MSL)
MW-1	NA	08/30/01	976.13	8.80	967.33
		05/12/11	976.13	7.03	969.10
MW-2	NA	08/30/01	974.79	NG	NG
		05/12/11	974.79	6.75	968.04
MW-3	16.5-21.5'	08/30/01	975.56	8.20	967.36
		05/12/11	975.56	6.12	969.44
MW-4	18-23'	08/30/01	976.65	8.37	968.28
		05/12/11	976.65	7.40	969.25
MW-5	19-24'	08/30/01	976.06	7.70	968.36
		05/12/11	976.06	6.64	969.42
MW-6	12-17'	08/30/01	977.46	9.19	968.27
		05/12/11	977.46	7.92	969.54
MW-7	14-19'	08/30/01	975.36	7.22	968.14
		05/12/11	975.36	5.88	969.48
MW-8	29-34'	08/30/01	972.95	5.46	967.49
		05/12/11	972.95	3.76	969.19
MW-9	29-34'	08/30/01	972.62	5.25	967.37
		05/12/11	972.62	3.10	969.52

Notes :

- Top of Casing Elevation = Elevation at the top of the PVC well casing relative to arbitrary on-site datum
- ft TOC - Depth to water is measured from the top of the well casing.
- ft MSL - Elevation in feet above the mean sea level
- Screened Interval - In feet below the top of casing
- Groundwater Elevation = Top of Casing Elevation - Depth to Groundwater
- NA - Screen interval data not available
- bgs - Below ground surface

Table 2
Summary of Groundwater Analytical Data
 INDOT Rushville
 Highway 52
 Rushville, IN
 ATC Project No. 86.30800.0079

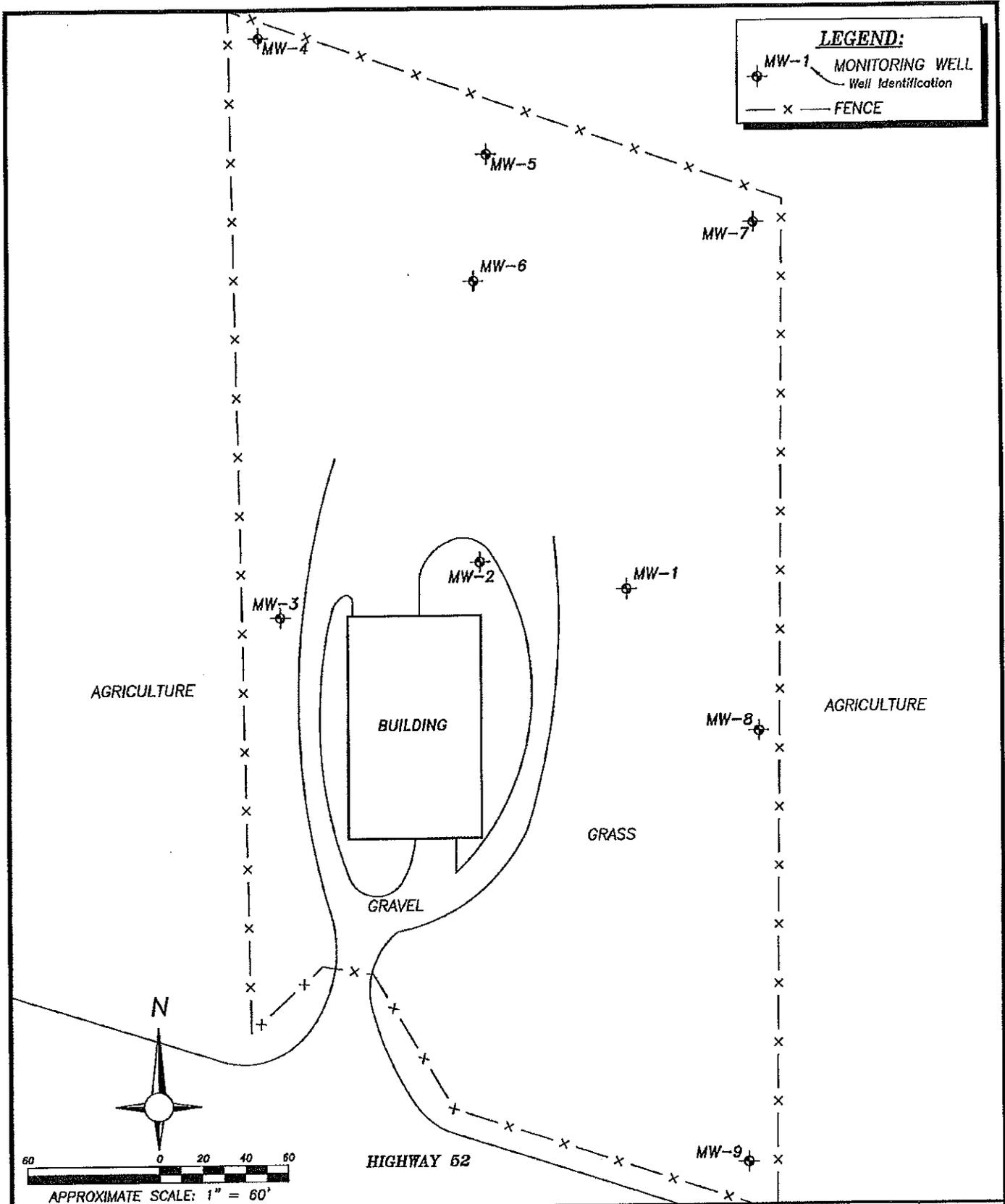
Sample ID	Sample Date	Bromide (ppm)	Chloride (ppm)	Sodium (ppm)
EPA National Secondary Standards for Drinking Water		NE	250	
EPA Drinking Water Equivalency Level		NE		20
MW-1	8/30/2001 5/12/2011	NA <1.0	NA 679	NA 447
MW-2	8/30/2001 5/12/2011	NA NS	NA NS	NA NS
MW-3	8/30/2001 5/12/2011	<1.0 <1.0	3,700 1,810	2,300 1,340
MW-4	8/30/2001 5/12/2011	<1.0 <1.0	290 128	320 2,870
MW-5	8/30/2001 5/12/2011	<1.0 <1.0	910 198	900 3,990
MW-6	8/30/2001 5/12/2011	<1.0 <1.0	390 56.6	550 1,280
MW-7	8/30/2001 5/12/2011	<1.0 1.8	2,600 714	2,100 6,340
MW-8	8/30/2001 5/12/2011	<5.0 7.2	15,000 5,230	5,700 3,690
MW-9	8/30/2001 5/12/2011	<1.0 2.0	1,700 1,560	1,900 8,730

Notes

- NE = Not established.
- NA = Data not available
- NS = Not Sampled

Bold = Concentration reported above Secondary Standard for Drinking Water

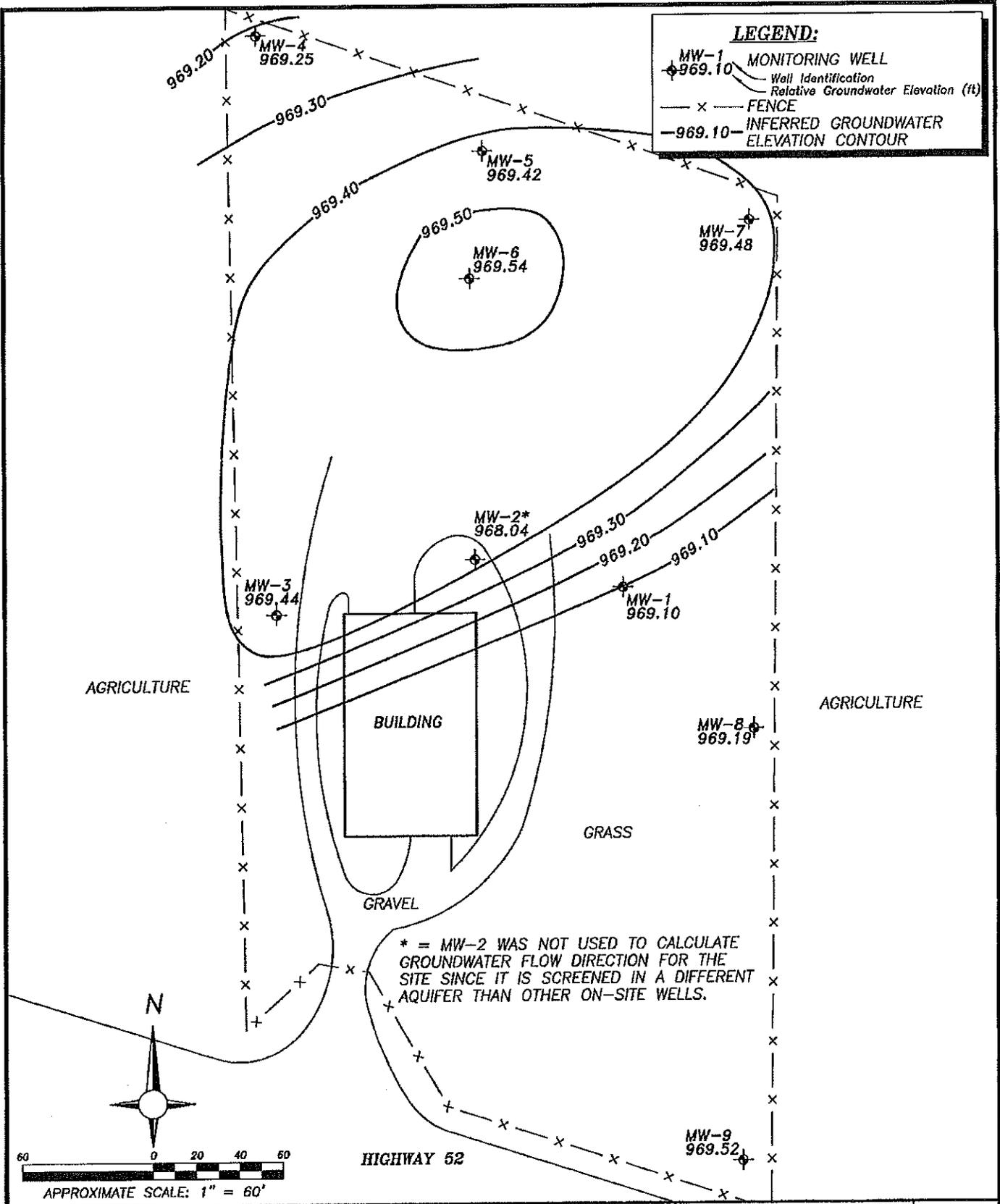
FIGURES



SITE PLAN
 INDOT RUSHVILLE
 HIGHWAY 52
 RUSHVILLE, INDIANA

Project Number: 86.30800.0079		Drn. By: EB
Drawing File: 30800-79B		Ckd. By: BM
Date: 6/11	Scale: AS SHOWN	App'd By:
		Figure: 1

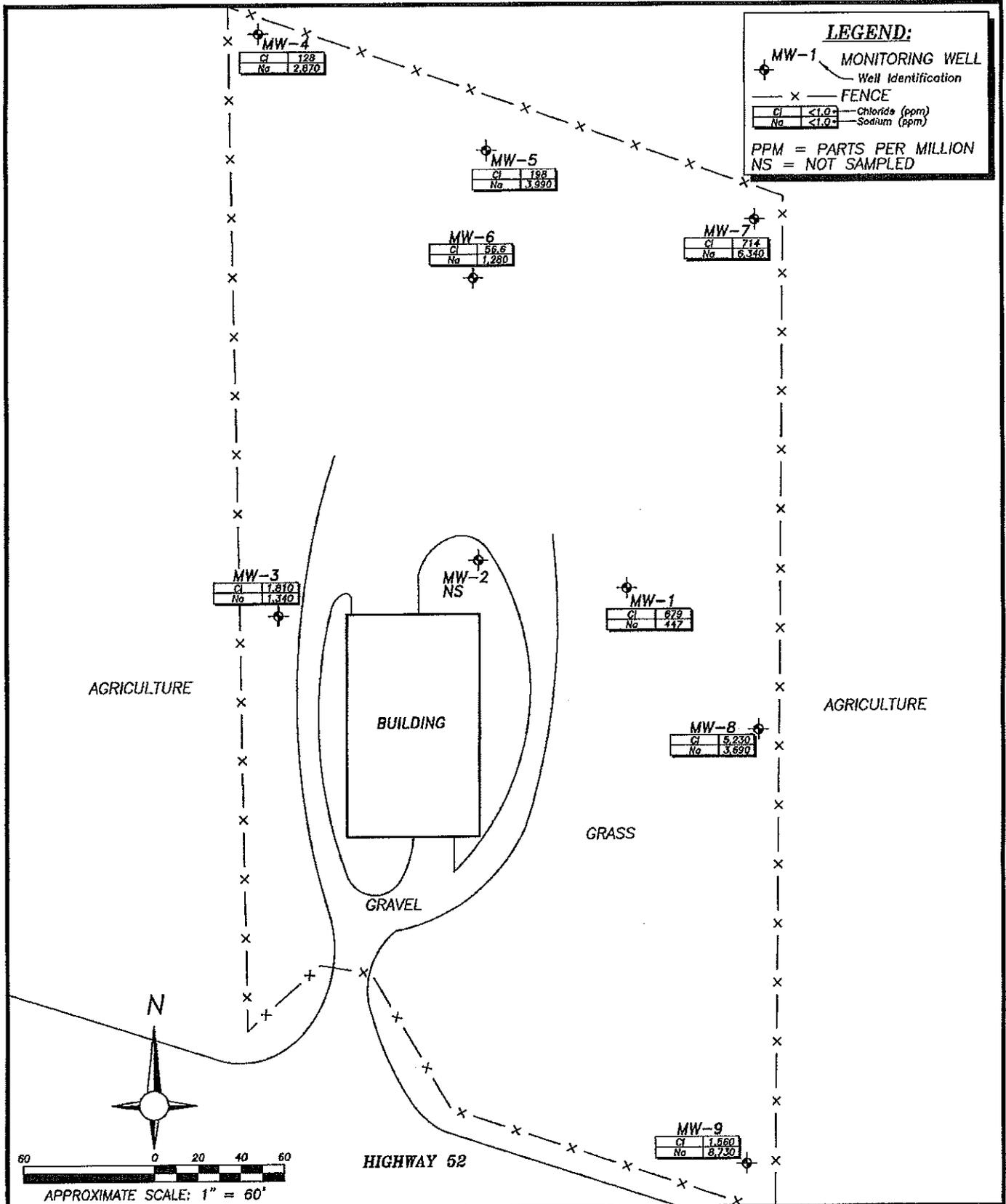
H:\2011\30800\0079



POTENTIOMETRIC SURFACE MAP
 INDOT RUSHVILLE
 HIGHWAY 52
 RUSHVILLE, INDIANA

Project Number: 86.30800.0079		Dwn. By: EB
Drawing File: 30800-79C		Ckd. By: BM
Date: 6/11	Scale: AS SHOWN	App'd By:
		Figure: 2

#:\2011\30800\0079



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GROUNDWATER ANALYTICAL MAP

INDOT RUSHVILLE
 HIGHWAY 52
 RUSHVILLE, INDIANA
 DATA DATE: MAY 12, 2011

Project Number: 86.30800.0079	Dr. By: EB
Drawing File: 30800-79D	Ckd. By: BM
Date: 6/11	App'd By:
Scale: AS SHOWN	Figure: 3



ATTACHMENT A

ATC Groundwater Sampling Log

Client: INDOT
 Project Name: Rushville
 Project #: 86.30800.0079
 Location: 1200 Hwy 52
 Type of Sampling: Groundwater Sampling
 Equipment: Bailers, water level meter, 40 ml vials, nitrile gloves
 Date: Thursday, May 12, 2011
 Sampler(s): B.Moon

Well ID	WD	DTP	DTW	BTW	CH	3-WV	AGP	Time Collected	Sample Preservative	Well Condition	Notes: odor, sheen, etc
MW-1	2"		7.03	9.85	2.82	1.38	1.00	10:03		Good	well is very shallow, blocked? Not sampled, MW-2 is site DW
MW-2	2"		6.75	63.00	56.25	27.56	NS	NS		Good	well
MW-3	2"		6.12	23.00	16.88	8.27	9.00	10:20		Good	clear
MW-4	2"		7.40	25.15	17.75	8.70	9.00	10:40		Good	clear
MW-5	2"		6.64	25.30	18.66	9.14	9.50	11:03		Good	clear
MW-6	2"		7.92	20.20	12.28	6.02	6.50	11:18		Good	clear to grey
MW-7	2"		5.88	20.05	14.17	6.94	7.50	11:35		Good	clear
MW-8	2"		3.76	35.50	31.74	15.55	16.00	13:05		Good	clear to orangish
MW-9	2"		3.10	35.25	32.15	15.75	16.00	13:40		Good	clear to orangish

WD = Well Diameter
 BTW = Bottom of the Well
 HCL = Hydrochloric Acid
 NP = No Purge
 DTW = Depth to Water
 AGP = Actual Gallons Purged
 NG = Not Guaged
 DTS = Depth to Screen
 CH = Height of Water Column
 HC = Hydrocarbon
 NA = Not Applicable

1-Inch Dia = CH x 0.12
 2-Inch Dia = CH x 0.49
 3-Inch Dia = CH x 1.11
 4-Inch Dia = CH x 1.95
 5-Inch Dia = CH x 3.06
 6-Inch Dia = CH x 4.41

REMARKS:



Pace Analytical Services, Inc.
7726 Moller Road
Indianapolis, IN 46268
(317)875-5894

May 26, 2011

Ms. Betsy Moon
ATC Associates
7988 Centerpoint Drive
Suite 100
Indianapolis, IN 46256

RE: Project: INDOT Rushville
Pace Project No.: 5048633

Dear Ms. Moon:

Enclosed are the analytical results for sample(s) received by the laboratory on May 13, 2011. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Andrew Votaw

andrew.votaw@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

Page 1 of 15

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CERTIFICATIONS

Project: INDOT Rushville
Pace Project No.: 5048633

Indiana Certification IDs

7726 Moller Road, Indianapolis, IN 46268
Illinois/NELAC Certification #: 100418
Indiana Certification #: C-49-06
Kansas Certification #: E-10247
Kentucky Certification #: 0042

Louisiana Certification #: 04076
Ohio VAP: CL0065
Pennsylvania: 68-00791
West Virginia Certification #: 330

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
A2LA Certification #: 2456.01
Arkansas Certification #: 05-008-0
Illinois Certification #: 001191
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-08-TX
Utah Certification #: 9135995665

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: INDOT Rushville
Pace Project No.: 5048633

Lab ID	Sample ID	Matrix	Date Collected	Date Received
5048633001	MW-1	Water	05/12/11 10:03	05/13/11 12:35
5048633002	MW-3	Water	05/12/11 10:20	05/13/11 12:35
5048633003	MW-4	Water	05/12/11 10:40	05/13/11 12:35
5048633004	MW-5	Water	05/12/11 11:03	05/13/11 12:35
5048633005	MW-6	Water	05/12/11 11:18	05/13/11 12:35
5048633006	MW-7	Water	05/12/11 11:35	05/13/11 12:35
5048633007	MW-8	Water	05/12/11 13:05	05/13/11 12:35
5048633008	MW-9	Water	05/12/11 13:40	05/13/11 12:35

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: INDOT Rushville
Pace Project No.: 5048633

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
5048633001	MW-1	EPA 6010	FRW	1	PASI-I
		EPA 300.0	AJM	2	PASI-K
5048633002	MW-3	EPA 6010	FRW	1	PASI-I
		EPA 300.0	AJM	2	PASI-K
5048633003	MW-4	EPA 6010	FRW	1	PASI-I
		EPA 300.0	AJM	2	PASI-K
5048633004	MW-5	EPA 6010	FRW	1	PASI-I
		EPA 300.0	AJM	2	PASI-K
5048633005	MW-6	EPA 6010	FRW	1	PASI-I
		EPA 300.0	AJM	2	PASI-K
5048633006	MW-7	EPA 6010	FRW	1	PASI-I
		EPA 300.0	AJM	2	PASI-K
5048633007	MW-8	EPA 6010	FRW	1	PASI-I
		EPA 300.0	AJM	2	PASI-K
5048633008	MW-9	EPA 6010	FRW	1	PASI-I
		EPA 300.0	AJM	2	PASI-K

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: INDOT Rushville
Pace Project No.: 5048633

Sample: MW-1	Lab ID: 5048633001	Collected: 05/12/11 10:03	Received: 05/13/11 12:35	Matrix: Water					
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Sodium	447000	ug/L	5000	5	05/17/11 00:00	05/20/11 08:15	7440-23-5		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Bromide	ND	mg/L	1.0	1		05/22/11 21:11	24959-67-9		
Chloride	679	mg/L	50.0	50		05/24/11 06:56	16887-00-6		

ANALYTICAL RESULTS

Project: INDOT Rushville
Pace Project No.: 5048633

Sample: MW-3	Lab ID: 5048633002	Collected: 05/12/11 10:20	Received: 05/13/11 12:35	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Sodium	1340000	ug/L	20000	20	05/17/11 00:00	05/20/11 08:20	7440-23-5	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		05/22/11 21:27	24959-67-9	
Chloride	1810	mg/L	100	100		05/24/11 07:13	16887-00-6	

ANALYTICAL RESULTS

Project: INDOT Rushville
Pace Project No.: 5048633

Sample: MW-4		Lab ID: 5048633003	Collected: 05/12/11 10:40	Received: 05/13/11 12:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010						
Sodium	287000	ug/L	5000	5	05/17/11 00:00	05/20/11 08:26	7440-23-5	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0						
Bromide	ND	mg/L	1.0	1		05/22/11 21:44	24959-67-9	
Chloride	128	mg/L	10.0	10		05/23/11 13:34	16887-00-6	

ANALYTICAL RESULTS

Project: INDOT Rushville
Pace Project No.: 5048633

Sample: MW-5		Lab ID: 5048633004	Collected: 05/12/11 11:03	Received: 05/13/11 12:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010						
Sodium	399000	ug/L	5000	5	05/17/11 00:00	05/20/11 08:32	7440-23-5	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0						
Bromide	ND	mg/L	1.0	1		05/22/11 22:00	24959-67-9	
Chloride	198	mg/L	20.0	20		05/23/11 13:51	16887-00-6	

ANALYTICAL RESULTS

Project: INDOT Rushville
Pace Project No.: 5048633

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Sample: MW-6								
Lab ID: 5048633005 Collected: 05/12/11 11:18 Received: 05/13/11 12:35 Matrix: Water								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Sodium	128000	ug/L	1000	1	05/17/11 00:00	05/19/11 14:26	7440-23-5	
300.0 IC Anions 28 Days								
Analytical Method: EPA 300.0								
Bromide	ND	mg/L	1.0	1		05/22/11 22:17	24959-67-9	
Chloride	56.6	mg/L	10.0	10		05/23/11 14:40	16887-00-6	

ANALYTICAL RESULTS

Project: INDOT Rushville
Pace Project No.: 5048633

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Sample: MW-7								
Lab ID: 5048633006 Collected: 05/12/11 11:35 Received: 05/13/11 12:35 Matrix: Water								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
6010 MET ICP								
Sodium	634000	ug/L	10000	10	05/17/11 00:00	05/20/11 08:37	7440-23-5	
300.0 IC Anions 28 Days								
Analytical Method: EPA 300.0								
Bromide	1.8	mg/L	1.0	1		05/22/11 23:07	24959-67-9	
Chloride	714	mg/L	50.0	50		05/24/11 07:30	16887-00-6	

ANALYTICAL RESULTS

Project: INDOT Rushville
Pace Project No.: 5048633

Sample: MW-8		Lab ID: 5048633007	Collected: 05/12/11 13:05	Received: 05/13/11 12:35	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010						
Sodium	3690000	ug/L	50000	50	05/17/11 00:00	05/20/11 08:43	7440-23-5	
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0						
Bromide	7.2	mg/L	1.0	1		05/22/11 23:23	24959-67-9	
Chloride	5230	mg/L	500	500		05/24/11 07:46	16887-00-6	

ANALYTICAL RESULTS

Project: INDOT Rushville
Pace Project No.: 5048633

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Sample: MW-9								
Lab ID: 5048633008 Collected: 05/12/11 13:40 Received: 05/13/11 12:35 Matrix: Water								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
6010 MET ICP								
Sodium	873000	ug/L	10000	10	05/17/11 00:00	05/20/11 08:49	7440-23-5	
300.0 IC Anions 28 Days								
Analytical Method: EPA 300.0								
Bromide	2.0	mg/L	1.0	1		05/22/11 23:40	24959-67-9	
Chloride	1560	mg/L	100	100		05/24/11 08:03	16887-00-6	

QUALITY CONTROL DATA

Project: INDOT Rushville
Pace Project No.: 5048633

QC Batch: MPRP/7428 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 5048633001, 5048633002, 5048633003, 5048633004, 5048633005, 5048633006, 5048633007, 5048633008

METHOD BLANK: 572421 Matrix: Water
Associated Lab Samples: 5048633001, 5048633002, 5048633003, 5048633004, 5048633005, 5048633006, 5048633007, 5048633008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sodium	ug/L	ND	1000	05/19/11 10:57	

LABORATORY CONTROL SAMPLE: 572422

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sodium	ug/L	10000	10700	107	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 572425 572426

Parameter	Units	5048577005		572426		MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result					
Sodium	ug/L	2700	10000	13300	13700	106	110	75-125	3	20

QUALITY CONTROL DATA

Project: INDOT Rushville
Pace Project No.: 5048633

QC Batch: WETA/16408 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 5048633001, 5048633002, 5048633003, 5048633004, 5048633005, 5048633006, 5048633007, 5048633008

METHOD BLANK: 818770 Matrix: Water
Associated Lab Samples: 5048633001, 5048633002, 5048633003, 5048633004, 5048633005, 5048633006, 5048633007, 5048633008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	05/22/11 16:30	

METHOD BLANK: 818944 Matrix: Water
Associated Lab Samples: 5048633001, 5048633002, 5048633003, 5048633004, 5048633005, 5048633006, 5048633007, 5048633008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	05/23/11 12:28	

LABORATORY CONTROL SAMPLE: 818771

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.3	106	90-110	

LABORATORY CONTROL SAMPLE: 818945

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	97	90-110	

MATRIX SPIKE SAMPLE: 818772

Parameter	Units	6098903001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	25	23.2	93	75-119	
Chloride	mg/L	17.0	25	38.8	87	64-118	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 818773 818774

Parameter	Units	6098914001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Bromide	mg/L	ND	25	25	23.9	23.5	96	94	75-119	1	10
Chloride	mg/L	4.1J	25	25	25.9	25.8	88	87	64-118	1	12

QUALIFIERS

Project: INDOT Rushville
Pace Project No.: 5048633

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

LABORATORIES

PASI-I Pace Analytical Services - Indianapolis
PASI-K Pace Analytical Services - Kansas City



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately

Page: 1 of 1

Required Client Information: Section A
 Company: **ATC ASSOCIATES INC.**
 Address: **7988 CENTERPOINT DR.**
INDIANAPOLIS, IN 46256
 Phone: **317.649.4990**
 Fax: **317.649.4990**
 Email: **betsy.moon@atcassociates.com**

Required Client Information: Section B
 Report To: **Betsy Moon**
 Copy To:
 Invoices To:
 P.O.

Required Client Information: Section C
 Quote Reference:
 Project Manager:
 Project #: **5048633**
 Profile #:

Required Client Information: Section D
 Project Name: **INDOT Rushville**
 Project Number: **B6.30860.009**

ITEM NUMBER	SAMPLE ID (One character per box.)	DATE COLLECTED	TIME COLLECTED	MATRIX CODE	PRESERVATIVES										Requested Analysis	REMARKS / Lab ID	
					# Containers	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Method 300	Method 301			Method 600
1	M	5/12/11	10:03	WT	X												001
2	M	5/12/11	10:20	WT	X												2
3	M	5/12/11	10:40	WT	X												3
4	M	5/12/11	11:03	WT	X												4
5	M	5/12/11	11:18	WT	X												5
6	M	5/12/11	11:35	WT	X												6
7	M	5/12/11	13:05	WT	X												7
8	M	5/12/11	13:40	WT	X												8

SHIPMENT METHOD AIRBILL NO. SHIPPING DATE NO. OF COOLERS ITEM #

RELINQUISHED BY / AFFILIATION DATE TIME ACCEPTED BY / AFFILIATION DATE TIME

RELINQUISHED BY / AFFILIATION **Betsy Moon / ATC Assoc.** **5/13/11 9:30** **Zekha Teku** **5/13/11 12:35**

RELINQUISHED BY / AFFILIATION **Betsy Moon** **12:35**

SAMPLE CONDITION: SAMPLE NOTES:

Temp in C	23°C
Received on Ice	(M)/N
Sealed Cooler	Y/(N)
Sample Intact	(M)/N

Additional Comments:

SAMPLER NAME AND SIGNATURE **Betsy Moon**

PRINT Name of SAMPLER: **Betsy Moon**

SIGNATURE of SAMPLER **Betsy Moon**

DATE Signed: **5-13-11**

Handwritten signature and date: Betsy Moon 5/13/11

Sample Condition Upon Receipt



Pace Analytical

Client Name: ATC Assoc. Project # 5048633

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Date/Time 5035A kits placed in freezer

Packing Material: Bubble Wrap Bubble Bags None Other ZIPIC

Thermometer Used Q2346ABCDE Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temperature 2.3°C Ice Visible in Sample Containers: yes no

Temp should be above freezing to 6°C Comments: _____ Date and Initials of person examining contents: 5/13/11

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	5.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sample Labels match COC: -Includes date/time/ID/Analysis	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	8. <u>no times on containers</u>
All containers needing acid/base pres. have been checked? exceptions: VOA, coliform, TOC, O&G	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9. (Circle) <u>HNO3</u> H2SO4 NaOH HCl <u>Indol w-5 = pH 2</u>
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	10.
Trip Blank Present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	11.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.

Client Notification/ Resolution: _____ Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: N Date: 5/13/11

Sample Container Count

CLIENT: ATC

COC PAGE 1 of 1

COC ID# _____

Project # _____



Sample Line Item	DG9H	AG1U	WGFU	R	4/6	BP2N	BP2U	BP2S	BP3N	BP3U	BP3S	AG3S	AG1H	Comments
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Container Codes	DG9H	40mL HCL	amber vov	vial	AF	Air Filter	AG1H	1 liter HCL	amber glass	AG1S	1 liter H2SO4	amber glass	AG1T	1 liter Na Thiosulfate	amber gl	BP1N	1 liter HNO3	plastic	DG9P	40mL TSP	amber vial	
	DG9H	40mL HCL	amber vov	vial	AF	Air Filter	AG1H	1 liter HCL	amber glass	AG1S	1 liter H2SO4	amber glass	AG1T	1 liter Na Thiosulfate	amber gl	BP1N	1 liter HNO3	plastic	DG9P	40mL TSP	amber vial	
	AG1U	1liter unpreserved	amber glass		AG1H	1 liter HCL	amber glass	AG1S	1 liter H2SO4	amber glass	AG1T	1 liter Na Thiosulfate	amber gl	BP1N	1 liter HNO3	plastic	DG9S	40mL H2SO4	plastic	DG9S	40mL H2SO4	amber vial
	WGFU	4oz clear soil	jar		AG1S	1 liter H2SO4	amber glass	AG1T	1 liter Na Thiosulfate	amber gl	BP1U	1 liter unpreserved	plastic	DG9T	40mL Na Thio	amber vial	DG9U	40mL unpreserved	amber vial	DG9T	40mL Na Thio	amber vial
	R	terra core kit			AG1T	1 liter Na Thiosulfate	amber gl	BP1Z	1 liter NaOH, Zn, Ac		DG9U	40mL unpreserved	amber vial	DG9U	40mL unpreserved	amber vial						
	BP2N	500mL HNO3	plastic		AG2N	500mL HNO3	amber glass	BP2A	500mL NaOH, Asc Acid	plastic												
	BP2U	500mL unpreserved	plastic		AG2S	500mL H2SO4	amber glass	BP2O	500mL NaOH	plastic												
	BP2S	500mL H2SO4	plastic		AG2U	500mL unpreserved	amber gla	BP2Z	500mL NaOH, Zn Ac													
	BP3N	250mL HNO3	plastic		AG3U	250mL unpreserved	amber gla	BP3A	250mL NaOH, Asc Acid	plastic												
	BP3U	250mL unpreserved	plastic		BG1H	1 liter HCL	clear glass	BP3C	250mL NaOH	plastic												
	BP3S	250mL H2SO4	plastic		BG1S	1 liter H2SO4	clear glass	BP3Z	250mL NaOH, Zn Ac	plastic												
	AG3S	250mL H2SO4	glass amber		BG1T	1 liter Na Thiosulfate	clear gla	C	Air Cassettes													
	AG1S	1 liter H2SO4	amber glass		BG1U	1 liter unpreserved	glass	DG9B	40mL Na Bisulfate	amber vial												
	BP1U	1 liter unpreserved	plastic		BP1A	1 liter NaOH, Asc Acid	plastic	DG9M	40mL MeOH	clear vial												