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NAS BRUNSWICK
5090.3a

3 December 1999

Mr. Emil Klawitter
Northern Division, Naval Facilities
Engineering Command
10 Industrial Highway, Mail Stop 82
Lester, Pennsylvania 19113-2090

RE: Summary of the Aqueous Diffusion Sampling Pilot Study Conducted at the Eastern Plume, Naval Air Station, Brunswick, Maine
Contract N62472-92-D-1296, Contract Task Order No. 0047
EA Project No. 29600.47

Dear Mr. Klawitter:

EA Engineering, Science, and Technology is pleased to provide this summary of analytical results for the aqueous diffusion sampling pilot study conducted at the Eastern Plume, Naval Air Station (NAS), Brunswick, Maine. The objective of this study was to assess whether aqueous diffusion samplers could be used effectively at NAS Brunswick as a cost effective ground-water sampling method alternative to the currently used low flow sampling method. This objective was addressed by assessing whether volatile organic compound (VOC) concentrations detected in aqueous diffusion samples could be comparable to concentrations detected in ground-water samples collected by the low flow sampling methods. The locations of the monitoring wells included in this pilot study are shown on Figure 1.

The 10 monitoring wells were selected to include the differing screened intervals (shallow, deep, and bedrock), differing well locations (interior plume, perimeter, and sentinel), and differing historical VOC concentrations, ranging from <5 μg/L (low) to >250 μg/L (high), based on results from Monitoring Events 1 through 14. Each of the 10 monitoring wells was sampled from similar intervals (approximately mid-screen) using the two different sampling methods. This letter summarizes the construction technique, sampling methodologies, and analytical results for the aqueous diffusion samplers; low flow ground-water sampling methodologies and analytical results; and the aqueous diffusion sampling pilot study results.

AQUEOUS DIFFUSION SAMPLERS

The aqueous diffusion samplers were constructed by sealing de-ionized water in a 2-in. diameter length of 2-mil polyethylene tubing which was then placed in nylon mesh bags for protection against punctures. The diffusion samplers were 1.5 ft in length, although the sampler used to

collect the matrix spike/matrix spike duplicate sample was 3 ft in length.[1] The samplers were weighted with stainless steel washers, and a string was attached for placement/retrieval actions. It should be noted that more weight was required for the samplers placed in the deep wells.

On 1-2 September 1999, the samplers were placed in the 10 monitoring wells following removal of the dedicated submersible pump. The depths of the diffusion samplers were similar to placement of the intake of the submersible pumps during low flow sampling (approximately mid-screen). The diffusion samplers were allowed to equilibrate for approximately 8 days. Following equilibration, the diffusion samplers were retrieved on 9-10 September 1999, and the aqueous samples were sent to Katahdin Analytical Services of Westbrook, Maine, for VOC analysis by U.S. Environmental Protection Agency (EPA) Method 8260B.

An equipment blank was constructed by placing a diffusion sampler in a sealed laboratory sample bottle filled with de-ionized water. The sample blank was also allowed to equilibrate for approximately 8 days prior to being sent to the laboratory for analysis. One duplicate aqueous diffusion sample was collected from MW-311. The equipment blank and duplicate samples were also analyzed for VOCs by EPA Method 8260B.

LOW FLOW GROUND-WATER SAMPLING

Low flow ground-water sampling was performed immediately following retrieval of the diffusion sampler on 9-10 September 1999, in accordance with the general methodologies established in the final report for Monitoring Event 4 (EA 1996). Dedicated Grundfos Redi-Flo2 stainless steel and Teflon® submersible pumping systems were utilized for sample collection at 9 of 10 wells. Monitoring well MW-207A was sampled utilizing a peristaltic pump because the polyvinyl chloride riser pipe was found to be broken at ground surface and a submersible pump could not fit into the well. One duplicate low flow ground-water sample was collected at MW-207A. The low flow samples were analyzed for VOCs by EPA Method 8260B. A schedule for repair of well MW-207A and the field records of well gauging, purging, and sampling were provided separately in the Monitoring Event 15 Report.

AQUEOUS DIFFUSION SAMPLER PILOT STUDY RESULTS

Table 1 summarizes analytical results for samples collected using the low flow method and the aqueous diffusion sampling method. This table summarizes only those analytes detected in at least one of the samples and the chemicals of concern listed in the Draft Final Long-Term Monitoring Plan for Sites 1 and 3 and Eastern Plume (EA 1999). Attachment 1 provides graphs for each of the 10 monitoring wells, which compare the analytical results for aqueous diffusion samplers and ground-water samples collected using the low flow sampling method.

1. The length of screen that was exposed to the diffusion sampler (1.5-3 ft) was greater than the length of screen influenced by the intake of the submersible pump (<6 in.).

Attachment 2 provides a table summarizing the percent differences between the two sampling methods for VOC constituents which were greater than 25 percent. The laboratory Form I summary tables were included in the Monitoring Event 15 Report.

The table below provides a summary of the aqueous diffusion sampler pilot study:

Monitoring Location	Ground-Water Total VOC Concentration[a]	Well Type	Comparison of Detected Total VOC Concentrations to Sampling Methods	Time of Diffusion Samplers in Well (days:hours:min)
Shallow Wells				
MW-332	Moderate	Interior Plume	Diffusion sampler lower	7:18:50
P-132	Non-detect	Sentinel	Both non-detect	7:04:20
Deep Wells				
MW-205	Moderate	Interior Plume	Diffusion sampler higher	7:02:45
MW-NASB-212	Low	Interior Plume	Diffusion sampler lower	7:04:40
MW-331	Moderate	Interior Plume	Diffusion sampler slightly lower	7:20:15
MW-207A	Low	Perimeter	Diffusion sampler lower	8:05:10
MW-311	High	Interior Plume	Diffusion sampler lower	7:19:45
MW-319	Moderate	Interior Plume	Diffusion sampler slightly higher	7:20:15
MW-333	Low	Interior Plume	Diffusion sampler lower	7:20:45
Bedrock Well				
MW-308	Non-detect	Perimeter	Both non-detect	7:22:54

(a) Historical VOC concentrations are based on results from Monitoring Events 1 through 14.

Due to the limited data set generated by this pilot study, no meaningful statistical analysis can be made to compare the detected VOC concentrations with the sampling methods, or other variables. However, the following qualitative observations can be made based on this pilot study:

- Although no definitive conclusions can be drawn based on these data, the VOC concentrations in the diffusion samplers appear to be lower than samples collected by the low flow method (6 out of 8 locations) more often than high.

- At two locations (MW-205 and MW-319), the total VOC concentrations detected in the aqueous diffusion samples were higher than total VOC concentrations detected in ground-water samples collected using the low flow sampling method.

- At two locations (MW-308 and P-132), VOCs were not detected in the samples collected by either of the two sampling methods.

- No definitive relationship was noted between the amount of time the aqueous diffusion sampler was in the monitoring well and the total VOC concentrations detected.

- The average percent difference in total VOC concentration between the aqueous diffusion samplers and ground-water samples collected by the low flow method was 41 percent . The largest percent difference was in monitoring well MW-207A (81 percent), and the smallest percent difference was in monitoring well MW-331 (6 percent). There were no deviations in the field method that might help explain the difference in the detected concentrations.

  The percent differences for detected VOCs are summarized below (refer to Attachment 2 for details):

  — 5 monitoring wells had percent differences greater than 25 percent in the concentrations of tetrachloroethene and trichloroethene

  — 4 wells had percent differences greater than 25 percent in the concentration of total 1,2-dichloroethene

  — 3 wells had percent differences greater than 25 percent in concentrations of 1,1,1-trichloroethane and 1,1-dichloroethane

  — 2 wells had percent differences greater than 25 percent in the concentration of 1,1-dichloroethene

  — 1 well had a percent difference greater than 25 percent in the concentration of 1,2-dichloroethane.

- The results for the two duplicate samples suggest both of the sampling methods had good reproducibility.

- Analyte exceedances of the State of Maine Maximum Exposure Guidelines (MEGs)/Federal Maximum Contaminant Levels (MCLs) detected in low flow collected samples were also detected in related aqueous diffusion samples, with the exception of trichloroethene in monitoring well MW-207A. At this location, the diffusion sample did not exceed the MEGs/MCLs while the low flow sample did.

CONCLUSIONS

The preliminary results of this pilot study were encouraging, but inconclusive. Although a few of the total VOC results for both sampling methods were very similar, others varied both higher and lower (within an order of magnitude) with no definitive explanation. With additional data and further refinement, the aqueous diffusion samplers may provide a cost effective alternative to low flow sampling in the Long-Term Monitoring Program at NAS Brunswick at some locations. However, several important factors remain uninvestigated, including how the placement of the aqueous diffusion sampler in the monitoring wells relative to VOC impacted intervals may

influence detectable VOC concentrations; the degree to which the length of the sampling interval and if increased equilibration time in the monitoring well may affect VOC results; if construction of the aqueous diffusion sampler can be refined to provide more representative samples; and the effect on VOC concentrations from collecting the low flow samples immediately after the replacement of the dedicated submersible pump compared to allowing a time period for equilibration equal to that for the aqueous diffusion samplers.

We look forward to discussing these issues with the Navy and the NAS Brunswick Restoration Advisory Board.

It has been our pleasure providing the Northern Division with this summary. If there are any questions, please do not hesitate to call either of the undersigned.

Sincerely,

EA ENGINEERING, SCIENCE,
AND TECHNOLOGY

Peter L. Nimmer, P.G.
CTO Manager

Suzanne Chase, P.G.
Site Geologist

PLN/mkp
Attachments

cc: T. Williams, NAS (NAS, 1 copy; Administrative Record, 2 copies)
C. Sait, MEDEP (2 copies)
M. Barry, EPA (2 copies)
C. Lepage, Lepage Environmental Services (1 copy)
J. Shultz, EA (1 copy)
P. Higgins, EA (1 copy)

TABLE 1 SUMMARY OF ANALYTICAL RESULTS FOR AQUEOUS DIFFUSION AND LOW-FLOW GROUND-WATER SAMPLES COLLECTED ON 9-10 SEPTEMBER 1999 AT EASTERN PLUME, NAVAL AIR STATION, BRUNSWICK, MAINE

Analyte	MW-205		MW-207A			MW-308		MW-311			MW-319		MEG[b]	MCL[c]
	Low-Flow	Diffusion	Low-Flow	Low-Flow DUP	Diffusion	Low-Flow	Diffusion	Low-Flow	Diffusion	Diffusion DUP	Low-Flow	Diffusion		
Well Depth and Location[a]	Deep/Interior Plume		Deep/Perimeter			Bedrock/Perimeter		Deep/Interior Plume			Deep/Interior Plume			
VOLATILE ORGANIC COMPOUNDS BY U.S. ENVIRONMENTAL PROTECTION AGENCY METHOD 8260B (μg/L)														
1,1,1-Trichloroethane	**230D**	**310D**	7	7	(<1U)	(<1U)	(<1U)	**950D**	**390D**	**380D**	4	4	200	200
Total 1,2-Dichloroethene	14	21	9	9	0.8J	(<1U)	(<1U)	8	5	5	8	11	70	70
Methylene Chloride	0.9JB	1B	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	2B	3B	3B	(<1U)	(<1U)	48	5
Trichloroethene	**140**	**190D**	**12**	**12**	3B	(<1U)	(<1U)	**440D**	**340D**	**330D**	**22**	**30**	5	5
Tetrachloroethene	**13**	**18**	**7**	**7**	**3**	(<1U)	(<1U)	**15**	**9**	**9**	**30**	**30**	3	5
1,1-Dichloroethene	**18**	**26**	0.7J	0.8J	(<1U)	(<1U)	(<1U)	**180**	**150**	**150**	(<1U)	(<1U)	7	7
1,1-Dichloroethane	0.5J	0.7J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	46	51	52	(<1U)	(<1U)	70	---
Total Xylenes	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	600	10,000
Ethylbenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	700	700
Chloroform	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	0.7JB	(<1U)	(<1U)	(<1U)	(<1U)	---	100
Benzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	0.9J	0.9J	0.8J	(<1U)	(<1U)	5	5
1,2-Dichloroethane	(<1U)	0.6J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	4	3	3	(<1U)	(<1U)	5	5
1,1,2-Trichloroethane	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	2	0.8J	0.8J	(<1U)	(<1U)	3	5
Total VOC[d]	416	566	36	36	7	0	0	1,646	950	931	64	75	NA	NA

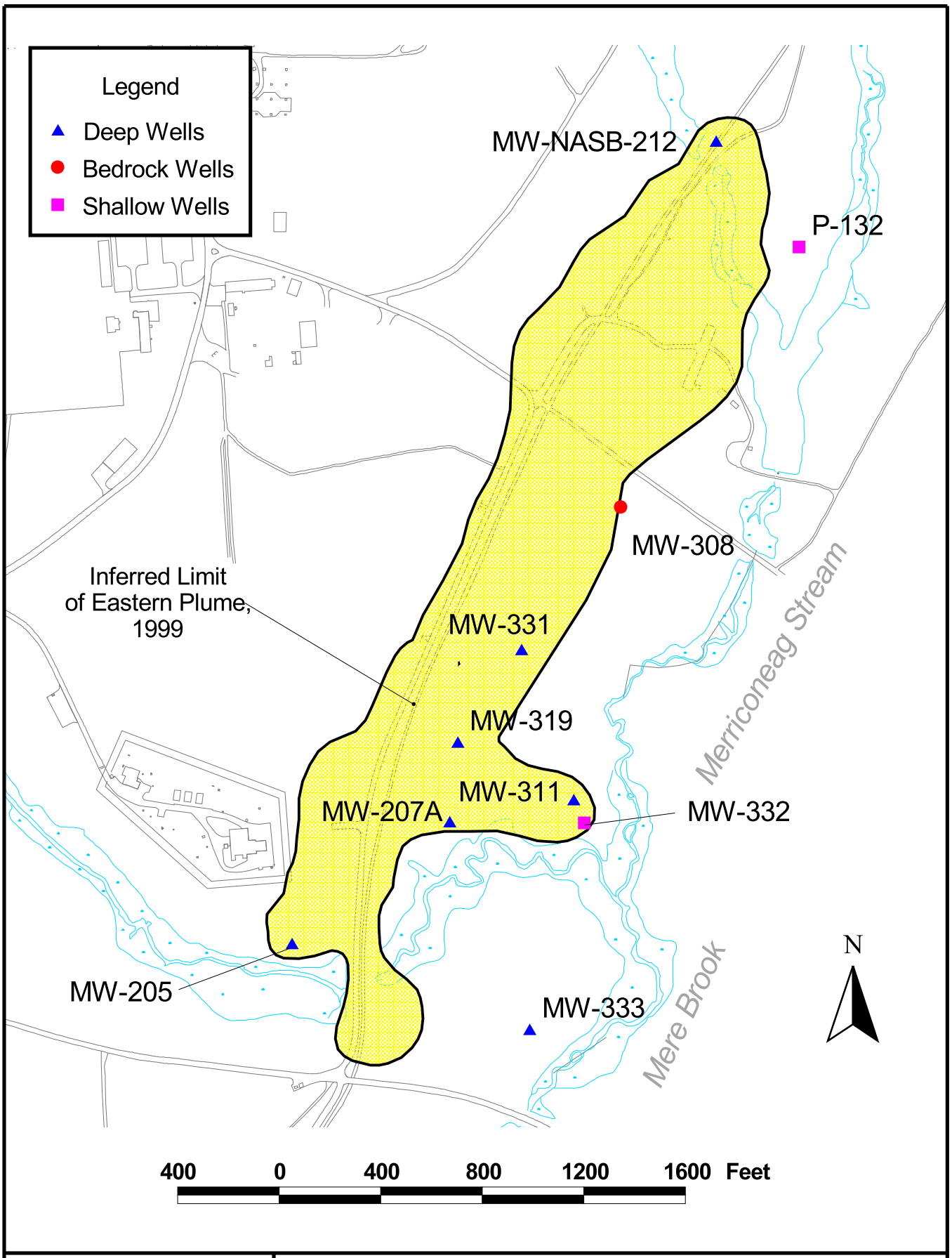
(a) Definitions of sentinel well, interior plume well, and perimeter well are provided as follows:
Interior Plume Well = Within area of known contamination to monitor plume migration.
Sentinel Well = Outside area of known contamination to be used to warn of plume migration.
Perimeter Well = Located at edge of the plume to monitor concentrations of plume boundary.
(b) MEG (Maximum Exposure Guideline) obtained from State of Maine Department of Human Services Revised Maximum Exposure Guidelines, memorandum dated 23 October 1992. Dashes (---) indicate no MEG applicable.
(c) MCL (Maximum Contaminant Level) obtained from 40 CFR Parts 141 and 142 (U.S. EPA 1994). Dashes (---) indicate no MCL applicable.
(d) Total (VOC) volatile organic compound calculation does not include common laboratory contaminants such as methylene chloride and acetone. Values are rounded to closest whole number.

NOTE:
D = Analysis at a secondary dilution factor.
U = Not detected. Sample quantitation limits are shown as (<____U).
J = Estimated concentration below detection limit.
B = Compound detected in associated method blank.
MW = Monitoring well sample.
NA = Not applicable.

Only those analytes detected in at least one of the samples, and the chemicals of concern listed in the Draft Long-Term Monitoring Plan (EA 1998), are shown on this table.
Results in bold indicate concentrations above Federal MCL and/or State MEG.
Refer to Data Quality Review section (Appendix B of Monitoring Event 15 Report for Sites 1 and 3 and Eastern Plume)) for listing of Method Detection Limits for referenced analytical methods.

TABLE 1 (Continued)

Analyte	MW-331		MW-332		MW-333		MW-NASB-212		P-132		RB-1	QT-002	QD-001		
	Low-Flow	Diffusion	Low-Flow	Diffusion	Low-Flow	Diffusion	Low-Flow	Diffusion	Low-Flow	Diffusion					
Well Depth[a]	Deep/Interior Plume		Shallow/Interior Plume		Deep/Interior Plume		Deep/Interior Plume		Shallow/Sentinel		Sample Blank	Trip Blank	Source Water Blank	MEG[b]	MCL[c]
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260 (μg/L)															
1,1,1-Trichloroethane	**270D**	**260D**	94	34	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	200	200
Total 1,2-Dichloroethene	4	4	(<1U)	(<1U)	(<1U)	(<1U)	2	2	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	70	70
Methylene Chloride	1B	1B	0.7JB	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	0.6JB	2B	(<1U)	48	5
Trichloroethene	**94**	**82**	**28**	**10**	(<1U)	(<1U)	**18**	**12B**	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	5	5
Tetrachloroethene	**4**	**4**	1	0.6J	(<1U)	(<1U)	0.9J	0.6J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	3	5
1,1-Dichloroethene	**29**	**30**	5	3	0.8J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	7	7
1,1-Dichloroethane	12	10	2	0.6J	2	0.9J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	70	---
Total Xylenes	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	600	10,000
Ethylbenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	700	700
Chloroform	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	---	100
Benzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	**6**	(<1U)	(<1U)	5	5
1,2-Dichloroethane	0.9J	0.8J	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	5	5
1,1,2-Trichloroethane	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	3	5
Total VOC[d]	414	391	130	48	3	1	21	15	0	0	NA	NA	NA	NA	NA

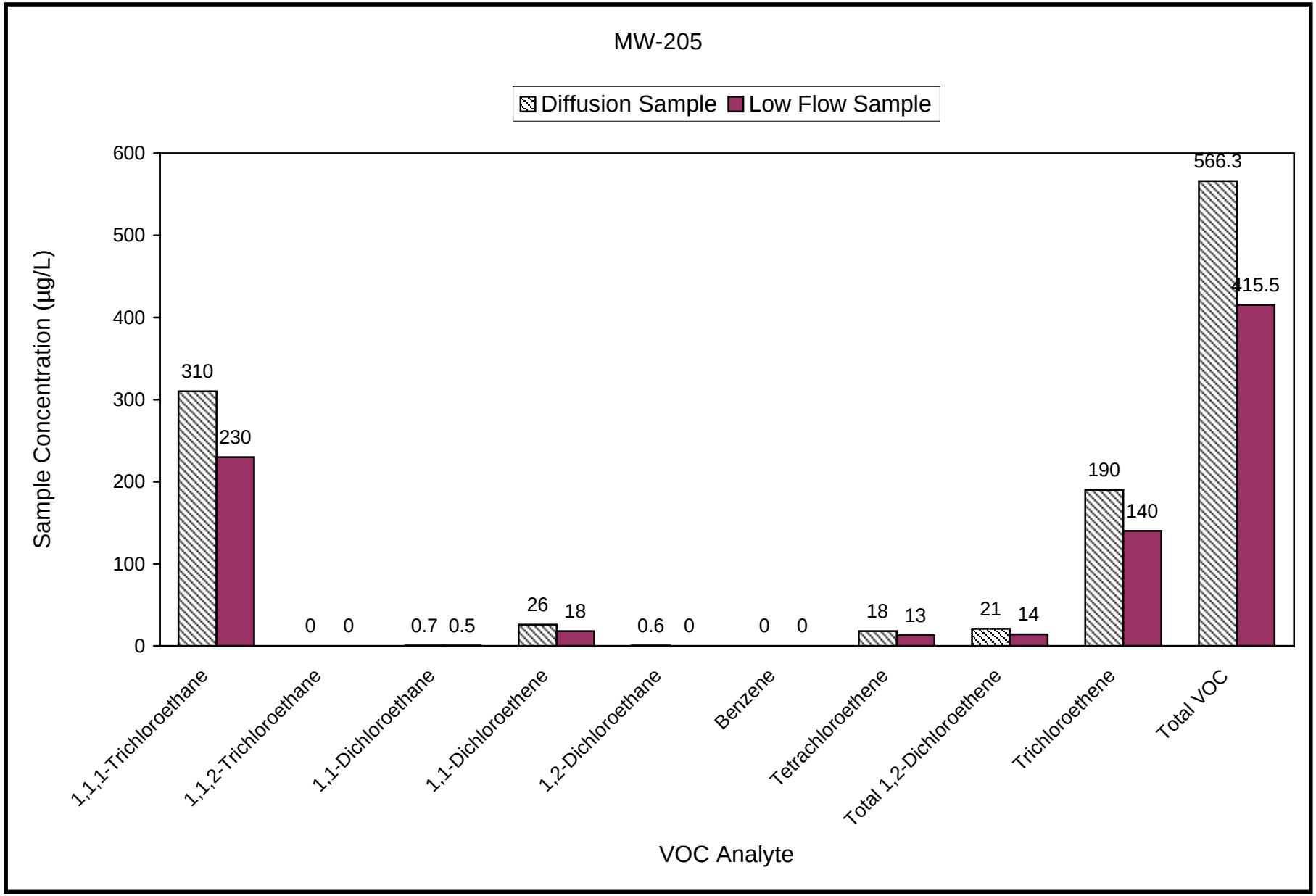


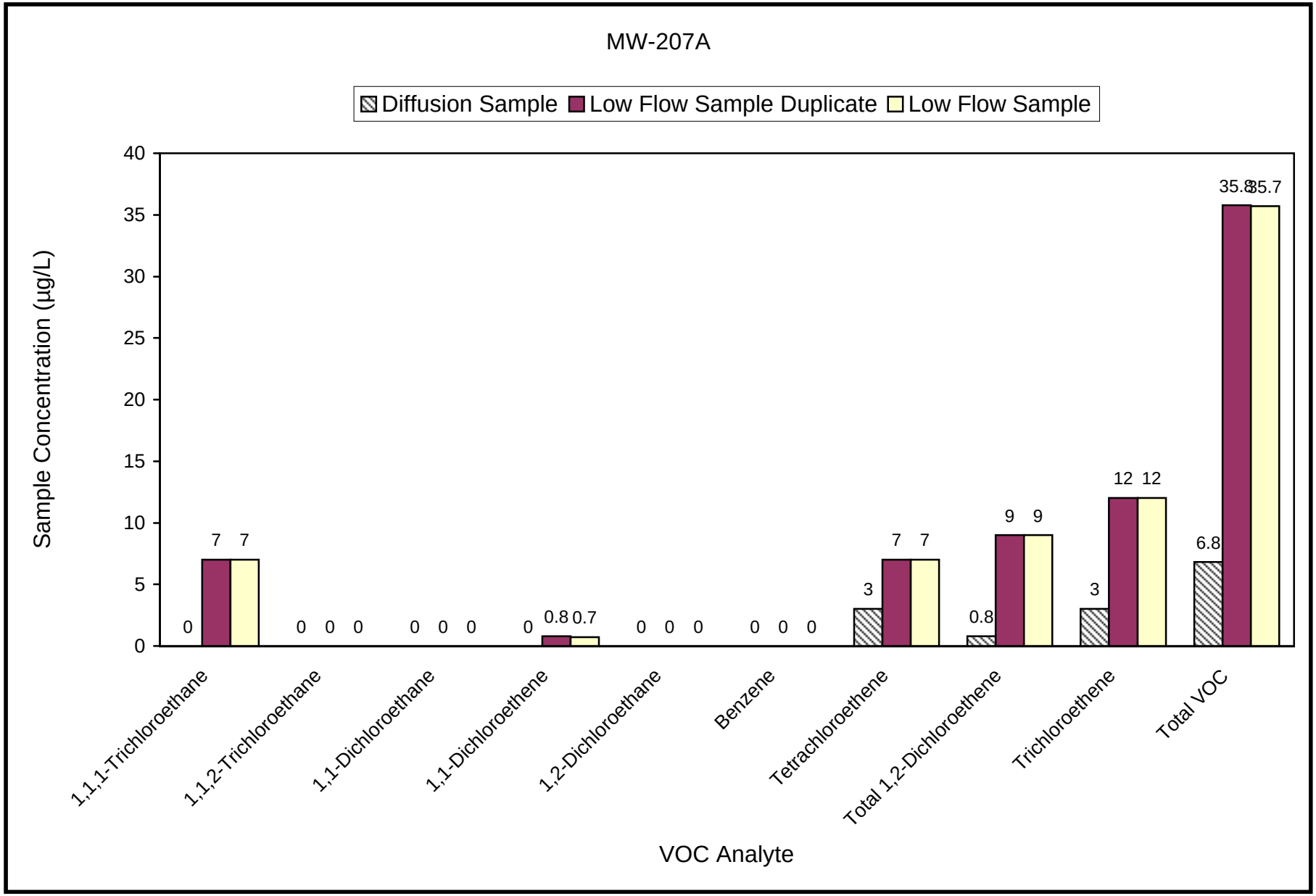
EA Engineering, Science, and Technology

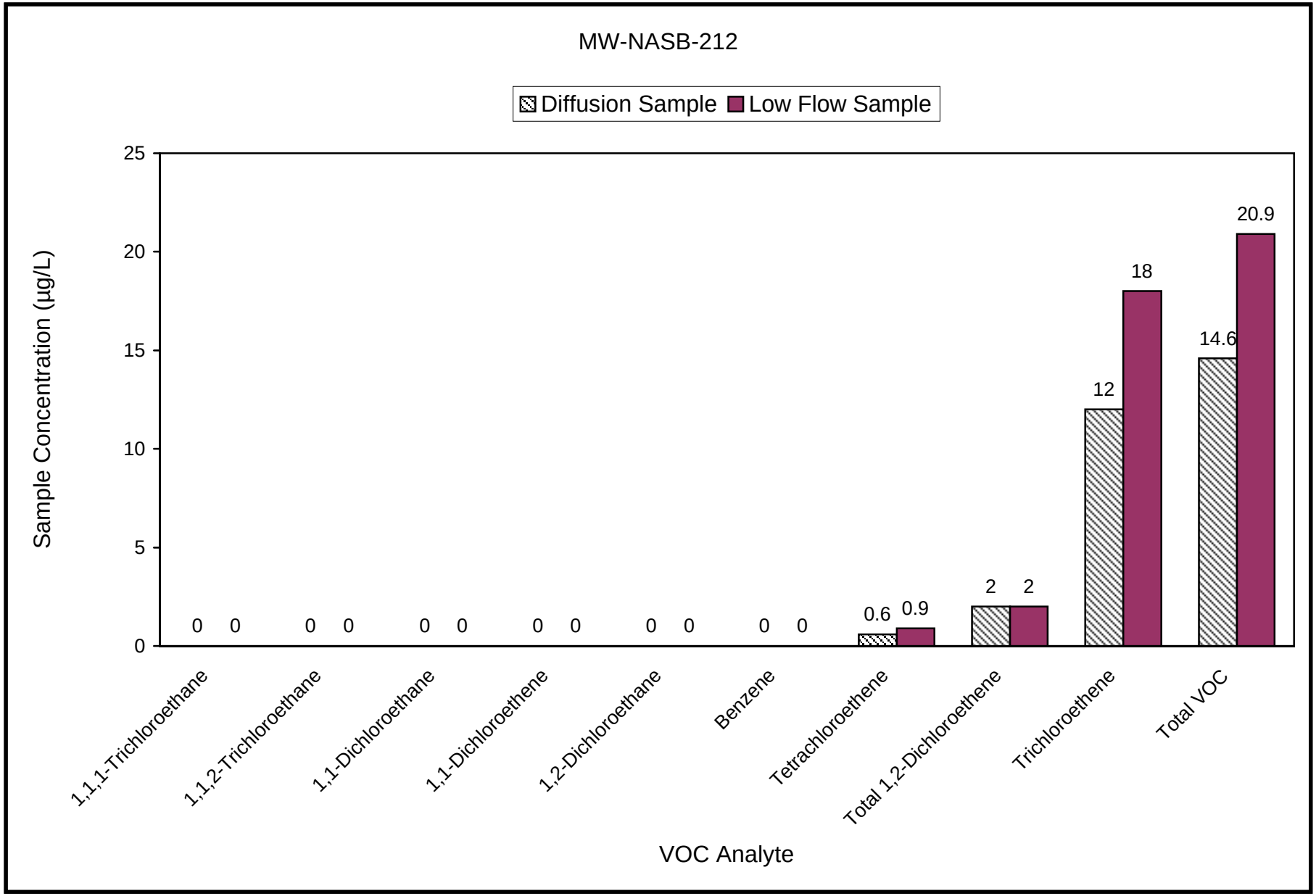
Figure 1.
Location of monitoring wells included in the Eastern Plume diffusion sampling pilot study.

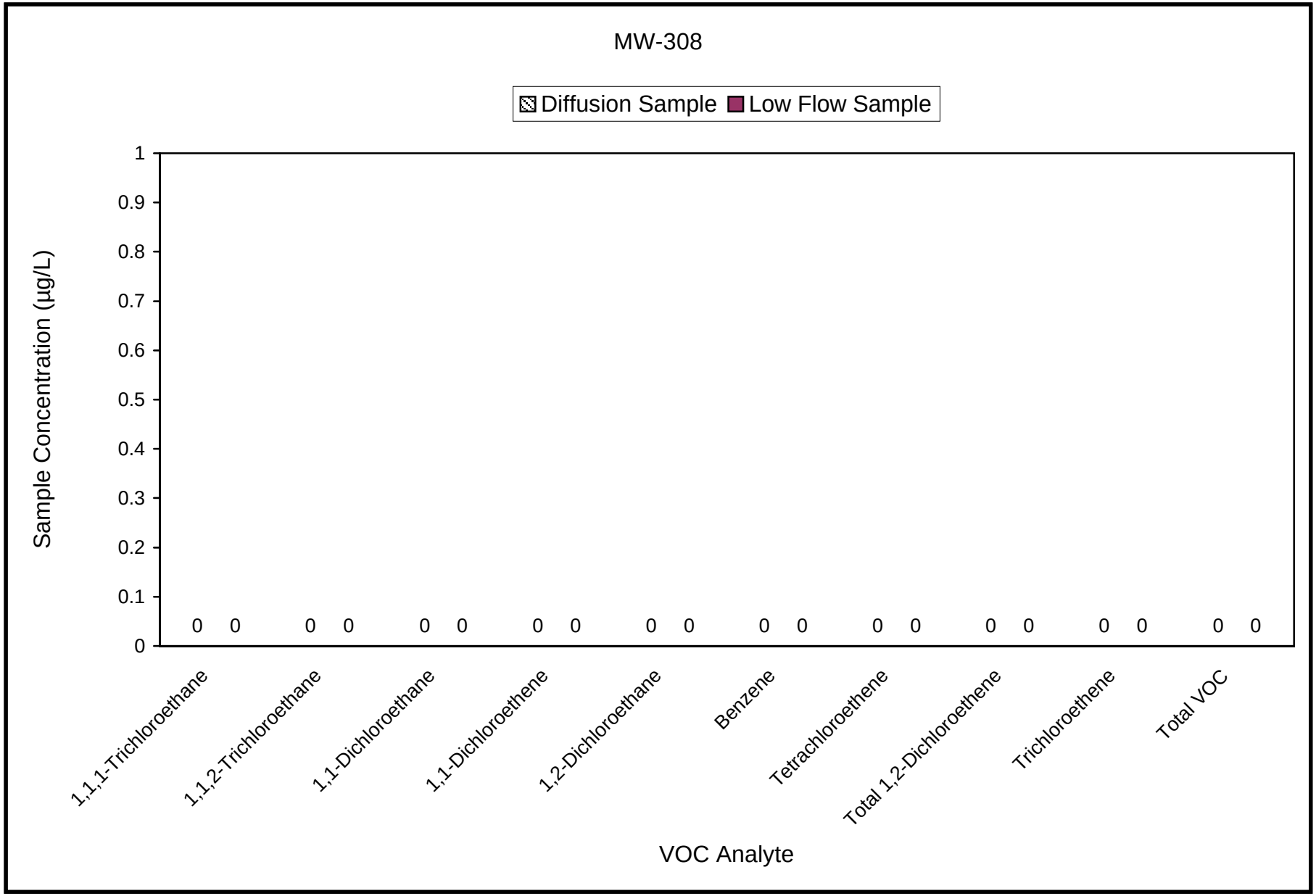
Attachment 1

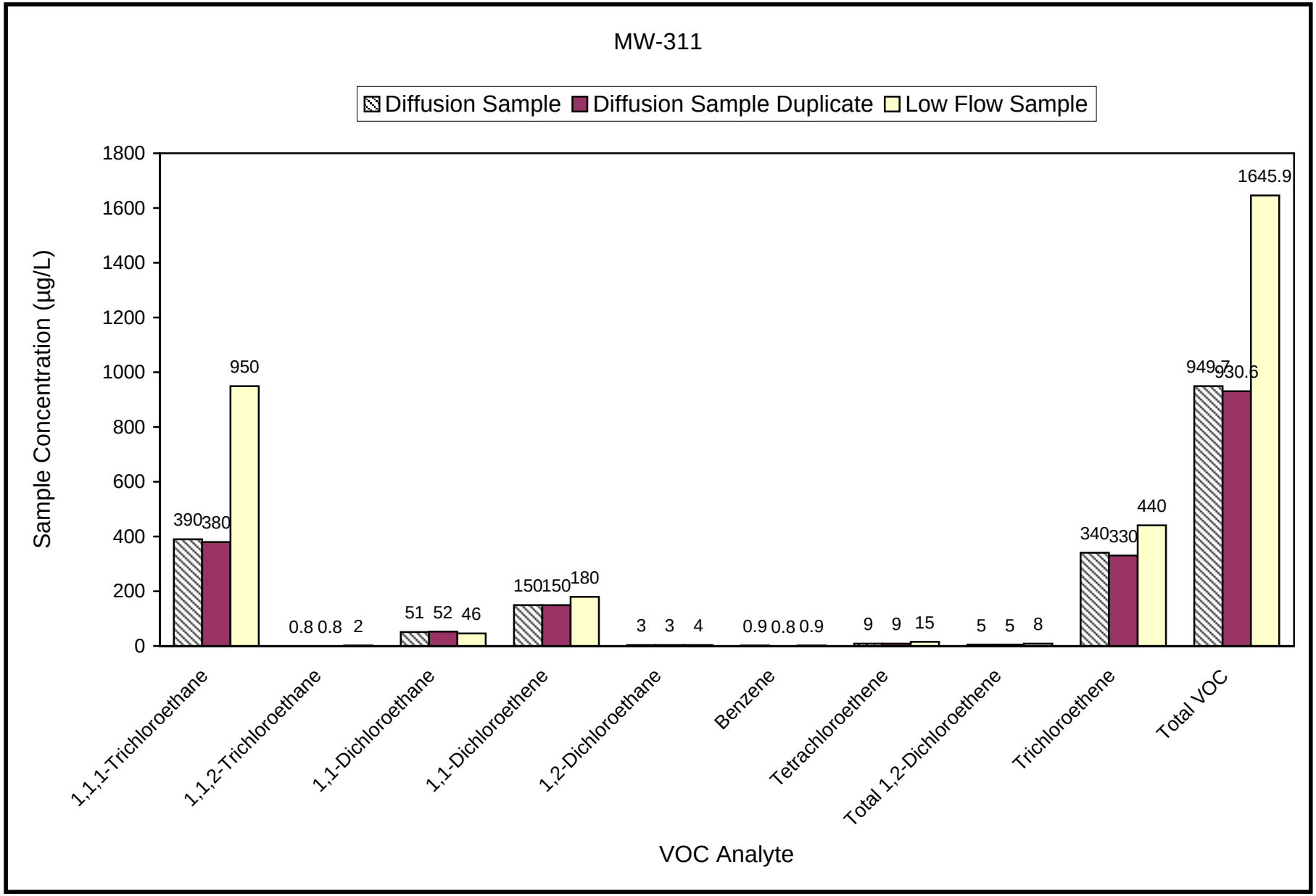
Graphs which Compare Analytical Results for Aqueous Diffusion Samplers and Ground-Water Samples Collected Using the Low Flow Sampling Method

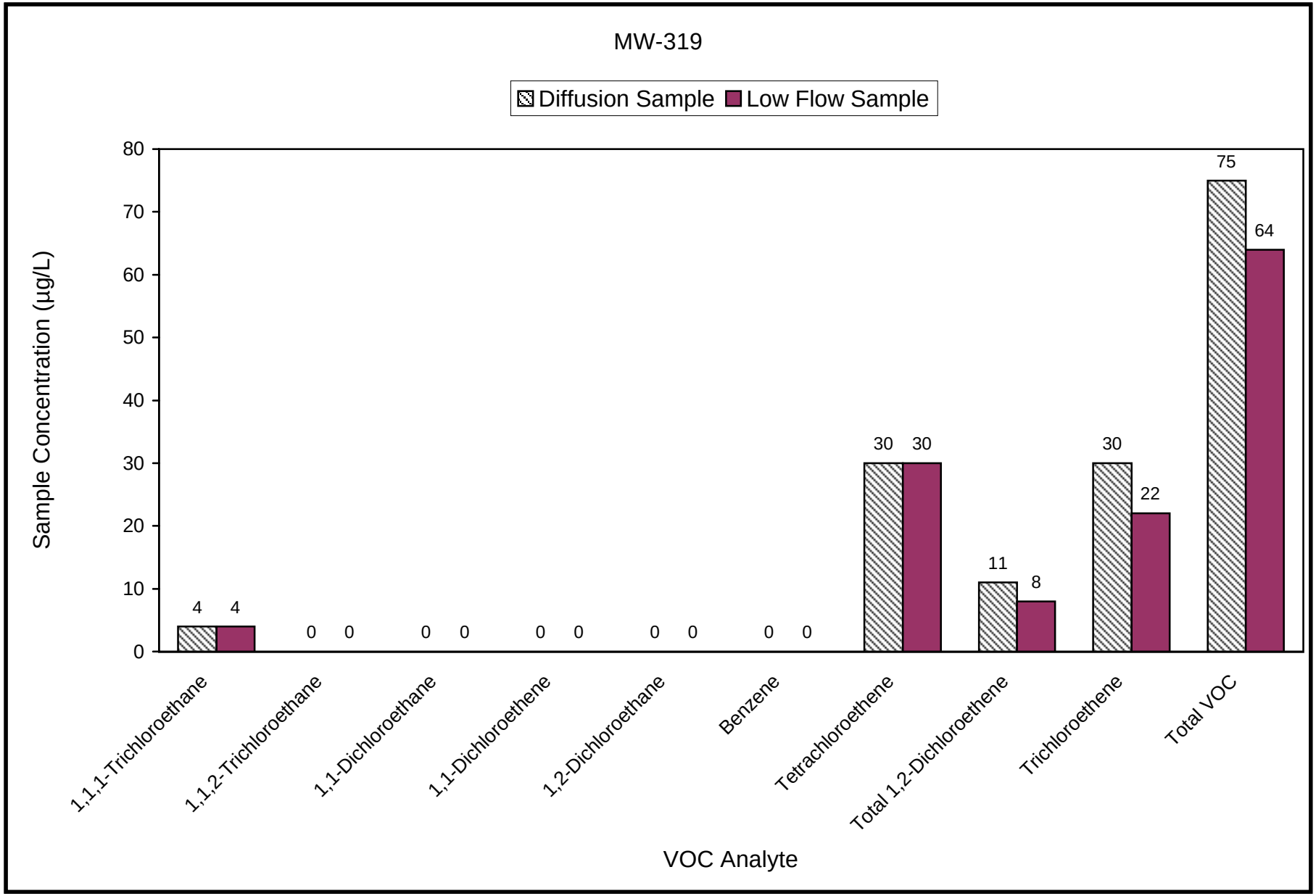

MW-205
Diffusion Sample
Low Flow Sample
Sample Concentration (µg/L)
600
500
400
300
200
100
0
310
230
0
0
0.7
0.5
26
18
0.6
0
0
0
18
13
21
14
190
140
566.3
415.5
1,1,1-Trichloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
1,2-Dichloroethane
Benzene
Tetrachloroethene
Total 1,2-Dichloroethene
Trichloroethene
Total VOC
VOC Analyte

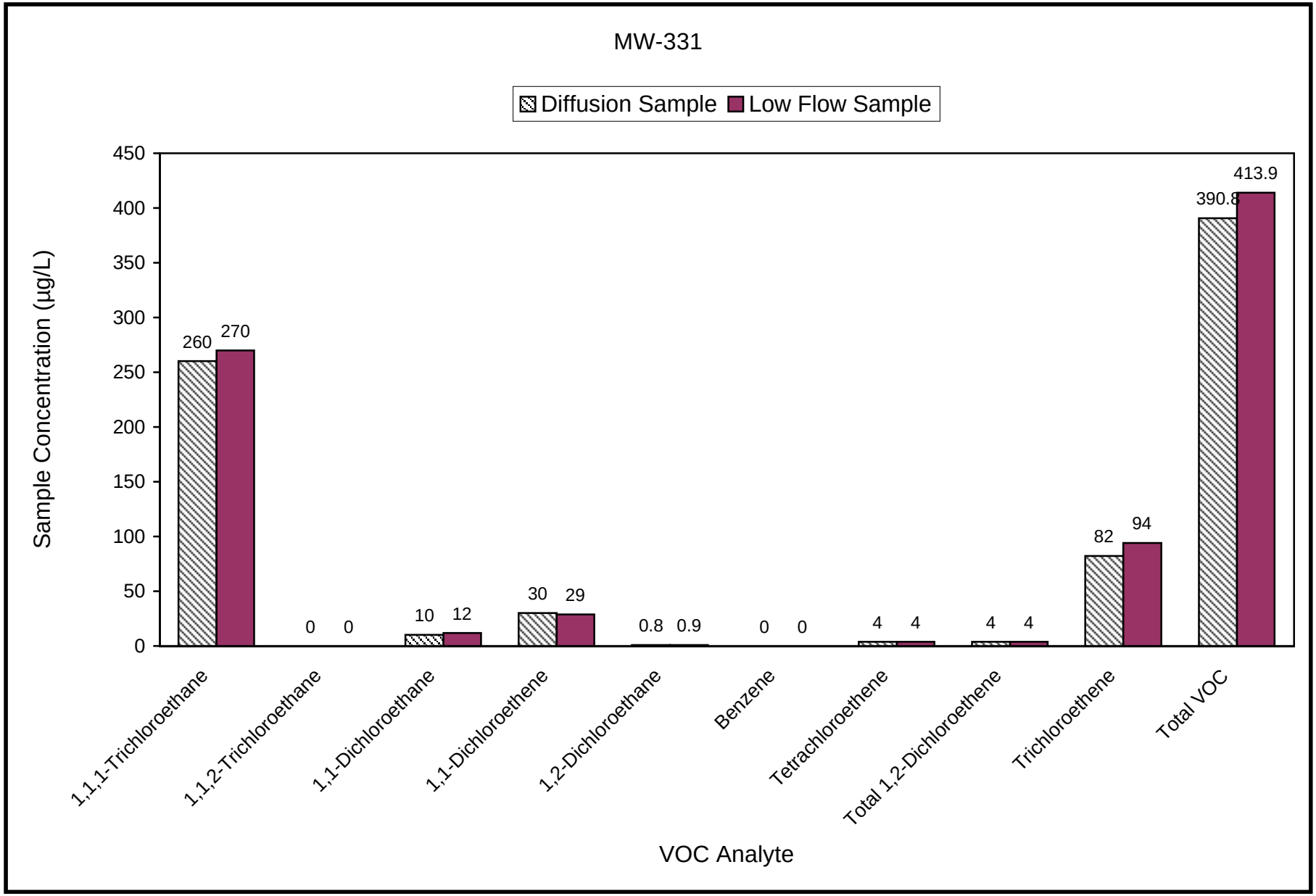

MW-207A
Diffusion Sample
Low Flow Sample Duplicate
Low Flow Sample
Sample Concentration (µg/L)
40
35
30
25
20
15
10
5
0
0
7
7
0
0
0
0
0
0
0
0.8
0.7
0
0
0
0
0
0
3
7
7
0.8
9
9
3
12
12
6.8
35.8
35.7
1,1,1-Trichloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
1,2-Dichloroethane
Benzene
Tetrachloroethene
Total 1,2-Dichloroethene
Trichloroethene
Total VOC
VOC Analyte

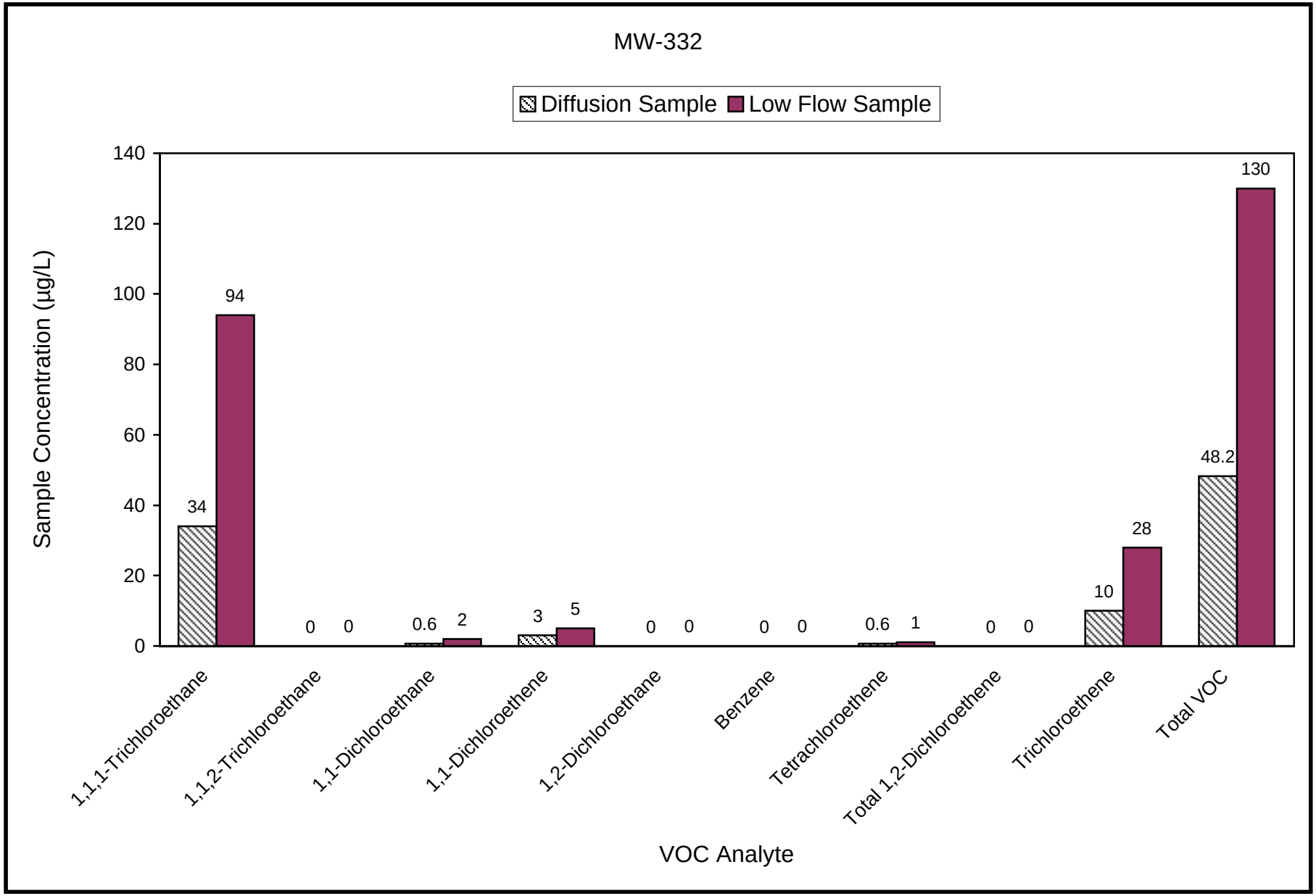

MW-NASB-212
Diffusion Sample
Low Flow Sample
Sample Concentration (µg/L)
25
20
15
10
5
0
0
0
0
0
0
0
0
0
0
0
0
0
0.6
0.9
2
2
12
18
14.6
20.9
1,1,1-Trichloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
1,2-Dichloroethane
Benzene
Tetrachloroethene
Total 1,2-Dichloroethene
Trichloroethene
Total VOC
VOC Analyte

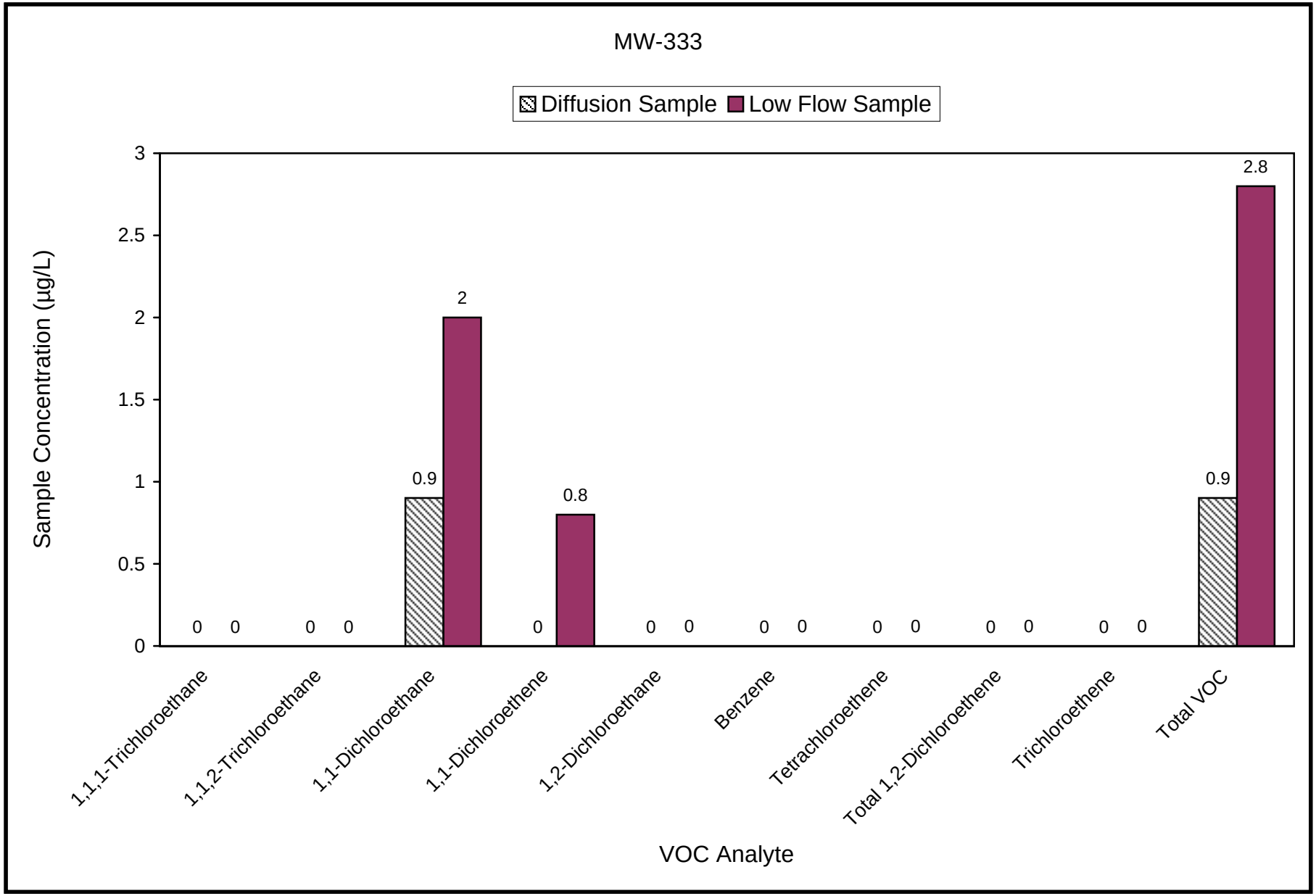

MW-308
Diffusion Sample
Low Flow Sample
Sample Concentration (µg/L)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1,1,1-Trichloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
1,2-Dichloroethane
Benzene
Tetrachloroethene
Total 1,2-Dichloroethene
Trichloroethene
Total VOC
VOC Analyte

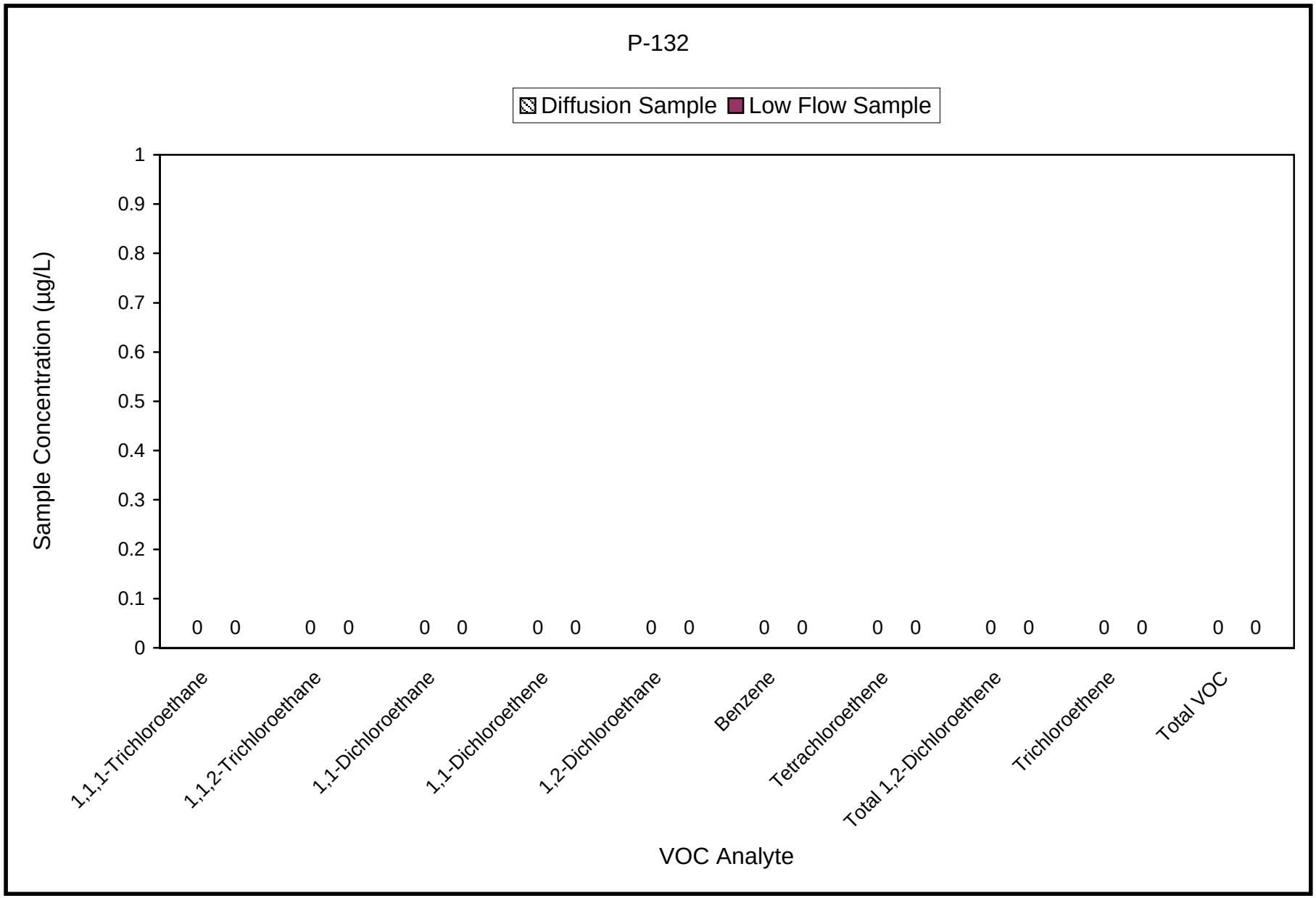

MW-311
Diffusion Sample
Diffusion Sample Duplicate
Low Flow Sample
Sample Concentration (µg/L)
1800
1600
1400
1200
1000
800
600
400
200
0
390
380
950
0.8
0.8
2
51
52
46
150
150
180
3
3
4
0.9
0.8
0.9
9
9
15
5
5
8
340
330
440
949.7
930.6
1645.9
1,1,1-Trichloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
1,2-Dichloroethane
Benzene
Tetrachloroethene
Total 1,2-Dichloroethene
Trichloroethene
Total VOC
VOC Analyte


MW-319
Diffusion Sample
Low Flow Sample
Sample Concentration (µg/L)
80
70
60
50
40
30
20
10
0
4
4
0
0
0
0
0
0
0
0
0
0
30
30
11
8
30
22
75
64
1,1,1-Trichloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
1,2-Dichloroethane
Benzene
Tetrachloroethene
Total 1,2-Dichloroethene
Trichloroethene
Total VOC
VOC Analyte


MW-331
Diffusion Sample
Low Flow Sample
Sample Concentration (µg/L)
450
400
350
300
250
200
150
100
50
0
260
270
0
0
10
12
30
29
0.8
0.9
0
0
4
4
4
4
82
94
390.8
413.9
1,1,1-Trichloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
1,2-Dichloroethane
Benzene
Tetrachloroethene
Total 1,2-Dichloroethene
Trichloroethene
Total VOC
VOC Analyte


MW-332
Diffusion Sample
Low Flow Sample
Sample Concentration (µg/L)
140
120
100
80
60
40
20
0
34
94
0
0
0.6
2
3
5
0
0
0
0
0.6
1
0
0
10
28
48.2
130
1,1,1-Trichloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
1,2-Dichloroethane
Benzene
Tetrachloroethene
Total 1,2-Dichloroethene
Trichloroethene
Total VOC
VOC Analyte


MW-333
Diffusion Sample
Low Flow Sample
Sample Concentration (µg/L)
3
2.5
2
1.5
1
0.5
0
0
0
0
0
0.9
2
0
0.8
0
0
0
0
0
0
0
0
0
0
0.9
2.8
1,1,1-Trichloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
1,2-Dichloroethane
Benzene
Tetrachloroethene
Total 1,2-Dichloroethene
Trichloroethene
Total VOC
VOC Analyte


P-132
Diffusion Sample
Low Flow Sample
Sample Concentration (µg/L)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1,1,1-Trichloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
1,2-Dichloroethane
Benzene
Tetrachloroethene
Total 1,2-Dichloroethene
Trichloroethene
Total VOC
VOC Analyte

Attachment 2

Summary of the Percent Differences in Volatile Organic Compound Constituents Greater than 25 Percent

ATTACHMENT 2

SUMMARY OF PERCENT DIFFERENCES FOR AQUEOUS DIFFUSION AND LOW-FLOW GROUND-WATER SAMPLES COLLECTED ON 9-10 SEPTEMBER 1999 AT EASTERN PLUME, NAVAL AIR STATION, BRUNSWICK, MAINE

Analyte	Concentration (μg/L)		Percent Difference
	Low-Flow	Diffusion	
MW-205			
1,1,1-Trichloroethane	**230D**	**310D**	26
1,1-Dichloroethane	0.5J	0.7J	29
1,1-Dichloroethene	**18**	**26**	31
Tetrachloroethene	**13**	**18**	28
Total 1,2-Dichloroethene	14	21	33
Trichloroethene	**140**	**190**	26
Total VOC[a]	416	566	27
MW-207A			
Tetrachloroethene	**7**	**3**	57
Total 1,2-Dichloroethene	9	0.8J	91
Trichloroethene	**12**	**3B**	75
Total VOC[a]	36	7	81
MW-319			
Total 1,2-Dichloroethene	8	11	27
Trichloroethene	**22**	**30**	27
Total VOC[a]	64	75	15
MW-331			
Total VOC[a]	414	391	6
MW-332			
1,1,1-Trichloroethane	94	34	64
1,1-Dichloroethane	2	0.6J	70
1,1-Dichloroethene	5	3	40
Tetrachloroethene	1	0.6J	40
Trichloroethene	**28**	**10**	64
Total VOC[a]	130	48	63
MW-333			
1,1-Dichloroethane	2	0.9J	55
Total VOC[a]	3	1	67
MW-311			
1,1,1-Trichloroethane	**950D**	**390D**	59
1,2-Dichloroethane	4	3	25
Tetrachloroethene	**15**	**9**	40
Total 1,2-Dichloroethene	8	5	38
Total VOC[a]	1,646	950	42
MW-NASB-212			
Tetrachloroethene	0.9J	0.6J	33
Trichloroethene	**18**	**12B**	33
Total VOC[a]	21	15	29

(a) Total VOC (volatile organic compound) calculation does not include common laboratory contaminants such as methylene chloride and acetone. Values are rounded to the closest whole number.

NOTE: D = Analysis at a secondary dilution factor.
J = Estimated concentration below detection limit.
B = Compound detected in associated method blank.
Only those analytes with a percent difference greater than 25 percent are shown on this table.
Shading indicates the higher detected concentrations for each of the low flow and diffusion sample data pairs.
Results in bold indicate concentrations above Federal Maximum Contaminant Levels and/or State Maximum Exposure Guidelines.