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*Bi-Annual Sampling Report  
For Treatment Systems*

*February 2001- June 2001*

**Marx Residence  
Multi-Site Wells**

Site Number 3-60-024

Work Assignment Number D003060-14.0

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Environmental Conservation  
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*August 2001*

## TABLE OF CONTENTS

Chapter		Page
1.0	INTRODUCTION .....	1
1.1	SITE DESCRIPTION .....	1
1.2	TREATMENT SYSTEMS .....	1
1.2.1	A-35 (Marx Residence) .....	1
1.2.2	A-36 (Savino Residence) .....	1
1.2.3	A-37 (Sklar Residence) .....	1
1.2.4	A-38 (Carpenter Residence) .....	1
2.0	SAMPLING .....	2
2.1	SAMPLE LOCATIONS .....	2
2.2	SAMPLING PROTOCOL .....	2
2.3	SAMPLING, FLOW READINGS AND SITE INSPECTION .....	2
2.4	ANALYTICAL RESULTS .....	2
2.4.1	A-35 (Marx Residence) .....	3
2.4.2	A-36 (Savino Residence) .....	3
2.4.3	A-37 (Sklar Residence) .....	3
2.4.4	A-38 (Carpenter Residence) .....	3
3.0	SYSTEM INSTALLATION, MAINTENANCE AND MODIFICATIONS .....	4
3.1.1	A-35 (Marx Residence) .....	4
3.1.2	A-38 (Carpenter Residence) .....	4
4.0	CONCLUSIONS .....	1

## LIST OF TABLES

### Table

2-1	Contact Information
2-2	Flow Volume and Analytical Results
2-3	Volatile Organic Analysis Data- EPA Method 524

## 1.0 INTRODUCTION

In accordance with the monitoring plan for the treatment system at the Marx Residence Site (Marx), the first round of water sampling by Earth Tech was performed on February 26, 2001. In January 2001 Earth Tech took over the responsibilities of operation and maintenance of the Marx granulated activated carbon (GAC) water treatment systems. The results of laboratory analyses for this sampling event are summarized in the following report as are subsequent actions taken in response to the analysis, routine system maintenance and/or required modifications. This report covers activities that have taken place February through June of 2001.

## 1.1 SITE DESCRIPTION

The Marx Residence site (Site Code #3-60-024) is located on Armonk Road, in the Township of New Castle, Westchester County, New York. This is a four-acre residential site consisting of four residential wells. Wells at this site have been contaminated with chlorinated VOCs including *cis*-1,2-dichloroethene (*cis*-1,2-DCE), *trans*-1,2-dichloroethene (*trans*-1,2-DCE), trichloroethene (TCE), perchloroethene (PCE), vinyl chloride, and methyl tert-butyl ether (MTBE).

## 1.2 TREATMENT SYSTEMS

Whole house granulated activated carbon (GAC) treatment systems were installed on four residential wells in September 1991 by Metcalf & Eddy (M&E). The installations are a mix of resident-owned and state furnished equipment.

New York State Department of Health (NYSDOH) recommends potable water treatment with two tanks connected in series for organics removal from drinking water. This configuration provides a primary and secondary GAC unit and allows for monitoring between these units. The systems are all equipped with valving and appurtenant equipment to allow flexibility in operation such as a flow meter, shut-off valves, and sample taps. They are also equipped with a particle filter, with the exception of well A-35; which has two.

### 1.2.1 A-35 (Marx Residence)

This location is a private residence. The system consists of two, 4.0 cu. ft. GAC tanks, a water meter, two particulate filters (one 20" double and one 10" single), and a Trojan 608 UV disinfection system. This system is seasonal and routinely opens in April.

### 1.2.2 A-36 (Savino Residence)

This location is a private residence. The system consists of two, 2.0 cu. ft. GAC tanks, a water meter, a particulate filter and an Ideal Horizon SV-7 UV disinfection system.

### 1.2.3 A-37 (Sklar Residence)

This location is a private residence. The system consists of two, 2.0 cu. ft. GAC tanks, a water meter, a particulate filter and a Trojan 608 UV disinfection system.

### 1.2.4 A-38 (Carpenter Residence)

This location is a private residence. The system consists of two, 2.0 cu. ft. GAC tanks, a water meter, a particulate filter and a Trojan 608 UV disinfection system.

## 2.0 SAMPLING

### 2.1 SAMPLE LOCATIONS

Table 2-1 presents project information including location and well ID. Sampling points include raw, intermediate and effluent ports.

### 2.2 SAMPLING PROTOCOL

Standard protocol is to allow a sampling tap to run for at least fifteen minutes prior to sampling to insure that representative water is in the system. After purging, samples are collected in the following order: effluent, intermediate, and finally raw water in order to minimize the possibility of cross-contamination. Volatile organics samples are overfilled in forty milliliter (ml) vials and capped and then checked to insure that no air bubbles are trapped in the vial. Care is taken during collection to minimize agitation and to immediately place sample containers on ice to prevent volatilization.

Bacteria sampling is conducted after volatile sampling. Sampling protocol requires that the sampling port be heated with an open flame for one minute prior to sampling to insure bacteria are coming from sample water only. Bacteria sample bottles may have an air space left inside.

Bi-annual samples are submitted for analysis by EPA Method 524, and total coliform analysis. Bender Laboratory of Albany, New York and the NYSDEC Division of Environmental Remediation Laboratory (NYSDEC Laboratory) of Rensselaer, New York are providing analytical services.

### 2.3 SAMPLING, FLOW READINGS AND SITE INSPECTION

This sampling round represents the first bi-annual sampling event to be conducted at the site, by Earth Tech. Samples were collected on February 26, 2001 from wells A-36, A-37, and A-38. Well A-35 was sampled on March 12, 2001.

All standard sampling procedures were followed except: taps were not run for fifteen minutes prior to sampling since water is regularly drawn through the systems and representative groundwater is already within the systems.

All volatile samples for this round were collected by Earth Tech staff, and packed on ice in a cooler with a completed chain of custody form and forwarded to the NYSDEC Laboratory for analysis. The flow volumes and raw water data will be tracked for each system over the course of the project and are summarized in Table 2-2.

No problems were noted during this sampling event. The quartz sleeves were cleaned and the UV units were found to be working properly.

### 2.4 ANALYTICAL RESULTS

The laboratory data sheets for analysis performed on samples are distributed electronically by the laboratory to Earth Tech and the NYSDEC. The Method 524 results for the sampling events are summarized on Table 2-3. Coliform results are not included on this table. Total coliform analysis was negative for treated water collected. A copy of the total coliform analysis is included with this report.

Raw water analysis data will be summarized in Table 2-2 for each sampling round.

System change out will occur for any intermediate or final water sample with a contamination level of 1 ug/L or above. Breakthrough was reported this sampling round at the Marx residence (A-35) and the Carpenter residence (A-38).

#### 2.4.1 A-35 (Marx Residence)

Between 1994 and 2000 the reported level of total volatile contamination has ranged from approximately 30 ug/L to as high as 1,500 ug/L.

The Round 1 (March 12, 2001) sampling results reported detection of cis-1,2 DCE, TCE, 1,1,2 TCE, and PCE in the raw sample at 24 ug/L, 82 ug/L, 13 ug/L, and 150 ug/L respectively. Cis- 1,2 DCE was reported in the intermediate sample at an estimated 0.7 ug/L. The final water sample reported no detection of site contaminants.

#### 2.4.2 A-36 (Savino Residence)

Between 1994 and 2000 the reported level of total volatile contamination has ranged from approximately 12 ug/L to as high as 600 ug/L.

The Round 1 (February 26, 2001) sampling results reported detection of cis-1,2 DCE and PCE in the raw sample at 0.4 ug/l and 0.6 ug/l respectively. The intermediate and final water samples reported no detection of site contaminants.

#### 2.4.3 A-37 (Sklar Residence)

Between 1994 and 2000 the reported level of total volatile contamination has been < 50 ug/l at this location.

The Round 1 (February 26, 2001) sampling results reported no detection of any contaminants in the raw, intermediate, or final water samples.

#### 2.4.4 A-38 (Carpenter Residence)

Between 1994 and 2000 the reported level of total volatile contamination has been < 100 ug/l at this location.

The Round 1 (February 26, 2001) sampling results reported no detection of any contaminants in the raw or final water samples. The intermediate sample reported cis-1,2 DCE at 3 ug/l.

### **3.0 SYSTEM INSTALLATION, MAINTENANCE AND MODIFICATIONS**

Initial site inspections by Earth Tech were conducted in February 2001 and March 2001 when water samples were collected. Well locations were inspected to assess GAC system conditions, foresee any potential maintenance problems, and to choose a suitable plan of action for system maintenance/modifications.

All future service will be conducted on an as needed basis and be provided by Earth Tech. Earth Tech will provide service for the following:

1. GAC exchange,
2. UV exchange before 8000 hour usage,
3. reoccurrence of previous problems; and
4. damage to system by resident.

#### **3.1.1 A-35 (Marx Residence)**

The carbon was exchanged in both GAC tanks on March 12, 2001 immediately after collection of water samples due to the historical high levels of contamination at this location and lack of previous GAC exchange dates. The intermediate samples did report trace breakthrough and therefore, changeout was warranted.

#### **3.1.2 A-38 (Carpenter Residence)**

The carbon was exchanged in the primary GAC tank on March 12, 2001.

#### 4.0 CONCLUSIONS

The GAC systems at the site are in satisfactory working order. The next bi-annual sampling event and system check will occur in August 2001.

**TABLES**



Table 2-1

**Marx Residence Treatment Systems  
Location and System Information**

Location	Owner/Contact	Phone #	Well ID	System Location
786 Armonk Road Mt. Kisco, NY 10549	Max Marx	(914)666-6571	A-35	
820 Armonk Road Mt. Kisco, NY 10549	Vincent Savino	(914)666-3573	A-36	
778 Armonk Road Mt. Kisco, NY 10549	Alan Sklar	(914)241-0482	A-37	Leaves signs to where tanks are after appointment is made
768 Armonk Road Mt. Kisco, NY 10549	Susan Carpenter	(914)241-1181	A-38	Behind stairway to kitchen

Table 2-2

**Marx Residence Treatment Systems  
Flow Volume and Raw Water Analytical Data / GAC Change Out Summary**

\* All information contained in this table was taken from the hand written logs provided by the DEC from TAMS consulting firm.

Location/ COC	Well ID	04-Feb-94	11-May-94	14-Jul-94	15-Nov-94	22-Mar-95	15-Jun-95	21-Sep-95	26-Mar-96	19-Jun-96	01-Aug-96	02-Oct-96
		Changed UV Bulb	Total Flow (gal)				Total Flow (gal)				Changed both GAC Units	
Max Marx	A-35	Total Flow (gal)	14379				21671					
1,1-Dichloroethene		127240		Not Listed	Not Listed	Not Listed		Not Listed	Not Listed	Not Listed		Not Listed
1,1,2-Trichloroethane				Not Listed	Not Listed	Not Listed		Not Listed	Not Listed	Not Listed		Not Listed
1,2-Dichloroethene				55	60	4		Not Listed	Not Listed	Not Listed		Not Listed
Vinyl Chloride				15	Not Listed	Not Listed		Not Listed	Not Listed	Not Listed		Not Listed
Trichloroethylene				120	110	63.7		368	240	0.56		145
cis-1,2-Dichloroethene				Not Listed	Not Listed	Not Listed		90.3	160	-		68
trans-1,2-Dichloroethene				Not Listed	Not Listed	Not Listed		Not Listed	Not Listed	Not Listed		Not Listed
Tetrachloroethylene				Not Listed	555	363		538	240	28		1000
Vincent Savino	A-36	Total Flow (gal)				Changed UV Bulb					Changed 1 GAC Tank	
1,1-Dichloroethene		76532			Not Listed				Not Listed	Not Listed	Changed UV Light	Not Listed
1,1,2-Trichloroethane		Changed UV Bulb			Not Listed				Not Listed	Not Listed		Not Listed
1,2-Dichloroethene					Not Listed				Not Listed	Not Listed		Not Listed
Vinyl Chloride					7				Not Listed	1.6		Not Listed
Trichloroethylene					55				26.3	17.2		3.3
cis-1,2-Dichloroethene					38				56.8	108		9.6
trans-1,2-Dichloroethene					Not Listed				Not Listed	3.1		Not Listed
Tetrachloroethylene					5				6.8	3.4		1.4
Alan Sklar	A37		Changed UV Light								Total Vol 82404	Changed Both GAC Tanks
1,2-Dichloroethene			Total Vol 22744	-	-	-	Total Vol 038567.0	-	-	-		-
Trichloroethylene							Changed UV Light	1.20	-	-		-
cis-1,2-Dichloroethene								Not Listed	Not Listed	Not Listed		-
Tetrachloroethylene								2.10	-	-		0.52
Susan Carpenter	A38					Changed UV Light	Changed 1 Tank					
1,2-Dichloroethene				-	-	Total Vol 22744		44	-	-		-
Trichloroethylene								16	-	-		-
cis-1,2-Dichloroethene								-	-	-		-
Tetrachloroethylene								38	-	-		-
Vinyl Chloride								Not Listed	Not Listed	Not Listed		Not Listed
1,1-Dichloroethane								Not Listed	Not Listed	Not Listed		Not Listed

Table 2-2

**Marx Residence Treatment Systems  
Flow Volume and Raw Water Analytical Data / GAC Change Out Summary**

\* All information contained in this table was taken from the hand written logs provided by the DEC from TAMS consulting firm.

Location/ COC	Well ID	29-Jan-97	11-Apr-97	22-Aug-97	26-Feb-98	05-Aug-98	01-Dec-98	02-Mar-99	07-Jun-99	23-Aug-99	28-Oct-99	07-Feb-00	13-Jun-00	Feb/May01
<b>Max Marx</b>	<b>A-35</b>													
1,1-Dichloroethene		Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	-
1,1,2-Trichloroethane		Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	13
1,2-Dichloroethene		Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	-
Vinyl Chloride		Not Listed	Not Listed	-	Not Listed	Not Listed	190	-	-	120	8	53	29	-
Trichloroethylene		65	92	160	200	120	-	150	95	130	140	250	290	82
cis-1,2-Dichloroethene		25	110	86	60	160	110	120	41	820	120	560	500	24
trans-1,2-Dichloroethene		Not Listed	1	-	-	-	5.7	-	-	Not Listed	Not Listed	Not Listed	Not Listed	-
Tetrachloroethylene		350	190	680	360	330	180	640	220	480	490	500	260	150
<b>Vincent Savino</b>	<b>A-36</b>													
1,1-Dichloroethene				Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	-
1,1,2-Trichloroethane				Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	-
1,2-Dichloroethene				Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	-
Vinyl Chloride				26	-	4	1.8	Not Listed	-	-	-	-	-	-
Trichloroethylene				34	15	36	13	Not Listed	-	2.8	-	2	-	-
cis-1,2-Dichloroethene				570	130	460	470	0.6	-	32	-	9	-	0.4 J/0.4J
trans-1,2-Dichloroethene				7	Not Listed	1.2	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	-
Tetrachloroethylene				7	10	16	6.5	0.7	1.5	3	-	1	-	0.6 J/0.5J
<b>Alan Sklar</b>	<b>A37</b>													
1,2-Dichloroethene		Not Listed		Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	-
Trichloroethylene		-		-	-	-	1.8	-	-	2.2	1	-	-	-
cis-1,2-Dichloroethene		-		-	-	-	2	-	-	14	2	-	-	-
Tetrachloroethylene		-		-	-	-	5.4	0.6	-	7.1	3	-	-	-
<b>Susan Carpenter</b>	<b>A38</b>													
1,2-Dichloroethene		-		Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	-
Trichloroethylene		-		15	-	-	1.3	-	-	-	-	-	-	-
cis-1,2-Dichloroethene		-		43	-	-	33	-	-	-	-	-	-	-
Tetrachloroethylene		-		47	-	1	16	-	-	1	-	-	-	-
Vinyl Chloride		Not Listed		-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane		Not Listed		Not Listed	-	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed	-

**TABLE 2-3**  
**Marx - Volatile Organics Analysis Data-EPA Method 524**

Sampling Dates : 2/26/01, 3/12/01

Compound	A-35 - R	A-35 - I	A-35 - F	A-36 - R	A-36 - I	A-36 - F	A-37 - R	A-37 - I	A-37 - F	A-38 - R	A-38 - I	A-38 - F
Bromodichloromethane												
Bromoform												
Bromoethane												
Carbon Tetrachloride												
Chlorobenzene												
Chloroethane												
2- Chloroethylvinyl ether												
Chloroform												
Chloromethane												
Dibromochloromethane												
1,2- Dichlorobenzene												
1,3- Dichlorobenzene												
1,4- Dichlorobenzene												
1,1- Dichloroethane												
1,2- Dichloroethane												
1,1- Dichloroethene												
cis- 1,2- Dichloroethene		0.7 J	24	0.4/0.4 J							3	
trans- 1,2- Dichloroethene												
1,2- Dichloropropane												
cis- 1,2- Dichloropropene												
trans- 1,3- Dichloropropene												
Methylene chloride												
4-methyl-2-pentanone												
Tetrachloroethene			150	0.6/0.5 J								
1,1,1- Trichloroethane												
1,1,2- Trichloroethane			13									
Trichloroethylene			82									
Trichlorofluoromethane												
Vinyl chloride												
<b>J = estimated</b> <b>/ = duplicate result</b> <b>E= estimated above calibration range.</b> <b>R= raw water sample</b> <b>I= intermediate water sample</b> <b>F= final water sample</b>												



**Earth Tech**  
**AMY VAN LAAK**  
**12 Metro Park Rd**  
**Albany, NY 12205**

MAR 15 2001

**Sample ID:** AC02767  
**Date Received:** 03/13/2001  
**Time Received:** 12:42:00  
**PO Number:**  
**Your Ref:** A-35

**Customer:** Earth Tech  
**Owner:** A-35  
**Sample Loc:** A-35

**Sample Pt:** A-35  
**Water Source:**  
**Chlorinated:** No  
**Residual Chlorine:**

**Collect Date:** 03/12/2001  
**Collect Time:** 15:25:00  
**Collected by:**  
**Potability:** Yes  
**Grab/Comp:** Grab

Test	Result	Analysis Unit	Acceptable Range	Method Used	Analyst Ref
Total Coliform,Membrane Filter	Negative	per 100 mL	—	SM 9222	BJS 03/14/2001

**Comments:**

Sample is NEGATIVE for Total Coliform. This result indicates that the water WAS of a SATISFACTORY sanitary quality when sampled for the contaminants examined. Sample is negative for Escherichia coli.

Reviewed by Betty Sherman  
Environmental Laboratory

Legend: <= Less Than, >= Greater Than  
mg/KG=ppm, mcg/KG=ppb, mg/L=ppm, mcg/L=ppb

New York State DOH E.L.A.P. # 10350



**Earth Tech**  
**MAY VAN LAAK**  
**12 Metro Park Rd**  
**Albany, NY 12205**

**Sample ID:** AC02262  
**Date Received:** 02/27/2001  
**Time Received:** 15:18:00  
**PO Number:**  
**Your Ref:** 32264.20150

**Customer:** Earth Tech  
**Owner:** A-36  
**Sample Loc:** A36

**Sample Pt:** A-36  
**Water Source:**  
**Chlorinated:** No  
**Residual Chlorine:**

**Collect Date:** 02/26/2001  
**Collect Time:** 09:00:00  
**Collected by:**  
**Potability:** Yes  
**Grab/Comp:** Grab

Test	Result	Analysis Unit	Acceptable Range	Method Used	Analyst Ref
Total Coliform,Membrane Filter	Negative	per 100 mL	—	SM 9222	BJS 02/28/2001

**Comments:**

Sample is NEGATIVE for Total Coliform. This result indicates that the water WAS of a SATISFACTORY sanitary quality when sampled for the contaminants examined. Sample is negative for Escherichia coli.

Reviewed by Betty Sherman  
Environmental Laboratory

Legend: < = Less Than, > = Greater Than  
mg/KG=ppm, mcg/KG=ppb, mg/L=ppm, mcg/L=ppb

New York State DOH E.L.A.P. # 10350



**Earth Tech**  
**MAY VAN LAAK**  
**12 Metro Park Rd**  
**Albany, NY 12205**

**Sample ID:** AC02263  
**Date Received:** 02/27/2001  
**Time Received:** 15:18:00  
**PO Number:**  
**Your Ref:** 32264.20150

**Customer:** Earth Tech  
**Owner:** A-37  
**Sample Loc:** A37

**Sample Pt:** A-37  
**Water Source:**  
**Chlorinated:** No  
**Residual Chlorine:**

**Collect Date:** 02/26/2001  
**Collect Time:** 09:40:00  
**Collected by:**  
**Potability:** Yes  
**Grab/Comp:** Grab

Test	Result	Analysis Unit	Acceptable Range	Method Used	Analyst Ref
Total Coliform,Membrane Filter	Negative	per 100 mL	---	SM 9222	BJS 02/28/2001

**Comments:**

Sample is NEGATIVE for Total Coliform. This result indicates that the water WAS of a SATISFACTORY sanitary quality when sampled for the contaminants examined. Sample is negative for Escherichia coli.

Reviewed by Betty Sherman  
Environmental Laboratory

Legend: < = Less Than, > = Greater Than  
mg/KG=ppm, mcg/KG=ppb, mg/L=ppm, mcg/L=ppb

New York State DOH E.L.A.P. # 10350



**Earth Tech**  
**MAY VAN LAAK**  
**12 Metro Park Rd**  
**Albany, NY 12205**

**Sample ID:** AC02264  
**Date Received:** 02/27/2001  
**Time Received:** 15:18:00  
**PO Number:**  
**Your Ref:** 32264.20150

**Customer:** Earth Tech  
**Owner:** A-38  
**Sample Loc:** A-38

**Sample Pt:** A-38  
**Water Source:**  
**Chlorinated:** No  
**Residual Chlorine:**

**Collect Date:** 02/26/2001  
**Collect Time:** 10:30:00  
**Collected by:**  
**Potability:** Yes  
**Grab/Comp:** Grab

Test	Result	Analysis Unit	Acceptable Range	Method Used	Analysis Ref
Total Coliform, Membrane Filter	Negative	per 100 mL	---	SM 9222	BJS 02/28/2001

**Comments:**

Sample is NEGATIVE for Total Coliform. This result indicates that the water WAS of a SATISFACTORY sanitary quality when sampled for the contaminants examined. Sample is negative for Escherichia coli.

Reviewed by Betty Sherman  
Environmental Laboratory

Legend: < = Less Than, > = Greater Than  
mg/KG=ppm, mcg/KG=ppb, mg/L=ppm, mcg/L=ppb

New York State DOH E.L.A.P. # 10350