

THE FOLLOWING DOCUMENT HAS NOT BEEN REVIEWED OR APPROVED BY THE INACTIVE HAZARDOUS SITES PROGRAM. ON _____, PROGRAM STAFF NOTIFIED THE REMEDIATING PARTY THAT BASED ON INFORMATION PROVIDED TO THE BRANCH AND KNOWN CONTAMINANT EXPOSURE CONCERNS RELATIVE TO OTHER SITES IDENTIFIED BY THE BRANCH, THIS SITE WAS DEEMED ELIGIBLE FOR PRIVATE PARTY OVERSIGHT AND CLEANUP UNDER THE REGISTERED ENVIRONMENTAL CONSULTANT (REC) PROGRAM AND FUTURE REMEDIAL ACTIVITIES NEEDED TO BE PERFORMED UNDER THE REC PROGRAM IN ORDER TO RECEIVE APPROVAL.

2014 ANNUAL SITE MONITORING REPORT
FORMER HANCOCK COUNTRY HAMS
3484 NC HIGHWAY 22 NORTH
FRANKLINVILLE, NORTH CAROLINA

March 21, 2014

Facility Owner/Operator and Land Owner:

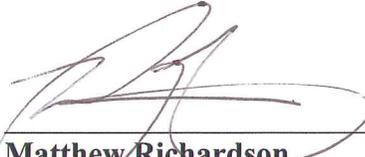
Smithfield

111 Commerce Street
Smithfield, VA 23430
(757) 356-3131

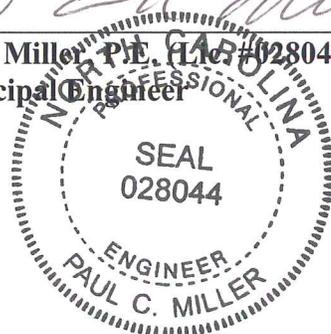
Consultant:

ENVIRONMENTAL
ALLIANCE, INC.

8215 Hermitage Road
Henrico, VA 23228
(804) 658-5550


Matthew Richardson
Project Geologist


Paul Miller, P.E. (Lic # 028044)
Principal Engineer



**ENVIRONMENTAL
ALLIANCE, INC.**

March 21, 2014

RECEIVED

APR 15 2014

Superfund Section

- Engineering
- Remediation
- Consulting

Ms. Ruth Debrito
Smithfield Packing Co., Inc.
111 Commerce Street
Smithfield, Virginia 23430

**Reference: 2014 Annual Site Monitoring Report
Former Hancock Country Hams
3484 NC Highway 22 North
Franklinville, North Carolina
Environmental Alliance, Inc. Project # 2719A**

Dear Ms. Debrito:

Environmental Alliance, Inc. (Alliance) is pleased to present our report of the surface water, groundwater, and soil sampling which took place at the referenced location.

Copies of this report have been forwarded to Mr. John Walch of the North Carolina Department of Environment and Natural Resources (NCDENR), Mr. George House, and Mr. Stanford Baird. If you have any questions or require additional information, please do not hesitate to contact the undersigned at (804) 658-5550.

Sincerely,
ENVIRONMENTAL ALLIANCE, INC.


Matthew Richardson
Project Geologist


Paul Miller, PE (Lic. #028044)
Principal Engineer

c: Mr. Stanford Baird
Mr. George House
Mr. John Walch, NCDENR

Attachment



\\192.168.1.10\Data2\EAI_files\2719_Smithfield_Hancock\Reports\2014\Hancock_2014_Annual_MonitoringRpt-Final.doc

Virginia Office: 8215 Hermitage Road Henrico, VA 23228 804-658-5550 804-658-5801 Fax

Corporate Office: 5341 Limestone Road Wilmington, DE 19808 302-234-4400 302-234-1535 Fax www.envalliance.com

**HANCOCK COUNTRY HAMS
SITE MONITORING REPORT**

Site Name and Location: Hancock Country Hams
3484 NC Highway 22 North, Franklinville, NC

Latitude and Longitude: 35° 46' 49" North; 79° 41' 40" West

Land Use Category: Commercial/Residential

Responsible Parties:

1. Smithfield Packing Co., Inc.
111 Commerce Street, Smithfield, VA 23430
757.357.1563
Attn.: Mr. R. Keith Bailey
Director, Environmental Affairs
2. Lance, Inc.
Post Office Box 32368
Charlotte, NC 28232
704.554.1421
3. Ms. Julia Hancock
3456 NC Hwy 22 N.
Franklinville, NC 27248

Current Land Owner: Smithfield Packing Co., Inc.
111 Commerce Street, Smithfield, VA 23430
757.356.1563
Attn.: Mr. R. Keith Bailey
Director, Environmental Affairs

Consultant: Environmental Alliance, Inc.
8215 Hermitage Road, Henrico, VA 23228
804.658.5550
Attn.: Mr. Matthew Richardson

Date of Report: March 21, 2014

Seal and Signature of Certifying Licensed Engineer



Paul Miller, P.E. (Lic. #028044)
Principal Engineer



TABLE OF CONTENTS

Section	Page Number
1.0 BACKGROUND	1-1
2.0 PURPOSE	2-1
3.0 RECEPTORS	3-1
4.0 METHODS	4-1
4.1 MONITORING WELL SAMPLING	4-1
4.2 RECOVERY WELL DISCRETE INTERVAL SAMPLING	4-1
4.3 WATER WELL SAMPLING	4-1
4.4 STREAM SAMPLING	4-1
4.5 SOIL SAMPLING	4-2
4.6 FIELD MEASUREMENTS	4-2
5.0 RESULTS	5-1
5.1 MONITORING WELLS	5-1
5.2 DISCRETE SAMPLING OF RECOVERY WELLS	5-1
5.3 SOIL SAMPLING	5-1
5.4 GROUNDWATER FLOW DIRECTION	5-1
5.5 PLUME GEOMETRY	5-2
6.0 CONCLUSIONS	6-1

TABLES

Table 1	Properties Within 1,500 Feet of the Site with Water Wells
Table 2	Adjacent Property Owners
Table 3	Historical Monitoring and Recovery Well Sample Results
Table 4	Soil Sample Results: Chloride
Table 5	Historical Surface Water Sample Results
Table 6	Summary of Monitoring Well and Groundwater Elevation Data
Table 7	Monitoring Schedule

FIGURES

Figure 1	Site Location Map
Figure 2	Site Map
Figure 3	Water Supply Wells within 1,500 Feet of the Site
Figure 4	Topographic Relationship of Water Wells to the Site
Figure 5	Soil Chloride Concentrations: 1990
Figure 6	Soil Chloride Concentrations: 2014
Figure 7	Groundwater Flow Map: February 2014
Figure 8	Groundwater Analytical Data: February 2014

APPENDICES

Appendix A	Laboratory Reports
Appendix B	Chloride Time Series Graphs

1.0 BACKGROUND

Environmental Alliance, Inc. (Alliance) has prepared this Annual Monitoring Report to document site monitoring activities performed during February 2014 at the former Hancock Country Hams Facility (the site). The site is located on the east side of the NC Hwy 22 approximately three miles south of Grays Chapel, Randolph County, North Carolina (Figure 1). The site is located in a rural, mostly undeveloped, area. The majority of the houses in the area are located along NC Hwy 22, north and south of the site, and along Cedar Forest Road, located approximately a 1/3 mile south of the site.

Westinghouse Environmental Services reported that four USTs were installed at the site in 1971. The tanks consisted of one-1,000 gallon gasoline UST, two-3,000 gallon gasoline USTs (nested together), and one-1,500 gallon gasoline UST. The UST locations are shown in Figure 2. All of the USTs were reportedly removed in 1986. Limited soil analysis data was collected from the UST excavations. Russnow, Kane, and Andrews collected samples from the South Well (SW), Ed Rhodes well (ERW), and the block house well (BHW) in May/June 1988. Contaminants associated with petroleum and chlorides were detected in the groundwater samples. The chloride in the groundwater is believed to be from the ham curing facility which operated at the site from the mid 1950's to the mid 1970's.

In May 1989, Westinghouse Environmental Services (WES) submitted an Initial Site Assessment of the site. This assessment included the drilling of numerous soil test borings, drilling and installation of two monitoring wells and three piezometers, stream sampling, and associated sampling and analyses in the fall of 1988. The site assessment determined the location of contaminated soil and began to determine the extent of groundwater contamination. The assessment confirmed that petroleum and chloride contamination was present in the bedrock aquifer. Chlorides have been detected in the creek east of the site. Also during the assessment, WES removed and treated approximately 700 cubic yards of petroleum contaminated soil from the UST Pit B area.

In early 1991, Charles T. Main (CTM) was contracted to develop a remedial action plan (RAP). Their plan was submitted to the then North Carolina Department of Environment, Health, and Natural Resources (NC DEHNR) Groundwater Section Regional Office in Winston-Salem, North Carolina on April 17, 1991. The NC DEHNR is currently the Department of Environment and Natural Resources (DENR) and will be referred to in that way in this report. The NCDENR requested additional information, and a supplemental RAP was submitted to the NCDENR on September 27, 1991. Both RAPs proposed using a pump and treat system to remediate the groundwater. The groundwater was to be pumped from seven recovery wells, treated, and discharged under an Individual NPDES permit. CTM recommended that the chloride contaminated soil be allowed to naturally remediate over time. Because of difficulties in obtaining access to discharge the effluent, in 1996, Smithfield Foods requested that the NCDENR allow the groundwater and soil be remediated through a process of natural attenuation. Following this request, on August 26, 1996, the NCDENR requested additional assessment of the site. In March 1998, a Groundwater Monitoring Report with updated sampling data was sent to the NCDENR. Upon review of the monitoring report, on May 20, 1998 the NCDENR requested additional investigation of the bedrock aquifer. A follow-up report was issued on August 23, 1999.

On October 11, 2002, the NCDENR sent Smithfield Foods a Notice of Regulatory Requirements requiring the submittal of a corrective action plan (CAP) to treat the petroleum contaminated soil and groundwater. Because chloride contaminated groundwater is commingled with the petroleum contamination, the CAP addressed both contaminants. On December 20, 2002 the CAP was submitted to NCDENR by Trigon Engineering Consultants (now Trigon/Kleinfelder). The CAP called for additional soil sampling in the UST B area, with excavation and disposal of any remaining contaminated soil. Groundwater contamination would be addressed with a pump and treat system incorporating an air stripper to treat the petroleum contamination and a reverse osmosis (RO) system to deal with elevated chloride concentrations. The December 2002 CAP was developed under tight time constraints and was, thus, based on the data from the 1999 sampling events. The CAP called for a new round of sampling and re-evaluation of the CAP requirements based on the analytical results.

Groundwater sampling of the recovery wells, monitoring wells, water wells and stream, and soil sampling of the UST B pit area and the salt disposal area was conducted on June 12 and 13, 2003. The results of the sampling was reported to NCDENR in an October 3, 2003 Groundwater and Soil Sampling Report. On March 30, 2003 a meeting was held at the site between Smithfield Foods, Mr. Stephen Williams of NCDENR and Trigon/Kleinfelder. Based on the preliminary June 2003 sampling results and a review of the site conditions, NCDENR agreed to consider modifying the December 2002 CAP to allow remediation of remaining contamination at the site by monitored natural attenuation. The modified conditions were to be allowed only if continued monitoring indicated that the contaminant plume was stable or improving. Groundwater sampling of the recovery wells, monitoring wells, water wells and the stream conducted on October 8, 2003 confirmed that both the BTEX and chloride plumes were stable and that natural attenuation of petroleum and chloride contamination in the groundwater may be occurring.

Following a review of the groundwater sampling data from the October 2003 sampling event, the NCDENR approved Smithfield's request on November 20, 2003 to modify the December 2002 CAP to provide for natural attenuation. On February 3, 2004, Trigon/Kleinfelder submitted a CAP to modify the December 2002 CAP, which will allow the existing petroleum and chloride contaminants in the site soil and groundwater to naturally attenuate. The February 3, 2004 natural attenuation CAP was approved by the NCDENR on March 16, 2004. As of July 2010, all residences in the site area except for the Norman residence (located up- and cross-gradient of the chloride and BTEX plumes) were connected to the public water supply. Subsequently, NCDENR's UST Branch closed the UST case in a No Further Action (NFA) letter dated November 19, 2010. Therefore, no additional monitoring of the BTEX plume is required.

On November 12, 2010, a conference call between Smithfield Packing Co., Inc. (Smithfield), Alliance, and the NCDENR Inactive Hazardous Waste Sites Branch was held to discuss future monitoring of the chloride plume in light of the closure of the UST case. During this conference call, it was decided that monitoring of the chloride plume would be reduced to an annual event until the chloride standards for groundwater and surface water have been met. At that point, quarterly monitoring will be resumed to demonstrate achievement of the chloride standards.

2.0 PURPOSE

On February 19 and February 20, 2014, groundwater, surface water, and soil samples were collected and analyzed to assess the current extent and magnitude of the chloride plume. It is the purpose of this report to present the results of this monitoring event.

3.0 RECEPTORS

A well survey of the area in October 1996 determined that there are approximately nine water supply wells within 1,500 feet of the site (Figure 3) and another seven wells within 1,750 feet of the site. Five of these wells are separated from the site by a stream valley (Figure 4). The names and addresses of water well users within 1,500 feet of the site are shown in Table 1. During the fall of 2007, a public water main was installed along NC Highway 22 to supply a proposed school north of the site. To date, all of the residences except for the Norman residence (located up- and cross-gradient of the chloride plume) have been connected to the public water system.

Property owners located immediately adjacent to the site are listed in Table 2 and property locations are presented on Figure 3.

The hillside southeast of the site is dissected by numerous small gullies that feed a wet weather drainage feature located approximately 1,000 feet southeast of the site. This drainage feature flows into an unnamed tributary to Sandy Creek which is located approximately 1.3 miles east of the site (Figure 1).

4.0 METHODS

4.1 MONITORING WELL SAMPLING

Monitoring well MW-1S and monitoring well MW-1D were sampled on February 20 and February 19, 2014, respectively. Prior to collecting the samples, the water level in each well was measured and recorded and a minimum of three well volumes of water was removed or the well was bailed dry using either a bailer or a peristaltic pump. After purging, monitoring well samples were collected with a new disposable bailer. The samples were collected in laboratory supplied bottles, preserved, and delivered under chain-of-custody to REIC Laboratories of Beaver, West Virginia. The locations of the monitoring wells are presented on Figure 2.

4.2 RECOVERY WELL DISCRETE INTERVAL SAMPLING

Recovery Wells RW-1, RW-3, RW-4, RW-5, RW-6, and RW-7 were sampled using a Solinst™ Model 425 Discrete Interval Sampler on February 19 and 20, 2014. The samples were delivered to REIC Laboratories of Beaver, West Virginia and analyzed for chloride using EPA Method 300.0. Recovery well locations are presented on Figure 2.

4.3 WATER WELL SAMPLING

Because all of the residences except for the Norman residence (located up- and cross-gradient of the chloride plume) have been connected to public water, and the UST case has been closed by NCDENR, sampling of the water wells is no longer conducted.

4.4 STREAM SAMPLING

The stream located east of the site was sampled on February 19, 2014, at the upper (S-1), mid (S-2), and lower (S-3) stream locations. The samples were delivered to REIC Laboratories of Beaver, West Virginia and analyzed for chloride using EPA Method 300.0. Stream sample locations are presented on Figure 2.

4.5 SOIL SAMPLING

On February 20, 2014, Alliance personnel collected soil samples from the salt/brine disposal area to determine current chloride concentrations. A shallow (1 foot deep) and a deep (4 foot deep) sample were collected at locations SS-1, SS-2, SS-3, and SS-4 with a stainless-steel auger. Each sample was a composite sample made by combining soil from four different borings located approximately five feet apart. The samples were delivered to REIC Laboratories of Beaver, West Virginia and analyzed for chloride using EPA Method 300.0. The approximate locations of the soil samples are shown in Figure 6.

4.6 FIELD MEASUREMENTS

The static water levels in monitoring wells MW-1D and MW-1S, recovery wells RW-1, RW-2, RW-3, RW-4, RW-5, RW-6, RW-7, and piezometers P-2 and P-3 were gauged on February 19 and February 20, 2014. The water level was measured using an electronic water level meter accurate to 0.01 feet. Water level measurement data are recorded on Table 6.

5.0 RESULTS

5.1 MONITORING WELLS

Chloride was detected in monitoring wells MW-1S (675 mg/L) and MW-1D (725 mg/L) above the State's 2L .0202 Standard of 250 mg/L. Laboratory results are summarized in Table 3 and laboratory reports are included as Appendix A.

5.2 DISCRETE SAMPLING OF RECOVERY WELLS

Chloride was detected in recovery wells RW-2 (1,070 mg/L) and RW-3 (2,310 mg/L) above the State's 2L .0202 Standard of 250 mg/L. Laboratory results are summarized in Table 3 and laboratory reports are included as Appendix A.

5.3 SOIL SAMPLING

Chloride concentrations were detected in the soil samples (SS-1, SS-2, SS-3, and SS-4) collected on February 20, 2014. Chloride concentrations from the 1-foot sample intervals ranged from a minimum of 3.40 mg/kg (SS-2) to a maximum of 41.0 mg/kg (SS-4). Chloride concentrations in the 4-foot sample interval ranged from a minimum of 80.8 mg/kg (SS-2) to 193 mg/kg (SS-4). Soil sampling analytical data is summarized on Table 4, and the accompanying laboratory analyses and chain-of-custody are included as Appendix A. Historical soil chloride concentrations (1990) are presented on Figure 5 and the 2014 soil chloride concentrations are presented on Figure 6.

5.4 GROUNDWATER FLOW DIRECTION

Groundwater measurements collected in February 2014 were used to prepare a groundwater surface contour map (Figure 7). The data indicates groundwater in both the residuum and bedrock are moving generally to the southeast. The water level data are summarized in Table 6.

5.5 PLUME GEOMETRY

Based on the data collected during the February 2014 sampling event, chloride is concentrated in the area immediately southeast of the plant (MW-1S, RW-2, and RW-3) and along a line extending to the southeast toward the stream (MW-1D). A diffuse plume of chloride extends to the north, southwest, and west of the plant. Groundwater chloride results from the February 2014 sampling event are plotted on Figure 8.

Current groundwater chloride concentrations are similar to previous annual sampling events.

6.0 CONCLUSIONS

Given that the UST case has been closed by NCDENR, it was agreed during the November 12, 2010 conference call with the Inactive Hazardous Waste Sites Branch that monitoring of the chloride plume will be reduced to an annual basis until the North Carolina standards for chloride have been met. After these standards have been met, quarterly monitoring will be resumed to demonstrate attainment.

Because the groundwater chloride concentrations are currently above the 2L standard of 250 mg/L, Alliance recommends continued annual monitoring of the site.

TABLES

TABLE 1: PROPERTIES WITHIN 1,500 FEET OF THE SITE WITH WATER WELLS

Parcel ID No.	Property Owner	Property Address
7794400682	Sherry J. Norman	3575 NC Hwy 22N, Franklinville, NC 27248
7794403084	William E. & Jane P. Rhodes	3520 NC Hwy 22 N., Franklinville, NC 27248
7794308034	Joseph & Anne Sue Beal	3511 NC Hwy 22 N., Franklinville, NC 27248
7793491793	Hancock Old Fashion Ctry Ham	3482 NC Hwy 22N., Franklinville, NC 27248
7793491252	Julia S. Hancock	3456 NC Hwy 22 N., Franklinville, NC 27248
7793395540	Wilbert L. Hancock	1716 Academy Rd. Ext., Franklinville, NC 27248
7793394490	Terry Wesley	P. O. Box 1300, Ramseur, NC 27316
7793393252	Raymond Jester, Jr.	3419 NC Hwy 22 N., Franklinville, NC 27248
7793392064	Peggy J. Brown	3399 NC Hwy 22N., Franklinville, NC 27248
7793381857	James T. & Charlotte Kivett	3367 NC Hwy 22 N., Franklinville, NC 27248
7793582180	Richard Wallace	3519 Cedar Forest Rd, Franklinville, Nc 27248
7793580431	Irene C. Garrett	3521 Cedar Forest Rd, Franklinville, NC 27248
7793487411	Steven E. & Loretta Thompson	3505 Cedar Forest Rd, Franklinville, NC 27248

Ms. Ruth Debritto,
 Smithfield Foods, Inc.
 Hancock Country Hams,
 Franklinville, North Carolina

TABLE 2: ADJACENT PROPERTY OWNERS

Parcel ID No.	Property Owner	Property Address
7794403084	William E. & Jane P. Rhodes	3520 NC Hwy 22 N., Franklinville, NC 27248
7794308034	Joseph & Anne Sue Beal	3511 NC Hwy 22 N., Franklinville, NC 27248
7793491252	Julia S. Hancock	3456 NC Hwy 22 N., Franklinville, NC 27248
7793593950	George H. & Barbara Poe	3862 HardinEllison Rd., Franklinville, NC 27248
7793597552	Mark A. & Marcia Coponen	3896 HardinEllison Rd., Franklinville, NC 27248
7793395540	Wilbert L. Hancock	1716 Academy Rd. Ext., Franklinville, NC 27248

Note: Locations shown on Figure 3.

TABLE 3
 HISTORICAL MONITORING AND RECOVERY WELL CHLORIDE SAMPLE RESULTS

Monitoring Well		21 Standard: 250 Ppm Chloride						
MW-1S	MW-1D	RW-1	RW-2	RW-3				
10/23/88	NA	740	05/26/93	473	05/26/93	419	05/26/93	1,219
11/20/88	3,800	1,387	02/17/98	284	02/17/98	255	02/17/98	4,250
10/01/96	9,844	1,781	03/23/99	492	03/23/99	419	02/17/98	3,800
02/17/98	4,590	851	06/12/03	553	06/12/03	575	10/20/98	NA
06/12/03	3,150	NS	10/08/03	550	10/08/03	370	10/20/98	4,250
10/08/03	3,200	1,100	01/08/04	525	01/08/04	765	10/20/98	6,400
01/08/04	2,710	1,680	04/07/04	612	04/07/04	637	03/23/99	3,413
04/07/04	2,800	1,840	07/20/04	643	12/15/04	755	06/12/03	4,230
07/20/04	2,700	987	12/15/04	594	03/24/05	773	10/08/03	3,800
12/15/04	2,351	1,629	10/12/06	466	08/23/05	659	01/08/04	4,210
03/24/05	2,620	1,150	01/03/07	665	12/01/05	783	04/07/04	4,850
08/23/05	2,210	1,480	03/22/07	308	03/08/06	560	07/20/04	2,720
12/01/05	1,990	1,370	07/18/07	704	06/20/06	783	12/15/04	3,705
03/08/06	1,700	1,200	01/24/08	692	10/12/06	519	03/24/05	4,010
06/20/06	1,541	1,394	03/20/08	670	01/03/07	641	08/23/05	3,290
10/12/06	1,662	1,297	06/21/08	753	03/22/07	445	12/01/05	4,600
03/22/07	1,496	1,449	01/14/09	711	07/18/07	440	03/08/06	4,400
07/18/07	1,346	1,404	04/22/09	800	01/24/08	498	06/20/06	NS
01/24/08	1,440	1,329	07/16/09	599	03/20/08	656	10/12/06	NS
03/20/08	1,362	1,000	10/14/09	520	06/24/08	420	01/03/07	1,758
06/24/08	1,680	1,220	01/13/10	460	01/14/09	472	03/22/07	3,161
01/14/09	1,040	1,320	04/15/10	558	04/22/09	528	07/18/07	3,767
04/21/09	1,110	1,010	07/22/10	345	07/16/09	473	01/24/08	2,940
07/16/09	843	1,380	10/26/10	383	10/14/09	649	03/20/08	2,730
10/14/09	850	1,240	01/18/11	428	01/13/10	698	06/24/08	2,690
01/14/10	885	1,260	1/18/2011** (Depth of 200 ft)	485	04/15/10	521	01/14/09	1,230
04/16/10	888	1,220	01/24/12	174	07/22/09	588	04/22/09	873
07/21/10	943	866	01/24/13	147	10/26/10	860	07/16/09	2,998
10/26/10	356	1,240	02/19/14	218	01/18/11	1,010	10/14/09	3,890
01/17/11	717	984			1/18/2011** (Depth of Sample 380 Ft)	815	01/13/10	2,840
01/24/12	670	1,200			01/24/12	1,050	04/15/10	1,880
01/24/13	625	1,070			01/24/13	1,050	07/22/10	2,490
02/20/14	675	755			02/20/14	1,070	10/26/10	2,160
							01/18/11	2,160
							1/18/2011** (Depth of 135 ft)	2,490
							1/18/2011** (Depth of 225 ft)	2,480
							1/18/2011** (Depth of 325 ft)	2,410
							01/24/12	1,750
							01/23/13	1,350
							02/20/14	2,310

TABLE 3
HISTORICAL MONITORING AND RECOVERY WELL CHLORIDE SAMPLE RESULTS

RW-4		RW-5		RW-6		RW-7	
Sample ID	Concentration (ppm)	Sample ID	Concentration (ppm)	Sample ID	Concentration (ppm)	Sample ID	Concentration (ppm)
05/26/93	457	05/26/93	418	05/26/98	144,965	05/26/93	324
02/17/98	226	02/17/98	316	10/01/98	800	03/29/96	211
03/23/99	419	03/23/99	386	05/26/93	245	02/17/98	140
06/12/03	368	06/12/03	282	02/17/98	301	10/21/98	240
10/08/03	400	10/08/03	340	10/21/98	615	03/23/99	261
01/08/04	304	01/08/04	324	03/23/99	599	06/12/03	293
04/07/04	323	04/07/04	338	06/12/03	521	10/08/03	358
07/20/04	277	07/20/04	315	10/08/03	310	01/08/04	310
12/15/04	271	12/15/04	347	01/08/04	233	04/07/04	310
03/24/05	249	03/24/05	345	04/07/04	275	07/20/04	283
08/23/05	228	08/23/05	354	07/20/04	219	12/15/04	299
12/01/05	230	12/01/05	329	12/15/04	190	03/24/05	258
03/08/06	130	03/08/06	150	03/24/05	195	08/23/05	261
06/20/06	218	06/20/06	NS	08/23/05	167	12/01/05	287
10/12/06	217	10/12/06	NS	12/01/05	185	03/08/06	140
01/03/07	428	01/03/07	404	03/08/06	120	06/20/06	276
03/22/07	230	03/22/07	NS	06/20/06	297	10/12/06	274
07/18/07	205	07/18/07	298	10/12/06	212	01/03/07	333
01/24/08	172	01/24/08	NS	01/03/07	523	03/22/07	220
03/20/08	175	03/20/08	191	03/22/07	212	07/18/07	220
06/24/08	182	06/24/08	222	07/18/07	161	07/24/08	125
07/14/09	190	07/14/09	236	07/24/08	180	03/20/08	113
04/22/09	209	04/22/09	244	03/20/08	198	06/24/08	152
07/16/09	233	07/16/09	258	06/24/08	258	01/14/09	190
10/14/09	184	10/14/09	230	01/14/09	239	04/22/09	209
07/13/10	214	07/13/10	228	4/22/09*	NS	07/16/09	239
04/15/10	198	04/15/10	209	07/16/09	190	10/14/09	194
07/22/10	176	07/22/10	232	10/14/09	183	01/13/10	170
10/26/10	171	10/26/10	139	01/13/10	211	04/15/10	251
01/18/11	139	01/18/11	184	04/15/10	166	07/22/10	201
07/24/11	184	07/24/11	169	07/22/10	147	10/26/10	258
01/24/12	156	01/24/12	149	10/26/10	165	01/18/11	214
02/20/14	200	02/20/14	190	1/18/2011** (Depth of 250 ft.)	171	01/24/12	192
				01/24/12	202	01/24/12	191
				02/19/14	186	02/19/14	227
				02/19/14	238		

Notes:
ppm = parts per million
= list
Concentrations which exceed the 21 Groundwater Quality Standards are bold
21 Standards - RCAC Title 15A, Subchapter 21, Quality Standards for Class GA groundwater, Jan. 1, 2010
PLW - Parking Lot Well
BOL - Below the quantitation limit of the method of analysis
NS - Not sampled
ND - Non-detect
Environmental Alliance began sampling in April 2009, all previous samples collected by others.
* Sample collected by Westinghouse Environmental Services, parameters currently infeasible
** Sample collected by BPA Environmental & Engineering, Inc.

1 EPA Method 802 with a detection limit of 1 to 5 ppb
2 EPA Method 304.1 with a Detection Limit of 0.02 ppb
3 EPA Method 601 with a detection limit of 1 to 5 ppb
4 Method 239.1 with a detection limit of 5 ppb
5 Method SM4500C with a detection limit of 0.10 ppm
6 Collected on 9/23/88
7 Sample collected by Ruznow, Kane, and Andrews
8 Sample collected by Charles T. Main
9 Sample collected by Smithfield Foods
10 Sample collected by BPA Environmental & Engineering, Inc.

144,965 - Sample collected near water table/sample collected at depth
19 Sample 1C collected from Packer Test Interval 220 - 240 ft. b.s.
20 Sample 3B Collected from Packer Test Interval 290 - 310 ft. b.s.
21 Sample 3A Collected from Packer Test Interval 319 - 339 ft. b.s.
22 Sample 6A Collected from Packer Test Interval 167 - 187 ft. b.s.
23 Sample 7B Collected from Packer Test Interval 170 - 190 ft. b.s.
24 Sample collected by Tigon Engineering Consultants, Inc.
25 Not sampled due to pump malfunctioning
26 ** Indicates when discrete sampling was used

TABLE 4: SOIL SAMPLE RESULTS : CHLORIDE

		SCL-1									
Depth in Feet		7/22/04	8/23/05	6/20/06	1/24/08 ¹	4/21/09	1/14/10	01/18/11 ¹	01/25/12 ¹	1/23/2013	2/20/2014 ¹
1.0		3.6	18.8	103.0	7.8	47.1	BDL	BDL	BDL	BDL	4.20
4.0		3.3	18.3	NS	1.5	211	95	170	BDL	BDL	160

		SCL-2									
Depth in Feet		7/22/04	8/23/05	6/20/06	1/24/08 ¹	4/21/09	1/14/10	01/18/11 ¹	01/25/12 ¹	1/23/2013	2/20/2014 ¹
1.0		217	29	BDL	53	19.5	BDL	BDL	BDL	70.0	3.40
4.0		3,320	NS	NS	146.0	32.7	33.2	BDL	28.0	57.6	80.8

		SCL-3									
Depth in Feet		7/22/04	8/23/05	6/20/06	1/24/08 ¹	4/21/09	1/14/10	01/18/11 ¹	01/25/12 ¹	1/23/2013	2/20/2014 ¹
1.0		80.5	23.9	65.1	23.1	BDL	BDL	BDL	BDL	BDL	5.80
4.0		670	12	NS	158.0	37	141	119	BDL	BDL	182

		SCL-4									
Depth in Feet		7/22/04	8/23/05	6/20/06	1/24/08 ¹	4/21/09	1/14/10	01/18/11 ¹	01/25/12 ¹	1/23/2013	2/20/2014 ¹
1.0		8.2	35.2	45.6	6.9	BDL	12.4	BDL	20.2	BDL	41.0
4.0		3.6	325.0	NS	429.0	19.4	18.2	27.2	27.8	BDL	193

Notes:

Results shown in parts per million (mg/kg)

NS - Not Sampled

BDL = Below detection limit

¹ Samples collected on 1/24/08, 1/18/11, 01/25/12, 01/23/13, 02/20/14 are labeled SS-1, SS-2, SS-3, and SS-4

TABLE 5: HISTORICAL SURFACE WATER SAMPLE RESULTS

S-1 (upper)																
2B Standard - 230 ppm Chloride																
Sample Date	10/31/88 ⁵	10/11/96 ⁵	2/18/98 ⁶	6/12/03 ⁷	10/8/03 ⁷	1/8/04 ⁷	4/7/04 ⁷	7/20/04 ⁷	12/15/04 ⁷	3/24/05 ⁷	8/23/05 ⁷	12/01/05 ⁷	3/08/06 ⁷	6/20/06 ⁷	10/12/06 ⁷	1/3/07 ⁷
Chloride ¹	1,000	74.6	22.8	12	7.6	10.8	13.6	209	31.6	27.8	NS	33.3	35	NS	NS	37.5

S-1 (upper) (cont'd.)																
2B Standard - 230 ppm Chloride																
Sample Date	3/22/07 ⁷	7/18/07 ⁷	1/24/08 ⁷	3/20/08 ⁷	6/24/08 ⁷	1/14/09 ⁹	4/21/09 ⁹	7/16/09 ⁹	10/14/09 ⁹	1/13/10	4/16/10	7/21/10	10/26/10	1/17/11	1/25/12	01/23/13
Chloride ¹	23.3	NS	NS	46.3	NS	25.1	14.2	DRY	DRY	9.08	6.52	DRY	DRY	DRY	10.7	74.5

S-1 (upper) (cont'd.)	
2B Standard - 230 ppm Chloride	
Sample Date	2/19/14
Chloride ¹	13.0

S-2 (mid)																
2B Standard - 230 ppm Chloride																
Sample Date	10/31/88 ⁵	10/11/96 ⁵	2/18/98 ⁶	6/12/03 ⁷	10/8/03 ⁷	1/8/04 ⁷	4/7/04 ⁷	7/20/04 ⁷	12/15/04 ⁷	3/24/05 ⁷	8/23/05 ⁷	12/01/05 ⁷	3/08/06 ⁷	6/20/06 ⁷	10/12/06 ⁷	1/3/07 ⁷
Chloride ¹	840	72.2	156	27	16	39.8	41.1	15.1	64.1	49.8	79.2	248	39	26.4	NS	39.9

S-2 (mid) (cont'd.)																
2B Standard - 230 ppm Chloride																
Sample Date	3/22/07 ⁷	7/18/07 ⁷	1/24/08 ⁷	3/20/08 ⁷	6/24/08 ⁷	1/14/09 ⁹	4/21/09 ⁹	7/16/09 ⁹	10/14/09 ⁹	1/13/10	4/16/10	7/21/10	10/26/10	1/17/11	1/25/12	01/23/13
Chloride ¹	55.9	NS	NS	72.9	NS	62.5	17.5	DRY	DRY	46.2	11.8	11.6	11.6	DRY	54.4	71.3

S-2 (mid) (cont'd.)	
2B Standard - 230 ppm Chloride	
Sample Date	2/19/14
Chloride ¹	49.4

S-3 (lower)																
2B Standard - 230 ppm Chloride																
Sample Date	10/31/88 ⁵	10/11/96 ⁵	2/18/98 ⁶	6/12/03 ⁷	10/8/03 ⁷	1/8/04 ⁷	4/7/04 ⁷	7/20/04 ⁷	12/15/04 ⁷	3/24/05 ⁷	8/23/05 ⁷	12/01/05 ⁷	3/08/06 ⁷	6/20/06 ⁷	10/12/06 ⁷	1/3/07 ⁷
Chloride ¹	700	295	54.7	29	32	53.4	53.1	97.1	105	51.2	35.6	140	61	75.8	25.9	79.8

S-3 (lower) (cont'd.)																
2B Standard - 230 ppm Chloride																
Sample Date	3/22/07 ⁷	7/18/07 ⁷	1/24/08 ⁷	3/20/08 ⁷	6/24/08 ⁷	1/14/09 ⁹	4/21/09 ⁹	7/16/09 ⁹	10/14/09 ⁹	1/13/10	4/16/10	7/21/10	10/26/10	1/17/11	1/25/12	01/23/13
Chloride ¹	70.9	NS	75.8	79.3	84.3	77.2	46.7	DRY	DRY	41.0	17.5	9.31	9.31	DRY	46.8	47.3

S-3 (lower) (cont'd.)	
2B Standard - 230 ppm Chloride	
Sample Date	2/19/14
Chloride ¹	35.2

Notes:
 All results are in parts per million (ppm)
 Concentrations which exceed the 2B Surface Water Quality Standards are bold
 2B Standards - Quality Standards for Aquatic Life in Fresh Water
 NS- Not Sampled
 NA- Not analyzed for this compound
 ND - Non-detect
 BQL- Below the quantitation limit of the method of analysis
 Environmental Alliance began sampling in April 2009, all previous samples collected by others

¹ EPA Method SM4500C with a detection limit of 0.10 ppm
⁵ Sample collected by Westinghouse Environmental



TABLE 6: SUMMARY OF MONITORING WELL AND GROUNDWATER ELEVATION DATA (cont'd)

Well No.	Elevation ¹ (ft)	Well Construction (ft)		Static Water Levels																			
		Top of Casing	Screen	Length of Screen	Depth of Well	7/18/07 ²		1/24/08 ³		3/20/08 ⁴		6/24/08 ⁵		1/14/09 ⁶		7/16/09 ⁷		10/14/09 ⁸		1/13/10 ⁹			
						Depth (ft)	Elevation (ft)	Depth (ft)	Elevation (ft)	Depth (ft)	Elevation (ft)	Depth (ft)	Elevation (ft)										
MW-1S	842.84	845.31	5.0	NA	15	12.21	830.63	14.6	828.24	14.47	828.37	14.42	828.42	14.88	827.96	14.72	828.12	14.96	827.88	14.72	828.12	13.92	828.92
MW-1D	674.66	-	NA	11.0	72	12.77	661.89	12.9	661.76	16.50	658.16	12.98	661.68	10.92	663.74	8.32	666.34	12.02	662.64	14.51	660.15	10.79	663.87
P-1	809.32	811.84	2.40	NA	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
P-2	NM	765.00	2.4	NA	5.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
P-3	682.98	684.89	2.4	NA	2.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
RW-1	842.56	-	NA	23.8	220	121.75	720.81	127.24	715.32	127.53	715.03	124.60	717.96	124.30	718.26	119.28	723.28	118.93	723.63	139.20	703.36	136.11	706.45
RW-2	850.47	-	NA	38.6	401	125.12	725.35	132.81	717.66	132.54	717.93	129.09	721.38	128.88	721.59	121.22	729.25	120.92	729.55	126.22	724.25	125.01	725.46
RW-3	840.65	-	NA	52.5	340	126.67	713.98	128.31	712.34	128.29	712.36	125.82	714.83	125.43	715.20	117.95	722.70	117.49	723.16	123.98	716.67	124.21	716.44
RW-4	821.49	-	NA	20.0	301	100.09	721.40	106.18	715.31	106.32	715.17	103.47	718.02	103.36	718.13	106.04	715.45	86.22	735.27	103.39	718.10	99.69	721.80
RW-5	831.07	-	NA	29.5	303	110.30	720.77	116.45	714.62	116.62	714.45	113.75	717.32	113.65	717.42	108.14	722.93	108.21	722.86	112.25	718.82	109.91	721.16
RW-6 (PLW)	858.38	-	NA	37.7	267	130.95	727.43	139.11	719.27	139.31	719.07	134.70	723.68	134.87	723.51	129.39	728.99	129.02	729.36	132.56	725.82	136.50	721.88
RW-7	857.00	-	NA	14.1	221	129.25	727.75	137.05	719.95	137.21	719.79	132.65	724.35	132.98	724.02	127.46	729.54	127.13	729.87	130.60	726.40	128.74	728.26

TABLE 6: SUMMARY OF MONITORING WELL AND GROUNDWATER ELEVATION DATA (cont'd)

Well No.	Elevation ¹ (ft)	Well Construction (ft)		Static Water Levels															
		Top of Casing	Screen	Length of Screen	Depth of Well	4/15/10 ²		7/22/10 ³		10/26/10 ⁴		01/17/11 ⁵		01/24/12 ⁶		01/23/13 ⁷		2/19-2/20/14 ⁸	
						Depth (ft)	Elevation (ft)	Depth (ft)	Elevation (ft)	Depth (ft)	Elevation (ft)	Depth (ft)	Elevation (ft)	Depth (ft)	Elevation (ft)	Depth (ft)	Elevation (ft)	Depth (ft)	Elevation (ft)
MW-1S	842.84	845.31	5.0	NA	15	13.52	829.32	13.02	829.82	14.81	828.03	13.50	829.34	14.37	828.47	14.65	828.19	14.50	828.34
MW-1D	674.66	-	NA	11.0	72	11.04	663.62	11.98	662.68	10.82	663.84	11.06	663.60	11.10	663.56	11.01	663.65	8.15	666.51
P-1	809.32	811.84	2.40	NA	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
P-2	NM	765.00	2.4	NA	5.5	Dry	---	---	---	---	---	---	---	---	---	---	---	---	---
P-3	682.98	684.89	2.4	NA	2.9	1.81	681.17	1.68	681.30	2.01	680.97	1.77	681.21	1.67	681.31	1.65	681.33	1.65	681.33
RW-1	842.56	-	NA	23.8	220	115.62	726.94	117.46	725.10	120.12	722.44	122.35	720.21	123.27	719.29	129.25	713.31	117.32	725.24
RW-2	850.47	-	NA	38.6	401	117.05	733.42	121.43	729.04	125.21	725.26	128.54	721.93	127.55	722.92	126.12	724.35	120.02	730.45
RW-3	840.65	-	NA	52.5	340	111.42	729.23	113.95	726.70	118.51	722.14	124.22	716.43	123.76	716.89	124.10	716.55	113.62	727.03
RW-4	821.49	-	NA	20.0	301	94.51	726.98	98.46	723.03	108.11	713.38	101.39	720.10	101.87	719.62	101.54	719.95	95.50	725.99
RW-5	831.07	-	NA	29.5	303	104.68	726.39	106.60	724.47	111.03	720.04	111.72	719.35	112.22	718.85	111.81	719.26	106.25	724.82
RW-6 (PLW)	858.38	-	NA	37.7	267	125.58	732.80	128.12	730.26	131.74	726.64	133.75	724.63	133.61	724.77	133.48	724.90	127.88	730.50
RW-7	857.00	-	NA	14.1	221	123.65	733.35	126.02	730.98	128.92	728.08	131.88	725.12	131.73	725.27	131.60	725.40	125.72	731.28

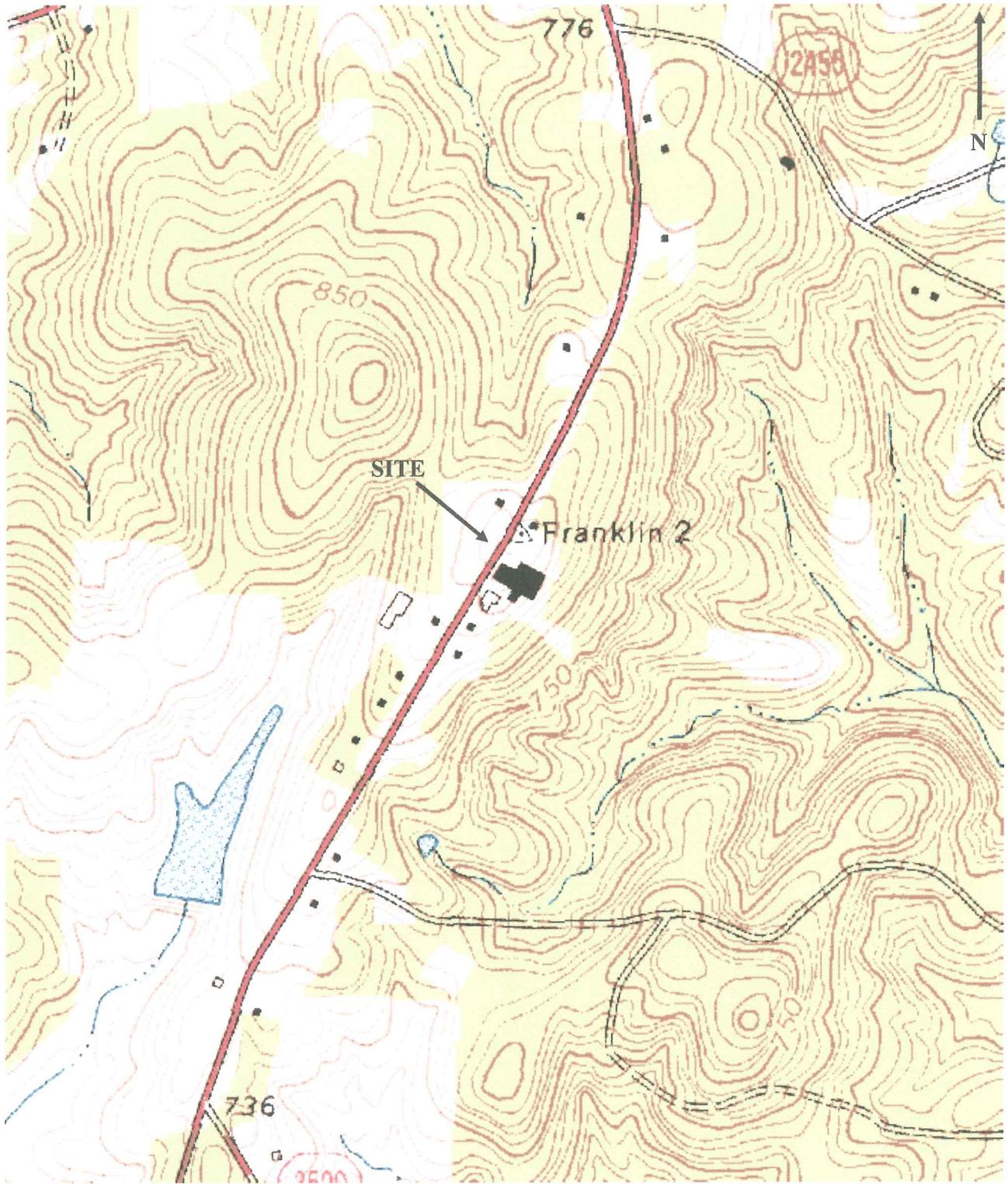
-- Depth to Groundwater Not Measured
¹Elevations surveyed from USGS Benchmark by Concord Engineering & Surveying.
²Static water levels measured from the top of casing.
³Water levels measured by Westinghouse Environmental Services.
⁴Water levels measured by BPA Environmental & Engineering, Inc.
⁵Bedrock Well - Open hole from this depth down. Depth of casing determined from geophysical logging.
⁶Water levels measured by Trigon Engineering Consultants, Inc.
⁷MW-1D and MW-1S water level measured 12/15/04
⁸Water levels measured by Environmental Alliance, Inc.

Ms. Ruth Debrito,
Smithfield Foods, Inc.
Hancock Country Hams,
Franklinville, North Carolina

TABLE 7: MONITORING SCHEDULE

Sample Location/Task	Frequency	Analysis
RW-1 thru RW-7, MW-1S, MW-1D	Annually	Chloride
Creek	Annually	Chloride
Soil Chloride Area	Annually	Chloride

FIGURES



SCALE:
1"=400'

DATE:
1/15/09

APPROVED
BY: JSE

SOURCE: 1974 USGS TOPOGRAPHIC MAP, GRAYS
CHAPEL QUADRANGLE

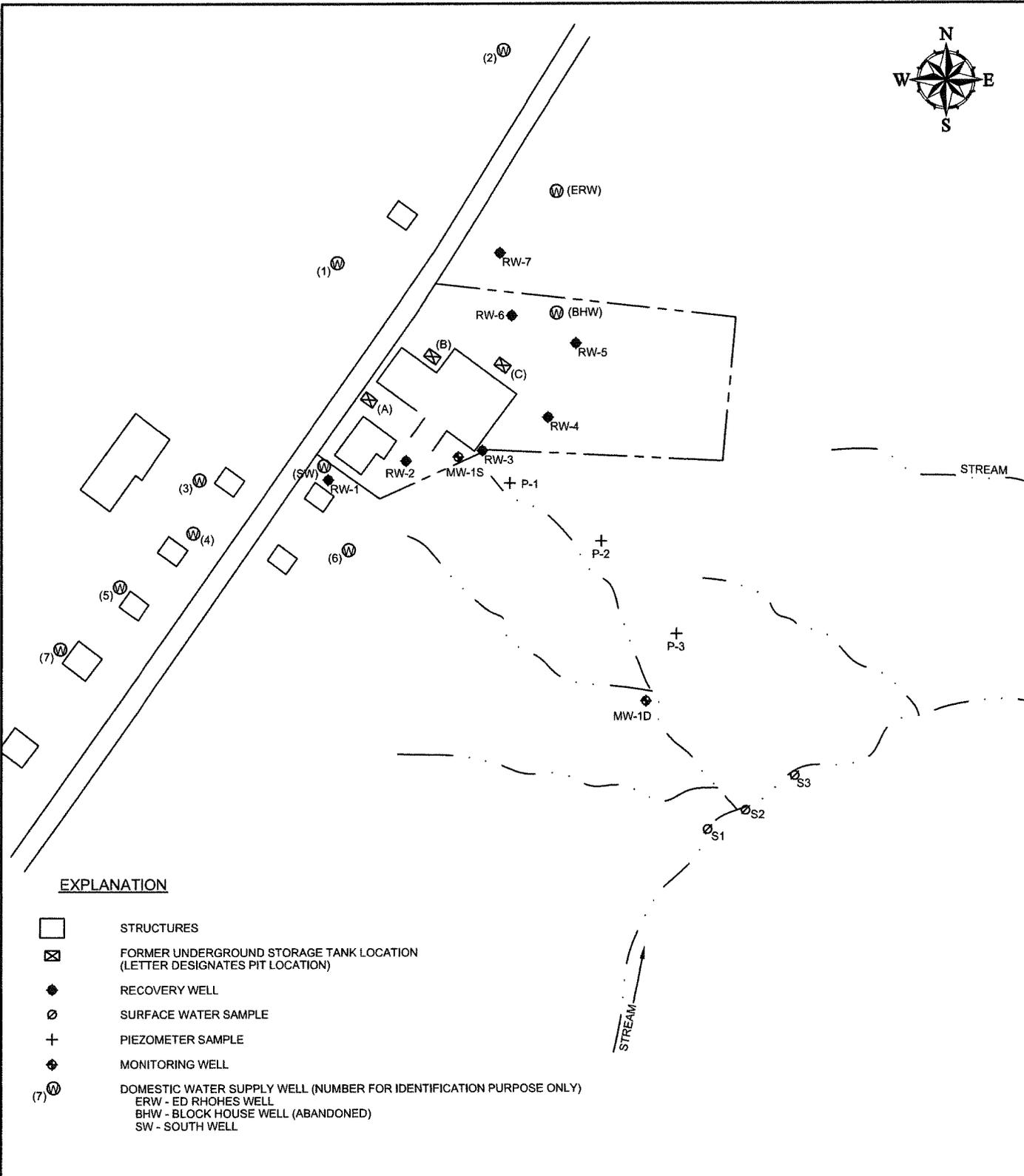


Environmental Alliance, Inc.
8215 Hermitage Road
Henrico, Virginia 23228

HANCOCK COUNTRY HAMS
3484 NC HIGHWAY 22
FRANKLINVILLE, NORTH CAROLINA

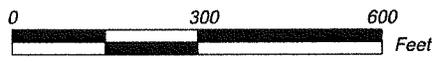
SITE LOCATION MAP

FIGURE
1



EXPLANATION

- STRUCTURES
- FORMER UNDERGROUND STORAGE TANK LOCATION (LETTER DESIGNATES PIT LOCATION)
- RECOVERY WELL
- SURFACE WATER SAMPLE
- PIEZOMETER SAMPLE
- MONITORING WELL
- DOMESTIC WATER SUPPLY WELL (NUMBER FOR IDENTIFICATION PURPOSE ONLY)
 ERW - ED RHOHES WELL
 BHW - BLOCK HOUSE WELL (ABANDONED)
 SW - SOUTH WELL

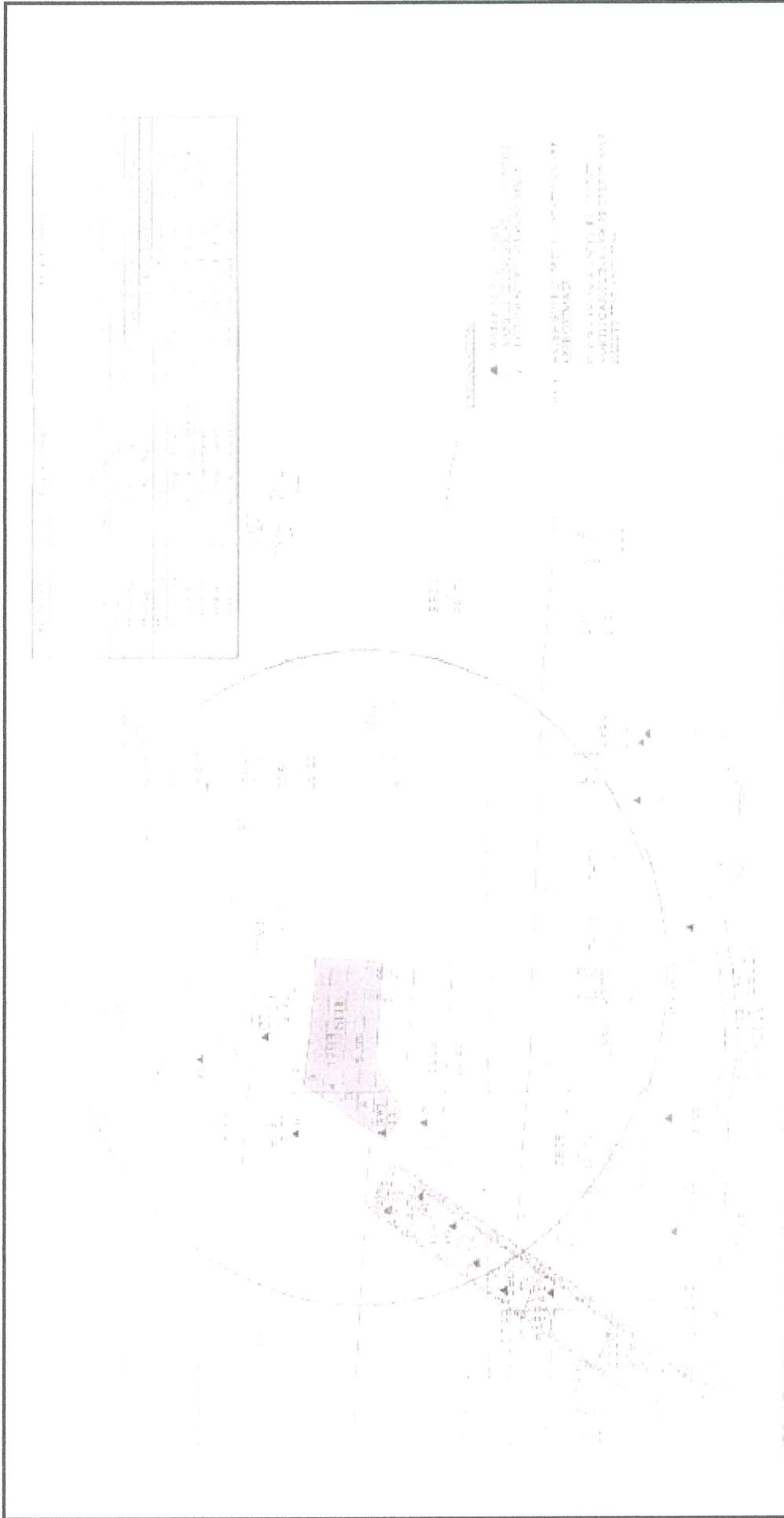


Environmental Alliance, Inc.
 8215 Hermitage Road - Henrico, Virginia 23228
 Phone: (877) 234-1141 - Fax: (302) 234-1535

**HANCOCK COUNTRY HAMS
 FRANKLINVILLE, NORTH CAROLINA**

SITE MAP

DESIGNED BY: —	DRAWN BY: AGG	UPDATED BY: —	FIGURE NO: 2
APPROVED BY: JSE	PROJECT NO: 2719	DATE: 2/7/2013	



Environmental Alliance, Inc.
8215 Heritage Road
Henrico, Virginia 23228

SCALE: 1" = 400'

DATE: 1/15/09

APPROVED BY: JSE

SOURCE: BPA ENVIRONMENTAL & ENGINEERING, INC. MARCH 23, 1998 REPORT

HANCOCK COUNTRY HAMS
3484 NC HIGHWAY 22
FRANKLINVILLE, NORTH CAROLINA

WATER SUPPLY WELLS WITHIN
1500 FEET OF THE SITE

FIGURE 3



EXPLANATION

- (2) SAMPLE IDENTIFICATION NUMBER
- ▲ DOMESTIC WATER SUPPLY WELL
- - - - - APPROXIMATE PROPERTY BOUNDARY
- 750 - TOPOGRAPHIC CONTOUR LINE
- - - - - STREAM
- ⊕ MONITORING WELL

SCALE:
1" = 500

DATE:
1/15/09

APPROVED
BY: JSE

SOURCE: 1974 USGS TOPOGRAPHIC MAP, GRAYS
CHAPEL QUADRANGLE

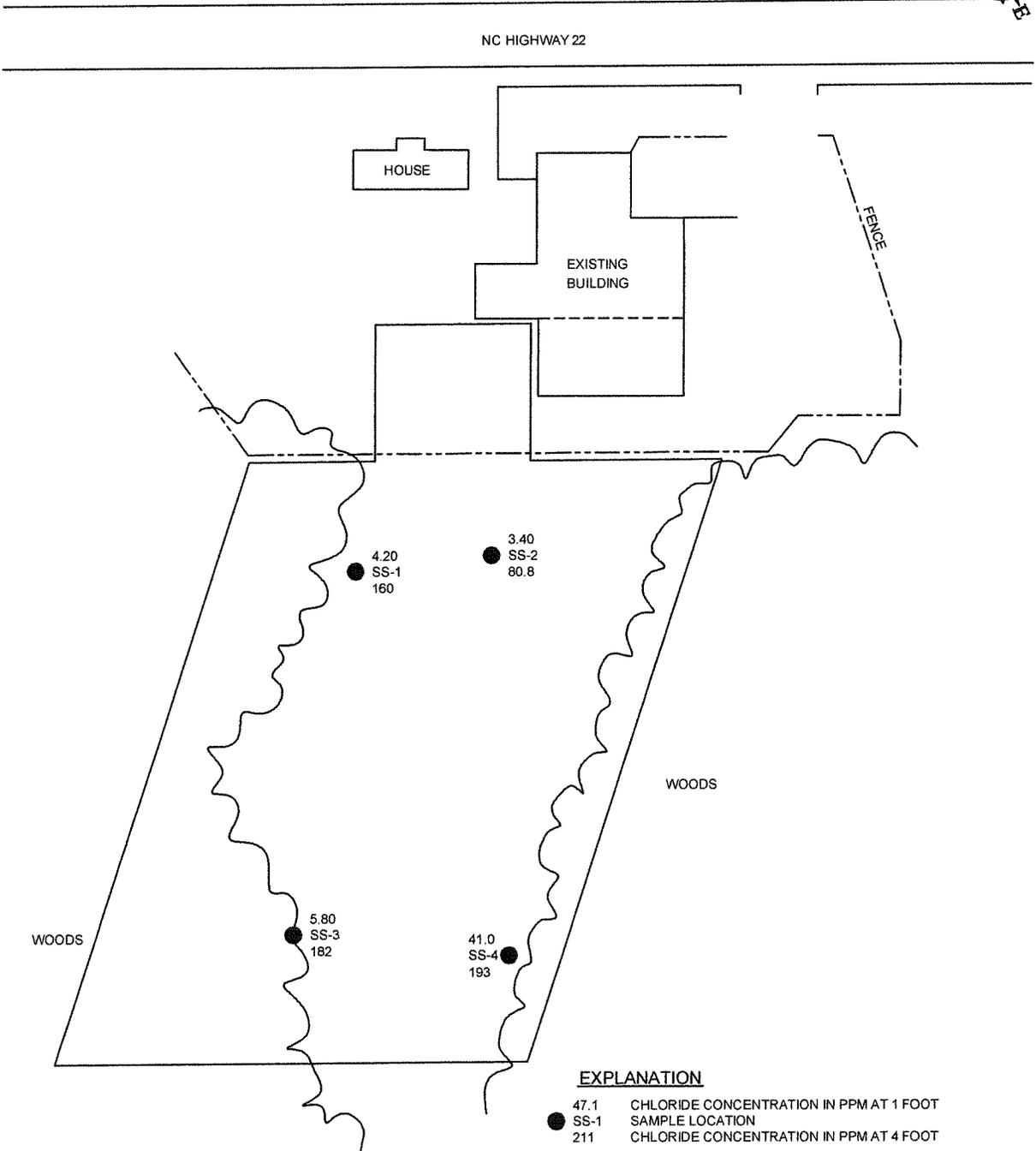
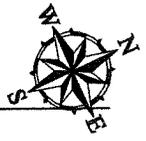
HANCOCK COUNTRY HAMS
3484 NC HIGHWAY 22
FRANKLINVILLE, NORTH CAROLINA



Environmental Alliance, Inc.
8215 Hermitage Road
Henrico, Virginia 23228

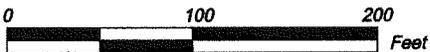
Topographic Relationship of Water Wells to the Site

FIGURE
4



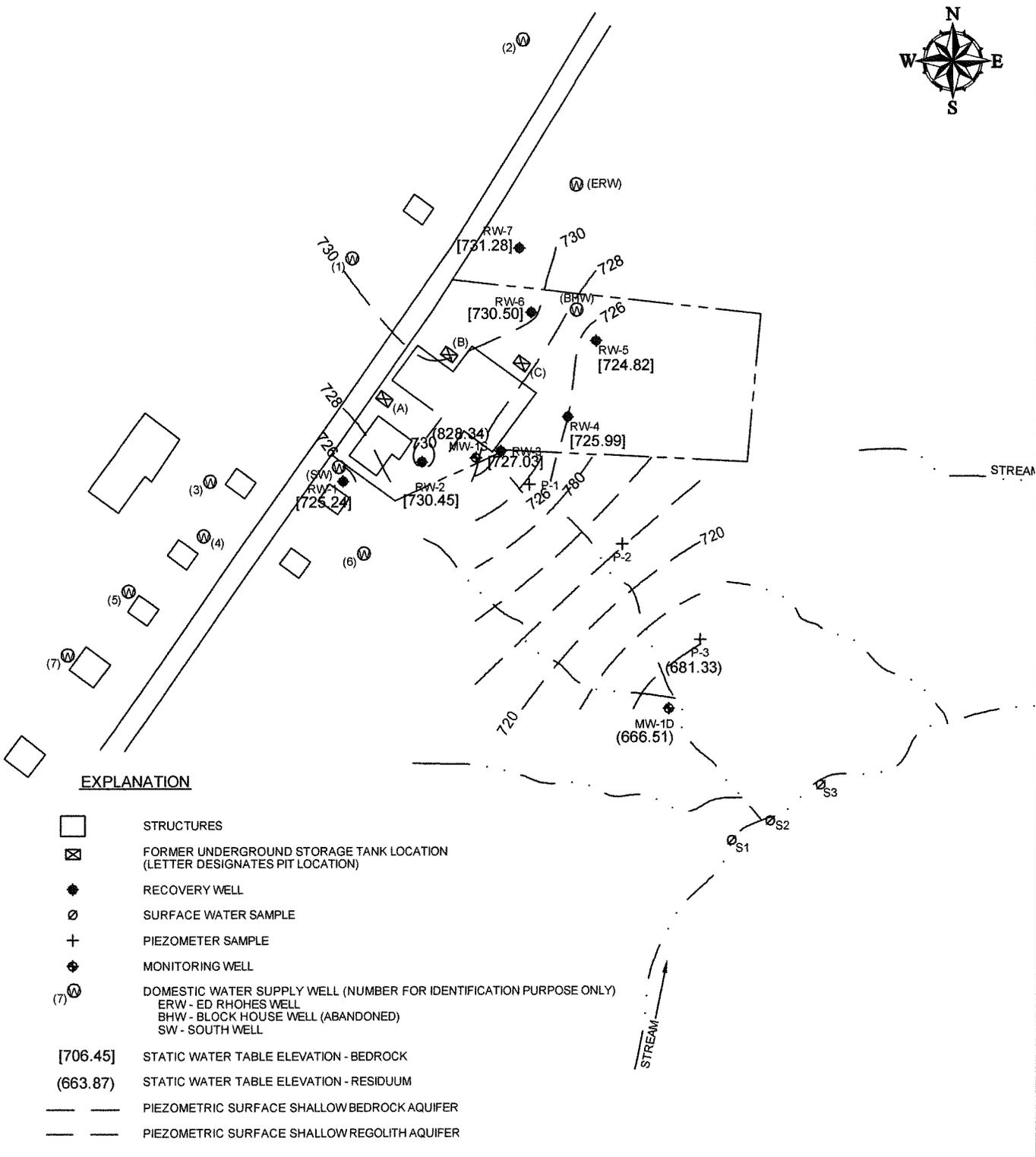
EXPLANATION

- 47.1 CHLORIDE CONCENTRATION IN PPM AT 1 FOOT
- SS-1 SAMPLE LOCATION
- 211 CHLORIDE CONCENTRATION IN PPM AT 4 FOOT
- BDL BELOW DETECTION LIMIT
- PREVIOUS SOIL SAMPLING AREA



Environmental Alliance, Inc.
 8215 Hermitage Road - Henrico, Virginia 23228
 Phone: (877) 234-1141 - Fax: (302) 234-1535

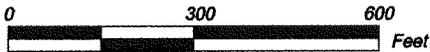
HANCOCK COUNTRY HAMS FRANKLINVILLE, NORTH CAROLINA			
SOIL CHLORIDE CONCENTRATION - 2014			
DESIGNED BY:	DRAWN BY: SKJ	UPDATED BY: —	FIGURE NO: 6
APPROVED BY:	PROJECT NO. 2719	DATE: 3/10/2014	



EXPLANATION

- STRUCTURES
- FORMER UNDERGROUND STORAGE TANK LOCATION (LETTER DESIGNATES PIT LOCATION)
- RECOVERY WELL
- SURFACE WATER SAMPLE
- PIEZOMETER SAMPLE
- MONITORING WELL
- DOMESTIC WATER SUPPLY WELL (NUMBER FOR IDENTIFICATION PURPOSE ONLY)
 ERW - ED RHOES WELL
 BHW - BLOCK HOUSE WELL (ABANDONED)
 SW - SOUTH WELL
- [706.45] STATIC WATER TABLE ELEVATION - BEDROCK
- (663.87) STATIC WATER TABLE ELEVATION - RESIDUUM
- --- PIEZOMETRIC SURFACE SHALLOW BEDROCK AQUIFER
- --- PIEZOMETRIC SURFACE SHALLOW REGOLITH AQUIFER

J:\EAL_files\2719_Smithfield_Hancock.dwg\14--February\CAD\2719-GWFlow--022014.dwg

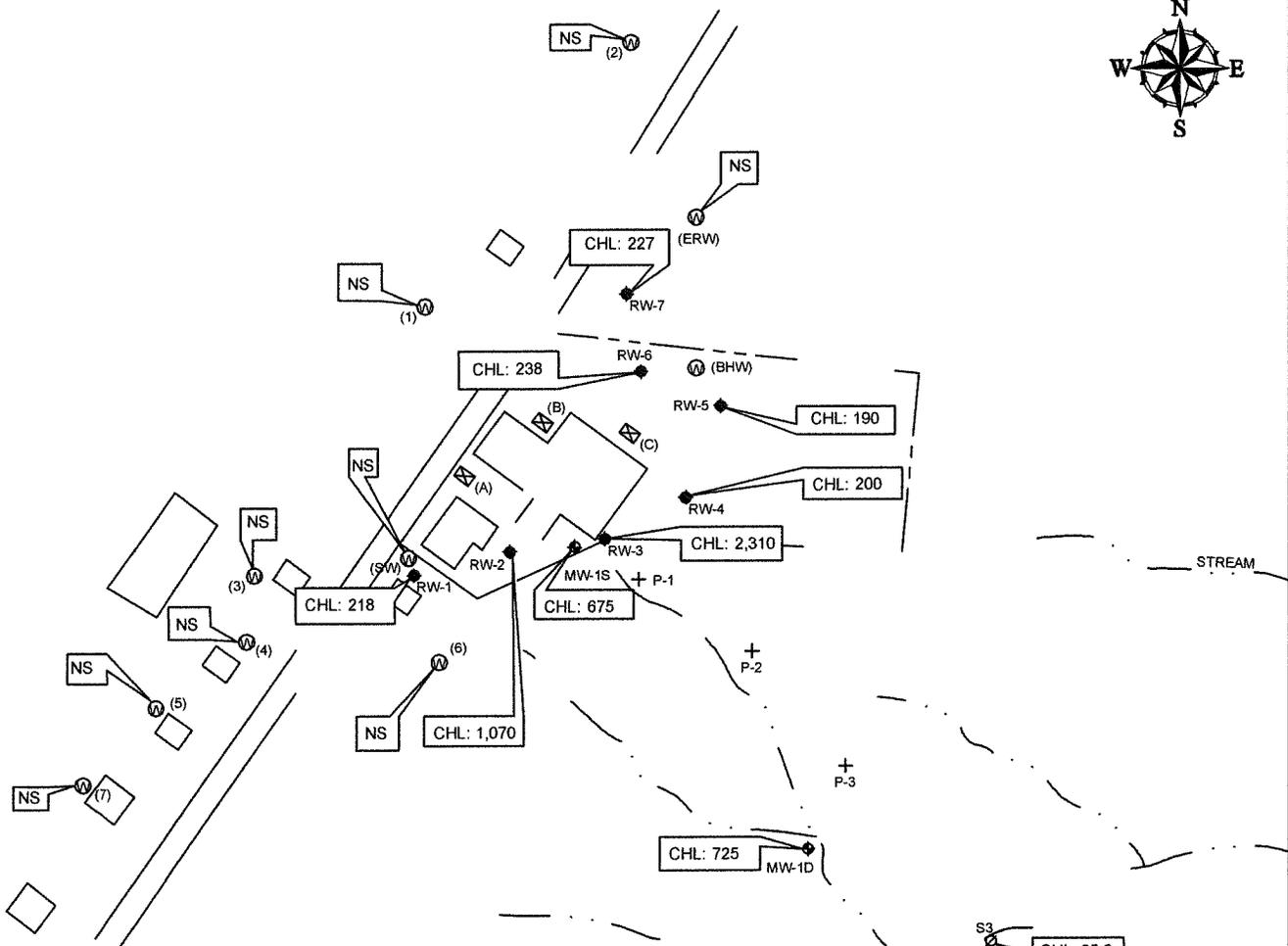


Environmental Alliance, Inc.
 8215 Hermitage Road - Henrico, Virginia 23228
 Phone: (877) 234-1141 - Fax: (302) 234-1535

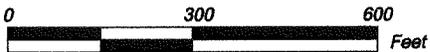
**HANCOCK COUNTRY HAMS
 FRANKLINVILLE, NORTH CAROLINA**

**GROUNDWATER FLOW MAP
 FEBRUARY 20, 2014**

DESIGNED BY: JSE	DRAWN BY: SKJ	UPDATED BY: ---	FIGURE NO. 7
APPROVED BY:	PROJECT NO. 2719	DATE: 3/10/2014	



- EXPLANATION**
- STRUCTURES
 - ⊠ FORMER UNDERGROUND STORAGE TANK LOCATION (LETTER DESIGNATES PIT LOCATION)
 - ◆ RECOVERY WELL
 - SURFACE WATER SAMPLE
 - ⊕ PIEZOMETER SAMPLE
 - ◆ MONITORING WELL
 - (7) Ⓜ DOMESTIC WATER SUPPLY WELL (NUMBER FOR IDENTIFICATION PURPOSE ONLY)
 ERW - ED RHOES WELL
 BHW - BLOCK HOUSE WELL (ABANDONED)
 SW - SOUTH WELL
- CHL: CHLORIDE (mg/L)
 NA: NOT ANALYZED
 NS: NOT SAMPLED



Environmental Alliance, Inc.
 8215 Hermitage Road - Henrico, Virginia 23228
 Phone: (877) 234-1141 - Fax: (302) 234-1535

HANCOCK COUNTRY HAMS FRANKLINVILLE, NORTH CAROLINA			
GROUNDWATER ANALYTICAL DATA FEBRUARY 2014			
DESIGNED BY:	DRAWN BY: SKJ	UPDATED BY: —	FIGURE NO. 8
APPROVED BY:	PROJECT NO. 2719	DATE 3/10/2014	

Source: Trigon Engineering, Inc., 2008

APPENDIX A
LABORATORY RESULTS



REI Consultants, Inc.
PO Box 286
Beaver, WV 25813
TEL: 304.255.2500
Website: www.reiclabs.com

Improving the environment, one client at a time...

3029-C Peters Creek Road
Roanoke, VA 24019
TEL: 540.777.1276

101 17th Street
Ashland, KY 41101
TEL: 606.393.5027

1557 Commerce Road, Suite 201
Verona, VA 24482
TEL: 540.248.0183

16 Commerce Drive
Westover, WV 26501
TEL: 304.241.5861

Wednesday, February 26, 2014

Mr. Matt Richardson
ENVIRONMENTAL ALLIANCE INC
8215 HERMITAGE RD
HENRICO, VA 23228

TEL: (804) 658-5550

FAX: (302) 234-1535

RE: 2719

Work Order #: 1402K70

Dear Mr. Matt Richardson:

REI Consultants, Inc. received 20 sample(s) on 2/20/2014 for the analyses presented in the following report.

Sincerely,

Scott Gross

Project Manager



Client: ENVIRONMENTAL ALLIANCE INC

Project: 2719

The analytical results presented in this report were produced using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. Verification of required sample preservation (as required) is recorded on associated laboratory logs. Any deviation from compliance or method modification is identified within the body of this report by a qualifier footnote which is defined at the bottom of this page.

All sample results for solid samples are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as TTHM and HAA5, may vary slightly from the sum of the individual parameter results, due to rounding of individual results, as required by EPA.

The test results in this report meet all NELAP (and/or VELAP) requirements for parameters except as noted in this report.

Please note if the sample collection time is not provided on the Chain of Custody, the default recording will be 0:00:00. This may cause some tests to be apparently analyzed out of hold.

All tests performed by REIC Service Centers are designated by an annotation on the test code. All other tests were performed by REIC's Main Laboratory in Beaver, WV.

This report may not be reproduced, except in full, without the written approval of REIC.

DEFINITIONS:

MCL: Maximum Contaminant Level

MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.

Mg/Kg or mg/L: Units of part per million (PPM) - milligram per Kilogram (weight/weight) or milligram per Liter (weight/volume).

NA: Not Applicable

ND: Not Detected at the PQL or MDL

PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.

Qual: Qualifier that applies to the analyte reported.

TIC: Tentatively Identified Compound, Estimated Concentration denoted by "J" qualifier.

Ug/Kg or ug/L: Units of part per billion (PPB) - microgram per kilogram (weight/weight) or microgram per liter (weight/volume).

QUALIFIERS:

*: Reported value exceeds required MCL

B: Analyte detected in the associated Method Blank at a concentration > 1/2 the PQL

E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be consider estimated.

H: Holding time for preparation or analysis has been exceeded.

J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the MDL. The result reported is an estimate.

S: % REC (% recovery) exceeds control limits

CERTIFICATIONS:

Beaver, WV: WVDHHR 00412CM, WVDEP 060, VADCLS 00281, KYDEP 90039, TNDEQ TN02926, NCDWQ 466, PADEP 68-00839, VADCLS (VELAP) 460148

Bioassay (Beaver, WV): WVDEP 060, VADCLS(VELAP) 460148, PADEP 68-00839

Roanoke, VA: VADCLS(VELAP) 460150

Verona, VA: VADCLS(VELAP) 460151

Ashland, KY: KYDEP 00094, WV 389

Morgantown, WV: WVDHHR 003112M, WVDEP 387

REI Consultants, Inc. - Analytical Report

WO#: 1402K70

Date Reported: 2/26/2014

Client:	ENVIRONMENTAL ALLIANCE INC	Collection Date:	2/20/2014 10:20:00 AM
Project:	2719	Date Received:	2/20/2014
Lab ID:	1402K70-02A	Matrix:	Groundwater
Client Sample ID:	RW4 0220141020	Site ID:	SMITHFIELD, FRANKLINVILLE, NC

Analysis	Result	MDL	PQL	MCL Qual	Units	Prep Date	Date Analyzed	NELAC
ANIONS by ION CHROMATOGRAPHY					Method: EPA 300.0			Analyst: CF
Chloride	200	0.50	5.00	NA	mg/L	02/21/14 11:14PM		PAVA

REI Consultants, Inc. - Analytical Report

WO#: 1402K70

Date Reported: 2/26/2014

Client:	ENVIRONMENTAL ALLIANCE INC	Collection Date:	2/20/2014 10:50:00 AM
Project:	2719	Date Received:	2/20/2014
Lab ID:	1402K70-03A	Matrix:	Groundwater
Client Sample ID:	RW5 0220141050	Site ID:	SMITHFIELD, FRANKLINVILLE, NC

Analysis	Result	MDL	PQL	MCL Qual	Units	Prep Date	Date Analyzed	NELAC
ANIONS by ION CHROMATOGRAPHY					Method: EPA 300.0			Analyst: CF
Chloride	190	0.50	5.00	NA	mg/L	02/21/14 11:33PM		PAVA

REI Consultants, Inc. - Analytical Report

WO#: 1402K70

Date Reported: 2/26/2014

Client:	ENVIRONMENTAL ALLIANCE INC	Collection Date:	2/20/2014 11:20:00 AM
Project:	2719	Date Received:	2/20/2014
Lab ID:	1402K70-05A	Matrix:	Solid
Client Sample ID:	SS204 0220141120	Site ID:	SMITHFIELD, FRANKLINVILLE, NC

Analysis	Result	MDL	PQL	MCL	Qual	Units	Prep Date	Date Analyzed	NELAC
ANIONS by IC, WATER SOLUBLE				Method: SW9056			Analyst: CF		
Chloride	80.8	2.00	20.0	NA		mg/Kg	02/22/14 6:49AM	PAVA	

REI Consultants, Inc. - Analytical Report

WO#: 1402K70

Date Reported: 2/26/2014

Client:	ENVIRONMENTAL ALLIANCE INC	Collection Date:	2/20/2014 11:45:00 AM
Project:	2719	Date Received:	2/20/2014
Lab ID:	1402K70-07A	Matrix:	Solid
Client Sample ID:	SS104 0220141145	Site ID:	SMITHFIELD, FRANKLINVILLE, NC

Analysis	Result	MDL	PQL	MCL Qual	Units	Prep Date	Date Analyzed	NELAC
ANIONS by IC, WATER SOLUBLE					Method: SW9056			Analyst: CF
Chloride	160	2.00	20.0	NA	mg/Kg	02/22/14 7:27AM		PAVA

REI Consultants, Inc. - Analytical Report

WO#: 1402K70

Date Reported: 2/26/2014

Client:	ENVIRONMENTAL ALLIANCE INC	Collection Date:	2/19/2014 1:00:00 PM
Project:	2719	Date Received:	2/20/2014
Lab ID:	1402K70-10A	Matrix:	Groundwater
Client Sample ID:	RW6 0219141300	Site ID:	SMITHFIELD, FRANKLINVILLE, NC

Analysis	Result	MDL	PQL	MCL Qual	Units	Prep Date	Date Analyzed	NELAC
ANIONS by ION CHROMATOGRAPHY					Method: EPA 300.0			Analyst: CF
Chloride	238	0.50	5.00	NA	mg/L		02/21/14 11:52PM	PAVA

REI Consultants, Inc. - Analytical Report

WO#: 1402K70

Date Reported: 2/26/2014

Client:	ENVIRONMENTAL ALLIANCE INC	Collection Date:	2/19/2014 2:15:00 PM
Project:	2719	Date Received:	2/20/2014
Lab ID:	1402K70-11A	Matrix:	Groundwater
Client Sample ID:	RW7 0219141415	Site ID:	SMITHFIELD, FRANKLINVILLE, NC

Analysis	Result	MDL	PQL	MCL	Qual	Units	Prep Date	Date Analyzed	NELAC
ANIONS by ION CHROMATOGRAPHY						Method: EPA 300.0			Analyst: CF
Chloride	227	0.50	5.00	NA		mg/L		02/22/14 12:11AM	PAVA

REI Consultants, Inc. - Analytical Report

WO#: 1402K70

Date Reported: 2/26/2014

Client: ENVIRONMENTAL ALLIANCE INC
Project: 2719
Lab ID: 1402K70-12A
Client Sample ID: MW1D 0219141535

Collection Date: 2/19/2014 3:35:00 PM
Date Received: 2/20/2014
Matrix: Groundwater
Site ID: SMITHFIELD, FRANKLINVILLE, NC

Analysis	Result	MDL	PQL	MCL	Qual	Units	Prep Date	Date Analyzed	NELAC
ANIONS by ION CHROMATOGRAPHY						Method: EPA 300.0		Analyst: CF	
Chloride	725	5.00	50.0	NA		mg/L	02/22/14 12:30AM	PA/VA	

REI Consultants, Inc. - Analytical Report

WO#: 1402K70

Date Reported: 2/26/2014

Client:	ENVIRONMENTAL ALLIANCE INC	Collection Date:	2/19/2014 2:50:00 PM
Project:	2719	Date Received:	2/20/2014
Lab ID:	1402K70-14A	Matrix:	Groundwater
Client Sample ID:	S2 0219141450	Site ID:	SMITHFIELD, FRANKLINVILLE, NC

Analysis	Result	MDL	PQL	MCL Qual	Units	Prep Date	Date Analyzed	NELAC
ANIONS by ION CHROMATOGRAPHY								
					Method: EPA 300.0			Analyst: CF
Chloride	49.4	0.20	2.00	NA	mg/L	02/22/14 2:43AM		PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1402K70

Date Reported: 2/26/2014

Client:	ENVIRONMENTAL ALLIANCE INC	Collection Date:	2/19/2014 3:00:00 PM
Project:	2719	Date Received:	2/20/2014
Lab ID:	1402K70-15A	Matrix:	Groundwater
Client Sample ID:	S3 0219141500	Site ID:	SMITHFIELD, FRANKLINVILLE, NC

Analysis	Result	MDL	PQL	MCL Qual	Units	Prep Date	Date Analyzed	NELAC
ANIONS by ION CHROMATOGRAPHY			Method: EPA 300.0			Analyst: CF		
Chloride	35.2	0.10	1.00	NA	mg/L	02/22/14 3:02AM	PAVA	

REI Consultants, Inc. - Analytical Report

WO#: 1402K70

Date Reported: 2/26/2014

Client:	ENVIRONMENTAL ALLIANCE INC	Collection Date:	2/19/2014 4:45:00 PM
Project:	2719	Date Received:	2/20/2014
Lab ID:	1402K70-16A	Matrix:	Groundwater
Client Sample ID:	RW1 0219141645	Site ID:	SMITHFIELD, FRANKLINVILLE, NC

Analysis	Result	MDL	PQL	MCL Qual	Units	Prep Date	Date Analyzed	NELAC
ANIONS by ION CHROMATOGRAPHY			Method: EPA 300.0			Analyst: CF		
Chloride	218	0.50	5.00	NA	mg/L	02/22/14 3:20AM	PAVA	

REI Consultants, Inc. - Analytical Report

WO#: 1402K70

Date Reported: 2/26/2014

Client:	ENVIRONMENTAL ALLIANCE INC	Collection Date:	2/20/2014 9:10:00 AM
Project:	2719	Date Received:	2/20/2014
Lab ID:	1402K70-17A	Matrix:	Groundwater
Client Sample ID:	MW1S 0220140910	Site ID:	SMITHFIELD, FRANKLINVILLE, NC

Analysis	Result	MDL	PQL	MCL Qual	Units	Prep Date	Date Analyzed	NELAC
ANIONS by ION CHROMATOGRAPHY								Analyst: CF
Chloride	675	2.50	25.0	NA	mg/L		02/22/14 3:39AM	PA/VA

REI Consultants, Inc. - Analytical Report

WO#: 1402K70

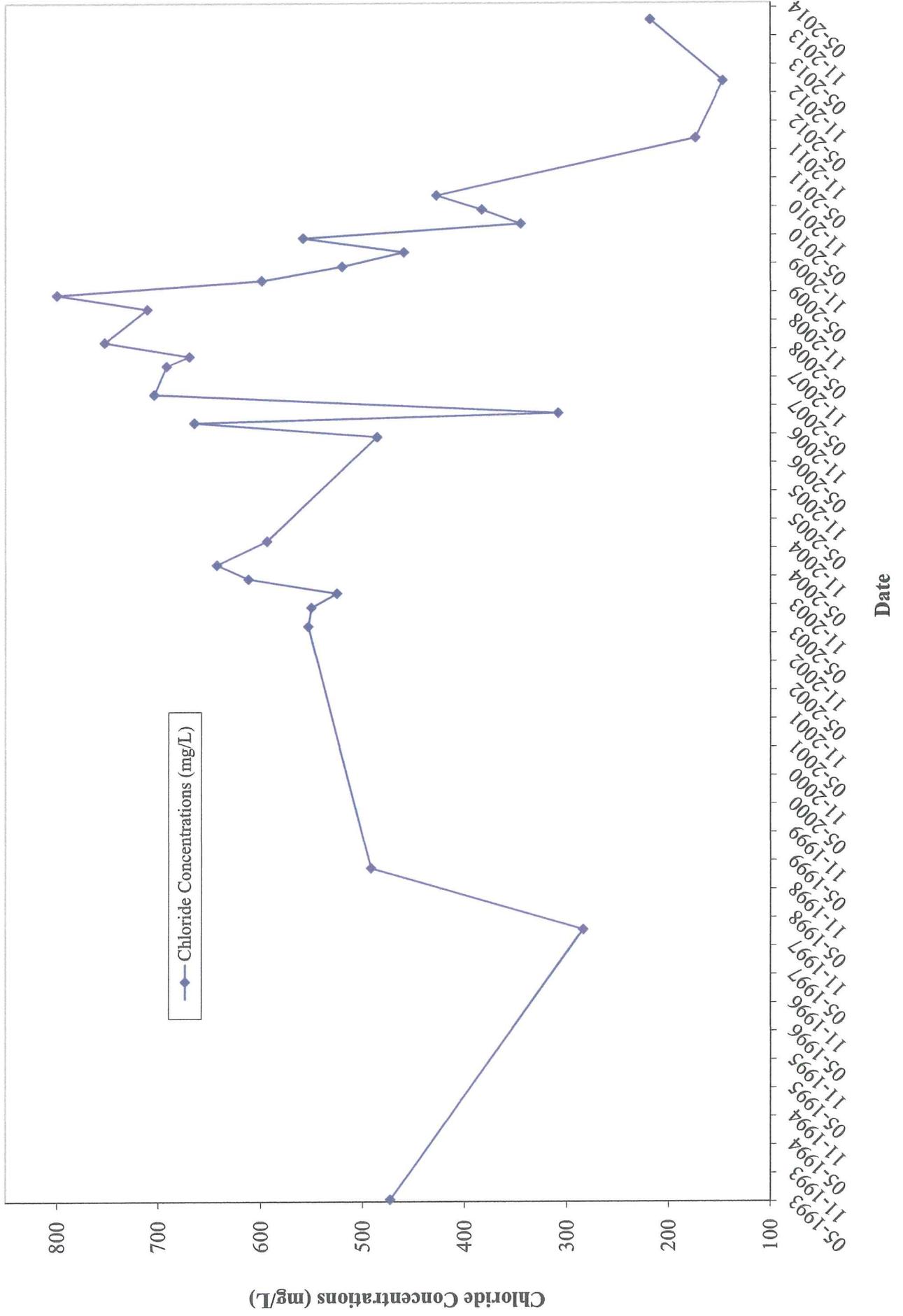
Date Reported: 2/26/2014

Client:	ENVIRONMENTAL ALLIANCE INC	Collection Date:	2/20/2014 9:05:00 AM
Project:	2719	Date Received:	2/20/2014
Lab ID:	1402K70-18A	Matrix:	Groundwater
Client Sample ID:	RW3 0220140905	Site ID:	SMITHFIELD, FRANKLINVILLE, NC

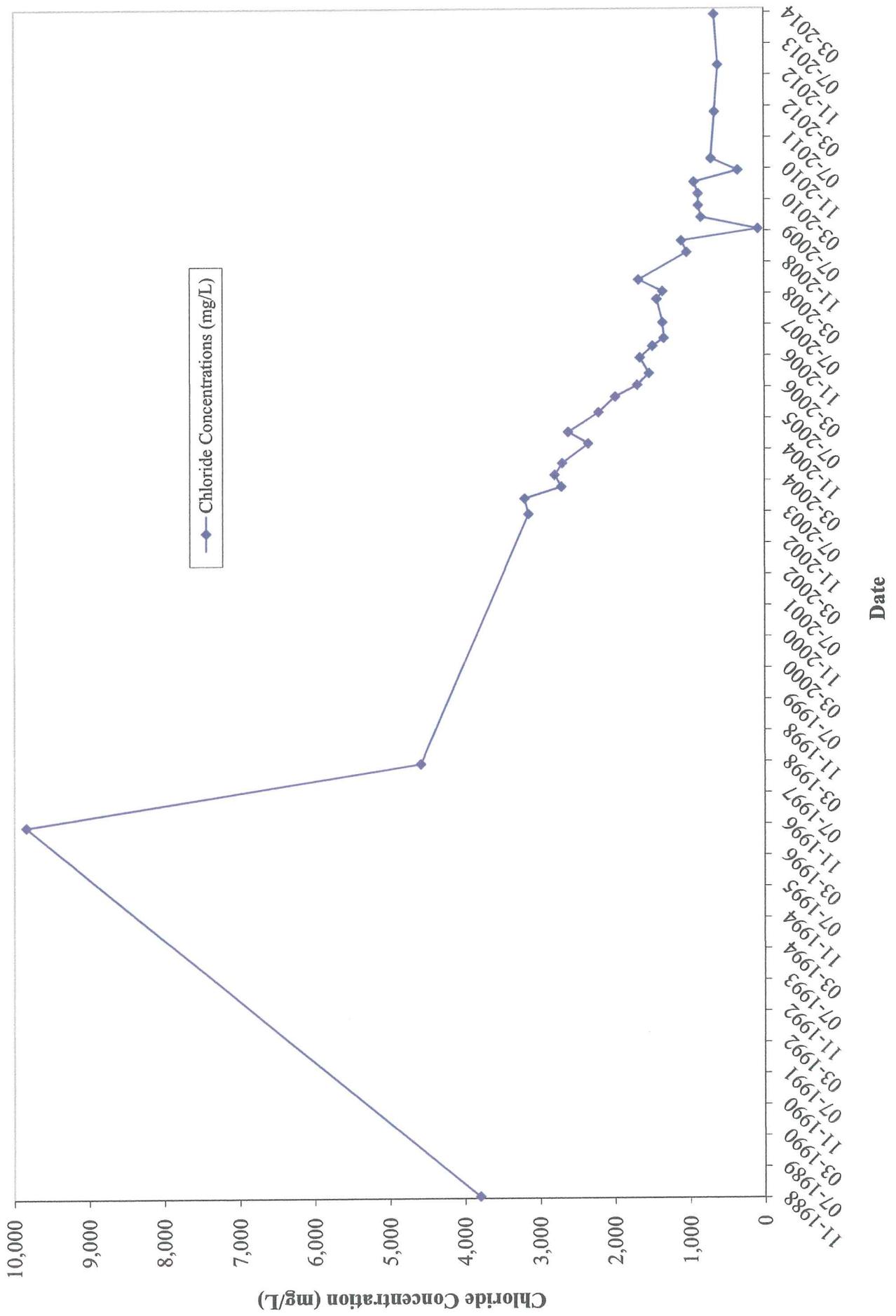
Analysis	Result	MDL	PQL	MCL Qual	Units	Prep Date	Date Analyzed	NELAC
ANIONS by ION CHROMATOGRAPHY					Method: EPA 300.0			Analyst: CF
Chloride	2,310	10.0	100	NA	mg/L	02/22/14 3:58AM		PA/VA

APPENDIX B
CHLORIDE TIME SERIES GRAPHS

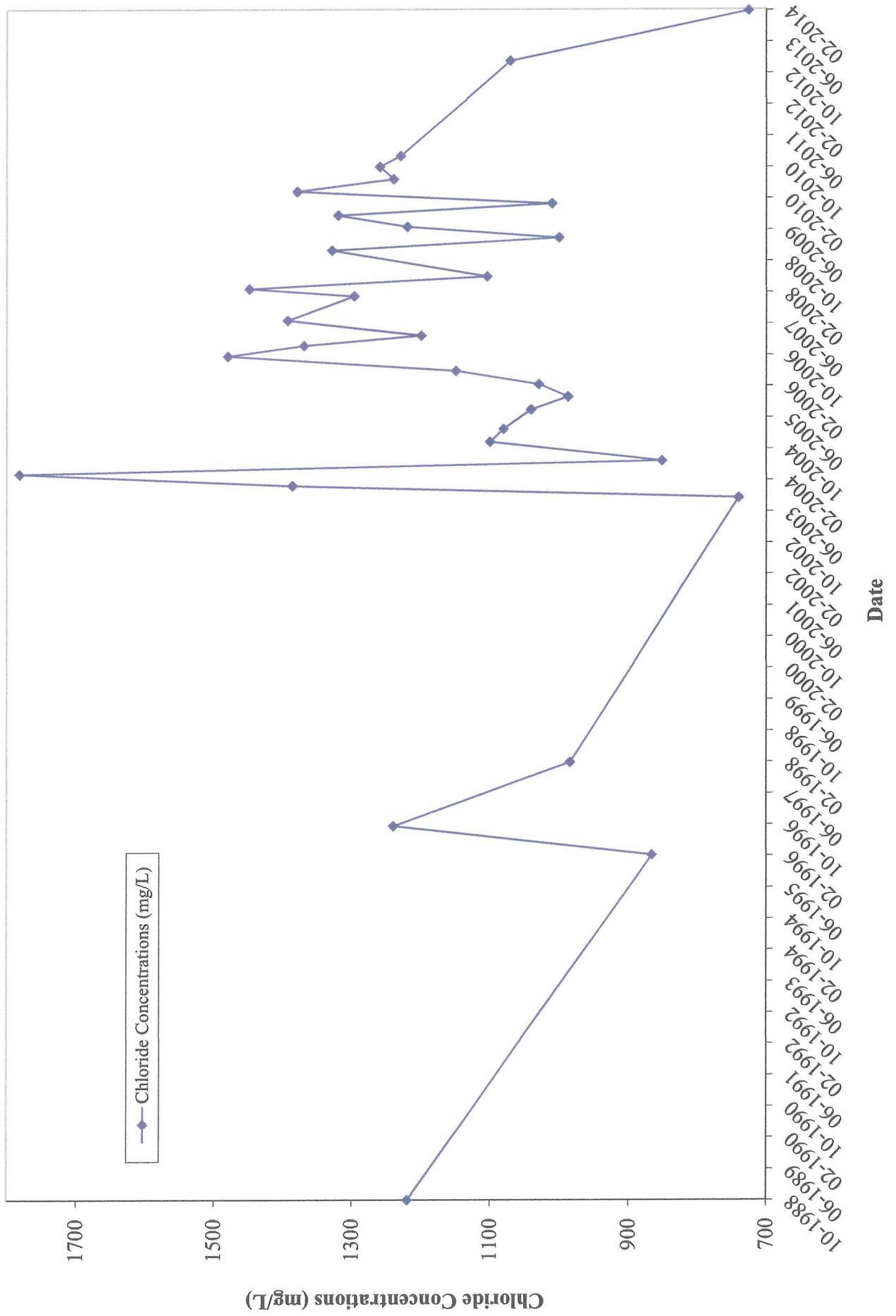
RW-1 Chloride Concentrations Over Time



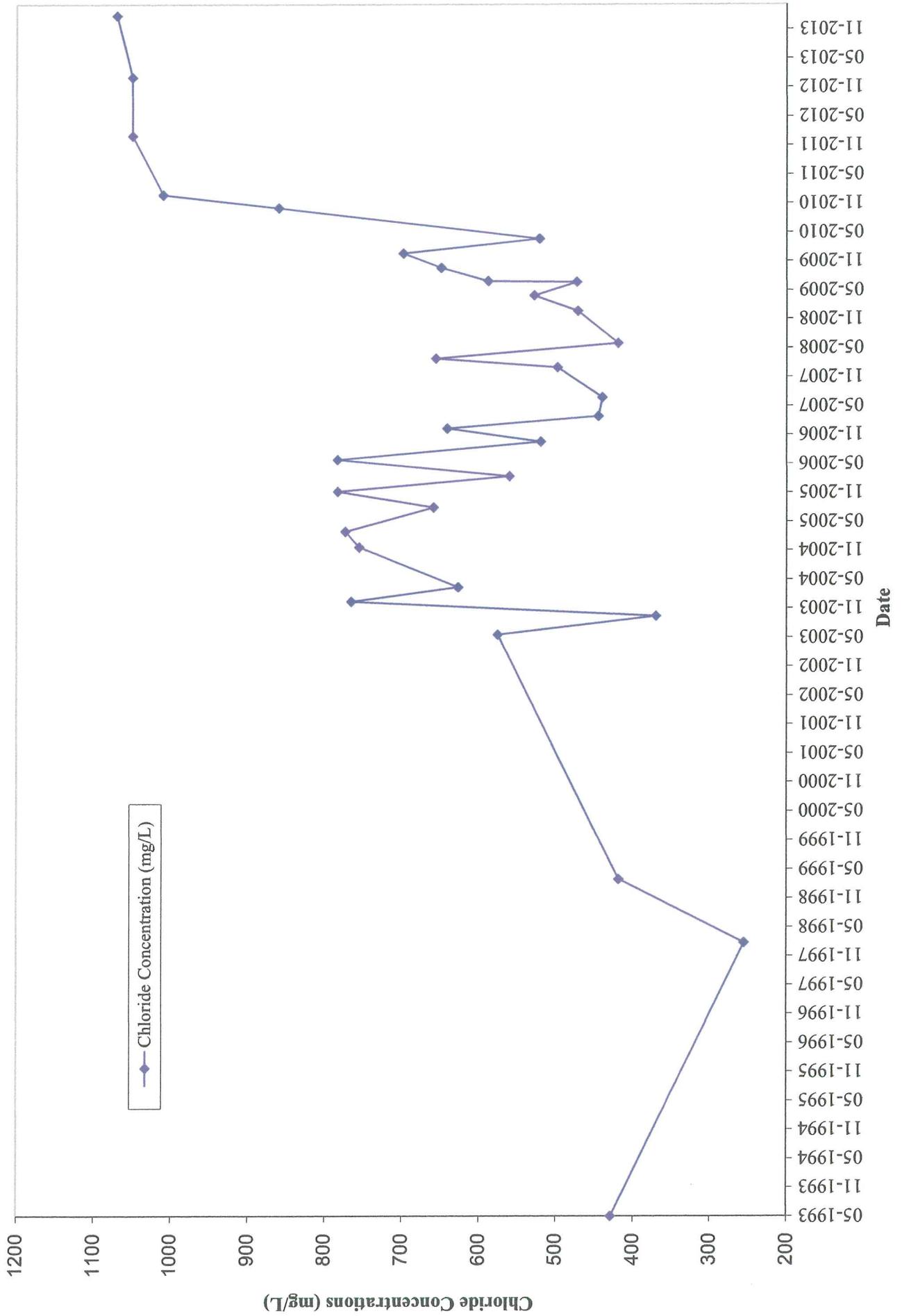
MW-1S Chloride Concentration Over Time



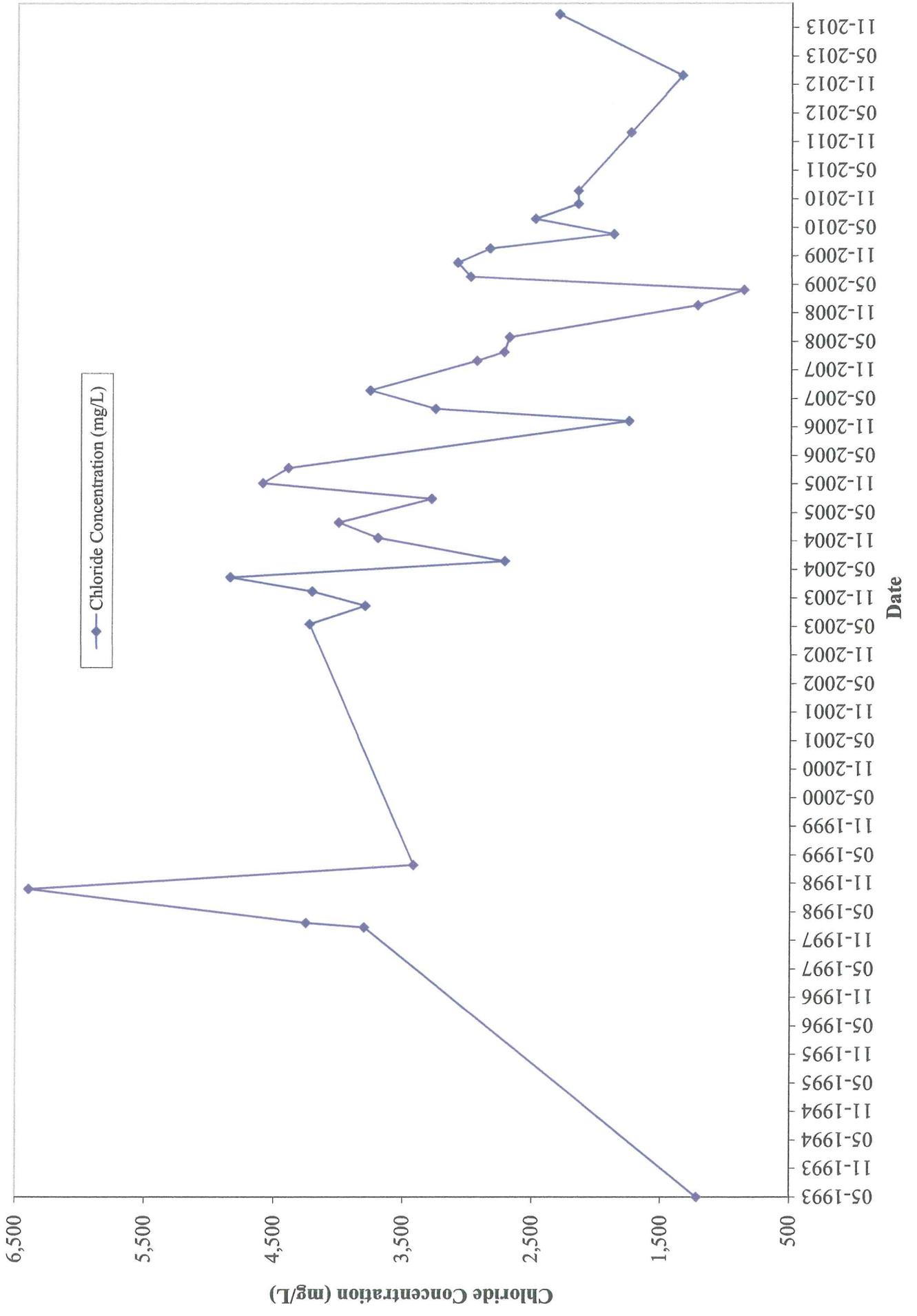
MW-1D Chloride Concentrations Over Time



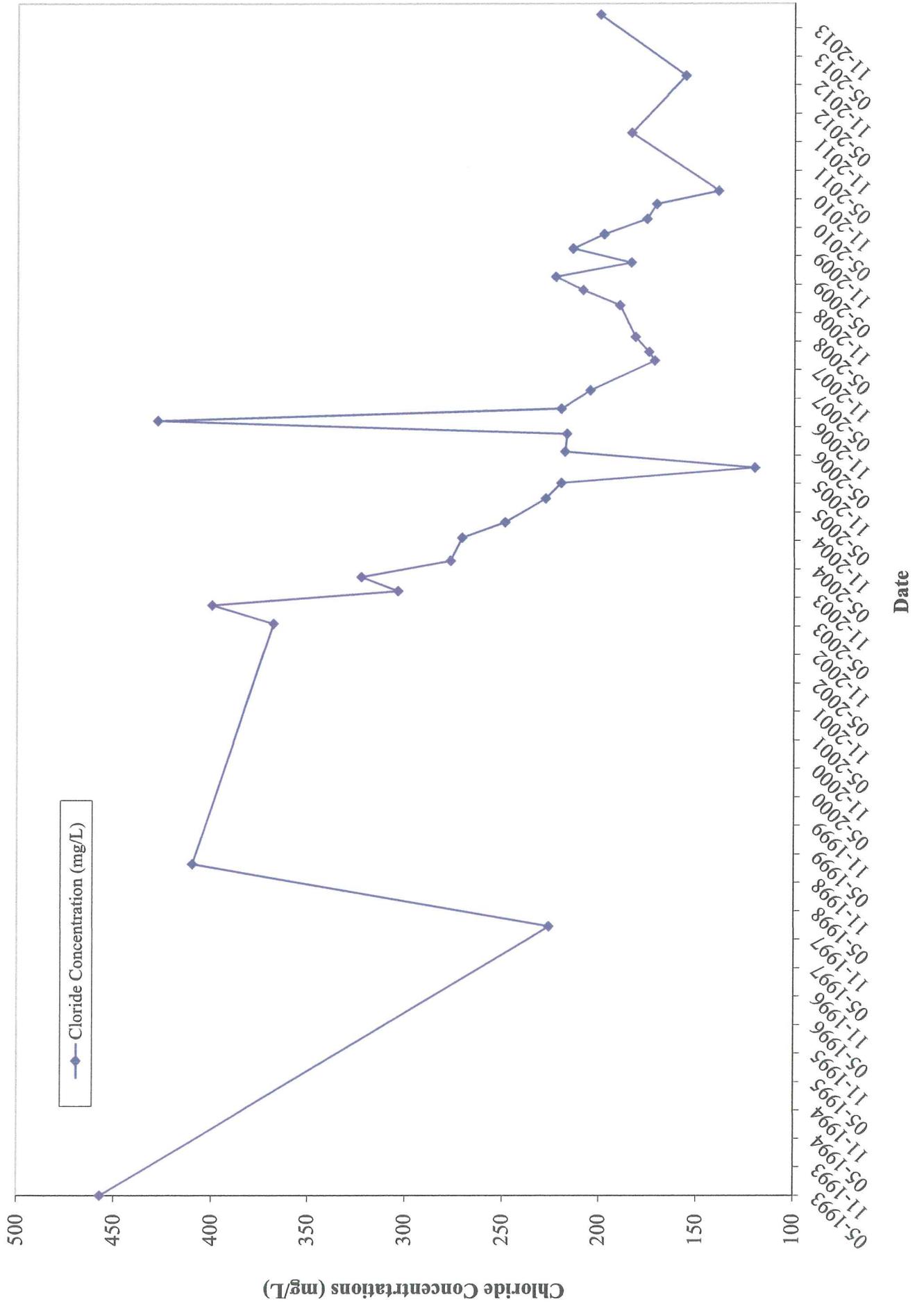
RW-2 Chloride Concentrations Over Time



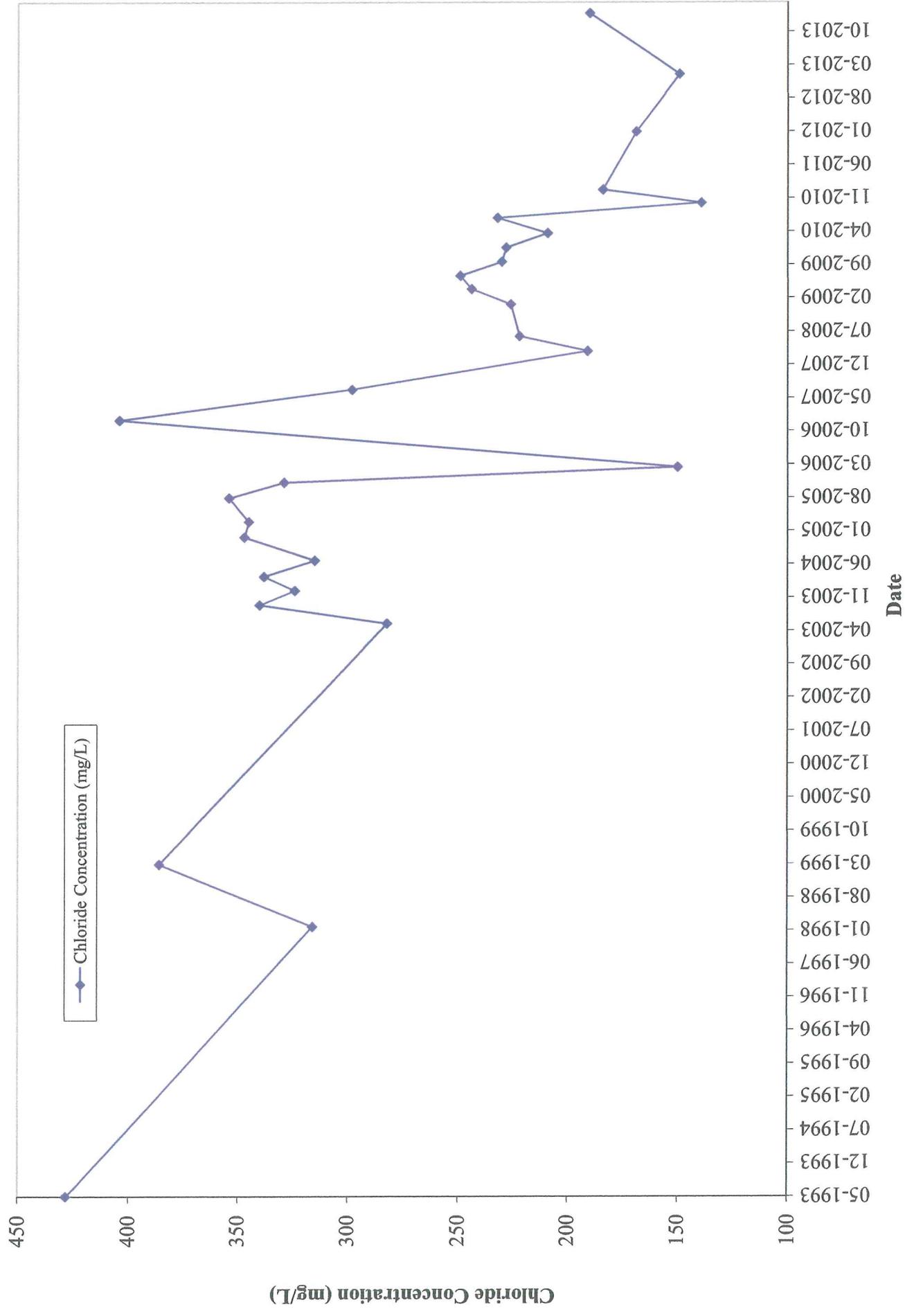
RW-3 Chloride Concentration Over Time



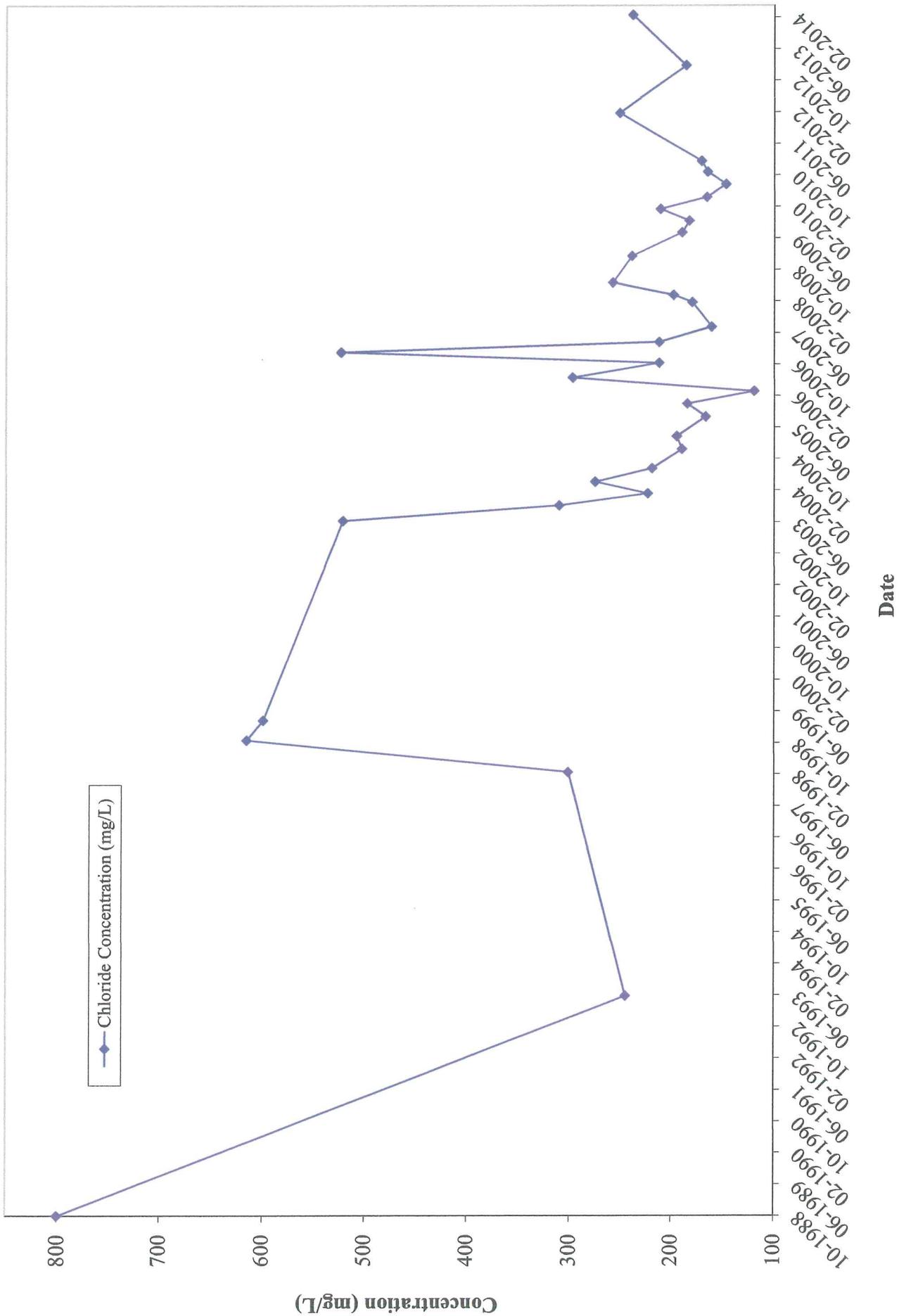
RW-4 Chloride Concentration Over Time



RW-5 Chloride Concentration Over Time



RW-6 Chloride Concentration (mg/L)



RW-7 Chloride Concentration Over Time

