



**CONESTOGA-ROVERS
& ASSOCIATES**

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January 23, 2013

Reference No. 002012

Mr. Fred Campbell
Minnesota Pollution Control Agency
Remediation Division
Superfund and Emergency Response Section
520 Lafayette Road
St. Paul, Minnesota 55155-4194

Dear Mr. Campbell:

Re: Data Report
October 2012 Residential Well Sampling Event
North Oaks, Minnesota

On behalf of Whirlpool Corporation and Reynolds Metals Company, Conestoga-Rovers & Associates (CRA) has prepared the following data report associated with the Residential Well Sampling Event conducted in North Oaks, Minnesota in October 2012. The October 2012 Residential Well Sampling Event was conducted in general accordance with the long-term monitoring program outlined in CRA's Feasibility Study Report (dated July 26, 2007 and approved by the Minnesota Pollution Control Agency (MPCA) on November 7, 2007) and as proposed in CRA's letter to MPCA dated September 7, 2012.

In October 2012, the MPCA also attempted to sample three additional residential wells outside the long-term monitoring program, located west of 2 Heron Lane (1 Heron Lane, 3 Heron Lane, and 5 Heron Lane).

A discussion of the work performed and summary of the sampling results are presented below.

SAMPLING PROGRAM

During the period from October 10, 2012 through October 18, 2012, CRA and MPCA attempted to collect samples from a total of 66 residential well locations in North Oaks. Samples were only collected from well locations where expressed permission was obtained and a water source at the residence was accessible (56 locations). Where possible, samples were collected from an outside tap and/or from an untreated water source (i.e., not softened or filtered). Prior to sampling, the tap was allowed to run (purge) for at least 20 minutes to purge the water line and pressure tank of residual water. The purge rate was measured and recorded. If a sample was collected from an outside tap, the water was directed via hose to an area of the yard that minimized the creation of pooled water or ice in an undesirable location. Field measurements for pH, conductivity, temperature, dissolved oxygen, and oxidation reduction potential (ORP) were taken after purging, at the time of sampling. Six duplicate samples, six field blank samples, and three matrix spike/matrix spike duplicate

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(MS/MSD) samples were collected for quality assurance/quality control (QA/QC) purposes. A sampling summary is provided in Table 1.

Water samples were collected directly from the tap after the purge hose was disconnected. Samples were placed on ice immediately following sample collection and were either sent by courier or hand delivered to the laboratories using standard chain-of-custody procedures. Samples were submitted for analysis of volatile organic compounds (VOCs) and chloride. VOC samples were submitted to the Minnesota Department of Health (MDH) Laboratory for low level vinyl chloride and VOC analysis by Method 524.2. A trip blank was included with each sample cooler containing VOC samples. Chloride samples were submitted to TestAmerica Laboratories for analysis by Method 300.0A.

SAMPLING RESULTS

Laboratory analytical reports and CRA's Data Quality Assessment and Validation memorandum associated with the October 2012 Residential Well Sampling Event are provided as Attachments A and B, respectively. A summary of detected compounds from the October 2012 Residential Well Sampling Event is presented in Table 2. Table 2 also presents the current MDH Health Risk Limits (HRLs) for each compound detected.

The October 2012 sampling results are generally consistent with results from previous sampling rounds conducted from October 2004 through May 2012.

Vinyl chloride (VC) concentrations from the October 2012 Residential Well Sampling Event are presented on Figure 1. In October 2012, VC was detected at three locations (2 Heron Lane, 1 Hummingbird Hill, and 15 West Shore Road). The VC detections are discussed separately, in the paragraphs below. Updated graphs of historical VC sampling results at active residential wells where VC has been detected previously are provided in Attachment C.

2 Heron Lane

VC was detected in the October 2012 sample collected from 2 Heron Lane at a concentration of 0.25 µg/L. The detected concentration is above the VC HRL (0.2 µg/L). VC had been detected previously (below the VC HRL) at this location beginning in October 2011. A graph of historical VC sampling results from 2 Heron Lane is provided in Attachment C. 2 Heron Lane is located in Area 5 west of Gilfillan Lake and is isolated from the area of VC detections observed in Area 3. The presence of VC in Area 5 west of Gilfillan Lake is inconsistent with historical results from samples collected from multiple wells in this area since 1993.

The MPCA, MDH, and CRA have been in contact with the homeowner at 2 Heron Lane regarding the October 2012 detection of VC above the VC HRL.



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On November 16, 2012, Whirlpool and Reynolds began providing bottled water to 2 Heron Lane as a precautionary, interim measure. On November 29, 2012, the MDH issued a well advisory to 2 Heron Lane based on the October 2012 detection of VC above the VC HRL. As stipulated in the amended Minnesota Decision Document (MDD) for the Highway 96 Site (signed August 26, 2008), the MPCA selected remedy for homes located in Operable Unit 4 of the Site that have been issued a well advisory due to site-related VOCs¹, is provision of a new/deeper residential well in the Prairie du Chien Aquifer. On December 6, 2012, CRA, on behalf of Whirlpool and Reynolds, sent a letter to the homeowner at 2 Heron Lane to initiate arrangements for installation of a new residential well in accordance with the amended MDD.

Installation of a new well at 2 Heron Lane is scheduled to be completed in February 2013.

1 Hummingbird Hill

VC was detected in the October 2012 sample collected from 1 Hummingbird Hill at an estimated (J) concentration of 0.077 µg/L. The presence of VC at 1 Hummingbird Hill is consistent with sampling result from April 2012. VC had not been detected previously at this location prior to April 2012. A graph of historical VC sampling results from 1 Hummingbird Hill is provided in Attachment C. 1 Hummingbird Hill is located adjacent to other locations where VC has been detected in Area 3 west of Gilfillan Lake (e.g., 2 Hummingbird Hill). As of October 2012, VC detections in samples collected from 1 Hummingbird Hill remain below the VC HRL (0.2 µg/L).

15 West Shore Road

VC was detected in the October 2012 sample collected from 15 West Shore Road at an estimated (J) concentration of 0.14 µg/L. The presence of VC at 15 West Shore Road is consistent with previous sampling results since 2007. A graph of historical VC sampling results from 15 West Shore Road is provided in Attachment C. 15 West Shore Road is located adjacent to other locations where VC has been detected in Area 3 west of Gilfillan Lake (e.g., 50 East Oaks Road, 12 West Shore Road and 13 West Shore Road). As of October 2012, VC detections in samples collected from 15 West Shore Road remain at or below the VC HRL (0.2 µg/L).

There were no detections of VC at any of the other 53 residential well locations sampled in October 2012.

Two additional Site-related VOCs¹ (trichloroethene and 1,1-dichloroethene) and three other frequently-detected compounds (cis-1,2-dichloroethene, dichlorodifluoromethane, and dichlorofluoromethane) were detected in residential well samples collected in October 2012. All

¹ As identified on Table 1 of MPCA's MDD Amendment dated August 26, 2008 (1,1,2-trichloroethene (TCE), vinyl chloride, trans-1,2-dichloroethene, 1,1-dichloroethane, benzene, toluene, and methyl ethyl ketone).



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detected concentrations are below their respective HRLs. These additional VOC detections are discussed separately, in the paragraphs below.

Trichloroethene (TCE) was detected in one residential well sample collected in October 2012 (see Table 2) at an estimated (J) concentration of 0.051 µg/L (4 West Shore Road). TCE has not been detected previously at this location, or at any other residential well location sampled since 1992. The October 2012 detection of TCE is below the TCE HRL (5 µg/L). The presence of TCE at 4 West Shore Road is inconsistent with previous sampling results and may be attributed to residential septic systems.

1,1-dichloroethane (11DCA) was detected in 12 residential well samples collected in October 2012 (see Table 2) at concentrations ranging from an estimated (J) 0.071 µg/L (14 Ski Lane) to 2.5 µg/L (22 Duck Pass Road). The October 2012 detections of 11DCA were from residential wells located within Area 3 west of Gilfillan Lake and Area 4 along Duck Pass Road, which is consistent with previous sampling results. As of October 2012, 11DCA detections in residential wells remain well below the 11DCA HRL (100 µg/L).

Cis-1,2-dichloroethene (C12DCE) was detected in four residential well samples collected in October 2012 (see Table 2) at concentrations ranging from an estimated (J) 0.058 µg/L (1 Hummingbird Hill) to 0.24 µg/L (15 West Shore Road). The October 2012 detections of C12DCE were from residential wells located within Area 3 west of Gilfillan Lake, at locations where C12DCE and VC have been detected previously. As of October 2012, C12DCE detections in residential wells remain well below the C12DCE HRL (50 µg/L).

Dichlorodifluoromethane (DCDFM) was detected in three residential well samples collected in October 2012 (see Table 2) at concentrations ranging from 1.4 µg/L (9 Duck Pass Road) to 6.1 µg/L (22 Duck Pass Road). The October 2012 detections of DCDFM were from residential wells located within Area 4 along Duck Pass Road, which is consistent with previous sampling results. As of October 2012, DCDFM detections in residential wells remain well below the DCDFM HRL (700 µg/L).

Dichlorofluoromethane (DCFM) was detected in two residential well samples collected in October 2012 (see Table 2) at concentrations ranging from 0.79 µg/L (20 Duck Pass Road) to 1.9 µg/L (22 Duck Pass Road). The October 2012 detections of DCFM were from residential wells located within Area 4 along Duck Pass Road, which is consistent with previous sampling results. There is no HRL established for DCFM.

One additional non Site-related VOC¹ (chloromethane) was detected in three residential well samples collected in October 2012 (see Table 2). All detected concentrations are estimated and there is no HRL established for chloromethane.



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Chloride concentrations in residential well samples collected in October 2012 ranged from 1.2 mg/L (1 Poplar Lane) to 120 mg/L (28 Duck Pass Road). Chloride has historically been detected in residential wells at similar concentrations.

FUTURE SAMPLING

The next residential well sampling event in North Oaks is scheduled for April 2013.

If you have any questions or require additional information, please call me at (651) 639-0913.

Sincerely,

CONESTOGA-ROVERS & ASSOCIATES

Sarah Illi, P.E.

MR/sb/61

Encl.

cc: Nile Fellows, Minnesota Pollution Control Agency
Emily Hansen, Minnesota Department of Health (w/o Attachments A and B)
Mayor John Schaaf, City of North Oaks (w/o Attachments A and B)
Melinda Coleman, City of North Oaks (w/o Attachments A and B)
Shane Waterman, Wenck Associates (w/o Attachments A and B)
North Oaks Homeowners' Association (w/o Attachments A and B)
Highway 96 Group

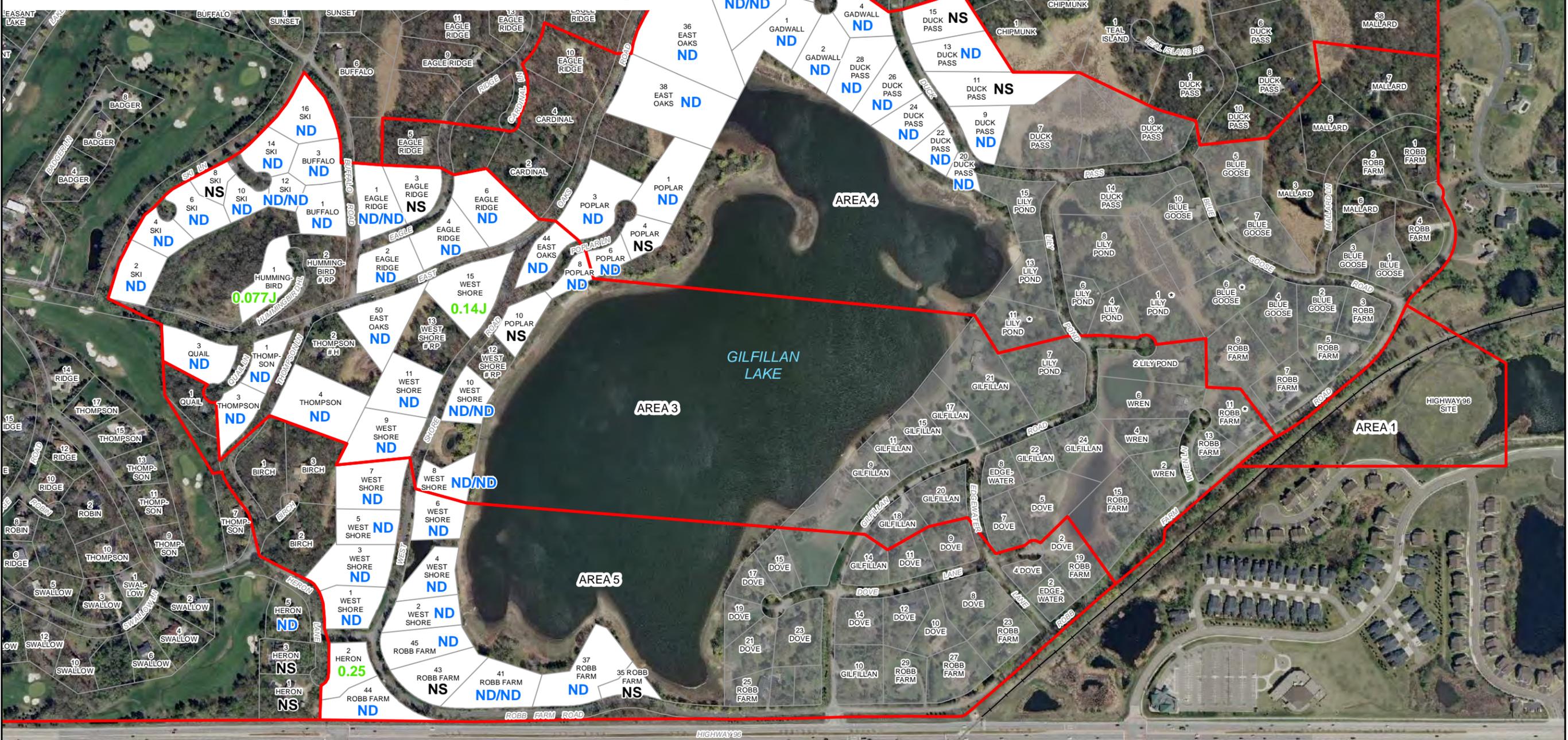
OCTOBER 2012

56 WELLS SAMPLED

53 WELLS - VINYL CHLORIDE NOT DETECTED

2 WELLS - VINYL CHLORIDE DETECTED AT OR BELOW HEALTH RISK LIMIT

1 WELL - VINYL CHLORIDE DETECTED ABOVE HEALTH RISK LIMIT (0.2 µg/L)



LEGEND

- | | | | |
|--------------|---|------|---|
| ND | VINYL CHLORIDE NOT DETECTED
(DETECTION LIMIT = 0.035 µg/L) | # RP | NEW (DEEPER) REPLACEMENT WELL
INSTALLED BY RPs |
| ND/ND | DUPLICATE SAMPLE RESULT | # H | NEW (DEEPER) REPLACEMENT WELL
INSTALLED BY HOMEOWNER |
| 0.14 | VINYL CHLORIDE CONCENTRATION (µg/L) | ■ | CONNECTED TO MUNICIPAL WATER SUPPLY |
| J | ESTIMATED RESULT | — | GEOGRAPHIC AREAS |
| NS | NOT SAMPLED (NO RESPONSE/DECLINED) | | |
| * | CONVERTED RESIDENTIAL MONITORING
WELL LOCATION | | |

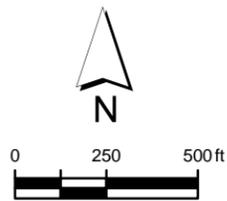


figure 1
VINYL CHLORIDE CONCENTRATIONS
(OCTOBER 2012)
North Oaks, Minnesota

TABLE 1

**SAMPLING SUMMARY
OCTOBER 2012
RESIDENTIAL WELL SAMPLING EVENT
NORTH OAKS, MINNESOTA**

<i>Well Address</i>	<i>Sample ID</i>	<i>Sampled By</i>	<i>Date (m/d/yyyy)</i>	<i>Purge Time (min)</i>	<i>Rate (gpm)</i>	<i>pH</i>	<i>Temp (oC)</i>	<i>Cond (us/cm)</i>	<i>DO (mg/L)</i>	<i>ORP (mV)</i>	<i>Clarity</i>	<i>QA/QC</i>	<i>QA/QC Sample ID</i>	<i>Notes</i>
1 Buffalo Road	W-121017-MLR-47	CRA	10/17/2012	21	10	7.42	9.34	678	1.02	-98	Clear	MS/MSD	--	--
3 Buffalo Road	W-121017-MLR-46	CRA	10/17/2012	21	10	7.40	8.82	715	3.94	-72	Clear	--	--	--
9 Duck Pass Road	W-121010-MLR-07	CRA	10/10/2012	25	6	7.83	10.13	662	1.12	-63	Clear	--	--	--
11 Duck Pass Road	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled - No response from resident.
13 Duck Pass Road	W-121010-MLR-10	CRA	10/10/2012	21	4	7.49	9.77	586	3.26	-103	Clear	--	--	--
15 Duck Pass Road	--	--	--	--	--	--	--	--	--	--	--	--	--	Resident gave permission to sample, however water was turned off for the winter.
20 Duck Pass Road	W-121010-MLR-06	CRA	10/10/2012	23	5	6.91	12.28	740	6.69	-87	Clear	Field Blank	W-121010-MLR-05	Treated sample (water softner and iron filter).
22 Duck Pass Road	W-121010-MLR-08	CRA	10/10/2012	23	12	7.48	9.99	757	3.27	-86	Clear	--	--	--
24 Duck Pass Road	W-121010-MLR-09	CRA	10/10/2012	22	5	7.53	9.97	489	1.10	-114	Clear	--	--	--
26 Duck Pass Road	W-121010-MLR-11	CRA	10/10/2012	23	4	7.46	10.10	623	3.25	-87	Clear	--	--	--
28 Duck Pass Road	W-121010-MLR-01	CRA	10/10/2012	20	6	7.93	10.69	909	2.06	93	Clear	MS/MSD	--	--
32 East Oaks Road	W-121010-MLR-15	CRA	10/10/2012	20	12	7.69	10.13	520	4.53	-94	Clear	Duplicate	W-121010-MLR-16	--
36 East Oaks Road	W-121010-MLR-17	CRA	10/10/2012	22	6	7.60	10.46	575	4.09	-96	Clear	--	--	--
38 East Oaks Road	W-121010-MLR-18	CRA	10/10/2012	21	6	7.57	10.60	386	3.22	-106	Clear	--	--	--
44 East Oaks Road	W-121010-MLR-19	CRA	10/10/2012	24	12	7.53	10.50	534	3.38	-88	Clear	--	--	--
50 East Oaks Road	50 EAST OAKS	MPCA	10/12/2012	20	7.5	NM	7.5	NM	NM	NM	NR	--	--	--

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<i>Well Address</i>	<i>Sample ID</i>	<i>Sampled By</i>	<i>Date (m/d/yyyy)</i>	<i>Purge Time (min)</i>	<i>Rate (gpm)</i>	<i>pH</i>	<i>Temp (oC)</i>	<i>Cond (us/cm)</i>	<i>DO (mg/L)</i>	<i>ORP (mV)</i>	<i>Clarity</i>	<i>QA/QC</i>	<i>QA/QC Sample ID</i>	<i>Notes</i>
1 Eagle Ridge Road	W-121017-MLR-49	CRA	10/17/2012	20	5	7.54	12.37	611	2.37	-119	Clear	Duplicate	W-121017-MLR-50	Treated sample (iron filter not bypassed per resident's request).
2 Eagle Ridge Road	W-121017-MLR-48	CRA	10/17/2012	10	6	7.49	9.68	690	1.18	-98	Clear	--	--	Reduced purge time based on small pressure tank (per resident's request).
3 Eagle Ridge Road	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled - No response from resident.
4 Eagle Ridge Road	W-121017-MLR-51	CRA	10/17/2012	20	5	7.65	10.60	675	6.58	-121	Clear	--	--	--
6 Eagle Ridge Road	W-121017-MLR-52	CRA	10/17/2012	20	8	7.59	10.31	741	8.40	-114	Clear	--	--	--
1 Gadwall Lane	W-121010-MLR-12	CRA	10/10/2012	20	5	7.44	9.98	609	5.08	-53	Clear	--	--	--
2 Gadwall Lane	W-121010-MLR-13	CRA	10/10/2012	21	8	7.48	10.01	589	3.53	-69	Clear	--	--	--
3 Gadwall Lane	W-121011-MLR-24	CRA	10/11/2012	21	5	8.00	9.87	488	9.33	-114	Clear	Field Blank	W-121011-MLR-23	--
4 Gadwall Lane	W-121010-MLR-14	CRA	10/10/2012	23	4	7.45	12.14	609	6.05	-79	Clear	--	--	--
1 Hummingbird Hill	1 HH	MPCA	10/12/2012	20	10	NM	6.0	NM	NM	NM	NR	--	--	--
1 Heron Lane #	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled - No response from resident.
2 Heron Lane	W-121011-MLR-30	CRA	10/11/2012	25	3	6.95	11.23	699	0.78	-83	Clear	--	--	--
3 Heron Lane #	--	--	--	--	--	--	--	--	--	--	--	--	--	Resident gave permission to sample, however water was turned off for the winter.
5 Heron Lane #	5 HERON	MPCA	10/12/2012	28	6.5	NM	5.0	NM	NM	NM	NR	--	--	--
1 Poplar Lane	W-121018-MLR-57	CRA	10/18/2012	23	5	6.84	9.46	442	6.47	-35	Clear	--	--	--
3 Poplar Lane	W-121018-MLR-56	CRA	10/18/2012	22	8	7.68	9.95	644	8.02	-38	Clear	--	--	--

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OCTOBER 2012
RESIDENTIAL WELL SAMPLING EVENT
NORTH OAKS, MINNESOTA**

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4 Poplar Lane	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled - No response from resident.
6 Poplar Lane	W-121017-MLR-55	CRA	10/17/2012	21	12	7.55	9.50	541	1.31	-88	Clear	--	--	--
8 Poplar Lane	W-121017-MLR-54	CRA	10/17/2012	20	8	7.49	10.46	644	9.21	-109	Clear	Field Blank	W-121017-MLR-53	--
10 Poplar Lane	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled - Resident declined.
3 Quail Lane	W-121011-MLR-20	CRA	10/11/2012	20	10	7.45	10.59	659	5.26	79	Clear	--	--	--
35 Robb Farm Road	--	--	--	--	--	--	--	--	--	--	--	--	--	Resident gave permission to sample, however water was turned off for the winter.
37 Robb Farm Road	W-121011-MLR-25	CRA	10/11/2012	20	8	7.46	10.91	536	2.23	-108	Clear	--	--	Water foams (soap suds) upon initial purge but dispated thereafter.
41 Robb Farm Road	W-121011-MLR-26	CRA	10/11/2012	20	8	7.38	10.56	495	2.12	-87	Clear	Duplicate	W-121011-MLR-27	--
43 Robb Farm Road	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled - No response from resident.
44 Robb Farm Road	W-121010-MLR-02	CRA	10/10/2012	10	4	7.56	12.61	686	4.28	-86	Clear	--	--	Reduced purge time because untreated spigot is directly from well.
45 Robb Farm Road	W-121011-MLR-28	CRA	10/11/2012	21	5	7.36	10.96	589	4.05	-68	Clear	--	--	Sample was initially effervescent.
2 Ski Lane	W-121012-MLR-37	CRA	10/12/2012	20	5	8.49	9.53	521	4.12	7	Clear	MS/MSD	--	--
4 Ski Lane	W-121012-MLR-38	CRA	10/12/2012	20	10	7.71	10.12	647	3.91	-98	Clear	--	--	--
6 Ski Lane	W-121012-MLR-39	CRA	10/12/2012	25	4	7.60	9.94	599	3.78	-56	Clear	--	--	--
8 Ski Lane	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled - No response from resident.
10 Ski Lane	W-121017-MLR-42	CRA	10/17/2012	22	10	7.38	9.07	655	4.13	-67	Clear	--	--	--

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OCTOBER 2012
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<i>Well Address</i>	<i>Sample ID</i>	<i>Sampled By</i>	<i>Date (m/d/yyyy)</i>	<i>Purge Time (min)</i>	<i>Rate (gpm)</i>	<i>pH</i>	<i>Temp (oC)</i>	<i>Cond (us/cm)</i>	<i>DO (mg/L)</i>	<i>ORP (mV)</i>	<i>Clarity</i>	<i>QA/QC</i>	<i>QA/QC Sample ID</i>	<i>Notes</i>
12 Ski Lane	W-121017-MLR-40	CRA	10/17/2012	21	6	7.11	9.59	613	4.00	-41	Clear	Duplicate	W-121017-MLR-41	--
14 Ski Lane	W-121017-MLR-44	CRA	10/17/2012	20	5	7.4	9.10	702	0.89	-22	Clear	Field Blank	W-121017-MLR-43	--
16 Ski Lane	W-121017-MLR-45	CRA	10/17/2012	22	12	7.82	9.26	654	8.31	-82	Clear	--	--	--
1 Thompson Lane	W-121010-MLR-04	CRA	10/10/2012	10	4	7.39	11.05	624	6.30	-86	Clear	--	--	Reduced purge time because untreated spigot is directly from well.
3 Thompson Lane	W-121011-MLR-21	CRA	10/11/2012	20	5	8.17	10.41	602	4.83	-42	Clear	--	--	--
4 Thompson Lane	W-121011-MLR-22	CRA	10/11/2012	21	6	7.53	10.98	920	3.02	-97	Clear	--	--	--
1 West Shore Road	W-121011-MLR-31	CRA	10/11/2012	22	4	7.69	10.38	710	3.56	-86	Clear	--	--	--
2 West Shore Road	W-121011-MLR-29	CRA	10/11/2012	22	10	7.26	10.90	714	2.64	-93	Clear	--	--	--
3 West Shore Road	W-121010-MLR-03	CRA	10/10/2012	20	6	7.33	10.78	570	3.23	-98	Clear	--	--	--
4 West Shore Road	W-121011-MLR-36	CRA	10/11/2012	22	5	7.16	11.80	800	1.94	-96	Clear	--	--	--
5 West Shore Road	W-121011-MLR-33	CRA	10/11/2012	20	8	7.54	11.26	583	4.61	-107	Clear	Field Blank	W-121011-MLR-32	--
6 West Shore Road	W-121011-MLR-35	CRA	10/11/2012	20	5	7.80	11.37	538	7.51	-94	Clear	--	--	--
7 West Shore Road	W-121011-MLR-34	CRA	10/11/2012	21	10	7.49	10.91	600	3.42	-95	Clear	--	--	--
8 West Shore Road	8 WSR	MPCA	10/12/2012	25	6.5	NM	6.0	NM	NM	NM	NR	Duplicate	8 WSR-DUP	--
9 West Shore Road	W-121018-MLR-63	CRA	10/18/2012	20	8	7.39	9.94	647	2.14	-108	Clear	--	--	--
10 West Shore Road	W-121018-MLR-61	CRA	10/18/2012	21	5	7.42	10.77	654	2.26	-98	Clear	Duplicate	W-121018-MLR-62	--

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OCTOBER 2012
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<i>Well Address</i>	<i>Sample ID</i>	<i>Sampled By</i>	<i>Date (m/d/yyyy)</i>	<i>Purge Time (min)</i>	<i>Rate (gpm)</i>	<i>pH</i>	<i>Temp (oC)</i>	<i>Cond (us/cm)</i>	<i>DO (mg/L)</i>	<i>ORP (mV)</i>	<i>Clarity</i>	<i>QA/QC</i>	<i>QA/QC Sample ID</i>	<i>Notes</i>
11 West Shore Road	W-121018-MLR-60	CRA	10/18/2012	21	8	7.36	10.42	607	3.31	-93	Clear	Field Blank	W-121018-MLR-59	Sample collected through dedicated hose (buried).
15 West Shore Road	W-121018-MLR-58	CRA	10/18/2012	20	10	7.36	9.86	744	5.34	-104	Clear	--	--	--

Notes:

DO - Dissolved Oxygen

ORP - Oxidation Reduction Potential

NM - Not Measured

NR - Not Recorded

- Additional sampling location proposed by MPCA (outside Long-Term Monitoring Program).

SUMMARY OF DETECTED COMPOUNDS
OCTOBER 2012
RESIDENTIAL WELL SAMPLING EVENT
NORTH OAKS, MINNESOTA

Address	HRL Date	-- Chloride mg/L	1,1-Dichloroethane 100 ug/L	-- Chloromethane ug/L	cis-1,2-Dichloroethene 50 ug/L	Dichlorodifluoromethane 700 ug/L	-- Dichlorofluoromethane ug/L	5 Trichloroethene (TCE) ug/L	Vinyl chloride 0.2 ug/L
1 Buffalo Road	10/17/12	25	0.096 J	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
3 Buffalo Road	10/17/12	33	0.19 J	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
9 Duck Pass Road	10/10/12	33	0.70	< 1	< 0.2	1.4	< 0.5	< 0.1	< 0.2
13 Duck Pass Road	10/10/12	20	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
20 Duck Pass Road	10/10/12	47	0.67	< 1	< 0.2	2.1	0.79	< 0.1	< 0.2
22 Duck Pass Road	10/10/12	52	2.5	< 1	< 0.2	6.1	1.9	< 0.1	< 0.2
24 Duck Pass Road	10/10/12	8.4	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
26 Duck Pass Road	10/10/12	29	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
28 Duck Pass Road	10/10/12	120	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
1 Eagle Ridge Road	10/17/12	15	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
1 Eagle Ridge Road	10/17/12	D 15	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
2 Eagle Ridge Road	10/17/12	28	0.078 J	0.14 J	< 0.2	< 1	< 0.5	< 0.1	< 0.2
4 Eagle Ridge Road	10/17/12	23	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
6 Eagle Ridge Road	10/17/12	41	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
32 East Oaks Road	10/10/12	26	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
32 East Oaks Road	10/10/12	D 26	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
36 East Oaks Road	10/10/12	20	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
38 East Oaks Road	10/10/12	1.6	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
44 East Oaks Road	10/10/12	11	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
50 East Oaks Road	10/12/12	21	0.087 J	< 1	0.061 J	< 1 UJ	< 0.5	< 0.1	< 0.2
1 Gadwall Lane	10/10/12	27	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
2 Gadwall Lane	10/10/12	22	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
3 Gadwall Lane	10/11/12	20	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
4 Gadwall Lane	10/10/12	28	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
2 Heron Lane	10/11/12	52	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	0.25
5 Heron Lane	10/12/12	NA	< 0.2	< 1	< 0.2	< 1 UJ	< 0.5	< 0.1	< 0.2
1 Hummingbird Hill	10/12/12	21	0.10 J	0.14 J	0.058 J	< 1 UJ	< 0.5	< 0.1	0.077 J
1 Poplar Lane	10/18/12	1.2	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
3 Poplar Lane	10/18/12	19	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
6 Poplar Lane	10/17/12	4.1	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
8 Poplar Lane	10/17/12	31	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
3 Quail Lane	10/11/12	17	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
37 Robb Farm Road	10/11/12	6.8	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
41 Robb Farm Road	10/11/12	2.6	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
41 Robb Farm Road	10/11/12	D 2.6	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
44 Robb Farm Road	10/10/12	25	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
45 Robb Farm Road	10/11/12	21	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
2 Ski Lane	10/12/12	17	< 0.2	< 1	< 0.2	< 1 UJ	< 0.5	< 0.1	< 0.2
4 Ski Lane	10/12/12	37	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
6 Ski Lane	10/12/12	26	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
10 Ski Lane	10/17/12	22	0.079 J	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
12 Ski Lane	10/17/12	14	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
12 Ski Lane	10/17/12	D 14	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
14 Ski Lane	10/17/12	30	0.071 J	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
16 Ski Lane	10/17/12	32	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2

**SUMMARY OF DETECTED COMPOUNDS
OCTOBER 2012
RESIDENTIAL WELL SAMPLING EVENT
NORTH OAKS, MINNESOTA**

<i>Address</i>	<i>HRL Date</i>	<i>-- Chloride mg/L</i>	<i>1,1-Dichloroethane 100 ug/L</i>	<i>-- Chloromethane ug/L</i>	<i>cis-1,2-Dichloroethene 50 ug/L</i>	<i>Dichlorodifluoromethane 700 ug/L</i>	<i>-- Dichlorofluoromethane ug/L</i>	<i>5 Trichloroethene (TCE) ug/L</i>	<i>0.2 Vinyl chloride ug/L</i>
1 Thompson Lane	10/10/12	18	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
3 Thompson Lane	10/11/12	10	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
4 Thompson Lane	10/11/12	110	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
1 West Shore Road	10/11/12	41	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
2 West Shore Road	10/11/12	46	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
3 West Shore Road	10/10/12	4.5	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
4 West Shore Road	10/11/12	55	< 0.2	< 1	< 0.2	< 1	< 0.5	0.051 J	< 0.2
5 West Shore Road	10/11/12	6.5	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
6 West Shore Road	10/11/12	3.8	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
7 West Shore Road	10/11/12	5.5	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1	< 0.2
8 West Shore Road	10/12/12	9.6	< 0.2	< 1	< 0.2	< 1 UJ	< 0.5	< 0.1	< 0.2
8 West Shore Road	10/12/12	D	9.6	< 0.2	0.19 J	< 1 UJ	< 0.5	< 0.1	< 0.2
9 West Shore Road	10/18/12		9.5	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1
10 West Shore Road	10/18/12		21	0.089 J	< 1	0.081 J	< 1	< 0.5	< 0.1
10 West Shore Road	10/18/12	D	21	0.090 J	< 1	0.079 J	< 1	< 0.5	< 0.1
11 West Shore Road	10/18/12		5.4	< 0.2	< 1	< 0.2	< 1	< 0.5	< 0.1
15 West Shore Road	10/18/12		38	0.34	< 1	0.24	< 1	< 0.5	< 0.1
									0.14 J

Notes:

HRL Health Risk Limit (HRL) established by the Minnesota Department of Health

Shaded result exceeds HRL

-- HRL not established.

D Duplicate

J Estimated result

NA Not Analyzed

UJ Estimated reporting limit

ATTACHMENT A
LABORATORY ANALYTICAL REPORTS

ATTACHMENT B

DATA QUALITY ASSESSMENT AND VALIDATION MEMORANDUM



MEMORANDUM

TO: Sarah Illi, CRA REF. NO.: 002012

FROM: Ruth Mickle/sb/3  DATE: January 7, 2013

RE: **Analytical Results and QA/QC Verification
Semi-Annual Residential Well Sampling Event
Highway 96 Site
White Bear Lake, Minnesota
October 2012**

INTRODUCTION

Residential well water samples were collected in support of the sampling program at the Highway 96 Site during October 10-18, 2012. Samples were submitted to TestAmerica Laboratories, Inc. (TestAmerica), located in Canton, Ohio for chloride analysis. Samples were submitted to the Minnesota Department of Health (MDH) Laboratory located in Minneapolis, Minnesota for volatile organic compound (VOC) analyses. A sample collection and analysis summary is presented in Table 1. A summary of the analytical methodology is presented in Table 2.

Standard CRA report deliverables were reported by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody forms, finished report forms, method blank data, duplicate data, laboratory control samples (LCS), and matrix spikes; and field QA/QC samples. The QA/QC criteria by which the data have been assessed are outlined in the respective method(s) and the following documents:

- i) "Response Action Plan Quality Assurance Project Plan (QAPP)"; May 1994, Conestoga-Rovers & Associates, Report 30.
- ii) "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, United States Environmental Protection Agency (USEPA) 540/R 99/008.
- iii) "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," February 1994, USEPA 540/R 94/013.

Items ii) and iii) will subsequently be referred to as the "Guidelines".

SAMPLE HOLDING TIME AND PRESERVATION

The sample holding time criteria for the analyses are summarized in Table 2. Sample chain of custody documents and analytical reports were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

All shipped samples were properly preserved and delivered on ice and stored by the laboratory at the required temperature (0-6°C). Samples were hand delivered to MDH laboratory within proper sample handling criteria.

LABORATORY METHOD BLANK ANALYSES

The purpose of assessing the results of laboratory method blank analyses is to determine the existence and magnitude of sample contamination introduced during analysis. Laboratory method blanks are prepared from a certified analyte-free matrix and analyzed with the samples.

For this study, laboratory method blanks were analyzed at a minimum frequency of one per analytical batch. All method blank results were non-detect, indicating that laboratory contamination was not a factor for this investigation.

SURROGATE SPIKE RECOVERIES

In accordance with the methods employed, all samples, blanks, and QA/QC samples analyzed for VOCs are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of individual sample matrices on analytical efficiency.

All surrogate recoveries were acceptable, indicating good analytical efficiency.

LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE (LCS/LCSD) ANALYSES

LCS and LCS/LCSD analyses serve as a monitor of the overall performance of all steps in the analysis, including the sample preparation. LCS or LCS/LCSD were analyzed using the same sample preparation, analytical methods, and QA/QC procedures employed for the investigative samples. LCS and LCS/LCSD recoveries and RPD of recoveries were assessed per the "Guidelines".

Table 3 lists outlying control sample results that require qualification of sample data. Associated sample data should be qualified as noted in the table.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) RESULTS

To assess the long-term accuracy and precision of the analytical method on various matrices, MS and MS/MSD percent recoveries and relative percent difference (RPD) of the recoveries were determined for the analyses. For this study, MS or MS/MSD samples were prepared and analyzed by the laboratory as specified in Table 1. The laboratory performed additional site-specific MS analyses internally.

The MS/MSD results were evaluated per the "Guidelines". Table 4 lists outlying matrix spike sample results that require qualification of sample data. Associated sample data should be qualified as noted in the table.

FIELD QA/QC

The field QA/QC samples consisted of trip blanks, field blanks, and field duplicate sample sets.

Trip Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, six trip blanks were collected and submitted to the laboratory for VOC analysis. A low level chloromethane result was reported in one trip blank sample. The associated results were nondetect and were not impacted by the indicated contamination.

Field Blank Sample Analysis

To assess ambient conditions at the site, six field blanks were submitted for analysis, as identified in Table 1. Low level toluene or chloroform were detected in each of the field blank samples. The associated sample results were non-detect and were not impacted by the indicated contamination.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, six field duplicate samples were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than 50 percent for water samples. If the reported concentration in either the investigative sample or its duplicate is less than five times the RL, the evaluation criteria is one times the RL value for water samples.

The field duplicate results were within acceptable agreement, demonstrating good sampling and analytical precision.

ANALYTE REPORTING

The MDH laboratory reported detected results down to the laboratory's method detection limit (MDL) for a select list of VOC analytes, as directed by the Minnesota Pollution Control Agency (MPCA). This list includes: chloroform, 1,1-dichloroethane, chloromethane, trichloroethene, cis-1,2-dichloroethene and vinyl chloride. Positive analyte detections less than the quantitation limit (i.e., laboratory reporting limit or RL) but greater than the MDL were qualified as estimated (J) unless qualified otherwise in this memorandum.

The remaining VOC analytes on the MDH analyte list were reported down to the laboratory RL. This was due to MPCA and MDH concerns about the reliability of MDLs for these analytes. Since the associated health risk limits were above the RL values, the MDH laboratory determined that reporting no lower than laboratory RLs would yield the most accurate results for these VOC analytes.

Non-detect results were presented as non-detect at the laboratory RL.

CONCLUSION

Based on this assessment, the data produced by TestAmerica and MDH were found to exhibit acceptable levels of accuracy and precision based on the provided information and may be used with the qualifications noted.

**SAMPLE COLLECTION AND ANALYSIS SUMMARY
RESIDENTIAL WELL SAMPLING - OCTOBER 2012
HIGHWAY 96 LANDFILL SITE
WHITE BEAR LAKE, MINNESOTA**

Sample Identification	Location	Matrix	QC Samples	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/ Parameters	
						VOC	Chloride
TA-NC Lot Nos. 240-16435, 240-16713							
MDH Lot Nos. 12J0543, 12J0613, 12J0669, 12J0860, 12J0962, 12J0994							
W-121010-MLR-01	28 Duck Pass Road	water	MS/MSD	10/10/2012	8:45	x	x
W-121010-MLR-02	44 Robb Farm Road	water	N	10/10/2012	9:20	x	x
W-121010-MLR-03	3 West Shore Road	water	N	10/10/2012	10:00	x	x
W-121010-MLR-04	1 Thompson Lane	water	N	10/10/2012	10:40	x	x
W-121010-MLR-05	20 Duck Pass Road	water	Field Blank	10/10/2012	11:15	x	x
W-121010-MLR-06	20 Duck Pass Road	water	N	10/10/2012	11:18	x	x
W-121010-MLR-07	9 Duck Pass Road	water	N	10/10/2012	11:25	x	x
W-121010-MLR-08	22 Duck Pass Road	water	N	10/10/2012	11:35	x	x
W-121010-MLR-09	24 Duck Pass Road	water	N	10/10/2012	12:12	x	x
W-121010-MLR-10	13 Duck Pass Road	water	N	10/10/2012	12:16	x	x
W-121010-MLR-11	26 Duck Pass Road	water	MS/MSD	10/10/2012	12:23	x	x
W-121010-MLR-12	1 Gadwall Lane	water	N	10/10/2012	12:59	x	x
W-121010-MLR-13	2 Gadwall Lane	water	N	10/10/2012	13:05	x	x
W-121010-MLR-14	4 Gadwall Lane	water	N	10/10/2012	13:13	x	x
W-121010-MLR-15	32 East Oaks Road	water	N	10/10/2012	13:48	x	x
W-121010-MLR-16	32 East Oaks Road	water	DUP (-15)	10/10/2012	13:50	x	x
W-121010-MLR-17	36 East Oaks Road	water	N	10/10/2012	13:57	x	x
W-121010-MLR-18	38 East Oaks Road	water	N	10/10/2012	14:31	x	x
W-121010-MLR-19	44 East Oaks Road	water	N	10/10/2012	14:39	x	x
Trip Blank	Trip Blank	water	Trip Blank	10/10/2012	15:00	x	
W-121011-MLR-20	3 Quail Lane	water	MS/MSD	10/11/2012	9:00	x	x
W-121011-MLR-21	3 Thompson Lane	water	N	10/11/2012	9:26	x	x
W-121011-MLR-22	4 Thompson Lane	water	N	10/11/2012	9:34	x	x
W-121011-MLR-23	3 Gadwall Lane	water	Field Blank	10/11/2012	9:50	x	x
W-121011-MLR-24	3 Gadwall Lane	water	N	10/11/2012	10:05	x	x
W-121011-MLR-25	37 Robb Farm Road	water	N	10/11/2012	11:00	x	x
W-121011-MLR-26	41 Robb Farm Road	water	N	10/11/2012	11:05	x	x
W-121011-MLR-27	41 Robb Farm Road	water	DUP (-26)	10/11/2012	11:08	x	x
W-121011-MLR-28	45 Robb Farm Road	water	N	10/11/2012	11:36	x	x
W-121011-MLR-29	2 West Shore Road	water	N	10/11/2012	11:42	x	x
W-121011-MLR-30	2 Heron Lane	water	MS/MSD	10/11/2012	11:50	x	x
W-121011-MLR-31	1 West Shore Road	water	N	10/11/2012	12:32	x	x
W-121011-MLR-32	5 West Shore Road	water	Field Blank	10/11/2012	12:55	x	x
W-121011-MLR-33	5 West Shore Road	water	N	10/11/2012	13:05	x	x
W-121011-MLR-34	7 West Shore Road	water	N	10/11/2012	13:11	x	x
W-121011-MLR-35	6 West Shore Road	water	N	10/11/2012	13:43	x	x
W-121011-MLR-36	4 West Shore Road	water	N	10/11/2012	13:50	x	x
Trip Blank	Trip Blank	water	Trip Blank	10/11/2012	14:20	x	
W-121012-MLR-37	2 Ski Lane	water	MS/MSD	10/12/2012	9:30	x	x
W-121012-MLR-38	4 Ski Lane	water	N	10/12/2012	10:10	x	x
W-121012-MLR-39	6 Ski Lane	water	MS/MSD	10/12/2012	10:50	x	x
Trip Blank	Trip Blank	water	Trip Blank	10/12/2012	11:30	x	
8 WSR	8 West Shore Road	water	N	10/12/2012	9:35	x	x

**SAMPLE COLLECTION AND ANALYSIS SUMMARY
RESIDENTIAL WELL SAMPLING - OCTOBER 2012
HIGHWAY 96 LANDFILL SITE
WHITE BEAR LAKE, MINNESOTA**

Sample Identification	Location	Matrix	QC Samples	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/ Parameters	
						VOC	Chloride
TA-NC Lot Nos. 240-16435, 240-16713							
MDH Lot Nos. 12J0543, 12J0613, 12J0669, 12J0860, 12J0962, 12J0994							
8 WSR-Dup	8 West Shore Road	water	DUP (8WSR)	10/12/2012	9:35	x	x
50 East Oaks	50 East Oaks Road	water	N	10/12/2012	10:05	x	x
1 HH	1 Hummingbird Hill	water	N	10/12/2012	10:35	x	x
Trip Blank	Trip Blank	water	Trip Blank	10/12/2012	0:00	x	
5 Heron	5 Heron Lane	water	N	10/12/2012	11:50	x	
W-121017-MLR-40	12 Ski Lane	water	N	10/17/2012	10:16	x	x
W-121017-MLR-41	12 Ski Lane	water	DUP (-41)	10/17/2012	10:16	x	x
W-121017-MLR-42	10 Ski Lane	water	N	10/17/2012	10:20	x	x
W-121017-MLR-43	14 Ski Lane	water	Field Blank	10/17/2012	10:50	x	x
W-121017-MLR-44	14 Ski Lane	water	N	10/17/2012	11:00	x	x
W-121017-MLR-45	16 Ski Lane	water	N	10/17/2012	11:05	x	x
W-121017-MLR-46	3 Buffalo Road	water	N	10/17/2012	11:41	x	x
W-121017-MLR-47	1 Buffalo Road	water	MS/MSD	10/17/2012	11:46	x	x
W-121017-MLR-48	2 Eagle Ridge Road	water	N	10/17/2012	12:10	x	x
W-121017-MLR-49	1 Eagle Ridge Road	water	N	10/17/2012	12:23	x	x
W-121017-MLR-50	1 Eagle Ridge Road	water	DUP (-49)	10/17/2012	12:23	x	x
W-121017-MLR-51	4 Eagle Ridge Road	water	N	10/17/2012	12:55	x	x
W-121017-MLR-52	6 Eagle Ridge Road	water	N	10/17/2012	13:00	x	x
W-121017-MLR-53	8 Poplar Lane	water	Field Blank	10/17/2012	13:25	x	x
W-121017-MLR-54	8 Poplar Lane	water	N	10/17/2012	13:30	x	x
W-121017-MLR-55	6 Poplar Lane	water	MS/MSD	10/17/2012	13:36	x	x
Trip Blank	Trip Blank	water	Trip Blank	10/17/2012	14:00	x	
W-121018-MLR-56	3 Poplar Lane	water	N	10/18/2012	10:39	x	x
W-121018-MLR-57	1 Poplar Lane	water	N	10/18/2012	10:44	x	x
W-121018-MLR-58	15 West Shore Road	water	N	10/18/2012	11:45	x	x
W-121018-MLR-59	11 West Shore Road	water	Field Blank	10/18/2012	11:46	x	x
W-121018-MLR-60	11 West Shore Road	water	N	10/18/2012	11:51	x	x
W-121018-MLR-61	10 West Shore Road	water	N	10/18/2012	12:28	x	x
W-121018-MLR-62	10 West Shore Road	water	DUP (-61)	10/18/2012	12:30	x	x
W-121018-MLR-63	9 West Shore Road	water	N	10/18/2012	12:38	x	x
Trip Blank	Trip Blank	water	Trip Blank	10/18/2012	13:00	x	

Notes:

- DUP - Field Duplicate Sample of sample in parenthesis
- MS/MSD - Matrix Spike/Matrix Spike Duplicate
- QC - Quality Control
- VOC - Volatile Organic Compounds

TABLE 2

**SUMMARY OF ANALYTICAL METHODS, HOLDING TIME PERIODS, AND PRESERVATIVES
RESIDENTIAL WELL SAMPLING - OCTOBER 2012
HIGHWAY 96 LANDFILL SITE
WHITE BEAR LAKE, MINNESOTA**

<i>Parameter</i>	<i>Method</i> ¹	<i>Matrix</i>	<i>Holding Time</i>	<i>Preservation</i> ²
VOC	EPA 524.2	Water	- 14 days from sample collection to completion of analysis	pH < 2 and Iced, 4 ± 2° C
General Chemistry Chloride	MCAWW 350.2	Water	- 28 days from sample collection to completion of analysis	Iced, 4 ± 2° C

Notes:

¹ Method References:

EPA - "Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry", EMSL ORD EPA, 1982, Method 524.2. The VOC parameter list was comprised from Minnesota Department of Health Methods 460 and 468.

MCAWW - "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions

VOC - Volatile Organic Compounds

TABLE 3

**SUMMARY OF QUALIFIED SAMPLE DATA DUE TO OUTLYING
LAB CONTROL SAMPLE /LAB CONTROL SAMPLE DUPLICATE RECOVERIES AND/OR RELATIVE PERCENT DIFFERENCE
RESIDENTIAL WELL SAMPLING - OCTOBER 2012
HIGHWAY 96 LANDFILL SITE
WHITE BEAR LAKE, MINNESOTA**

<i>Parameter</i>	<i>Analyte</i>	<i>LCS %Rec</i>	<i>LCSD %Rec</i>	<i>RPD</i>	<i>Control Limits</i>			<i>Associated Sample ID</i>	<i>Qualified Result</i>	<i>Units</i>	
					<i>%Rec</i>	<i>RPD</i>					
VOC	Bromomethane	51	73	36	70	-	130	30	W-121010-MLR-13	1UJ	ug/L
									W-121010-MLR-14	1UJ	ug/L
									W-121010-MLR-15	1UJ	ug/L
									W-121010-MLR-16	1UJ	ug/L
									W-121010-MLR-17	1UJ	ug/L
									W-121010-MLR-18	1UJ	ug/L
									W-121010-MLR-19	1UJ	ug/L
									Trip Blank	1UJ	ug/L
									W-121011-MLR-20	1UJ	ug/L
									W-121011-MLR-21	1UJ	ug/L
									W-121011-MLR-22	1UJ	ug/L
									W-121011-MLR-23	1UJ	ug/L
									W-121011-MLR-24	1UJ	ug/L
									VOC	Dichlorodifluoromethane	92
8 WSR	1UJ	ug/L									
8 WSR-DUP	1UJ	ug/L									
50 EAST OAKS	1UJ	ug/L									
1 HH	1UJ	ug/L									
5 HERON	1UJ	ug/L									

Notes:

- UJ - Result is an Estimated Report Limit
- LCS - Lab Control Sample
- LCSD - Lab Control Sample Duplicate
- RPD - Relative Percent Difference
- %Rec - Percent Recovery
- VOC - Volatile Organic Compounds

TABLE 4

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO OUTLYING
 MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERIES AND/OR RELATIVE PERCENT DIFFERENCE
 RESIDENTIAL WELL SAMPLING - OCTOBER 2012
 HIGHWAY 96 LANDFILL SITE
 WHITE BEAR LAKE, MINNESOTA

<i>Parameter</i>	<i>Analyte</i>	<i>MS %Rec</i>	<i>MSD %Rec</i>	<i>RPD</i>	<i>Control Limits</i>		<i>Associated Sample ID</i>	<i>Qualified Result</i>	<i>Units</i>	
					<i>%Rec</i>	<i>RPD</i>				
VOC	Dichlorodifluoromethane	62	65	5	70	- 130	30	W-121012-MLR-37	1UJ	ug/L
VOC	Bromomethane	58	63	7	70	- 130	30	W-121010-MLR-01	1UJ	ug/L

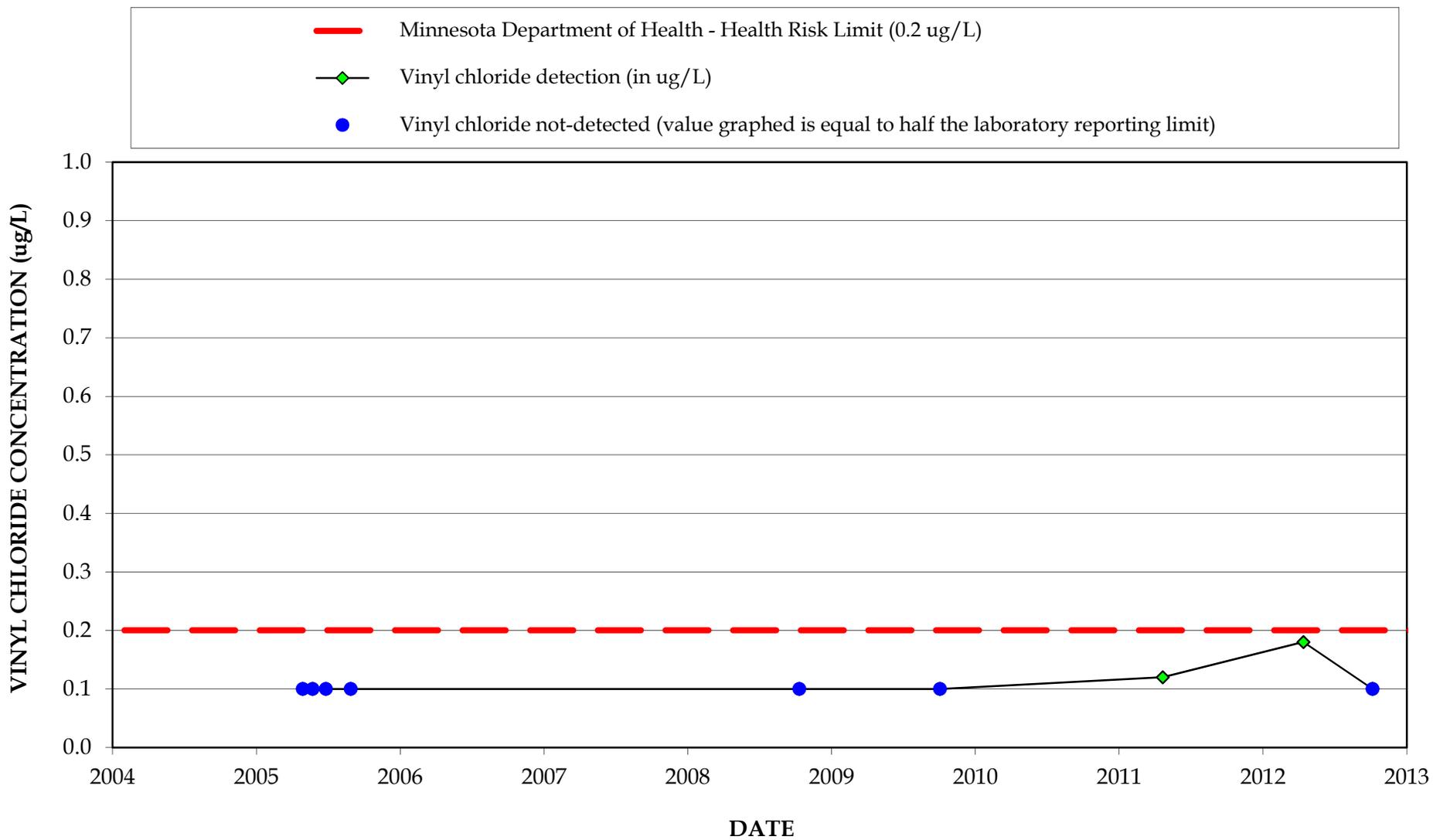
Notes:

- UJ - Result is an Estimated Report Limit
- MS - Matrix Spike
- MSD - Matrix Spike Duplicate
- RPD - Relative Percent Difference
- %Rec - Percent Recovery
- VOC - Volatile Organic Compounds

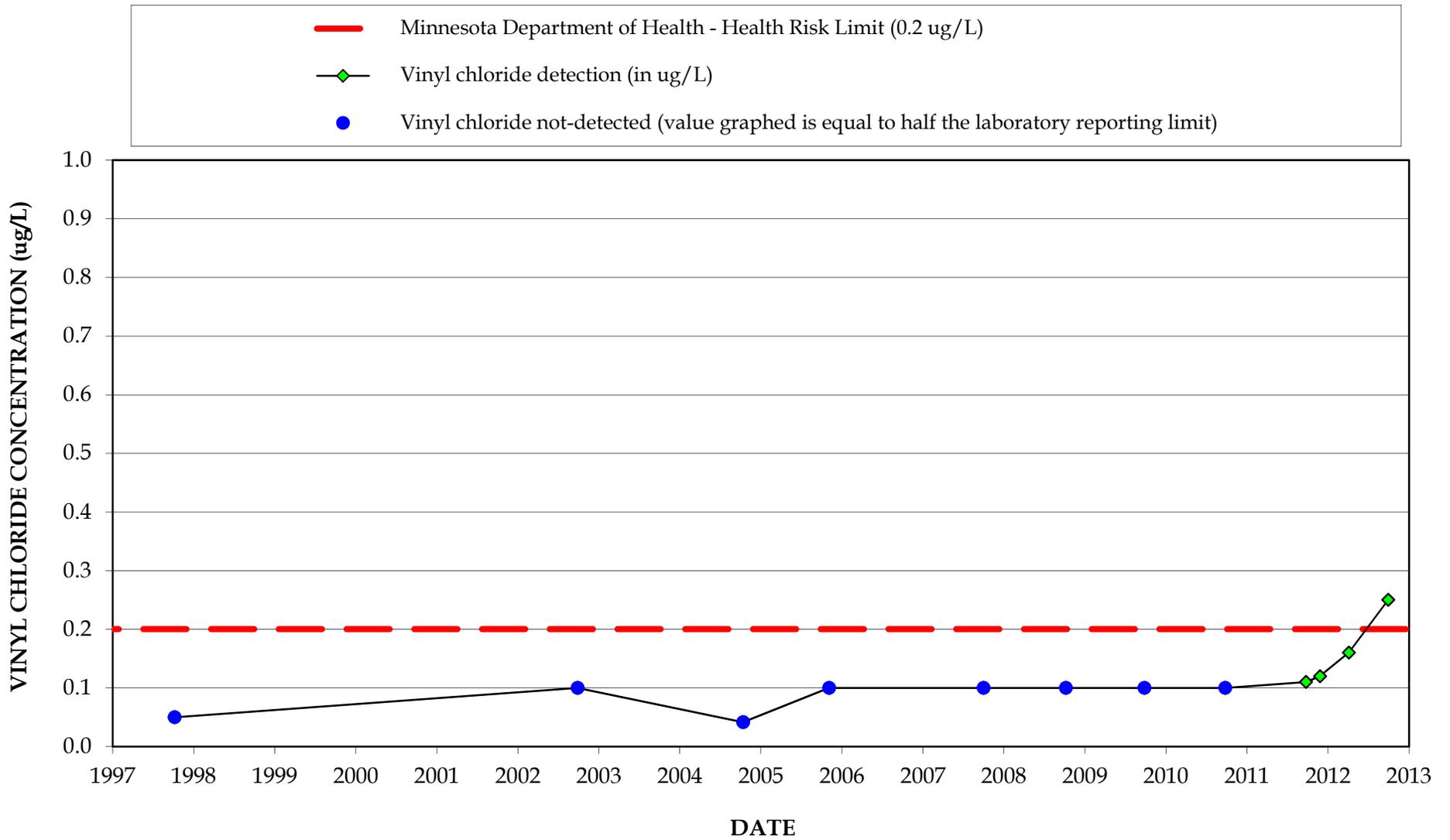
ATTACHMENT C

GRAPHS OF VINYL CHLORIDE DETECTIONS IN
ACTIVE RESIDENTIAL WELL LOCATIONS

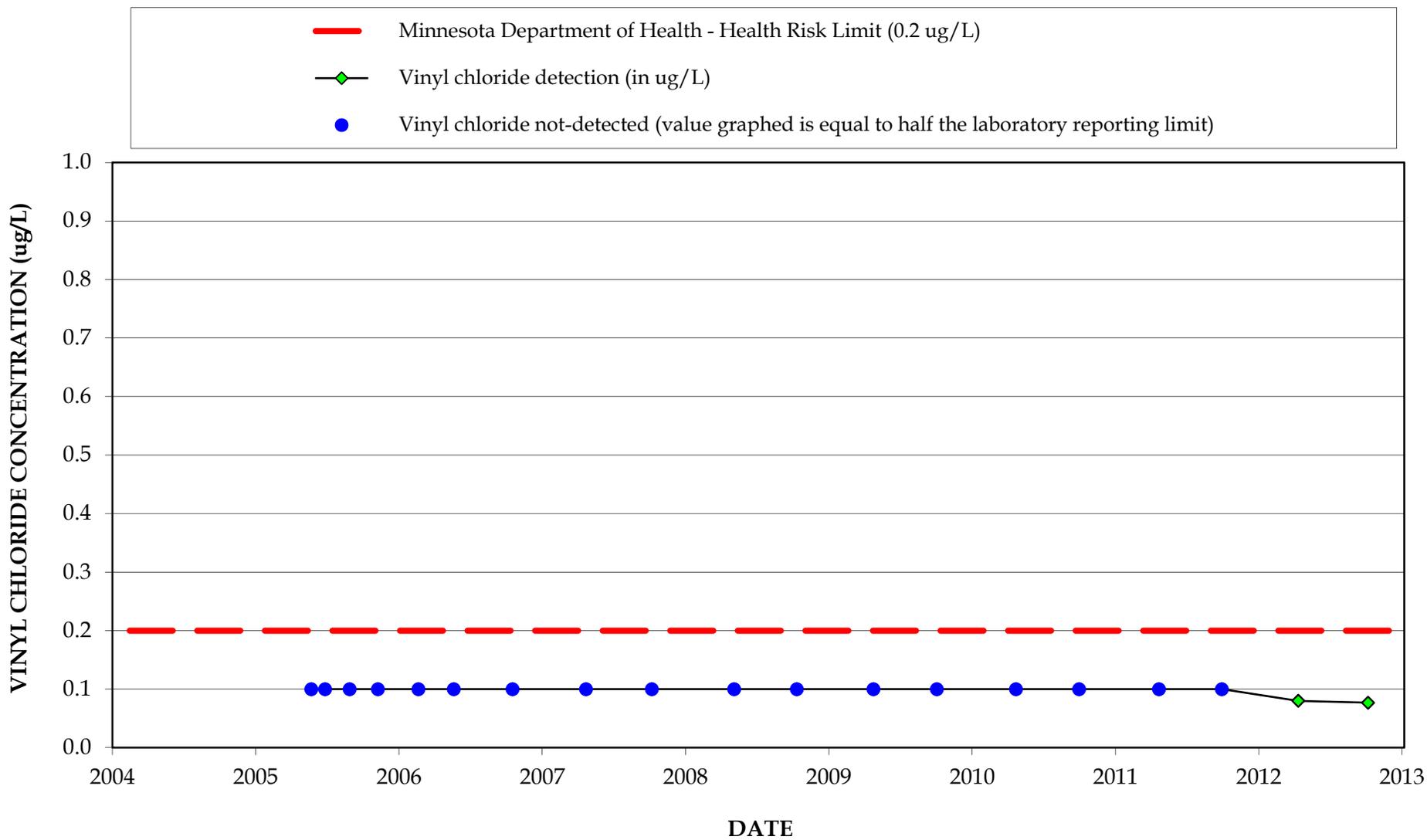
VINYL CHLORIDE CONCENTRATIONS
50 EAST OAKS ROAD
NORTH OAKS, MINNESOTA



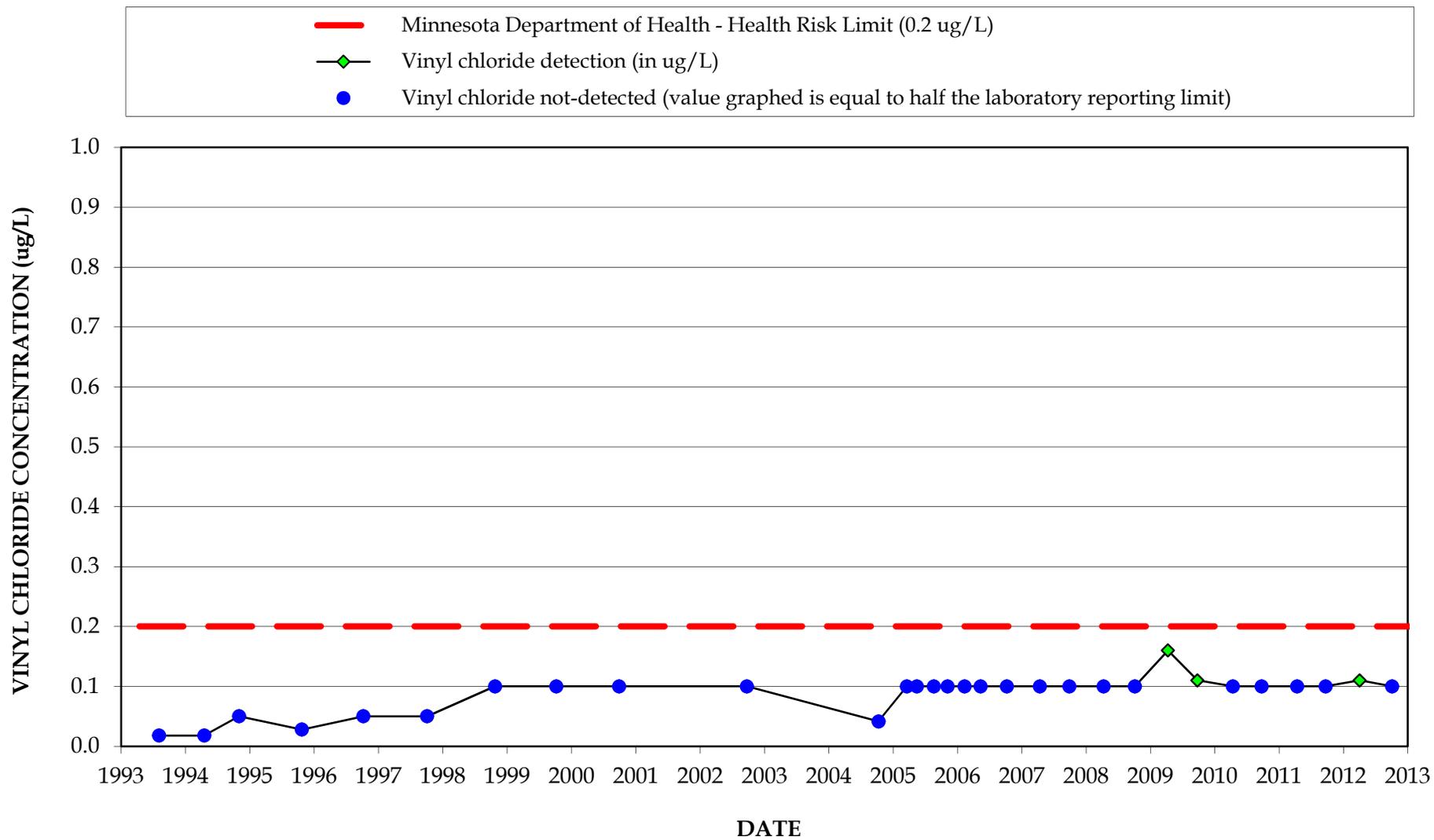
VINYL CHLORIDE CONCENTRATIONS
2 HERON LANE
NORTH OAKS, MINNESOTA



VINYL CHLORIDE CONCENTRATIONS
1 HUMMINGBIRD HILL
NORTH OAKS, MINNESOTA



VINYL CHLORIDE CONCENTRATIONS
10 WEST SHORE ROAD
NORTH OAKS, MINNESOTA



VINYL CHLORIDE CONCENTRATIONS
15 WEST SHORE ROAD
NORTH OAKS, MINNESOTA

