New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau B
625 Broadway, Albany, New York 12233-7016
Phone: (518) 402-9768 • **FAX:** (518) 402-9020
Website: www.dec.ny.gov

Alexander B. Grannis
Commissioner

April 3, 2009

Mark Sielski
Tetra Tech EC., Inc.
2000 The American Road
Morris Plains, NJ 07950

Re: Magna Metals Site (Site No. 360003)
Remedial Investigation Report dated August 2007 and Additional Data Collection Data Summary Report dated January 30, 2009

Dear Mr. Sielski:

The Departments of Environmental Conservation and Health have reviewed the above-mentioned reports and find them acceptable. The 2009 data summary report, in conjunction with the August 2007 RI report, provide enough data to move forward with a Feasibility Study. Please submit these two documents in final format, both hard copy and electronic format within 30 days. This RI report approval does not include the indoor air study being completed by AKRF. That study and any associated reports will be completed and approved separately.

As stated in the consent decree, within 90 days of receipt of this approval of the RI report, ISC shall submit a Feasability Study evaluating on-site and off-site remedial alternatives, consistent with the approved RI/FS work plan and CERCLA.

Sincerely,

Sally Dewes

Sally Dewes, P.E.
Project Manager

ec: R. Cozzy/File
R.Rusinko, OGC
C. Grosier, DFWMR
N. Walz, NYSDOH

TETRA TECH EC, INC.

August 30, 2007

Mr. Chris Milack
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway – 12th Floor
Albany, NY 12233-7016

Subject: **Draft Final Remedial Investigation Report for the Former Magna Metals Site (NYSDEC Site No. 360003)**

Dear Mr. Milack:

Please find enclosed two hard copies and one CD of the Draft Final Remedial Investigation Report for the Former Magna Metals Site.

If you have any questions or comments, please contact me by telephone at (973) 630-8544 or via e-mail at mark.sielski@tteci.com.

Sincerely,

Mark Sielski, P.G.
Project Manager

cc: Nathan M. Walz, NYSDOH – 2 hard copies and 1 CD
Nicholas M. Ward-Willis – 1 hard copy

1000 The American Road, Morris Plains, NJ 07950
Tel 973.630.8000 Fax 973.630.8025
www.tteci.com

DRAFT FINAL REMEDIAL INVESTIGATION REPORT

FOR THE

FORMER MAGNA METALS SITE

(NYSDEC Site No. 360003)
TOWN OF CORTLANDT
WESTCHESTER COUNTY, NEW YORK

August 2007

PREPARED BY:

Tetra Tech EC, Inc.
1000 The American Road
Morris Plains, New Jersey 07950

INCORPORATING:

REMEDIAL INVESTIGATION/FEASIBILITY STUDY REPORT
November 1998

DRAFT SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT
June 2004

DATA FINDINGS FROM THE ADDITIONAL DATA COLLECTION LETTER REPORT
June 2006

VOLUME 1 OF 2

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont'd)

TABLE OF CONTENTS (Cont'd)

LIST OF TABLES

LIST OF TABLES (Cont'd)

LIST OF TABLES (Cont'd)

LIST OF FIGURES

LIST OF APPENDICES

2.0 SCOPE OF INVESTIGATION

2.1 Introduction

This section describes the soil, sediment, surface water, and groundwater RI activities performed and previously reported in the 1998, 2004, and 2006 NYSDEC deliverables. Descriptions of the field methods, approved by NYSDEC, were detailed in the August 1995, April 2003, and September 2005 Work Plans. For completeness, a brief summary of the 2007 Subslab Vapor and Indoor Air Quality activities is included. A more detailed report encompassing vapor and air can be found in the February 2007 Soil Vapor Intrusion Work Plan and July 2007 Soil Vapor Investigation Report by AKRF.

2.2 Pit Location Survey

In the 1998 RI/FS, seven each pit/tank were positively identified. Four of the known structures (historically identified by WCHD/NYSDEC as Pits C, D, E, and F on Figure 2-1) are concrete cinderblock construction and were apparently used for leaching solids from the electroplating process water. The fifth structure (Pit G, Figure 2-1) is a concrete tank with internal baffles believed to increase the flow path of water through the tank and promote the settling of solids. This tank is located on the northwest corner of the Magna Metals building and was apparently the first tank in the series of settling tanks/leach pits. The sixth structure (Pit A, Figure 2-1) is a small concrete tank that appears to be a septic system distribution or storage tank, but it may have also served as part of the leaching system. During brush clearing activities, a fifth concrete, cinderblock pit (Pit B, Figure 2-1), similar to pits C, D, E, and F, (Figure 2-1) was located.

However, historical documentation, contained in NYSDEC files and provided to ISCP September 2002 showed that two septic tanks and up to nine drainage structures existed on the Magna Metals site at one time (Appendix A). Commencement of field work occurred July 2003 to search for additional structures beyond those presented in the 1998 RI.

Based on field observations and field interpretation of the pit structures, Pit A and Pit G, were renamed septic tank ST-01, and leach pit LP-01, respectively for the 2004 report. These appear to be the first in the series of settling tanks/leach pits at the site (Figure 2-2). In the 2004 supplemental RI report Pit B was also renamed ST-02, and Pits C, D, E, and F were renamed to LP-02, LP-03, LP-04, and LP-05, respectively.

Operations, to find and excavate additional leach pits beyond those presented in the 1998 RI, were conducted from August through October 2003. A total of 13 leach pits/septic tanks, which includes the 7 previously found structures during the 1998 RI, were identified during of the 2003 excavation activities (see Figure 2-3).

The results of the 2004 Supplemental RI report investigatory excavation work are described herein. Photographs documenting the findings are presented in Appendix B. On August 11th and 25th, 2003, RI field personnel hand excavated targets identified by the geophysics subcontractor. The targets were excavated to depths ranging from 1.5 to 2.5 feet below ground surface (bgs). This effort did not result in the discovery of any additional pits.

After excavation of targets, field personnel began excavations tracing pipes connecting known leach pits. By tracing the pipes, three leach pits (LP-06, LP-07, and LP-08) were discovered (photos 2 – 4 in Appendix B). These three leach pits are of prefabricated concrete construction similar to leach pits LP-0A and LP-09. Prior to performing the geophysical survey, field reconnaissance and brush clearing activities were performed during July and August of 2003. Leach pits (LP-09 and LP-0A on Figure 2-2) are of prefabricated concrete construction with side-walls perforated by approximately 1-inch diameter holes. The pits appear to have gravel bottoms and gravel packing around the tank sides to facilitate the filtration of water away from the pits. One inlet pipe enters and one outlet pipe exits leach pit LP-0A. LP-09 contains only an inlet pipe and therefore appears to be the terminus of the leach pit series.

The pipes traced off of the known leach pits were perforated and of PVC or composite plastic construction. A photograph displaying the type of inter connecting pipes is provided as photo 5 in Appendix B.

Using polyethylene tubing fed through the pipes observed to enter/exit leach pits, field personnel confirmed that leach pits LP-04, LP-06 through LP-09 and LP-0A are directly connected, with no pits believed to be in-between these pits (Figure 2-2). This method was also used to confirm a connection between leach pits LP-02 through LP-05 (Figure 2-2). Several attempts were made to verify a connection between ST-02 and LP-02. Each attempt failed as the tubing appeared to encounter an obstruction approximately 25 feet to the north of ST-02. Based on historic drawings, this obstruction may be another leach pit.

A pipe leading from leach pit LP-05 was excavated on August 26, 2003. The effort was terminated approximately 7 ft north of the leach pit opening at 4 feet bgs, the greatest depth that could be reached by hand digging methods.

On October 9th and 10th, 2003, with the use of a Bobcat Model 325 Mini-excavator, the pipe leading to the north from leach pit LP-05 was further traced and another leach pit (LP-06A) was uncovered (photo 6 in Appendix B). Leach pit LP-06A, is of concrete cinderblock construction, similar to pits LP-02 through LP-05 (Table 2-1), and contains one inlet pipe on the southern wall and one pipe exiting the pit on the northern side. The existing pipe has been blocked and apparently sealed off using a tarred tin coffee can (photo 7 in Appendix B). Utilizing polyethylene tubing, it was determined that leach pit LP-06A is connected to leach pit LP-05. The pipe leading north from of leach pit LP-06A was traced approximately 11 feet north of the leach pit and to a depth of approximately 7.5 feet bgs, the maximum depth able to be reached with the mini-excavator. The pipe appeared to continue to the north, but could not be followed further due to the pipe depth.

The mini-excavator was also used to excavate the remaining targets identified by geophysics. Five targets that appeared to be inline with the pipe leading north from leach pit LP-06A were excavated to depths ranging from approximately 2.8 to 4 feet bgs. The excavation of these targets did not result in discovery or any additional pits.

Ten of the 13 leach pits were observed to contain sludge cake. The sludge cake in pits ST-02, LP-02, LP-03 and LP-05, which had been left open to the elements, after historic operations ceased, was moist. Sludge cake in pits LP-06A, LP-07, LP-08, LP-09 and LP-0A, which had

been covered until discovery during the Supplemental RI field work, were desiccated. The desiccated sludge cake in LP-06 is shown in photo 7 of Appendix B. Table 2-1 identifies the approximate thickness of sludge cake observed in each leach pit/septic tank.

2.2.1 Geophysical Survey

Two geophysical surveys were performed in order to verify the number of pits/tanks on site and the sampling of those pits; November 20 and 21, 1996 and August 5 and 11, 2003.

During the 1996 survey, ground penetrating radar (GPR) data were collected along 34 mutually orthogonal lines. Lines parallel to the former Magna Metals building (roughly east-west) were spaced 10 feet apart. Multiple GPR lines were collected over locations of known subsurface pits to identify the characteristic GPR signature of these features. The GPR data indicated seven subsurface structures.

A second survey was performed on August 4th and 11th, 2003. Based on the historical documents, provided to ISP by NYSDEC in 2003, an area north of the known pits, approximately 30 feet by 165 feet in size, was identified for study. On March 29th and 30th, 2004, the area surveyed was presented and on Figure 2-2.

Two geophysical methods; electromagnetic terrain conductivity (EM) and ground penetrating radar (GPR) were used to conduct the 2003 survey. EM data was collected at approximately two-foot intervals along parallel lines spaced approximately 2.5 feet apart. GPR data was also collected along parallel lines spaced no greater than 2.5 feet apart to aid in the identification of subsurface anomalies.

Based on the results of the 2003 geophysical survey, six relatively large, flat-topped subsurface anomalies were detected. The size and shape of these targets were determined to be consistent with potential leach/septic pits. Additionally, some smaller flat reflectors that could represent smaller leach/septic pits and general areas of buried metal and apparent conductive anomalies were detected (see Appendix C, Figure 5).

Based on the results of the geophysical survey, locations of potential leach/septic structures were marked in the field with flags. A photograph of the geophysical area with flagged targets is provided as photo 1 in Appendix B of this report.

A complete record of the two geophysical reports are provided in Appendix C.

2.3 Holding Tank/Septic Tank/Leaching Pit/Refuse Area Sampling

One septic tank, Pit A, and one leach pit, Pit G, were sampled on May 14 and 22, 1997. Please note that these structures were later renamed as ST-01 and LP-01 respectively in the 2004 report as further field information was obtained. Standing water from both pits were collected, and analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), TCL semi-volatile organic compounds (SVOCs), TCL pesticides and polychlorinated biphenyls (PCBs), Target Analyte List (TAL) metals, and cyanide. In addition, a sludge sample was collected from Pit A; no sample could be collected from Pit G due to an absence of sludge. The Pit A sludge

sample was analyzed for TCL VOCs, TCL SVOCs, TCL pesticides and PCBs, TAL metals, cyanide and total organic carbon (TOC).

A light track rig was used for drilling soil borings adjacent (approximately two feet away) to the septic tanks/leach pits. The seven soil borings were advanced on December 10 and 11, 1996 using hollow-stem auger and continuous 2-inch split-spoon drilling methods. The targeted sampling depth was the interval extending from the elevation of the bottom of the structure to two feet below the bottom of the structure.). Soil samples were collected from the interval equivalent to the bottom of the tank/pit. The samples were field screened visually, and with an organic vapor analyzer (OVA) and a combustible gas indicator (CGI). A total of seven samples and one duplicate were collected, and the soil samples were analyzed for TCL VOCs, TCL SVOCs, TCL pesticides and PCBs, TAL metals, and cyanide. Soils were classified according to Burmeister Soil Classification System. Organic vapors in the soil were monitored with a Foxboro OVA 128. Logs for the soil borings, including soil descriptions, field instrumentation readings, observations, and analytical sampling intervals, are provided in Appendix D.

Sampling of the leach pits/septic tanks took place on July 30th, August 26th, September 5th and October 10th, 2003. Eleven pits were sampled: LP-02, LP-03, LP-05, LP-06, LP-06A, LP-07, LP-08, LP-09, LP-0A, ST-01 and ST-02. Samples were collected using decontaminated stainless-steel hand-augers, bowls, and spoons.

When possible, two samples were collected from each pit, one of the sludge-cake materials and a second of the soil immediately below the sludge-cake. The sludge-cake materials contained fine laminations of a variety of colors including greens, grays, maroons, pinks, browns, yellows and blues (photo 8 in Appendix B). The southern septic tank ST-01 had an apparent concrete bottom, and therefore only a sludge sample was collected from this pit. Pits LP-0A and LP-09 contained only trace amounts of sludge above the soil. As such, only one sample was collected from each of these pits. The samples collected from leach pits LP-0A and LP-09 were a combination of soil and the overlying sludge cake.

A total of 19 samples and two duplicate samples were collected and analyzed for TCL, VOCs, TCL SVOCs, TCL pesticides and PCBs, TAL metals, cyanide and TOC. Sludge materials, when present, were described and soils were classified according to the Unified Soil Classification System (USCS).

No sample was collected from LP-01 as the pit has and apparent concrete/solid bottom with no sludge present. Leach pit LP-04 could not be sampled as this pit has been filled with asphalt pieces, glass bottles and other debris.

One sample was collected from 2.5 to 3.0 feet bgs in the apparent refuse area located north of the former Magna Metals building (soil boring RA on Figure 2-2). A decontaminated stainless steel hand auger, bowl and spoon were used to collect the sample. The sample was analyzed for TCL VOCs, TCL SVOCs, TCL pesticides and PCBs, TAL metals, cyanide and TOC.

2.4 Surface Water and Sediment Sampling

A total of 12 surface water samples (and one duplicate) were collected by grab at the Magna Metals site on May 12, 14 and 22, 1997. Locations were as follows: four surface water samples

from the tributary, one sample after the confluence of the stream and tributary; one sample from the confluence of the stream and pond; two samples from the pond; one sample at the drainage culvert from the pond along Cross Roads Avenue; two samples in the wetlands area; and one upgradient sample from the stream. Surface water sampling locations are presented on Figure 2-2. Samples were collected prior to sediment samples and by moving in an upstream direction. Field analyses of pH, specific conductance, and temperature were taken at each sampling location with a Hydac water quality meter. The surface water samples were analyzed for TCL VOCs, TCL SVOCs, TCL pesticides and PCBs (three locations), TAL metals, cyanide, and hardness.

Twelve surface sediment samples (and one duplicate) were collected at the same locations in 1997; see Figure 2-2. A stainless steel scoop was used to obtain those sediment samples with only standing water less than four inches deep. When the water above the sediments was flowing or was greater than four inches in depth, a corer was used to collect the sediment sample so that washing of the sample was minimized. Sediment samples were collected moving in an upstream direction and after then surface water samples were collected. The sediment samples were field screened visually and with a photoionization (HNu) instrument. Samples for volatile analysis were collected without homogenization. The sediment samples were analyzed for TCL VOCs, TCL SVOCs, TCL pesticides and PCBs (three locations), TAL metals, cyanide, and TOC.

Benthic samples were collected from 7 locations on March 29th and 30th, 2004. Sediment for toxicity and supplemental analyses (TAL metals, PAH, TOC and acid volatile sulfide and soluble extractable metals) were collected March 30th through April 3rd, 2004. Surface water samples for TAL metals and toxicity analyses were collected on March 29, 2004.

Sample locations were surveyed using a Trimble Pro XRS GPS. GPS data was collected March 25th through April 3rd, 2004. GPS data is presented on Figure 2-2.

Analyses and reporting of the surface water and sediment data used in the ecological analysis is presented in Section 5 of this report.

2.5 Surface Soil Sampling

Five surface soil samples and one duplicate were collected at the locations displayed on Figure 2-2 on April 11, 1997. An additional surface soil sample was collected from location SS-2 on November 17, 1997. Samples SS-1, SS-2 and SS-3 were collected downgradient of the on-site tanks/pits. Samples SS-4 and SS-5 are upgradient background surface soils. A material classification using the Burmeister Classification system was performed at each sampling location, and the soil descriptions are presented on logs in Appendix D. In addition, the surface soil samples were field screened visually and with a photoionization (HNu) instrument.

A stainless steel soil coring device/silver bullet sampler was used to obtain the surface (i.e., 0 to 12 inches in depth) samples. Volatile samples were collected first without homogenization, from the 6 to 12-inch interval. The April 1997 surface soil samples were analyzed for TCL VOCs, TCL SVOCs, TCL pesticides and PCBs, TAL metals, and cyanide. The November 1997 surface soil sample was also analyzed for TOC.

On July 29th and 30th, 2003, ten additional surface soil samples were collected from the 0 to 2-inch bgs interval. The samples were collected using a stainless steel spoon and bowl and were analyzed for TCL VOCs, TAL metals and cyanide. The surface soil sample locations were surveyed using a Trimble Pro XRS GPS. GPS data was collected on July 30, 2003 and February 27, 2004 and sample locations are presented on Figure 2-2.

2.6 Subsurface Soil Sampling

Soil borings were drilled in conjunction with the monitoring well installation program at the site on November 17 through 21, 1997, utilizing hollow stem augers. Split spoon sampling was performed continuously from the surface to the bottom of the boring to provide a continuous boring log. These logs are provided in Appendix D and include the following:

- Physical characteristics and grain size distribution of samples (using the Burmeister Soil Classification System);
- Blow counts for driving the sampler (standard penetration resistance);
- Presence of any visible contaminants;
- Color changes;
- Groundwater level;
- Thickness of individual units; and
- Any other conditions encountered during drilling.

A total of seven samples and one duplicate were analyzed for volatile organics, TCL VOCs, TCL SVOCs, TCL pesticides and PCBs (one sample) and TAL metals, cyanide, and total organic carbon. Soil samples were collected continuously at all test borings. Two samples were collected for analysis at each location wherever possible. Sample intervals were from surface (0 to 2'), at the water table interface (approximately 6 to 8 feet below ground surface [bgs]) and at the midpoint of the screened interval (10 to 12 feet bgs).

2.7 Monitoring Well Installation

1998 RI/FS

The RI monitoring well program was designed to provide groundwater sampling points immediately downgradient of the potential source area (leach pits and tanks), and a sampling point upgradient to provide background data for comparative analytical purposes. Downgradient wells were positioned to intercept groundwater flow from the disposal area in the overburden aquifer. Since the site area contains a large topographic low area which consists of wetlands, groundwater flow is anticipated in this direction. Therefore, three monitoring wells, MW-2, MW-3, and MW-4, were installed southwest (downgradient) of the tanks/leach pits to intercept groundwater flow. Monitoring well MW-1 was installed at a location upgradient/sidegradient of the sources. The locations of the monitoring wells are shown in Figure 2-2.

On November 17 through 21, 1997, the monitoring wells were installed in the overburden aquifer to screen the water table. Monitoring well borings were drilled utilizing hollow stem augers. Wells were constructed in the boreholes using two-inch diameter PVC riser and No. 20 slot PVC screens. Well development was conducted until the well responded to water level changes in the formation and produced clear, sediment-free water to the extent possible. The

wells were developed with a goal of producing water of not more than 10% variation between successive field parameters.

2004 Supplemental RI

On August 26 through 28, 2003, monitoring wells MW-05, MW-06, and MW-08 (Figure 2-2) were installed in the overburden. Monitoring well MW-05 was installed upgradient of the leach pit area for the collection of background groundwater chemistry samples. Monitoring well MW-06 was installed in the leach pit area to assist in defining the northerly extent of groundwater contamination detected in samples collected from monitoring well MW-04 in May 1998. Monitoring well MW-08 was installed to assist in delineation the horizontal extent of groundwater contamination downgradient of the leach pit area.

Overburden monitoring well borings were drilled with 4 ¼ inner-diameter hollow stem augers (HSA). The boreholes were completed as monitoring wells and screened across the water table using two-inch Schedule 40 PVC riser and 10 slot Schedule 40, slotted PVC screen. Sand packs were constructed with No. 1 silica sand. Boring logs and monitoring well construction diagrams are provided in Appendix D.

Well development was conducted by pumping and surging until the well responded to water level changes in the formation and produced clear, sediment-free water to the extent possible. The wells were developed with a goal of producing water of not more than 10% variation between successive field parameters.

Bedrock monitoring wells MW-04D and MW-07 (Figure 2-2) were installed on August 22 through September 3, 2003. Bedrock monitoring well borings were drilled with 4 ¼ HSA in the overburden and a 5 5/8-inch roller bit in bedrock. MW-04D was installed immediately adjacent to MW-04 to determine if contamination of the overburden aquifer had migrated into the underlying bedrock aquifer. MW-07 was installed approximately 600 feet in the general downgradient direction of MW-04 along Rosalind Drive. MW-07 was initially planned as an overburden well to assist in determining the downgradient edge of the plume; however bedrock was encountered at 2 feet bgs, thus the well was completed as a bedrock well. Boring logs and monitoring wells construction diagrams are provided in Appendix D.

The bedrock monitoring wells were developed following the same procedures as for the overburden monitoring wells. Monitoring well development data sheets for the bedrock wells are provided in Appendix D.

2006 Data Findings Letter Report

A third phase of monitoring well installation and sampling were performed in 2005. The proposed additional activities were requested by NYSDEC to provide a more comprehensive view of volatile organic contamination in the groundwater occurring at the site.

Three additional monitoring wells were installed in the overburden water-bearing zone as specified during the August 31, 2005 NYSDEC/NYSDOH site meeting. The locations of the three additional monitoring wells are shown on Figure 2-2.

Monitoring wells MW-09 and MW-10 were installed west (downgradient) of the Site building to evaluate groundwater quality and to provide a more comprehensive assessment on the source of groundwater contamination. MW-11 was installed on the north side of Leach Pit LP-09 and within the terrace on which the leach pits are situated, to supplement delineation of the volatile organic groundwater contamination. Monitoring well depths and screened intervals were selected based on the elevation of the water table, the screen intervals being placed across the water table.

2.8 Groundwater Contamination Delineation

1998 RI/FS

The 1998 RI/FS groundwater sampling program was designed to provide information (1) for a more precise understanding of overburden groundwater at the site, and (2) on the presence, nature and extent of a contamination plume. One round of sampling was performed on May 11 and 12, 1998, at the four installed monitoring wells (see Figure 2-2). The wells were sampling using NYSDEC approved USEPA Low Flow Sampling Procedures. Specific conductance, pH, and temperature were measured at the start of purging operations and after each purged volume. Stabilization of these parameters of ± 10 percent from successive purged volumes indicated that the groundwater within the well was at equilibrium. Groundwater samples were obtained by using a stainless steel or Teflon bailer suspended on stainless steel Teflon coated wire. Wells were sampled for TCL VOCs, TCL SVOCs, TCL pesticides and PCBs, TAL metals and cyanide.

2004 Supplemental RI

The groundwater sampling program was designed to provide additional information for a more precise understanding of overburden and bedrock water bearing units at the site, and to further define the presence, nature and extent of a contamination plume. One round of sampling was performed on October 6 through 8, 2003. Groundwater samples were collected from seven of the nine site monitoring wells (MW-01, MW-02, MW-04, MW-04D, MW-05, MW-07, and MW-08) The collected samples were analyzed for TCL VOCs, TAL metals and cyanide.

All wells, except MW-04, were sampled using NYSDEC-approved USEPA Low Flow Sampling Procedures. Groundwater samples were collected using a 2-inch stainless steel Grundfos pump with Teflon-lined tubing.

Specific conductance, pH, dissolved oxygen, oxidation-reduction potential, turbidity and temperature were measured at the start of purging operations and periodically (approximately every 3 minutes) during purging. Stabilization of these parameters (pH: ± 0.1; conductivity: ± 3%; dissolved oxygen: ± 10%; oxidation-reduction potential: ± 10 mV; turbidity: >50 NTU or ±10%) over three consecutive readings indicated that the groundwater within the well was at equilibrium. Well purge data sheets are presented in Appendix D.

Due to a low volume of water in MW-04, this well was bailed dry using a 1" diameter Teflon bailer and then allowed to recharge. Once the well had recharged, samples were collected using a Teflon bailer. Due to the small volume of water extracted from the well during purging (approximately 0.25 gallons), water quality measurements were not collected.

No sample could be collected from monitoring wells MW-03 and MW-06. MW-03 was dry and MW-06 was bailed but contained only mud and sediment. As such, no sample was collected. These wells demonstrated the limited water-bearing zone beneath the site area.

2006 Data Findings

Three (3) newly installed monitoring wells (MW-9 through MW-11) and previously installed monitoring wells MW-02, MW-03, MW-04, and MW-06 were sampled in accordance with approved work plan procedures. In addition, one (1) field blank, one (1) duplicate, and one (1) MS/MSD was collected. One (1) trip blank was collected for each day of sampling. Groundwater samples were analyzed for Target Compound List Volatile Organic Analytes (TCL VOAs) only.

2.9 Hydraulic Conductivity Testing

Instantaneous displacement tests or slug tests were conducted at four Magna Metals site monitoring wells on May 11 and 12, 1998. These tests were conducted in order to provide a general indication of relative hydraulic conductivity in the shallow unconsolidated aquifer.

Each slug test was conducted by dropping a sealed PVC cylinder (i.e., slug) into the well and measuring the resultant water level displacement. First, the static water level was measured with a hand-held instrument from the top of the casing prior to the test. The slug was then dropped into the well and completely submerged within a few seconds. Water levels were measured by hand-held instrument at regular intervals after displacement by the slug. Measurements were continued until approximately 90 percent recovery had occurred. After recovery from the first test was achieved, the slug was removed within a few seconds and recovering water levels were again monitored with a hand-held instrument.

Detailed analyses of the slug tests from the 1998 RI are presented in Appendix E.

2.10 Homeowner Survey

On August 8, 2003, officials at the Cortlandt Town Hall were contacted regarding potential private wells in the area. Based on discussions with Mickey Foster in the Town Water Department, it was concluded that all residents are currently on town water. Some town residents still have private wells, but these properties are either not in the area of the site. Private wells are upgradient of the former Magna Metals property by at least ¼ to ½ mile.

2.11 Monitoring Well Survey

The monitoring well locations were surveyed. Horizontal control was referenced to the New York State Plane coordinate system using the North American Datum of 1983 (NAD83). Vertical control was referenced to the North American Vertical Datum of 1988 (NAVD88). The survey was performed on March 29th and 30th, 2004.

2.12 Groundwater Level Measurements and Surface Water Survey

A synoptic round of water levels was collected on March 30, 2004 in coordination with a survey of five surface water elevation locations. Water levels were collected using a Solinst interface probe. The surface water elevations were also surveyed. Horizontal control was referenced to the New York State Plane coordinate system using the North American Datum of 1983 (NAD83). Vertical control was referenced to the North American Vertical Datum of 1988 (NAVD88). The results of the synoptic round of water level measurements are displayed in Table 2-2.

2.13 Building Interior Sampling

As a result of a proposed building demolition by Baker Properties, sampling beneath the building slab of the former Magna Metals building was planned. However, sampling was not performed because the building was not demolished prior to the field work. The structure is considered physically unsafe to enter. During remediation activities, the derelict building should be taken down and soils should be sampled for potential removal.

2.14 Investigation Derived Waste

Prior to the start of investigative work related to the supplemental RI, investigation derived waste (IDW) from the 1998 investigation was removed from the site (July 25, 2003). IDW resulting from work performed as part of the supplemental RI/FS work was stored on site in 55-gallon steel drums. Following the completion of supplemental RI investigative activities, a second IDW removal event occurred (May 3, 2004). No investigation waste remained at the conclusion of the 2005 field work. All investigation waste was removed from the site.

2.15 Soil Vapor Survey (2006)

Following submittal and NYSDEC review of the Draft Supplemental RI Report dated August 2004, the additional work was required to address the potential for soil gas at the site.

Eight (8) soil vapor and one (1) sub-slab vapor samples and one field duplicate were collected. Locations of the soil and sub-slab vapor (SV) locations are presented on Figure 2-4 and were agreed upon by representatives of NYSDEC and NYSDOH. Soil vapor and sub-slab vapor sampling was performed to confirm the absence of a vapor intrusion pathway.

Soil vapor and sub-slab vapor samples were analyzed at an ELAP-certified laboratory. Vapor samples were analyzed by United States Environmental Protection Agency (USEPA) Method TO-15 for volatile organic compounds with a reporting limit of 1 $\mu g/m^3$.

Soil vapor horizontal locations were surveyed using a Global Positioning System (GPS) unit with 3-foot accuracy. The sub-slab vapor implant location was measured from corners of the building in which the location is located. The relevant external corners of the building were located using a GPS unit.

2.16 AKRF Vapor Intrusion Assessment (2007)

In November 2006, the NYSDEC issued correspondence requiring the sampling of sub-slab soil vapor from the on-site office/warehouse building to the case of the Magna Metals building to confirm the presence or absence of soil vapor intrusion. NYSDEC's sampling requirement was in response to a TCE concentration of 59 micrograms per cubic meter in one soil vapor sample (SV-03) that was collected next to the office/warehouse building. A Soil Vapor Investigation Work Plan dated February 2007 (prepared by AKRF, Inc.) was approved by the NYSDEC in March 2007.

On March 16, 2007, the soil vapor sampling program was initiated with the completion of a presampling survey of the site building. A NYSDOH Indoor Air Quality Questionnaire and Building Inventory form for each occupant was used to document the detailed results of the survey.

On March 24, 2007, five interior soil-gas sampling points (SV-11 through SV-15), were installed within the Polymedco office, the Motion Laboratory, the Polymedco warehouse, and the International Purchasing Systems warehouse. Sample locations are presented in Figure 2-5.

On April 5, 2007, five sub-slab soil gas and six indoor air samples were collected using six-liter Summa canisters over an 8-hour sampling period. The samples were analyzed for VOCs by EPA Method TO-15.

Table 2-1
Leach/Septic Pit IDs, Sludge Thickness, and Construction Details
Magna Metals - Cortlandt, New York

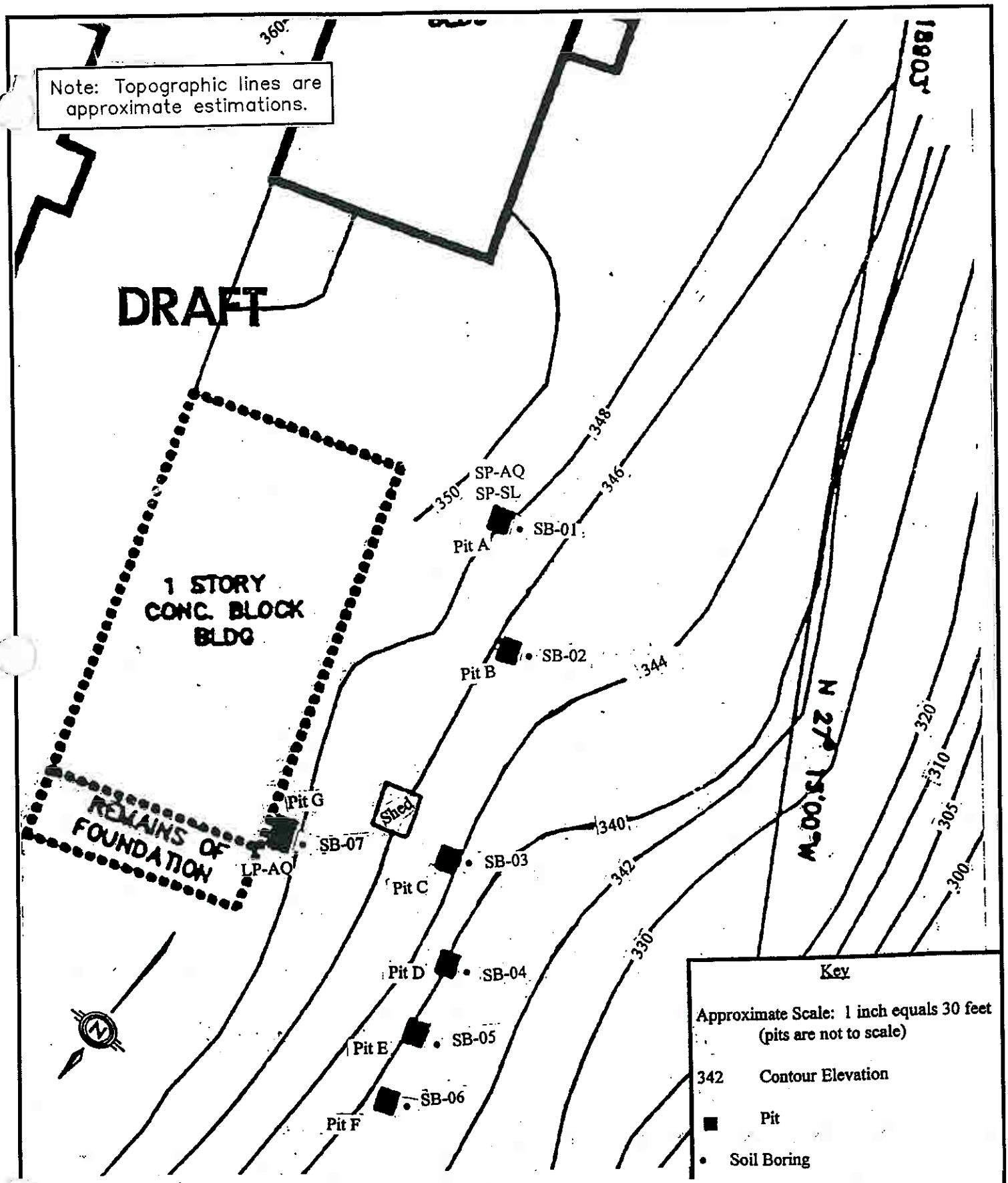
Current Pit ID	Previous Pit ID	Approximate Depth to Sludge (feet)*	Approximate Depth to Soil (feet)*	Approximate Sludge Thickness (feet)	Leach Pit Construction
ST-01	Pit A	6	-	NE	Rectangular shape with concrete walls and bottom
ST-02	Pit B	7	7.6	0.6	Cinderblock
LP-01	Pit G	NE	NE	NE	Rectangular shape, concrete walls with internal baffles
LP-02	Pit C	7	7.75	0.75	Cinderblock
LP-03	Pit D	7	8.3	1.3	Cinderblock
LP-04	Pit E	-	-	-	Cinderblock
LP-05	Pit F	7	8	1.0	Cinderblock
LP-06	**	7	7.3	0.3	Pre-fabricated
LP-06A	**	7	8	1.0	Cinderblock
LP-07	**	7	7.1	0.1	Pre-fabricated
LP-08	**	7	7.02	0.02	Pre-fabricated
LP-09	**	7	NE	<0.02	Pre-fabricated
LP-0A	**	7	NE	<0.02	Pre-fabricated

* Depths measured in feet below pit opening
** Leach pit discovered during 2004 field effort.
- Not able to measure
NE - Not estimated
Cinderblock - Cylindrical shape with concrete cinderblock construction
Pre-fabricated - Cylindrical, pre-fabricated concrete construction with 1" diameter perforations along sidewalls
All pits except ST-01and LP-01 are approximately 6' in diameter.
LP-04 is filled with debris, depth could not be measured

Table 2-2
Groundwater and Surface Water Elevations
March 30, 2004
Magna Metals - Cortlandt, New York

Location	Northing (feet)	Easting (feet)	Measuring Point Elevation (feet msl)	Depth to Water (feet)	Water Elevation (feet msl)
MW-01	889547.12	665389.57	367.94	6.85	361.09
MW-02	889760.21	665127.51	346.57	14.81	331.76
MW-03	889806.63	665090.97	341.92	16.67	325.25
MW-04D	889832.07	665073.80	339.61	14.9	324.71
MW-04	889840.26	665070.73	338.03	13.47	324.56
MW-05	890191.50	665491.01	343.40	11.71	331.69
MW-06	889901.83	665025.92	336.97	16.14	320.83
MW-07	889316.93	664899.66	334.73	8.48	326.25
MW-08	889301.20	664474.00	317.54	6.48	311.06
SWEL-1	889844.39	664863.44	309.86	0.00	309.86
SWEL-2	889797.07	664799.56	309.83	0.00	309.83
SWEL-3	890262.07	664686.03	309.97	0.00	309.97
SWEL-4	890099.19	664725.83	309.93	0.00	309.93
SWEL-5	889492.49	665113.99	316.31	0.00	316.31

msl - Mean Sea Level
Horizontal Datum North American Datum of 1983 (NAD83 New York State Plane Coordinates Zone 3101)
Vertical Datum is North American Vertical Datum of 1988 (NAVD88)

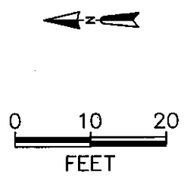


TETRA TECH EC, INC.	TITLE: Leach Pit Location Map – 1998 RI Summary Magna Metals Cortlandt, New York	DWN: LMB	DES.:	PROJECT NO.: 106–1172
		CHKD:	APPD:	
		DATE: 08/22/07	REV.: 0	FIGURE NO.: 2–1

LEGEND

- LEACH PIT OF CINDER BLOCK CONSTRUCTION
- LEACH PIT OF PERFORATED CONCRETE CYLINDER CONSTRUCTION
- ——— VERIFIED CONNECTION VIA PIPE
- - -?- - INFERRED PIPE CONNECTION

NOTE: LEACH/SEPTIC PIT LOCATIONS ARE BASED ON GPS DATA.

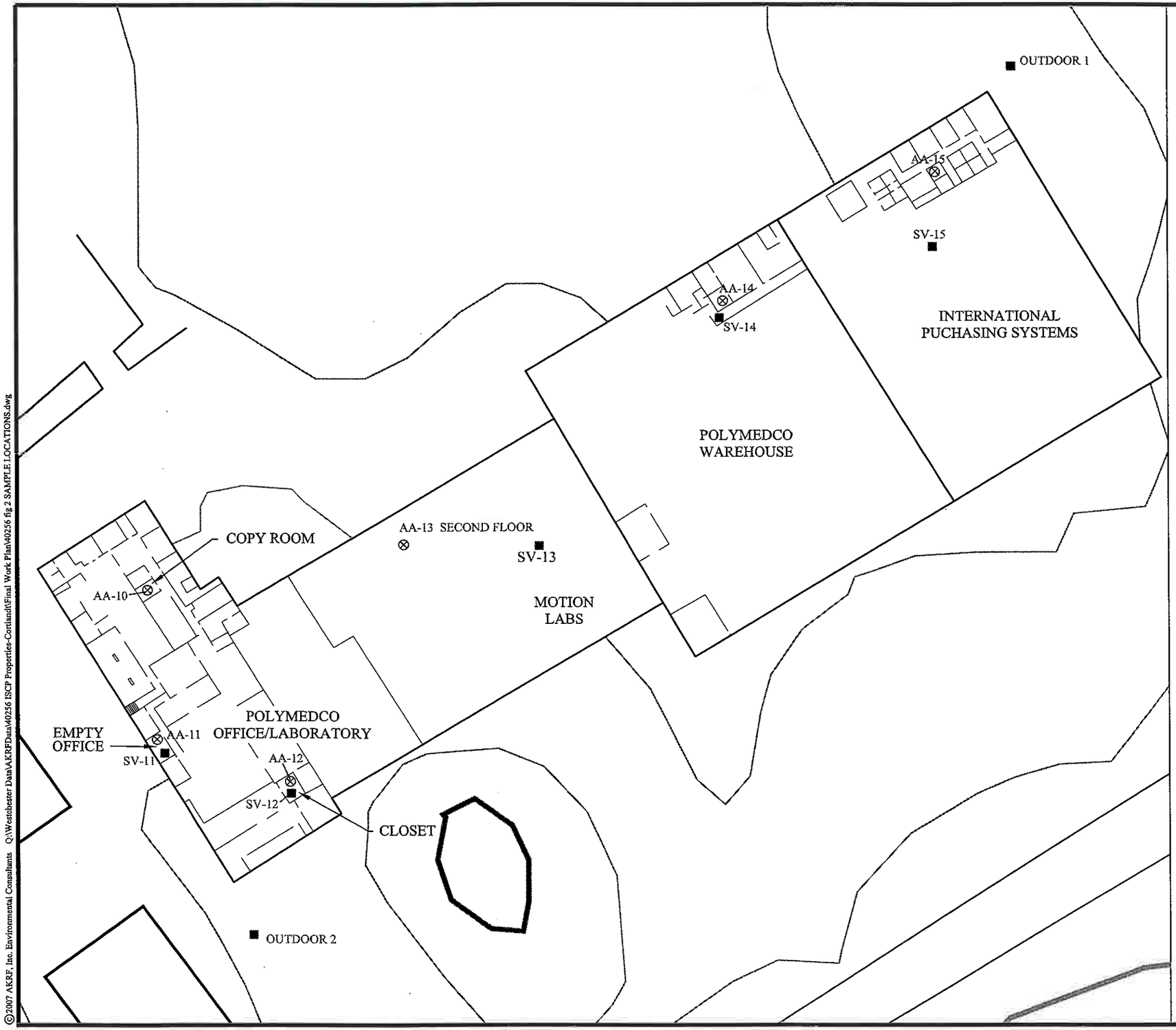


TETRA TECH EC, INC

TITLE:
Leach/Septic Pit Location Map – 2004 Supplemental RI
Magna Metals
Cortlandt, New York

DWN.: CTS	DATE: 08/21/07	PROJECT NO.: 106-1172
CHKD:	REV.: 0	FIGURE NO.: 2-3
DES.: DPC	APPD:	

N:\GIS\GISKEY\GISPROJ31\MAGNA METALS\DRAFT FINAL RI\FIGURE 2-3 082107.DWG



SOURCES:
1. BASE MAP PROVIDED BY TETRA TECH EC, INC. JUNE 2006.

2. CONTOUR LINES BASED ON MOHEGAN LAKE, NY AND PEEKSKILL, NY TOPOGRAPHIC QUADRANGLES, 7.5-MINUTE SERIES, DATED 1956 AND 1957, RESPECTIVELY, AND PHOTOREVISED IN 1981.

3. ADDITIONAL SURFACE FEATURES BASED ON WESTCHESTER COUNTY DEPARTMENT OF PLANNING AERIAL PHOTOGRAPH (SPRING 1990), DECEMBER 18, 1999 AERIAL PHOTOGRAPH, AND SURVEY DATA.

LEGEND:

- SV-14 ■ — SUBSLAB VAPOR SAMPLING LOCATION
- ⊗ — INDOOR AIR SAMPLING LOCATIONS
- 320 — CONTOUR LINE (20 FT INTERVAL)

NOTES:
1. LOCATIONS OF FORMER MAGNA METALS BUILDING, 1 STORY CONCRETE BLOCK BUILDING, SHED, GEOPHYSICAL SURVEY AREA, AND MONITORING WELLS ARE BASED ON SURVEY DATA.

0' 30' 60' 120'
SCALE IN FEET

N

AKRF
Environmental Consultants
34 South Broadway, White Plains, N.Y. 10601

MAGMA METALS
CORTLANDT, NEW YORK

SAMPLING LOCATIONS

DATE
05.25.07

PROJECT NO.
40256

SCALE
1"=60'

FIGURE
2-5

3.0 PHYSICAL CHARACTERISTICS OF THE STUDY AREA

Topography is fairly steep throughout the 0.5-mile radius from the site. Elevations range from 300 to 600 feet above mean sea level (msl). On the former Magna Metals Site, topography ranges from 360 feet msl along the eastern site boundary, to 320 feet msl along the western site boundary. The topography decrease is fairly steep. Stormwater drainage flows towards the west, following site topography, and drains into an unnamed tributary to Furnace Brook. The tributary flows south/southwest and discharges into a pond located in a large wetland area. Figure 3-1 depicts the site drainage pattern.

Stormwater drainage flows towards the west, following site topography, and drains into an unnamed tributary of Furnace Brook and a large wetland area. The unnamed tributary flows north to Furnace Brook, which it joins approximately 150 feet northwest of the Magna Metals Site boundary. Furnace Brook, a Class C stream, flows south/southwest through the wetland area and discharges into a pond located approximately 250 feet downgradient (west) of the site. The wetlands are not classified as New York State regulated wetlands. Based on the homeowner survey (Section 2.2), there are no drinking water aquifers in the vicinity of the site.

3.1 Site Geology

The primary geologic characteristics of the subsurface conditions at the site and surrounding area consists primarily of a sandy to silty sand overburden unit, approximately 2 to 18 feet thick, overlying Hornblende bedrock, which is a associated with the New England Upland geologic unit. Figure 3-2 presents Cross-Section A-A', which shows the relationship of the units. The transect of Cross Section A-A' is depicted on Figure 2-2.

In the leach pit area, it is presumed that much of the overburden material is fill resulting from the installation of the leach pits. Based on boring logs (Appendix D), it is inferred that the fill material extends at least as deep as the bottoms of the leach pits. This depth appears to range from approximately 7 to 10 feet bgs across the site. The geophysics indicated areas on the site of apparent conductive anomalies as well as areas of buried metal. Excavation efforts in the leach pit area confirmed the presence of buried debris consisting mostly metal lamp parts and some pieces of lamp glass and other lamp associated debris. A photograph of the lamp debris uncovered is provided as photo 9 in Appendix B.

Bedrock was encountered at depths of 2 to 18 feet bgs at the site. The bedrock was found to be generally hard with fresh weathering. Rock quality designations (RQDs) of the bedrock ranged from 47% to 100%. At the MW-07 location, a fracture zone was present in the bedrock at 9 to 15 feet bgs.

3.2 Site Hydrology

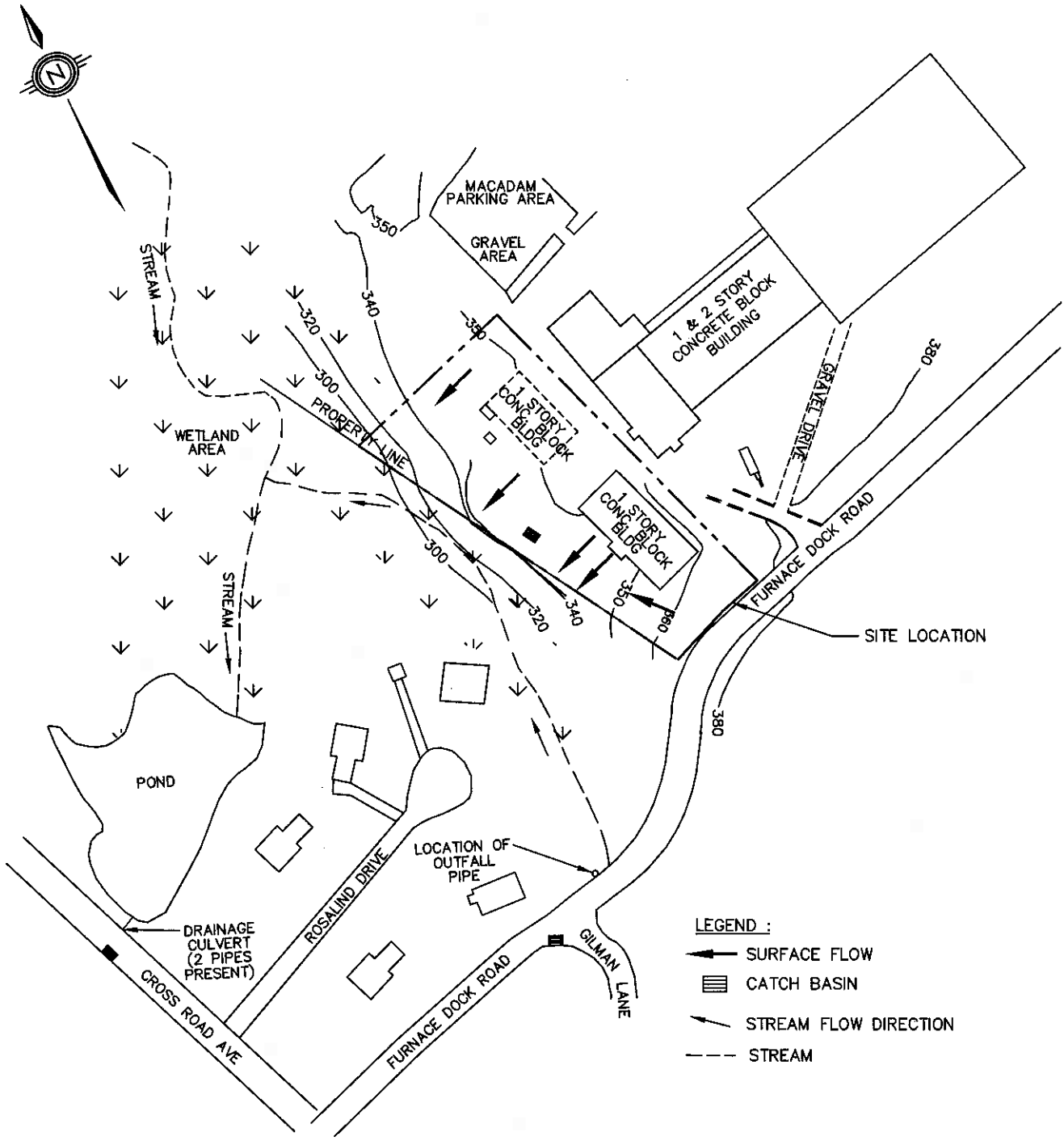
Overburden groundwater exists in the form of a very shallow water-bearing unit (i.e., typically less than five feet in thickness). Based on water level measurements collected on March 30, 2004 (Table 2-2), overburden groundwater elevations ranged across the site and nearby vicinity from 311.06 ft msl (MW-08) to 361.09 ft msl (MW-01). Overburden groundwater flow direction is to the west toward the unnamed tributary, the wetland area, and the confluence of the unnamed tributary and Furnace Brook. Overburden groundwater likely discharges to the unnamed

tributary, Furnace Brook, and the local wetlands. Figure 3-3 displays groundwater flow as interpreted from the March 30, 2004 data. Based on Figure 3-3, the hydraulic gradient in the overburden between the site and the unnamed tributary and wetland area is approximately 0.1 ft/ft.

Bedrock groundwater elevations ranged from 324.71 ft msl (MW-04D) to 326.25 ft msl (MW-07). Based on the March 30, 2004 groundwater data collected from monitoring wells MW-04 and MW-04D, there is a slightly upward vertical hydraulic gradient between the bedrock and overburden water bearing units.

3.3 Cross Section

Cross section (A-A') (Figure 3-2) extends from the leach pit area, through the wetland area, and to Furnace Brook. The cross-section was prepared to depict the relationship of the fill, native overburden, and bedrock, to the potential source area (the leach pit area) and to potential environmental receptors (wetlands, Furnace Brook, and the unnamed tributary). Cross Section A-A' runs approximately perpendicular to groundwater and topographic contour lines and therefore roughly parallels the groundwater flow and surface water runoff flow directions. The topography of the native soil roughly mimics the topography of the underlying bedrock, with the relief of the surface topography having been enhanced in the Leach Pit Area with the addition of fill to cover the leach pits. Surface runoff follows the dip of the land surface and runs from the leach pit area into the wetland area. Overburden groundwater is not depicted in the vicinity of MW-06 because this well was dry during groundwater sampling. However, water table groundwater flow likely discharges to the wetland area and eventually to Furnace Brook and the unnamed tributary.

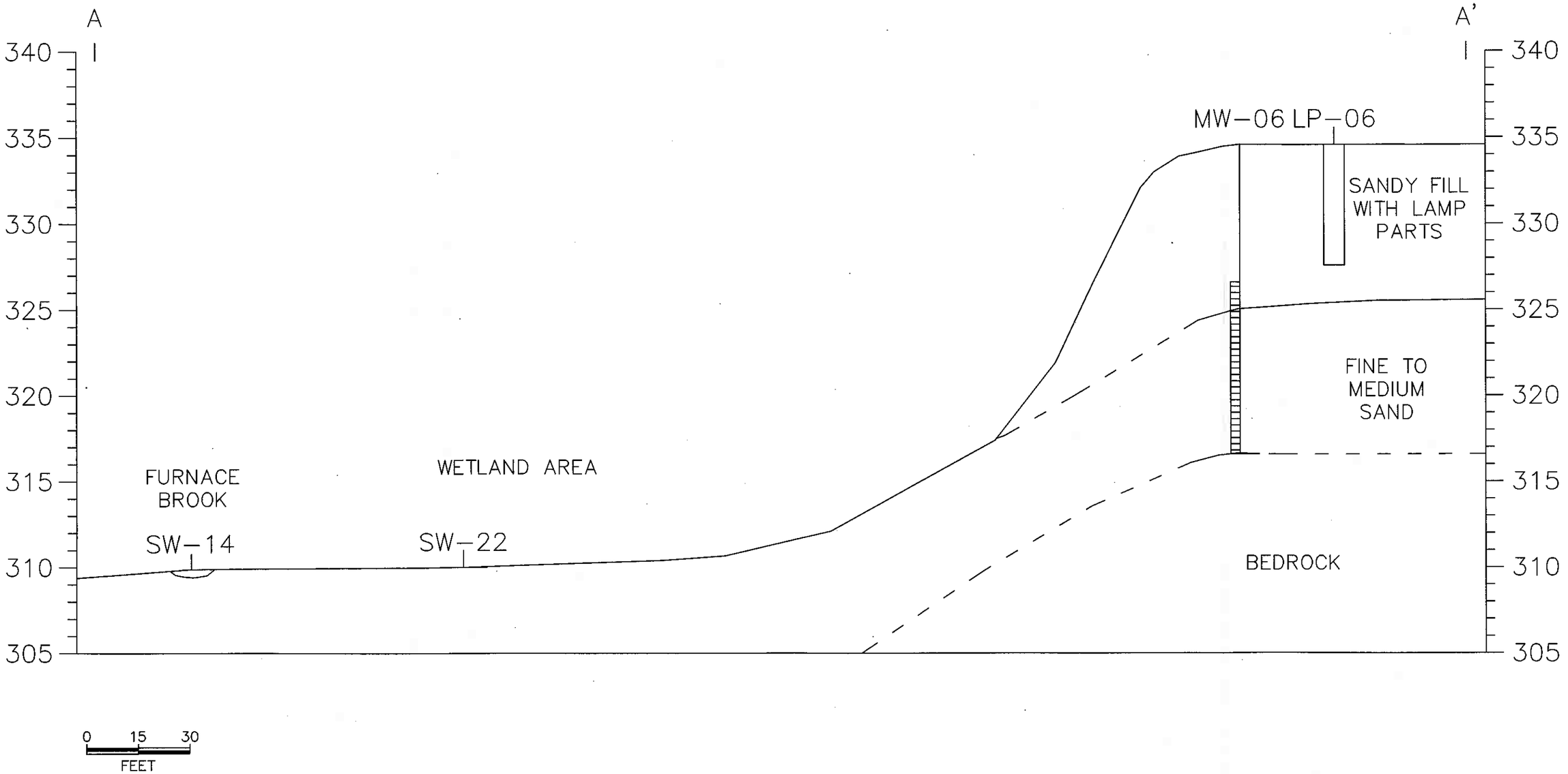


SURFACE FEATURES FROM
WESTCHESTER COUNTY, DEPARTMENT
OF PLANNING AERIAL PHOTOGRAPH, SPRING 1990

TOPOGRAPHIC INTERPRETATION
FROM NYSDEC, 1983

TETRA TECH EC, INC.	TITLE: Drainage Map – 1998 RI Summary Magna Metals Cortlandt, New York	DWN: LMB	DES.:	PROJECT NO.: 106-1172
		CHKD:	APPD:	FIGURE NO.: 3-1
		DATE: 08/21/2007	REV.: 1	

H:\GIS\GISKEY\GISPROJ\MAGNA METALS\DRAFT FINAL RI\FIGURE 3-1 082107.DWG



TETRA TECH EC, INC.

TITLE:
Cross-Section A - A' - 2004 Supplemental RI
Magna Metals
Cortlandt, New York

DWN.: CTS	DATE: 08/21/07	PROJECT NO.: 1172.0003	
CHKD:	REV.: 0	FIGURE NO.: 3-2	
DES.: DPC	APPD:		

N:\GIS\GISKEY\GISPROJ31\MAGNA METALS\DRAFT FINAL RI\FIGURE 3-2 082107.DWG

4.0 ENVIRONMENTAL SAMPLING RESULTS

4.1 Introduction

The Magna Metals RI/FS Site investigation was an extensive and comprehensive multimedia environmental sampling and analysis program which included the collection and analysis of septic tank/leach pit water and sludge samples, surface water and sediment samples, surface and subsurface soil samples, groundwater samples, and soil gas to determine the presence, nature and extent of contamination at the site. In addition, sub slab vapor and indoor air samples have been collected and the data results have been presented in the AKRF Soil Vapor Investigation Report, July 2007. For completeness, a brief summary of those results are presented herein.

The environmental samples were analyzed by methods stated in the NYSDEC-Analytical Services Protocol (ASP) and included the following analyses:

- Target Compound List (TCL) Volatile Organic Compounds (VOCs);
- TCL Semi-Volatile Organic Compounds (SVOCs);
- TCL Pesticides and Polychlorinated Biphenyls (PCBs);
- Target Analyte List (TAL) Metals;
- Cyanide; and
- Total Organic Carbon

The results of the 1998, 2004, and 2006 reports sampling investigation are summarized by environmental medium in Appendices F, G, H, respectively.

Data qualifiers are noted throughout the text and tables to indicate concentrations which are undetected (designated with a "U", "ND" or "--"); estimated ("J"); and/or rejected ("R"). A "B" found in the organics data indicates that the compound was also detected in an associated laboratory blank, possibly showing inter-laboratory contamination. In contrast, a "B" found in the inorganics data indicates that the element was detected above the instrument detection limit but below the method-specific and matrix-specific quantitation limit.

4.2 Holding Tank/Septic Tank/Leaching Pit Analytical Results

4.2.1 1998 RI/FS

One sludge and one water tank sample were collected from one Septic Tank, Pit A. In addition, a water sample was collected from one leach pit, Pit G, during the May 1997 site investigation. Please note that these two pits were renamed as LP-01 (G) and ST-01 (A). The samples were analyzed for TCL organics, TAL metals and cyanide, and/or TOC (sludge only). A summary of the detected constituents presented in 1998 Report can be found in Table 4-1 and on Figure 4-1. Analytical results from the 1998 RI/FS are presented in Tables F-2 through F-6 of Appendix F.

Three VOC constituents were present in the septic tank sludge samples. 2-Butanone, toluene and xylenes were detected at concentrations of 37 ug/kg, 14 ug/kg and 30 ug/kg, respectively. The water sampled from the septic tank contained none of these VOCs. 1,4-Dichlorobenzene was detected in SP-AQ at a concentration of 0.76 ug/L. Analysis of sample LP-AQ from Pit G

indicated concentrations of three chlorinated aliphatics (chlorine-substituted hydrocarbon compounds). These detected compounds were vinyl chloride at 2.2 ug/L, cis-1,2-dichloroethene at 4.8 ug/L, and trichloroethene at 0.92 ug/L.

The septic tank sludge in Pit A contained occurrences of eleven SVOCs, of which eight were polycyclic aromatic hydrocarbons (PAHs). Concentrations for the PAH constituents ranged from 200 ug/kg (benzo(a)pyrene) to 1,500 ug/kg (2-methylnaphthalene). The other three detected SVOCs were 1,4-dichlorobenzene at 4,200 ug/kg, bis(2-ethylhexyl)phthalate at 12,000 ug/kg, and di-n-octylphthalate at 330 ug/kg. The water samples from the septic tank (SP-AQ) and from the leach pit (LP-AQ) both contained bis(2-ethylhexyl)phthalate at concentrations of 2 ug/L. PAH compounds generally consist of two or more fused benzene rings, and occur from the burning of oils, wood, coal, gas, etc.; from wood processing and treating operations; and from the manufacture of plastics, chemicals and dyes. 1,4-Dichlorobenzene is utilized as a disinfectant, deodorant and chemical intermediate. The manufacture of plastics and rubber materials use phthalate compounds. It is noted that the existence of the PAH compounds is not typical of bi-products found in metals plating waste stream.

One pesticide and two PCBs were detected in the septic tank sludge. Sample SP-SL contained 11 ug/kg of 4,4'-DDE, 150 ug/kg of Aroclor-1248 and 72 ug/kg of Aroclor-1260. The septic tank water and the leach pit water samples contained no detectable levels of pesticide or PCB constituents.

Analysis of the septic tank sludge indicated detectable occurrences of 20 metals. Concentrations ranged from 0.49 mg/kg for mercury to 30,400 mg/kg for iron. In addition, cyanide was detected in the sludge at a concentration of 2,420 mg/kg. The septic tank water sample contained 18 inorganics (17 metals and cyanide), at concentrations up to 22,000 ug/L. Thirteen metal analytes and cyanide were detected in LP-AQ. Concentrations for the leach pit sample ranged from 1.4 ug/L (vanadium) to 9,500 ug/L (calcium). The concentration of TOC in the septic tank sludge was 52,000 mg/kg.

4.2.2 2004 Supplemental RI

Samples were collected from 11 leach pits at the Magna Metals Site. The 11 pits sampled were the southern septic tank (ST01), the northern septic tank (ST02), leach pit LP-02, LP-03, LP-05, LP-06, LP-06A, LP-07, LP-08, LP-09 and LP-0A. Samples were analyzed for TAL metals, TCL VOCs, TCL SVOCs, TCL pesticides and PCBs, TOC and cyanide. The results of these analyses are discussed below. Analytical results are presented in Table 4-2 and the distribution of exceedances are presented on Figure 4-2.

Of the soil/sludge samples collected from the eleven pits, all had metals results that exceeded the NYSDEC Recommended Soil Clean-up Criteria. Generally speaking, the samples collected below the sludge cake material had fewer exceedances and/or metals concentrations that were significantly lower than those of the overlying sludge material sampled from the same pit. The results of the soil samples were still in exceedance by many magnitudes. Depending on the analyte, metals results exceeded the NYSDEC Recommended Soil Clean-up Criteria.

One leach pit sample (ST-01 which was previously labeled Pit A in the 1998 RI/FS) had a volatiles exceedance. This sample exceeded the NYSDEC Recommended Clean-up Criteria for m/p-Xylenes.

Six of the leach pit samples (LP-02, LP-05, LP-07, LP-09, LP-0A, ST-02) had semi-volatile results that exceeded the NYSDEC Recommended Soil Clean-up Criteria. Of these six samples, three samples were of the sludge material, and the underlying soil samples from the corresponding leach pit had no semi-volatile exceedances. The exceedance samples collected from LP-0A and LP-09 contained both sludge cake material and underlying soil, as the sludge layer was very thin in these leach pits. A sample of the underlying soils from the northern septic tank (ST-02) was found to have semi-volatile results exceeding the NYSDEC Recommended Soil Clean-up Criteria. This sample was the only soil sample of underlying soils to contain semi-volatile compounds that were above the NYSDEC Recommended Soil Clean-up Criteria. Depending on the analyte, semi-volatile results for leach pit samples exceeded the NYSDEC Recommended Soil Clean-up Criteria.

Of the leach pit samples, no analytical results for PCBs or pesticides exceeded the NYSDEC Recommended Soil Clean-up Criteria.

4.3 Refuse Area Analytical Results

4.3.1 2004 Supplemental RI

One soil samples was collected from the apparent refuse area. The soil sample (RA) was collected from a depth of 2.5 – 3.0' below ground surface (bgs) and was analyzed for TCL VOCs, TCL SVOCs, TCL pesticides and PCBs, TAL metals, cyanide, and TOC.

The refuse area soil sample had no volatile, semi-volatile, pesticide or PCB results that exceeded the NYSDEC Recommended Soil Clean-up Criteria.

Soil sampled from the former refuse area had metals results that were in excess of the NYSDEC Soil Clean-up Criteria. Depending on the analyte, metals results in the refuse area soil sample exceeded the NYSDEC Recommended Soil Clean-up Criteria.

4.4 Surface Water Analytical Results

4.4.1 1998 RI/FS

Twelve surface water samples and one duplicate sample were collected from the following locations: four surface water samples from the tributary, one sample after the confluence of the stream and tributary, one sample from the confluence of the stream and pond, two samples from the pond, one sample at the drainage culvert from the pond along Cross Roads Avenue, two samples in the wetlands area, and one upgradient sample from the stream. All of the surface water samples were analyzed for full NYSDEC-ASP TCL/TAL constituents and hardness. Results for these analyses are provided in Appendix F. Table 4-3 presents a summary of the detected constituents and their range of concentrations in the surface water samples. Constituents from the 1998 RI/FS report exceeding applicable criteria levels are plotted on Figure 4-1.

Five VOC compounds were detected in at least one of the surface water samples, and with the exception of the upstream background location (SW-12), every surface water sample contained at least one of the chlorinated aliphatic VOCs. Cis-1,2-dichloroethene and trichloroethene were present in a majority of the downgradient surface water samples (9 of 11 samples, or 82 percent). Concentrations for the VOCs ranged up to 18 ug/L (cis-1,2-dichloroethene in SW-9 from the wetlands). With the exception of trichloroethene, maximum concentrations for the VOCs were present in samples from the wetlands to the west of the site or the tributary to the south. Trichloroethene's maximum concentration (5.5 ug/L), in comparison, was detected in the furthest downgradient sample, the drainage culvert, SW-1.

Six SVOCs were detected in the surface water samples, at concentrations less than 4 ug/L. Bis(2-ethylhexyl)phthalate was the only SVOC constituent present in the upstream sample, SW-12, and this sample contained the maximum concentration of this constituent (3 ug/L). 4-Methylphenol, fluoranthene and pyrene were only detected in one of the two wetland surface water samples. One sample from each of the tributary, pond and drainage culvert locations contained diethylphthalate and hexachlorobenzene.

None of the surface water samples analyzed for pesticides and PCBs contained detectable levels of these constituents.

Twenty metals and cyanide were detected in at least one of the surface water samples collected during the investigation, and five inorganics (copper, iron, mercury, zinc, and cyanide) were present at concentrations greater than their respective applicable criteria levels. With the exception of iron, which exceeded in 10 of 12 sampled locations, criteria exceedances for the inorganics were generally located in the tributary, wetlands and drainage culvert samples. Concentrations of a majority of metals were greater, in the downgradient tributary (SW-6 specifically) and/or wetlands (SW-7 and SW-9) surface water samples in comparison to the upstream sample (SW-12).

Hardness of the surface water samples ranged from approximately 102 mg/L (SW-11) to 479 mg/L (SW-9); see Table F-11 of Appendix F. With the exception of location SW-9, the hardness concentrations were greater in comparison to the upstream sample. Analysis of the surface water sample from SW-9 indicated a concentration of hardness higher than the background. As stated above, this location contained elevated levels of numerous metals, and had calcium (40,600 ug/L) and magnesium (68,600 ug/L) concentrations which were greater than background (see Table 4-3.

4.5 Sediment Analytical Results

4.5.1 1998 RI/FS

Twelve sediment samples and one duplicate sample were collected from the same locations as the surface water samples. The sediment samples were analyzed for NYSDEC-ASP TCL organics, TAL inorganics and/or TOC. Results for these analyses are provided in Appendix F. A summary of the detected constituents and their range of concentrations in the sediment samples is presented in Table 4-5. Constituents present at concentrations exceeding applicable criteria levels are plotted on Figure 4-1.

The sediment samples contained occurrences of ten VOCs, as shown in Table 4-5. Of these ten, two of the chlorinated volatiles (vinyl chloride and trichloroethene) were also detected during the surface water investigation. The concentration of vinyl chloride from sample SD-9 (25 ug/kg) was greater than its normalized sediment criteria level. The surface water from this wetlands location had contained the maximum concentration for vinyl chloride (2.5 ug/L).

Twenty-three SVOCs were detected in the sediments, and there were 18 PAH compounds, three phthalate compounds, one phenolic compound, and one chlorinated aliphatic compound (see Table 4-5). The PAHs were detected at concentrations less than 2,701 ug/kg, in all of the sediment samples, with the exception of the upstream location SD-12. As presented on Table 4-5 and Figure 4-2, six PAHs (benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, and indeno(1,2,3-cd)pyrene) were present at concentrations exceeding applicable criteria levels. These exceedances occurred in 64 percent of the locations (i.e., 7 of 11). A majority of the maximum concentrations (16 of 18, or 89 percent) for all of the PAH compounds occurred in the sediment sample collected from the drainage culvert near Cross Road Avenue (SD-1). Since these levels are greater than those upgradient, there is a strong potential that road runoff acts as a contributor. As shown on Table 4-5, the three phthalate compounds were generally detected below 1,000 ug/kg, and were present in the further downstream sediment samples (SD-6 through SD-1). Analysis of pond sediment sample SD-3 indicated 160 ug/kg of 4-chloro-3-methylphenol, which exceeds its normalized sediment criteria level of 50.5 ug/kg. Location SD-10 contained hexachloroethane at 960 ug/kg. No other detections of these two SVOCs were found during the sediment investigation.

Alpha-chlordane and gamma-chlordane were detected in tributary sediment sample SD-10, as presented in Table 4-5. Concentrations for these two pesticides were 3.5 ug/kg and 3.4 ug/kg, respectively, and both are greater than applicable criteria levels. No detections of pesticides or PCBs were found in the downgradient samples analyzed (SD-1DUP and SD-4).

Twenty-one of the 24 TAL inorganics were detected in at least one of the sediment locations (see Table 4-5). Chromium, copper, nickel, and zinc had concentrations that exceeded their respective guidance sediment criteria values. As present on Figure 4-1, the exceedance for chromium occurred at SD-9 (144 mg/kg), while those for zinc were at SD-5 (441 mg/kg), SD-6 (938 mg/kg) and SD-7 (1,890 mg/kg). Both copper and nickel were detected above criteria at locations SD-1 through SD-7 and SD-9 (see Figure 4-1). Exceedance concentrations for copper and nickel were found greater than criteria. As with the surface water investigation, numerous metals were present in locations SD-6 (tributary), SD-7 (wetlands) and SD-9 (wetlands) at more elevated concentrations in comparison to upgradient levels. Concentrations for these samples were greater than the SD-12 samples, as shown in Table 4-5.

Total organic carbon for the sediments ranged considerably in concentration (Appendix F). The upstream background sample contained 2,590 mg/kg. TOC concentrations ranged from 2,510 mg/kg to 160,000 mg/kg for the samples directly to the west, southwest and south of the site (SD-5 through SD-11). Analysis of the further downgradient sediment samples indicated TOC from 38,100 mg/kg to 169,000 mg/kg.

4.5.2 2004 Supplemental RI

Fourteen sediment samples and one duplicate sample were collected and analyzed for PAHs and TAL metals. PAH analytical results for sediment samples are presented in Table 4-6A, and metals analytical results for sediment samples are presented in Table 4-6B. The distribution of exceedances in sediment samples is presented in Figure 4-3.

Six of the 14 samples contained PAH compounds that were in excess of the NYSDEC sediment criteria. The distribution of PAHs in sediments is presented in Figure 4-3. Depending on the analyte, PAH results in sediments exceeded applicable criteria.

PAHs were not detected in sediment samples SD-13 and SD-14, collected upgradient of the confluence of Furnace Brook and the unnamed tributary. However PAHs were detected in sediment samples collected in the unnamed tributary and downgradient of the confluence of Furnace Brook and the unnamed tributary, including sediment sample SD-17 which was collected upgradient of the site. It is possible that PAHs detected in sediment samples have been transported by stormwater runoff from Furnace Dock Road, which crosses the unnamed tributary upgradient of sediment sample location SD-17.

Metals results exceeded criteria in 13 of the 14 sediment samples (Table 4-6B). Metals were not detected in the upgradient sample SD-17 collected in the unnamed tributary. Only one metal, nickel, was detected at approximately 1.26 times the criterion in the sediment sample SD-13, collected upgradient of the site in Furnace Brook. Metals found to be above criteria were chromium, copper, lead, nickel and zinc. The distribution of metals exceedances in sediment samples is presented in Figure 4-3. Depending on the analyte, metals results exceeded criteria.

4.6 Surface Soil Analytical Results

4.6.1 1998 RI/FS

Five surface (i.e., 0 to 12 inches in depth) soil samples and one duplicate were collected on April 11, 1997, and one surface soil sample was collected on November 17, 1997. Samples SS-1, SS-2 and SS-3 were collected to the west and downgradient of the on-site tanks/pits. Samples SS-4 and SS-5 are upgradient background surface soils, collected north and southeast of the site, respectively. The surface soil samples were analyzed for NYSDEC-ASP TCL/TAL constituents and/or TOC. Results for these analyses are provided in Appendix F. Table 4-7 presents a summary of the detected constituents and their range of concentrations in the surface soil samples, and Figure 4-1 plots the constituents detected at concentrations exceeding applicable criteria levels.

No volatile organics were detected in the surface soils (Appendix F).

As shown in Table 4-7, the surface soils collected from the three on-site locations (SS-1, SS-2 and SS-3) contained concentrations of 14 SVOCs, including 11 PAH and 3 phthalate compounds. Detected levels ranged from 8 ug/kg (anthracene) to 4,900 ug/kg (bis(2-ethylhexyl)phthalate). Benzo(a)pyrene was the only SVOC to exceed its applicable criteria value, and it was present at 97 ug/kg in SS-1 (see Figure 4-1). The concentrations of di-n-butylphthalate and bis(2-ethylhexyl)phthalate may not be related to site activities, as these

constituents were present in associated blank samples. Analysis of the off-site surface soils indicated concentrations of ten SVOCs, of which nine were also detected in the on-site samples. In general, the on-site concentrations were relatively equivalent or less than the off-site concentrations.

Three pesticides and two PCBs, as presented in Table 4-7, were detected in the on-site and/or off-site surface soil locations. 4,4'-DDE and 4,4'-DDT were present in 4 and 5 samples, respectively, at relatively equivalent concentrations for both the on-site (detected range: 5 ug/kg to 10 ug/kg) and off-site (detected range: 4.3 ug/kg to 8.9 ug/kg) surface soils. Sample SS-2 also contained 7.1 ug/kg of 4,4'-DDD. PCB analysis of the surface soils indicated Aroclor-1254 and Aroclor-1260 in the surface soils from locations SS-1 and SS-2. As shown on Table 4-7, concentrations ranged up to 62 ug/kg for Aroclor-1254 and up to 46 ug/kg for Aroclor-1260.

Analysis of the surface soils indicated concentrations of 18 metals (see Table 4-7). Fourteen of these analytes were present at levels of equal or lesser magnitude on-site in comparison to off-site samples. Calcium, copper, potassium and zinc were detected at concentrations greater than background/applicable criteria levels. Exceedance concentrations of calcium and potassium occurred in all three on-site locations, and ranged from 1,280 mg/kg to 1,540 mg/kg for calcium and from 526 mg/kg to 768 mg/kg for potassium. Copper was 177 mg/kg in SS-1 (with a duplicate of 51.7 mg/kg) and 39 mg/kg in SS-2. These two locations also contained exceedance concentrations of zinc, 124 mg/kg in SS-1 and 68.7 mg/kg in SS-2. Sample SS-3 had a zinc concentration of 41.5 mg/kg, exceeds its criteria level of 41.1 mg/kg.

Total organic carbon content of the SS-2 surface soils is 8,760 mg/kg. Results for TOC are presented in Appendix F.

4.6.2 2004 Supplemental RI

Ten surface soil samples (SS-06 through SS-15) were collected at the Magna Metals Site. Surface soil samples were collected from a depth of 0 to 2–inches bgs and were analyzed for TCL VOCs, TAL metals and cyanide. A summary of the surface soil results is provided in Table 4-8, and the distribution of exceedances in surface soil samples is presented in Figure 4-2.

None of the surface soil samples had volatile results that exceeded the NYSDEC Recommended Soil Clean-up Criteria.

Seven of the surface soil samples collected from the Magna Metals Site had metals results that exceeded the NYSDEC Recommended Soil Clean-up Criteria. Depending on the analyte, metals results in the surface soil samples exceeded the criteria.

4.7 Subsurface Soil Analytical Results

4.7.1 1998 RI/FS

Seven soil borings (SB-1 through SB-7) were drilled adjacent to the septic tanks/leach pits on December 10 and 11, 1996. Soil samples were collected from the interval equivalent to the bottom of the tank/pit. A total of seven samples and one duplicate were collected, and the soil samples were analyzed for TCL VOCs, TCL SVOCs, TCL pesticides and PCBs, and TAL

metals and cyanide. Additional subsurface soil samples were collected during the installation of the monitoring wells on November 17 through 19, 1997. Boring MW-1 was located sidegradient to the site as background. Locations MW-1 through MW-4 were sampled from the 6 to 8-foot and/or 12 to 14-foot bgs depth intervals. Seven subsurface soil samples and one duplicate were analyzed for TCL/TAL constituents and/or TOC. Results for these analyses are provided in Appendix F. A summary of the detected constituents and their range of concentrations in the subsurface soil samples is presented in Table 4-9. Figure 4-1 plots the constituents detected at concentrations exceeding applicable criteria levels.

Seven VOCs were detected in the subsurface soils collected from the site, and the analytical results are presented in Table 4-9. Methylene chloride and/or acetone were present in a majority of the samples (i.e., almost 79 percent for methylene chloride and 50 percent for acetone), including the background boring MW-1. Due to their widespread occurrence, their presence in associated blank samples, and their laboratory and decontamination use, these constituents are likely not related to site activities. Four VOCs (2-butanone, 4-methyl-2-pentanone, 2-hexanone and 1,1,2,2-tetrachloroethane) were detected at concentrations less than 6 ug/L, in the duplicate soil sample from MW-2 at 6 to 8 feet bgs. The 3.5 to 5.5-foot soils from SB-7, drilled to the southwest of Leach Pit G, contained trichloroethene (35 ug/kg, with a duplicate of 29 ug/kg).

Analysis of the subsurface soils indicated detectable levels of six PAHs and five phthalates (see Table 4-9). The PAHs were present from 4 feet bgs to 9.5 feet bgs, at locations SB-1, SB-2, SB-5 and MW-4. Concentrations of these constituents ranged up to only 160 ug/kg, and were below applicable criteria levels. The concentrations of diethylphthalate, di-n-butylphthalate and bis(2-ethylhexyl)phthalate may not be related to site activities, as these constituents were present in associated blank samples; see Table 4-9. The other two phthalate compounds (butylbenzylphthalate and di-n-octylphthalate) were detected at concentrations from 13 ug/kg to 43 ug/kg.

Pesticide/PCB results for the subsurface soil analyses are presented in Appendix F, and are summarized on Table 4-9. One pesticide (alpha-chlordane) was detected at 2 ug/kg in soil boring SB-4. The samples from the soil borings installed near the septic tank/leach pit area also contained Aroclor-1254. This PCB was found in SB-3 at 8 to 9.5 feet bgs (24 ug/kg), SB-4 at 6.5 to 8.5 feet bgs (160 ug/kg), and SB-7 at 3.5 to 5.5 feet bgs (280 ug/kg, with a duplicate of 240 ug/kg). In addition, as shown in Table 4-9, analysis of the 12 to 14-foot bgs soils of monitoring well boring MW-4 indicated eight pesticides. Concentrations for these pesticides ranged up to 0.98 ug/kg. The existence of pesticides on the site has no historical documentation.

Eighteen of the 21 inorganics detected in the subsurface soils had concentrations that exceeded applicable criteria levels. As shown in Table 4-9, only cobalt, vanadium and cyanide were present at concentrations less than their respective criteria. Exceedance concentrations were found in all on-site locations (see Figure 4-2 and Table 4-9). Maximum concentrations for the metals and cyanide were distributed throughout the boring locations, with the highest number (8) present in SB-7 at 3.5 to 5.5 feet bgs.

Samples for TOC analysis were collected from MW-1 (12 to 14 feet bgs), MW-2 (12 to 14 feet bgs), MW-3 (6 to 8 feet bgs), and MW-4 (12 to 14 feet bgs) in November 1997. The result

concentrations were relatively equivalent, with the detected levels ranging from 806 mg/kg to 1,360 mg/kg (see Appendix F).

4.8 Groundwater Analytical Results

4.8.1 1998 RI/FS

One round of groundwater samples was obtained from the four newly installed monitoring wells in May 1998. The samples and a duplicate were analyzed for TCL organics and TAL inorganics, and tabulated results are provided in Appendix F. Sample GW-1 was collected from a sidegradient well for a background sample. Table 4-10 presents a summary of the detected groundwater constituents and their range of concentrations. Those constituents found at concentrations exceeding applicable criteria levels are plotted on Figure 4-1.

The groundwater collected from beneath the site contained trichloroethene and tetrachloroethene, two chlorinated aliphatic solvents). Trichloroethene was detected in all of the sampling locations but the background (GW-1), with concentrations ranging from 3.7 ug/L to 4,700 ug/L. As shown in Figure 4-1, it exceeded its applicable criteria level of 5 ug/L in GW-3 (68 ug/L) and GW-4 (4,700 ug/L). The subsurface soils from this location had contained 4 ug/kg of trichloroethene. Tetrachloroethene was present in the duplicate sample from location GW-4, at an exceedance concentration of 90 ug/L.

As shown in Table 4-10, bis(2-ethylhexyl)phthalate was the only identifiable SVOC detected in the groundwater (0.9 ug/L), and it was present in sample GW-5, the duplicate of GW-4. Due to its presence in associated blank samples, bis(2-ethylhexyl)phthalate is not related to site activities.

The groundwater was analyzed for pesticides/PCBs, and the results are presented in Appendix F. As shown in the summary table (Table 4-10), 11 pesticides were detected at concentrations ranging from 0.00022 ug/L to 0.11 ug/L. Three of these constituents, beta-BHC in GW-3 and GW-4, heptachlor epoxide in GW-2 and GW-3, and 4,4'-DDT in GW-3, were present at concentrations greater than the method detection levels, indicating exceedances of the groundwater criteria. The existence of pesticides in the groundwater may be related to their distribution in the surface and subsurface soils from non-point sources.

Of the 24 TAL inorganics, only four (beryllium, mercury, silver, and thallium) were not detected in the samples collected during the groundwater investigation (see Table 4-10). In general, maximum concentrations for the inorganics were located in the GW-2 sample, which is located to the south-southeast of the septic tanks/leach pits. As shown in Figure 4-1, among the detected metals, exceedances occurred for antimony, arsenic, chromium, iron, manganese, selenium, sodium, zinc, and cyanide. Only sodium had a concentration in the background sample GW-1 that also exceeded applicable criteria levels.

4.8.2 2004 Supplemental RI

Seven of the nine monitoring wells at the Magna Metals Site were sampled during the fall of 2003. Five of the monitoring wells were over burden wells (MW-01, MW-02, MW-04, MW-05, and MW-08) and two were bedrock monitoring wells (MW-04D and MW-07). All of the

groundwater samples were analyzed for TCL VOCs, TAL metals and cyanide. Samples from MW-01 and MW-04 were additionally analyzed for dissolved metals due to the turbidity of the sample. Table 4-11 provides a summary of the groundwater sample results, and the distribution of contaminant exceedances in groundwater samples is presented in Figure 4-4.

Groundwater Volatiles Results

Samples from three of the monitoring wells (MW-02, MW-04 and MW-04D) had VOC results that exceeded the NYSDEC Groundwater Quality Standards. The volatile compounds in excess included tetrachloroethene, trichloroethene and cis-1,2-dichloroethene. Depending on the analyte, volatile results in the groundwater samples exceeded the NYSDEC Groundwater Quality Standards.

Groundwater Inorganics Results

Samples all seven monitoring wells and the duplicate sample had metals results that exceeded the NYSDEC Groundwater Quality Standards. Groundwater sampled from MW-04 also had dissolved metals results that exceeded NYSDEC standards. Depending on the analyte, metals results in the groundwater samples exceeded the NYSDEC Groundwater Quality Standards.

4.8.3 2006 Additional Data Findings

Groundwater samples collected from wells MW-09 and MW-10 did not indicate elevated levels of contaminants. These wells were installed in close proximity to the former Magna Metals building due to potential concerns of source material below the structure. Monitoring well MW-11 had a concentration of 190 ppb for trichloroethene. The well was located near leach pit LP-09. As such, the result is consistent with prior conclusion drawn from the 1998 and 2004 report, that is, the leach pits are the source of soil and groundwater contamination at the site. Concurrent with sampling of the monitoring wells installed in 2005 (MW-9, MW-10, and MW-11), previously installed wells MW-02, MW-03, MW-04, and MW-06 were sampled and indicated exceedance of trichloroethene ranging from 17 ppb to 270 ppb in three of four wells and one occurrence of Tetrachloroethene of 7.5 ppb. One well, MW-02 did not indicate contamination present. The wells were located adjacent to the leach pits and the data is consistent with previous findings. Figure 4-5 and Table 4-12 presents the exceedance in groundwater.

4.9 Soil Gas (2006)

The soil gas sample results from the 2006 investigation documented that VOCs were detected at concentrations ranging from 1 to 1,900 micrograms per cubic meter (ug/m^3), an elevated level of TCE, 59 ug/m^3 at SV-03 was detected next to the office/warehouse building. Lower levels of TCE were recorded at the other two locations adjacent to the office building/warehouse. Elevated VOCs were detected in soil gas locations located along the leach pit series. The results are consistent with previously collected groundwater data, that is the leach pits are the source of contamination at the site. Figure 4-6 and Table 4-13 presents the soil vapor sample data.

Appendix K contains the indoor air quality questionnaire and building inventory.

4.10 AKRF 2007 Subslab Vapor and Indoor Air Results

Five sub-slab and six indoor air samples were collected and analyzed for VOCs as part of the 2007 investigation. The results were presented as part of the July 2007 Soil Vapor Investigation Report, AKRF. For completeness, these results are summarized herein.

For the sub-slab samples, TCE detection of 1,200 ug/m^3 and 66,000 gu/m^3 were recorded at locations SV-11 and SV-12, respectively, above the action levels in Matrix 1 in NYSDOH's *Soil Vapor Intrusion Guidance* (October 2006). For PCE, two detections of 5.5 and 7.8 ug/m^3 were both below the lowest action level of 100 ug/m^3 in Matrix 2 and also below the EPA BASE 90th percentile value of 15.9 ug/m^3. 1,1,1-trichloroethane (TCA) was not detected in any of the samples. Carbon tetrachloride was detected in one sample at a concentration of 0.53 ug/m^3, which was similar to the outdoor air samples. At location SV-12, a value of 11,000 ug/m^3 was recorded for cis-1,2-dichloroethene (DCE), a breakdown product of TCE. Toluene was detected in all samples with a maximum value of 3,300 ug/m^3 at location SV-12. Cyclohexane was detected in all but one of the samples with a maximum value of 170 ug/m^3 at location SV-11.

There were no exceedences of the NYSDOH guidance values for either PCE (1`00 ug/m^3) or TCE (5 ug/m^3) in any of the indoor air samples. Toluene was detected at all locations, with the highest values of 31 ug/m^3 and 19 ug/m^3 at locations SV-13 (Motion Labs) and SV-14 (Polymedco warehouse), respectively. The only other detection greater than 10 ug/m^3 in indoor air samples was for n-heptane, with a value of 17 ug/m^3 at location SV-13. All detections of other compounds were at levels similar to the outdoor air samples and below the EPA BASE 90th percentile values.

Table 4-14 presents the soil vapor sample data for the 2007 investigation.

TABLE 4-1
Summary of Detected Constituents
Holding Tank/Septic Tank/Leaching Pit Analytical Results

	Septic Tank A Sludge (SP-SL)	Septic Tank A Water (SP-AQ)	Leach Pit G Water (LP-AQ)
Volatile Organic Compounds (ug/kg sludge; ug/L water)			
Vinyl Chloride	--	--	2.2
cis-1,2-Dichloroethene	NA	--	4.8
2-Butanone	37 J	R	R
Trichloroethene	--	--	0.92 J
Toluene	14 J	--	--
Xylene (total)	30 J	--	--
1,4-Dichlorobenzene	NA	0.76 J	--
Semi-Volatile Organic Compounds (ug/kg sludge; ug/L water)			
1,4-Dichlorobenzene	4,200 J	--	--
2-Methylnaphthalene	1,500 J	--	--
Fluoranthene	1,200 J	--	--
Pyrene	300 J	--	--
Benzo(a)anthracene	230 J	--	--
Chrysene	280 J	--	--
bis(2-Ethylhexyl)phthalate	12,000 JD	2 J	2 J
Di-n-octylphthalate	330 J	--	--
Benzo(b)fluoranthene	330 J	--	--
Benzo(k)fluoranthene	240 J	--	--
Benzo(a)pyrene	200 J	--	--
Pesticide/PCB Compounds (ug/kg sludge; ug/L water)			
4,4'-DDE	11 JP	--	--
Aroclor-1248	150 JP	--	--
Aroclor-1260	72 JP	--	--
Inorganics (mg/kg sludge; ug/L water)			
Aluminum	16,100 J	80.8 B	162 B
Antimony	5.9 JB	3.1 B	--
Arsenic	402 J	3.4 B	88.8
Barium	174 J	20.4 B	23.8 B
Cadmium	6.4 J	--	--
Calcium	9,760 J	22,000	9,500

TABLE 4-1
Summary of Detected Constituents
Holding Tank/Septic Tank/Leaching Pit Analytical Results

	Septic Tank A Sludge (SP-SL)	Septic Tank A Water (SP-AQ)	Leach Pit G Water (LP-AQ)
Chromium	R	2 B	--
Cobalt	34 JB	1.8 B	--
Copper	1,160 J	167	154
Iron	30,400 J	582 J	256 J
Lead	228 J	R	R
Magnesium	5,940 J	2,560 B	536 B
Manganese	815 J	72.5	28.2
Mercury	0.49 J	--	--
Nickel	10,400 J	788	45.9
Potassium	1,120 JB	2,900 JB	704 JB
Selenium	200 J	14.3	3.2 B
Silver	0.97 JB	--	--
Sodium	717 JB	4,500 B	--
Thallium	--	--	--
Vanadium	32.9 JB	1.1 B	1.4 B
Zinc	9,660 J	230 J	286 J
Cyanide	2,420 J	39.3	12.7

Notes:
-- = Constituent not detected.
J = Constituent value is estimated.
R = Constituent value is rejected and deemed unusable.
D = Constituent value is from a dilution analysis.

P = Constituent had a greater than 25 percent difference for the detected concentration values between two gas chromatograph columns.
B (inorganics) = Constituent value is less than the required detection limit but greater than the instrument detection limit.
NA = Not analyzed/not available.

Table 2
Leach Pit/Refuse Area Samples
Compounds Exceeding Soil Cleanup Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth (ft. bgs)		NYSDEC Recommended Soil Cleanup Criteria	LP-02 MM-LP02-073003 07/30/2003 10	LP-02 MM-LP02-08260310.010 08/26/2003 10.75	LP-03 MM-LP03-073003 07/30/2003 7.75	LP-03 MM-LP13-073003 Duplicate of MM-LP03-073003
Constituent						
m/p-Xylenes	(ug/kg)	1200	9UJ	3U	9.3UJ	11UJ
Benzo(a)anthracene	(ug/kg)	224	220J	35UJ	110UJ	130UJ
Benzo(a)pyrene	(ug/kg)	61	[260]J	53UJ	160UJ	190UJ
Benzo(b)fluoranthene	(ug/kg)	1100	270J	35UJ	110UJ	130UJ
Chrysene	(ug/kg)	400	220J	56UJ	180UJ	200UJ
Dibenz(a,h)anthracene	(ug/kg)	14	160UJ	53UJ	170UJ	190UJ
Aluminum	(mg/kg)	5040*	[5700]J	4450	[3340]J	4500J
Arsenic	(mg/kg)	7.5	[627]J	[9.7]	[947]J	[1190]J
Barium	(mg/kg)	300	124J	29.5	199J	222J
Beryllium	(mg/kg)	0.32*	0.14J	0.13J	[0.6]J	[0.43]J
Cadmium	(mg/kg)	1	[13.7]J	0.05U	[16.2]J	[19.2]J
Calcium	(mg/kg)	1690*	[9920]J	1380	[11000]J	[13600]J
Chromium	(mg/kg)	10	[2690]J	[34.1]J	[3980]J	[4070]J
Cobalt	(mg/kg)	30	[62.3]J	3.4J	[74.5]J	[86.6]J
Copper	(mg/kg)	25	[33500]J	[203]	[27200]J	[31300]J
Iron	(mg/kg)	10000*	[22500]J	5880	[32000]J	[35000]J
Lead	(mg/kg)	3.7*	[649]J	[6.2]	[849]J	[1030]J
Magnesium	(mg/kg)	2100*	[2910]J	1570	[4210]J	[4950]J
Manganese	(mg/kg)	250*	[610]J	83J	[713]J	[864]J
Nickel	(mg/kg)	15*	[38200]J	[226]	[53800]J	[62900]J
Potassium	(mg/kg)	864*	580J	451J	463J	405J
Selenium	(mg/kg)	2	[473]J	[13]J	[1120]J	[1410]J
Sodium	(mg/kg)	86.8*	[9060]J	[124]J	[6980]J	[8690]J
Thallium	(mg/kg)	ND*	1.8UJ	0.62U	2UJ	2.2UJ
Zinc	(mg/kg)	23.3*	[37300]J	[235]	[28900]J	[35600]J
Mercury	(mg/kg)	0.1	[0.92]J	0.01U	[0.75]J	[1.1]J

Notes:

U - Non-detect

J - Estimated

D - Dilution

R - Rejected

Shading & [ ] - Indicates exceedance of criteria.

* - Criteria is based on the maximum site background concentration from background location MW-1 as stated in the November 1998 RI/FS.

Table 4-2
Leach Pit/Refuse Area Samples
Compounds Exceeding Soil Cleanup Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth (ft. bgs)		NYSDEC Recommended Soil Cleanup Criteria	LP-03 MM-LP03-0905031.3-2 09/05/2003 9	LP-05 MM-LP05-073003 07/30/2003 8.5	LP-05 MM-LP05-0905031.0-1 09/05/2003 8.7	LP-06 MM-LP06-0905030.3-0 09/05/2003 7.8
Constituent						
m/p-Xylenes	(ug/kg)	1200	3.8U	3.7U	2.9U	6.8UJ
Benzo(a)anthracene	(ug/kg)	224	57J	[510]	35U	80UJ
Benzo(a)pyrene	(ug/kg)	61	67U	[500]J	52U	120UJ
Benzo(b)fluoranthene	(ug/kg)	1100	44U	550J	35U	80UJ
Chrysene	(ug/kg)	400	71U	[540]J	55U	130UJ
Dibenz(a,h)anthracene	(ug/kg)	14	67U	66UJ	52U	120UJ
Aluminum	(mg/kg)	5040*	[14700]	[9670]	4560	[7110]J
Arsenic	(mg/kg)	7.5	[103]	[37.8]	[19.4]	[376]J
Barium	(mg/kg)	300	142	104	50.4	223J
Beryllium	(mg/kg)	0.32*	[0.43]J	[0.35]J	0.20J	0.31UJ
Cadmium	(mg/kg)	1	0.7	[1.2]	0.13U	[1.3]J
Calcium	(mg/kg)	1690*	[3000]	[3620]	[3190]	[2840]J
Chromium	(mg/kg)	10	0.25R	[535]	0.20R	0.45R
Cobalt	(mg/kg)	30	0.32R	11.1	0.25R	0.57R
Copper	(mg/kg)	25	[987]	[246]	[152]	[34700]JD
Iron	(mg/kg)	10000*	[18500]	[12400]	[20000]	[22200]J
Lead	(mg/kg)	3.7*	[67.2]	[66]	[10.5]	[858]J
Magnesium	(mg/kg)	2100*	[5380]	[3150]	1770	[3560]J
Manganese	(mg/kg)	250*	229	[274]	206	[262]J
Nickel	(mg/kg)	15*	[2380]	[2070]	[340]	[63700]JD
Potassium	(mg/kg)	864*	[1430]J	654J	589J	[1050]J
Selenium	(mg/kg)	2	[184]	[16.9]	[29.8]	[178]J
Sodium	(mg/kg)	86.8*	[574]J	[699]J	[111]J	[1520]J
Thallium	(mg/kg)	ND*	0.41U	0.77U	0.33U	[23.6]J
Zinc	(mg/kg)	23.3*	[494]	[2240]J	[693]	[15900]J
Mercury	(mg/kg)	0.1	0.1	[0.13]J	0.02	0.02UJ

Notes:
U - Non-detect
J - Estimated
D - Dilution
R - Rejected
Shading & [ ] - Indicates exceedance of criteria.
* - Criteria is based on the maximum site background concentration from background location MW-1 as stated in the November 1998 RI/FS.

Ta l-2
Leach Pit/Refuse Area Samples
Compounds Exceeding Soil Cleanup Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth (ft. bgs)		NYSDEC Recommended Soil Cleanup Criteria	LP-06 MM-LP06-0905030-0.3 09/05/2003 7.3	LP-06A MM-LP06A-101003 10/10/2003 11	LP-06A MM-LP06A-1010032-2.5 10/10/2003 11.5	LP-07 MM-LP07-0905030-0.1 09/05/2003 7.1
Constituent						
m/p-Xylenes	(ug/kg)	1200	5.4U	3.5U	5.5U	24
Benzo(a)anthracene	(ug/kg)	224	180J	51J	65U	[470]
Benzo(a)pyrene	(ug/kg)	61	94U	62U	97U	[360]J
Benzo(b)fluoranthene	(ug/kg)	1100	210J	62J	65U	730
Chrysene	(ug/kg)	400	220J	66U	100U	[620]
Dibenz(a,h)anthracene	(ug/kg)	14	95U	62U	98U	[89]J
Aluminum	(mg/kg)	5040*	[10600]	[10500]	[8700]	3270
Arsenic	(mg/kg)	7.5	[10.3]	[29.3]	[609]	[79.1]
Barium	(mg/kg)	300	152	67.3	111	61.8
Beryllium	(mg/kg)	0.32*	[0.68]J	[0.37]J	0.26U	0.15U
Cadmium	(mg/kg)	1	0.23U	0.15U	[7.2]	0.14U
Calcium	(mg/kg)	1690*	[16800]	[3950]	[3550]	[1990]
Chromium	(mg/kg)	10	0.37R	[440]	[5050]	0.22R
Cobalt	(mg/kg)	30	5.8J	16.3	[34.0]	0.28R
Copper	(mg/kg)	25	[483]	[3580]	[15000]D	[9710]D
Iron	(mg/kg)	10000*	[18600]	[14100]	[18700]	8260
Lead	(mg/kg)	3.7*	[268]	[39.5]J	[279]J	[197]
Magnesium	(mg/kg)	2100*	[3450]	[3370]	[2870]	1890
Manganese	(mg/kg)	250*	[715]	[330]	[344]	135
Nickel	(mg/kg)	15*	[781]	[2940]	[23200]D	[45600]
Potassium	(mg/kg)	864*	[1640]J	607J	402J	567J
Selenium	(mg/kg)	2	[3.1]	[80.1]	[733]	[53.5]
Sodium	(mg/kg)	86.8*	[2750]	[303]J	[964]J	[544]J
Thallium	(mg/kg)	ND*	0.60U	0.39U	[8.1]	[16.9]
Zinc	(mg/kg)	23.3*	[386]	[2100]J	[8570]J	[7020]
Mercury	(mg/kg)	0.1	[0.17]	[0.15]	[0.50]	0.09

Notes:
U - Non-detect
J - Estimated
D - Dilution
R - Rejected
Shading & [ ] - Indicates exceedance of criteria.
* - Criteria is based on the maximum site background concentration from background location MW-1 as stated in the November 1998 RI/FS.

Table 4-2
Leach Pit/Refuse Area Samples
Compounds Exceeding Soil Cleanup Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth (ft. bgs)		NYSDEC Recommended Soil Cleanup Criteria	LP-07 MM-LP07-0905030.1-0 09/05/2003 7.5	LP-08 MM-LP08-0905030-0.3 09/05/2003 7.3	LP-08 MM-LP18-0905030-0.3 Duplicate of MM-LP08-0905030-0.3	LP-08 MM-LP08-0905030.3-0 09/05/2003 7.6
Constituent						
m/p-Xylenes	(ug/kg)	1200	3.0U	3.1U	3.1U	5.5J
Benzo(a)anthracene	(ug/kg)	224	44J	36U	37U	36U
Benzo(a)pyrene	(ug/kg)	61	54U	55U	55U	54U
Benzo(b)fluoranthene	(ug/kg)	1100	44J	36U	37U	36U
Chrysene	(ug/kg)	400	57U	58U	58U	57U
Dibenz(a,h)anthracene	(ug/kg)	14	54U	55U	55U	54U
Aluminum	(mg/kg)	5040*	[15900]	[5110]	4080	3760
Arsenic	(mg/kg)	7.5	[16.7]	[8.6]	[7.6]	3.8
Barium	(mg/kg)	300	116	26.7	21.9J	20.1J
Beryllium	(mg/kg)	0.32*	[0.46]J	0.20J	0.17J	0.18J
Cadmium	(mg/kg)	1	0.13U	0.13U	0.13U	0.13U
Calcium	(mg/kg)	1690*	[3300]	1460	1310	1200
Chromium	(mg/kg)	10	0.21R	0.21R	0.21R	0.21R
Cobalt	(mg/kg)	30	0.26R	0.27R	5.3J	5.3J
Copper	(mg/kg)	25	[185]	[210]	[214]	[35.3]
Iron	(mg/kg)	10000*	[19500]	7990	6680	6020
Lead	(mg/kg)	3.7*	[22.7]	[15.3]	[19.1]	2.9
Magnesium	(mg/kg)	2100*	[6700]	[2110]	1650	1680
Manganese	(mg/kg)	250*	[280]	97	89.4	97.8
Nickel	(mg/kg)	15*	[2510]	[468]	[399]	[99.3]
Potassium	(mg/kg)	864*	[1260]J	550J	442J	447J
Selenium	(mg/kg)	2	[4.7]	[2.1]	1.5	0.98
Sodium	(mg/kg)	86.8*	[289]J	[118]J	111U	108U
Thallium	(mg/kg)	ND*	0.34U	0.34U	0.35U	0.34U
Zinc	(mg/kg)	23.3*	[962]	[440]	[402]	[220]
Mercury	(mg/kg)	0.1	0.01R	0.01U	0.01U	0.01U

Notes:
U - Non-detect
J - Estimated
D - Dilution
R - Rejected
Shading & [ ] - Indicates exceedance of criteria.
* - Criteria is based on the maximum site background concentration from background location MW-1 as stated in the November 1998 RI/FS.

TABLE 4-3
Summary of Detected Constituents
Surface Water Analytical Results

	NYSDEC Water Quality Standards/ Guidance Values (Class C)	Wetlands (SW-7, SW-9)	Tributary (SW-6, SW-8, SW-10, SW-11)	Confluence of Tributary and Stream (SW-5)	Confluence of Pond and Stream (SW-4)	Pond (SW-2, SW-3)	Drainage Culvert (SW-1, SW-1DUP)	Upsteam (SW-12)
Volatile Organics (ug/L)								
Vinyl Chloride	NC	ND - 2.5	ND - 0.91 J	--	0.7 J	--	--	--
Methylene Chloride	NC	ND - 2.3	--	--	--	--	--	--
cis-1,2-Dichloroethene	NC	ND - 18	5.1 - 9	2.1	4.5	3.2 - 3.3	3.5 - 4.2	--
Chloroform	NC	--	0.77 J - 1.6	--	--	--	--	--
Trichloroethene	11	ND - 0.73 J	ND - 1.4	2.2	2.6	2.3 - 2.4	2.7 - 5.5	--
Semi-Volatile Organics (ug/L)								
4-Methylphenol	5	ND - 0.2 J	--	--	--	--	--	--
Diethylphthalate	NC	--	ND - 0.2 J	--	--	ND - 0.2 J	ND - 0.3 J	--
Hexachlorobenzene	NC	--	ND - 0.3 J	--	--	ND - 0.3 J	ND - 0.2 J	--
Fluoranthene	NC	ND - 0.3 J	--	--	--	--	--	--
Pyrene	NC	ND - 0.3 J	--	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	NC	ND - 1 J	ND - 0.7 J	0.6 J	--	--	ND - 2 J	3 J
Inorganics (ug/L)								
Aluminum	NC	8,960 - 13,100	41.9 B - 2,660	178 B	103 B	126 B - 454	54.2 B - 135 B	64.8 B
Antimony	NC	ND - 4.9 B	ND - 3.5 B	3.1 B	3.5 B	--	--	3.6 B
Arsenic	360	4.1 B - 18.3	ND - 4 B	--	--	--	--	--
Barium	NC	250 - 631	52.4 B - 154 B	68 B	37.7 B	25.4 B - 33.7 B	27.2 B - 56 B	33.4 B
Cadmium	3	1.1 B - 1.7 B	--	--	--	--	--	--
Calcium	NC	18,800 - 40,600	16,300 - 21,800	23400	22600	20,700 - 21,500	22,200 - 23,500	23000
Chromium	106	69.7 - 253	ND - 39.6	1.5 B	--	1.4 B - 3.5 B	--	--
Cobalt	110	31.4 B - 32.8 B	ND - 6.7 B	1.4 B	--	--	--	--
Copper	13	95.4 - 3,960	2.8 B - 491	14.1 B	4.3 B	8 B - 14 B	4.9 B - 6.5 B	2.7 B
Iron	300	24,000 - 34,100 J	94.2 B - 7,240 J	1110 J	856 J	908 - 1,510	658 - 1,060 J	363 J
Lead	6	43.6 - 88	ND - 14.2	R	--	2 JB - 2.2 JB	--	R
Magnesium	NC	13,800 - 68,600	14,200 - 20,200	15,200	18,200	17,300 - 17,900	18,800 - 18,900	13,800
Manganese	NC	1,010 - 1,760	57.4 - 625	888	336	182 - 188	209 - 422	60.3
Mercury	0.2	ND - 0.22	--	--	--	--	--	--
Nickel	75.5	204 - 558	5.5 B - 136	15.7 B	8.9 B	4 B - 4.6 B	2.3 B - 10.6 B	3.5 B

TABLE 4-3
Summary of Detected Constituents
Surface Water Analytical Results

	NYSDEC Water Quality Standards/ Guidance Values (Class C)	Wetlands (SW-7, SW-9)	Tributary (SW-6, SW-8, SW-10, SW-11)	Confluence of Tributary and Stream (SW-5)	Confluence of Pond and Stream (SW-4)	Pond (SW-2, SW-3)	Drainage Culvert (SW-1, SW-1DUP)	Upsteam (SW-12)
Potassium	NC	2,790 JB - 5,980 J	1,510 B - 1,990 JB	2060 JB	2360 JB	2,080 B - 2,160 B	2,230 B - 2,300 JB	1970 B
Selenium	NC	3 B - 40.1	ND - 10.2	--	--	ND - 4.5 B	ND - 3.4 B	--
Sodium	NC	21,700 - 30,300	23,600 - 27,900	18800	19600	18,600 - 19,200	20,300 - 20,400	17600
Vanadium	190	25.7 B - 29.6 B	ND - 8.6 B	1.3 JB	--	ND - 1.6 B	--	--
Zinc	120	146 - 2,090 J	18.3 B - 232 J	28.1 J	17.8 B	16.7 B - 37	10.7 B - 21.8 B	27.3 J
Cyanide	22	18.7 - 858	ND - 220	--	--	--	ND - 39.6 J	--

Notes:
--/ND = Constituent not detected.
J = Constituent value is estimated.
R = Constituent value is rejected and deemed unusable.
B (inorganics) = Constituent value is less than the required detection limit but greater than the instrument detection limit.
NC = No criteria available.
NA = Not analyzed/not available.
Shaded entries exceed the comparison criteria in at least the maximum amount per concentration range.

Table 4-4
Surface Water Samples
Compounds Exceeding Surface Water Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date	NYSDEC Water Quality Standards Class C*	SW-13 MM-SW13-032904 03/29/2004	SW-14 MM-SW14-032904 03/29/2004	SW-15 MM-SW15-032904 03/29/2004	SW-16 MM-SW16-032904 03/29/2004	SW-17 MM-SW17-032904 03/29/2004	SW-18 MM-SW18-032904 03/29/2004
Constituent							
Aluminum	100	[366]	[690]	[328]	[316]	[262]	[342]
Arsenic	150	4.8U	4.8U	4.8U	4.8U	4.8U	4.8U
Barium	NC	53.5J	79J	105J	99.7J	82.2J	132J
Calcium	NC	32700	35000	31000	29100	25000	31100
Chromium	132	1.2U	1.3J	1.2U	1.2U	2.2J	1.2U
Cobalt	5	2.4U	2.4U	2.4U	2.4U	2.4U	2.4U
Copper	16	0.74U	[57.6]J	0.74U	0.74U	0.74UJ	0.74U
Iron	300	[327]J	[1670]J	212J	205J	107J	[583]J
Lead	8	1.8UJ	1.8UJ	1.8UJ	1.8UJ	1.8UJ	1.8UJ
Magnesium	NC	20200	21400	30100	28200	23500	55200
Manganese	NC	73.8	234	118	112	35.2	134
Nickel	94	5.5U	24.8J	20.9J	19.9J	12.5J	16J
Potassium	NC	2940J	3130J	2990J	2700J	2360J	5140J
Selenium	4.6	5.2U	5.2U	5.2U	5.2U	5.2U	5.2U
Sodium	NC	43000J	38300J	67000J	62100J	61500J	38900J
Thallium	8	5.8U	5.8U	5.8U	5.8U	5.8U	5.8U
Vanadium	14	1.9U	1.9U	1.9U	1.9U	1.9U	1.9U
Zinc	150	8.1U	23.7J	11.5J	14.4J	13J	10.6J

Notes:
All results are in ug/l.
U - Non-detect
J - Estimated
Shading and [ ] - Indicates exceedance of criteria.
* - Criteria is based on a Class C stream class which is the most stringent for surface water.

Table 4-4
Surface Water Samples
Compounds Exceeding Surface Water Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date	NYSDEC Water Quality Standards Class C*	SW-18 MM-SW18D-032904 Duplicate of MM-SW18-032904	SW-19 MM-SW19-032904 03/29/2004	SW-20 MM-SW20-032904 03/29/2004	SW-21 MM-SW21-032904 03/29/2004	SW-22 MM-SW22-032904 03/29/2004
Constituent						
Aluminum	100	[983]J	[723]J	[858]J	[725]J	[381]J
Arsenic	150	4.8U	4.8U	4.8U	4.8U	6.9J
Barium	NC	141J	119J	74.6J	185J	33.4J
Calcium	NC	32100	32900	30500	32400	10600
Chromium	132	1.2U	2.6J	1.2U	3.4J	26.7
Cobalt	5	2.4U	2.4U	2.4U	2.8J	[5.1]J
Copper	16	0.74UJ	[22.6]J	0.74UJ	5.5J	[772]J
Iron	300	[908]J	[2180]J	[868]J	[4790]J	[2020]J
Lead	8	1.8UJ	1.8UJ	1.8UJ	3.5J	1.8UJ
Magnesium	NC	56500	27000	25800	49700	5680
Manganese	NC	0.2R	0.2R	0.2R	0.2R	0.2R
Nickel	94	19.4J	22.4J	7J	29.9J	[161]
Potassium	NC	5400J	3910J	3140J	5000J	828J
Selenium	4.6	5.2U	5.2U	5.2U	5.2U	[8.7]J
Sodium	NC	40500J	48400J	48500J	36100J	12100J
Thallium	8	5.8U	5.8U	5.8U	6.9J	5.8U
Vanadium	14	1.9U	2J	1.9U	2J	1.9U
Zinc	150	16.8J	57.3J	9.3J	27.4J	[343]J

Notes:
All results are in ug/l.
U - Non-detect
J - Estimated
Shading and [ ] - Indicates exceedance of criteria.
* - Criteria is based on a Class C stream class which is the most stringent for surface water.

TABLE 4-5
Summary of Detected Constituents
Sediment Analytical Results

	NYSDEC Sediment Criteria ug/gOC	Normalized Sediment Criteria ug/kg	Wetlands (SD-7, SD-9)	Tributary (SD-6, SD-8, SD-10, SD-11)	Confluence of Tributary and Stream (SD-5)	Confluence of Pond and Stream (SD-4)	Pond (SD-2, SD-3)	Drainage Culvert (SD-1, SD-1DUP)	Upsteam (SD-12)
Volatile Organics (ug/kg)									
Chloromethane	NC	NC	ND - 7 J	--	--	--	--	--	--
Vinyl Chloride	0.07 HH	5.98	ND - 25 J	--	--	--	--	--	--
Acetone	NC	NC	ND - 530 J	ND - 150 J	770 J	340 J	--	--	--
Carbon Disulfide	NC	NC	--	--	--	12 J	--	--	--
2-Butanone	NC	NC	39 J - 160 J	ND - 36 J	260 J	95 J	11 J	21 - 74	--
Trichloroethene	2 HH	171	ND - 22 J	--	20 J	--	--	--	--
4-Methyl-2-Pentanone	NC	NC	--	ND - 5 J	--	--	12 J	--	--
2-Hexanone	NC	NC	--	ND - 10 J	--	--	18 J	--	--
Tetrachloroethene	0.8 HH	68.3	--	ND - 4 J	--	--	--	--	--
Toluene	NC	NC	ND - 12 J	--	--	--	--	--	--
Semi-Volatile Organics (ug/kg)									
Hexachloroethane	NC	NC	--	ND - 960	--	--	--	--	--
Naphthalene	NC	NC	--	--	--	--	--	ND - 42 J	--
4-Chloro-3-methylphenol	0.6 CTY	51.2	--	--	--	--	ND - 160 J	--	--
2-Methylnaphthalene	NC	NC	--	--	--	--	--	ND - 38 J	--
Acenaphthylene	NC	NC	--	ND - 19 J	--	--	--	ND - 180 J	--
Acenaphthene	140 CT	11,951	--	ND - 53 J	--	--	ND - 88 J	ND - 140 J	--
Dibenzofuran	NC	NC	--	ND - 29 J	--	--	--	ND - 220 J	--
Fluorene	NC	NC	--	ND - 74 J	--	--	--	ND - 540	--
Phenanthrene	120 CT	10,243	250 J - 350 J	35 J - 950 J	270 J	--	--	ND - 2,700	--
Anthracene	NC	NC	37 J - 45 J	ND - 130 J	35 J	--	--	ND - 700	--
Carbazole	NC	NC	--	ND - 120 J	--	--	--	ND - 340 J	--
Di-n-butylphthalate	NC	NC	--	ND - 97 J	92 J	85 J	--	ND - 170 J	--
Fluoranthene	1,020 CT	87,069	590 J - 650 J	71 J - 1,400 J	490 J	280 J	--	270 J - 2,400	--
Pyrene	NC	NC	640 J - 710 J	72 J - 1,500 J	390 J	220 J	ND - 180 J	220 J - 2,300	--
Butylbenzylphthalate	NC	NC	--	--	--	--	ND - 1,000 J	--	--
Benzo(a)anthracene	1.3 HH	111	260 J - 300 J	31 J - 710 J	180 J	--	--	ND - 1,200	--
Chrysene	1.3 HH	111	370 J - 410 J	46 J - 1,000 J	300 J	--	--	ND - 1,300	--

TABLE 4-5
Summary of Detected Constituents
Sediment Analytical Results

	NYSDEC Sediment Criteria ug/gOC	Normalized Sediment Criteria ug/kg	Wetlands (SD-7, SD-9)	Tributary (SD-6, SD-8, SD-10, SD-11)	Confluence of Tributary and Stream (SD-5)	Confluence of Pond and Stream (SD-4)	Pond (SD-2, SD-3)	Drainage Culvert (SD-1, SD-1DUP)	Upsteam (SD-12)
bis(2-Ethylhexyl)phthalate	199.5 CT	17,030	--	ND - 140 J	250 J	210 J	--	ND - 300 J	--
Benzo(b)fluoranthene	1.3 HH	111	320 J - 360 J	32 J - 820 J	260 J	150 J	--	ND - 840	--
Benzo(k)fluoranthene	1.3 HH	111	300 J - 320 J	38 J - 780 J	210 J	150 J	--	ND - 950	--
Benzo(a)pyrene	1.3 HH	111	300 J - 320 J	ND - 810 J	180 J	120 J	ND - 58 J	230 J - 1,000	--
Indeno(1,2,3-cd)pyrene	1.3 HH	111	150 J - 290 J	ND - 87 J	--	--	--	ND - 110 J	--
Benzo(g,h,i)perylene	NC	NC	120 J - 250 J	ND - 51 J	--	--	--	ND - 55 J	--
Pesticides/PCBs (ug/kg)									
alpha-Chlordane	0.001 HH	0.09	NA	3.5 JP	NA	--	NA	--	NA
gamma-Chlordane	0.001 HH	0.09	NA	3.4	NA	--	NA	--	NA
	NYSDEC Sediment Criteria Severe Effect Level mg/kg								
Inorganics (mg/kg)									
Aluminum	NC		12,700 J - 14,900 J	4,970 - 34,090	19,800 J	10,600 J	7,770 J - 9,900	10,100 J - 11,700 J	2920
Arsenic	33		5.8 JB - 16.9 J	1.1 B - 19.3 J	7 J	9.1 J	3 B - 4.4 JB	3.2 JB - 10.6 J	--
Barium	NC		142 J - 604 J	32.6 B - 460 J	364 J	256 J	135 - 261 J	132 J - 289 J	33.8 B
Beryllium	NC		--	ND - 0.6 JB	0.62 JB	--	--	--	--
Cadmium	9		1 JB - 1.8 JB	0.31 B - 1.4 JB	1.1 JB	1 JB	0.78 J - 1.1 JB	1 JB - 1.3 JB	--
Calcium	NC		4,020 J - 11,200 J	2,590 - 13,000	7,760 J	9,530 J	4,490 J - 4,600	7,560 J - 11,500 J	882 B
Chromium	110		144 J	11.4 - 34	R	R	43 - 106 J	78.1 J	R
Cobalt	NC		20.4 J - 41.7 J	4.9 B - 24.7 JB	22.2 JB	24.6 JB	14.2 B - 37.3 J	31.9 JB - 35.6 J	4.6 B
Copper	110		129 J - 2,080 J	12.3 - 2,330 J	690 J	603 J	162 - 398 J	374 J - 493 J	4.4 B
Iron	40,000 (4%)		23,600 J - 38,600 J	9,820 - 20,200 J	28,000 J	19,500 J	2,160 - 27,000 J	21,100 J - 34,200 J	7,320
Lead	110		62.9 J - 63.2 J	3.9 - 48.2 J	46.2 J	29.3 J	15.4 J - 19.4	16.6 J - 29.2 J	3
Magnesium	NC		7,120 J - 9,420 J	3,950 - 7,830 J	7,000 J	8,670 J	6,160 - 21,800 J	10,700 J - 23,400 J	2,130
Manganese	1,100		220 J	841 J	321 J	167 J	R	154 J	87
Nickel	50		264 J - 494 J	26.9 - 835 J	231 J	234 J	180 - 212 J	166 J - 284 J	17.3
Potassium	NC		831 JB - 1,040 JB	413 B - 1,880 J	1,400 JB	894 JB	668 JB - 976 B	906 JB - 1,240 JB	207 B

TABLE 4-5
Summary of Detected Constituents
Sediment Analytical Results

	NYSDEC Sediment Criteria Severe Effect Level mg/kg	Wetlands (SD-7, SD-9)	Tributary (SD-6, SD-8, SD-10, SD-11)	Confluence of Tributary and Stream (SD-5)	Confluence of Pond and Stream (SD-4)	Pond (SD-2, SD-3)	Drainage Culvert (SD-1, SD-1DUP)	Upsteam (SD-12)
Selenium	NC	9.6 J - 46 J	ND - 68.2 J	19.2 J	14 J	4.8 J - 8.4	3.2 J - 14.6 J	--
Silver	2.2	ND - 0.66 JB	ND - 0.72 JB	0.66 JB	1.3 JB	ND - 0.58 JB	ND - 1.4 JB	0.26 B
Sodium	NC	311 JB - 454 JB	92.7 B - 586 JB	546 JB	343 JB	193 B - 324 JB	228 JB - 384 JB	59.8 B
Vanadium	NC	30.6 J - 49.5 J	8.1 B - 36.2 J	41.6 J	39.8 JB	25.4 - 26.9 J	23.5 J - 44.1 JB	5.8 B
Zinc	270	226 J - 1,890 J	36.8 - 938 J	441 J	209 J	133 J - 155	142 J - 180 J	29.3 J
Cyanide	NC	ND - 519 J	ND - 52.4 J	--	--	ND - 3.33 J	ND - 45.3 J	--

Notes:

--/ND = Constituent not detected.

J = Constituent value is estimated.

R = Constituent value rejected and deemed unusable.

B (inorganics) = Constituent value is less than the required detection limit but greater than the instrument detection limit.

NA = Not analyzed/not available.

NC = No criteria available.

Shaded entries exceed the comparison criteria in at least the maximum amount per concentration range.

Table 4-6A
Sediment Samples
PAH Compounds Exceeding Sediment Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth	Sample Result Units	NYSDEC Sediment Criteria	Sample Specific Criteria TOC=40,000 mg/kg	SD-13 MM-SD13-033004 03/30/2004 0-6 in. bgs	Sample Specific Criteria TOC=60,000 mg/kg	SD-14 MM-SD14-033004 03/30/2004 0-6 in. bgs	Sample Specific Criteria TOC=40,000 mg/kg	SD-15 MM-SD15-033004 03/30/2004 0-6 in. bgs
Constituent								
Anthracene	(ug/kg)	986 *	39440	29UJ	59160	46UJ	39440	31UJ
Benzo(a)anthracene	(ug/kg)	1.3 *	52	18UJ	78	29UJ	52	[470]J
Benzo(a)pyrene	(ug/kg)	1.3 *	52	21UJ	78	34UJ	52	[660]J
Benzo(b)fluoranthene	(ug/kg)	1.3 *	52	65UJ	78	100UJ	52	[1200]J
Benzo(ghi)perylene	(ug/kg)	NC *	NC	53UJ	NC	85UJ	NC	220J
Benzo(k)fluoranthene	(ug/kg)	1.3 *	52	42UJ	78	66UJ	52	[600]J
Chrysene	(ug/kg)	1.3 *	52	39UJ	78	62UJ	52	[650]J
Fluoranthene	(ug/kg)	1020 *	40800	17UJ	61200	27UJ	40800	1400J
Fluorene	(ug/kg)	73 *	2920	35UJ	4380	55UJ	2920	37UJ
Indeno(1,2,3-cd)pyrene	(ug/kg)	1.3 *	52	29UJ	78	47UJ	52	32UJ
Phenanthrene	(ug/kg)	120 *	4800	27UJ	7200	44UJ	4800	590J
Pyrene	(ug/kg)	8775 *	351000	22UJ	526500	35UJ	351000	1300J

Notes:
U - Non-detect
J - Estimated
R - Rejected
Shading and [ ] - Indicates exceedance of criteria.
* - Sediment criteria in units of ug/g Organic Carbon. Sample specific criteria were calculated using the TOC results.

Table 4-6A
Sediment Samples
PAH Compounds Exceeding Sediment Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth	Sample Result Units	NYSDEC Sediment Criteria	Sample Specific Criteria TOC=18,000 mg/kg	SD-16 MM-SD16-033004 03/30/2004 0-6 in. bgs	Sample Specific Criteria TOC=6,100 mg/kg	SD-17 MM-SD17-033104 03/31/2004 0-6 in. bgs	Sample Specific Criteria TOC=76,000 mg/kg	SD-18 MM-SD18-033104 03/31/2004 0-6 in. bgs
Constituent								
Anthracene	(ug/kg)	986 *	17748	17UJ	6014.6	200J	74936	37UJ
Benzo(a)anthracene	(ug/kg)	1.3 *	23.4	[140]J	7.93	[470]	98.8	[160]J
Benzo(a)pyrene	(ug/kg)	1.3 *	23.4	[190]J	7.93	[430]J	98.8	[220]J
Benzo(b)fluoranthene	(ug/kg)	1.3 *	23.4	[260]J	7.93	[670]J	98.8	[260]J
Benzo(ghi)perylene	(ug/kg)	NC *	NC	32UJ	NC	150J	NC	68UJ
Benzo(k)fluoranthene	(ug/kg)	1.3 *	23.4	[190]J	7.93	[380]J	98.8	[220]J
Chrysene	(ug/kg)	1.3 *	23.4	[190]J	7.93	[490]	98.8	[180]J
Fluoranthene	(ug/kg)	1020 *	18360	410J	6222	1300	77520	410J
Fluorene	(ug/kg)	73 *	1314	21UJ	445.3	70J	5548	44UJ
Indeno(1,2,3-cd)pyrene	(ug/kg)	1.3 *	23.4	18UJ	7.93	[48]J	98.8	38UJ
Phenanthrene	(ug/kg)	120 *	2160	190J	732	[900]	9120	170J
Pyrene	(ug/kg)	8775 *	157950	380J	53527.5	1000	666900	380J

Notes:
U - Non-detect
J - Estimated
R - Rejected
Shading [ ] - Indicates exceedance of criteria.
* - Sediment criteria in units of ug/g Organic Carbon. Sample specific criteria were calculated using the TOC results.

Table 4-6A
Sediment Samples
PAH Compounds Exceeding Sediment Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth	Sample Result Units	NYSDEC Sediment Criteria	Sample Specific Criteria TOC=60,000 mg/kg	SD-18 MM-SD18D-033104 Duplicate of MM-SD18-033104	Sample Specific Criteria TOC=89,000 mg/kg	SD-19A MM-SD19A-033104 03/31/2004 0-6 in. bgs	Sample Specific Criteria TOC=100,000 mg/kg	SD-20 MM-SD20-033104 03/31/2004 0-6 in. bgs
Constituent								
Anthracene	(ug/kg)	986 *	59160	41UJ	87754	52UJ	98600	87UJ
Benzo(a)anthracene	(ug/kg)	1.3 *	78	26UJ	115.7	33UJ	130	55UJ
Benzo(a)pyrene	(ug/kg)	1.3 *	78	30UJ	115.7	38UJ	130	63UJ
Benzo(b)fluoranthene	(ug/kg)	1.3 *	78	92UJ	115.7	120UJ	130	190UJ
Benzo(ghi)perylene	(ug/kg)	NC *	NC	75UJ	NC	95UJ	NC	160UJ
Benzo(k)fluoranthene	(ug/kg)	1.3 *	78	59UJ	115.7	74UJ	130	120UJ
Chrysene	(ug/kg)	1.3 *	78	55UJ	115.7	69UJ	130	120UJ
Fluoranthene	(ug/kg)	1020 *	61200	180J	90780	250J	102000	51UJ
Fluorene	(ug/kg)	73 *	4380	49UJ	6497	62UJ	7300	100UJ
Indeno(1,2,3-cd)pyrene	(ug/kg)	1.3 *	78	42UJ	115.7	53UJ	130	88UJ
Phenanthrene	(ug/kg)	120 *	7200	39UJ	10680	49UJ	12000	82UJ
Pyrene	(ug/kg)	8775 *	526500	31UJ	780975	220J	877500	65UJ

Notes:
U - Non-detect
J - Estimated
R - Rejected
Shading and [ ] - Indicates exceedance of criteria.
* - Sediment criteria in units of ug/g Organic Carbon. Sample specific criteria were calculated using the TOC results.

Table 4-6A
Sediment Samples
PAH Compounds Exceeding Sediment Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth	Sample Result Units	NYSDEC Sediment Criteria	Sample Specific Criteria TOC=49,000 mg/kg	SD-21 MM-SD21-040304 04/03/2004 0-6 in. bgs	Sample Specific Criteria TOC=12,000 mg/kg	SD-22 MM-SD22-040304 04/03/2004 0-6 in. bgs	Sample Specific Criteria TOC=10,000 mg/kg	SD-23 MM-SD23-040304 04/03/2004 0-6 in. bgs
Constituent								
Anthracene	(ug/kg)	986 *	48314	86UJ	11832	87UJ	9860	66UJ
Benzo(a)anthracene	(ug/kg)	1.3 *	63.7	55UJ	15.6	55UJ	13	[360]J
Benzo(a)pyrene	(ug/kg)	1.3 *	63.7	62UJ	15.6	63UJ	13	[410]J
Benzo(b)fluoranthene	(ug/kg)	1.3 *	63.7	190UJ	15.6	190UJ	13	[680]J
Benzo(ghi)perylene	(ug/kg)	NC *	NC	160UJ	NC	160UJ	NC	120UJ
Benzo(k)fluoranthene	(ug/kg)	1.3 *	63.7	120UJ	15.6	120UJ	13	94UJ
Chrysene	(ug/kg)	1.3 *	63.7	110UJ	15.6	120UJ	13	[510]J
Fluoranthene	(ug/kg)	1020 *	49980	50UJ	12240	51UJ	10200	1000J
Fluorene	(ug/kg)	73 *	3577	100UJ	876	100UJ	730	78UJ
Indeno(1,2,3-cd)pyrene	(ug/kg)	1.3 *	63.7	87UJ	15.6	88UJ	13	66UJ
Phenanthrene	(ug/kg)	120 *	5880	81UJ	1440	81UJ	1200	450J
Pyrene	(ug/kg)	8775 *	429975	64UJ	105300	65UJ	87750	790J

Notes:
U - Non-detect
J - Estimated
R - Rejected
Shading and [ ] - Indicates exceedance of criteria.
* - Sediment criteria in units of ug/g Organic Carbon. Sample specific criteria were calculated using the TOC results.

Table 4-6A
Sediment Samples
PAH Compounds Exceeding Sediment Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth	Sample Result Units	NYSDEC Sediment Criteria	Sample Specific Criteria TOC=140,000 mg/kg	SD-24 MM-SD24-040304 04/03/2004 0-6 in. bgs	Sample Specific Criteria TOC=100,000 mg/kg	SD-25 MM-SD25-040304 04/03/2004 0-6 in. bgs	Sample Specific Criteria TOC=100,000 mg/kg	SD-26 MM-SD26-040304 04/03/2004 0-6 in. bgs
Constituent								
Anthracene	(ug/kg)	986 *	138040	R	98600	13UJ	98600	14UJ
Benzo(a)anthracene	(ug/kg)	1.3 *	182	R	130	8.3UJ	130	100J
Benzo(a)pyrene	(ug/kg)	1.3 *	182	R	130	9.5UJ	130	120J
Benzo(b)fluoranthene	(ug/kg)	1.3 *	182	R	130	76J	130	[180J]
Benzo(ghi)perylene	(ug/kg)	NC *	NC	R	NC	24UJ	NC	26UJ
Benzo(k)fluoranthene	(ug/kg)	1.3 *	182	R	130	19UJ	130	85J
Chrysene	(ug/kg)	1.3 *	182	R	130	71J	130	[150J]
Fluoranthene	(ug/kg)	1020 *	142800	R	102000	160J	102000	280J
Fluorene	(ug/kg)	73 *	10220	R	7300	16UJ	7300	17UJ
Indeno(1,2,3-cd)pyrene	(ug/kg)	1.3 *	182	R	130	13UJ	130	14UJ
Phenanthrene	(ug/kg)	120 *	16800	R	12000	80J	12000	130J
Pyrene	(ug/kg)	8775 *	1228500	R	877500	120J	877500	220J

Notes:
U - Non-detect
J - Estimated
R - Rejected
Shading and [ ] - Indicates exceedance of criteria.
* - Sediment criteria in units of ug/g Organic Carbon. Sample specific criteria were calculated using the TOC results.

Table 4-6B
Sediment Samples
Inorganic Compounds Exceeding Sediment Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth	Sample Result Units	New York State DEC Sediment Criteria	SD-13 MM-SD13-033004 03/30/2004 0-6 in. bgs	SD-14 MM-SD14-033004 03/30/2004 0-6 in. bgs	SD-15 MM-SD15-033004 03/30/2004 0-6 in. bgs	SD-16 MM-SD16-033004 03/30/2004 0-6 in. bgs	SD-17 MM-SD17-033104 03/31/2004 0-6 in. bgs	SD-18 MM-SD18-033104 03/31/2004 0-6 in. bgs
Constituent								
Aluminum	(mg/kg)	NC	9920J	13800J	10100J	9080J	4080	12700J
Arsenic	(mg/kg)	33	2.3J	8.3J	8.3J	3.7J	1.5	12J
Barium	(mg/kg)	NC	229J	334J	266J	154J	47.5	409J
Beryllium	(mg/kg)	NC	0.86J	1.2J	0.82J	0.55J	0.28J	0.98J
Calcium	(mg/kg)	NC	4940J	13400J	7130J	7190J	16200	13300J
Chromium	(mg/kg)	110	31.1J	49.1J	[158J]	43.4J	16.4J	[426J]
Cobalt	(mg/kg)	NC	14.4J	22.5J	16.5J	12.8J	5.4J	36.1J
Copper	(mg/kg)	110	24.4J	[672J]	[1040J]	107J	9.9	[327J]
Iron	(mg/kg)	40000	11500J	13600J	10900J	12400J	6590	14400J
Lead	(mg/kg)	110	23.6J	39.5J	32.2J	22.9J	6.7	88.7J
Magnesium	(mg/kg)	NC	4400J	6310J	5280J	6880J	11900	9190J
Manganese	(mg/kg)	1100	391J	598J	958J	313J	337	241J
Nickel	(mg/kg)	50	[636J]	[300J]	[332J]	[143J]	35.6	[460J]
Potassium	(mg/kg)	NC	444J	726J	585J	833J	560J	584J
Selenium	(mg/kg)	NC	2.1J	12J	18.2J	2J	0.42U	9.9J
Silver	(mg/kg)	2.2	0.39UJ	0.6UJ	0.42UJ	0.24UJ	0.14U	0.49UJ
Sodium	(mg/kg)	NC	281J	770J	766J	348J	127J	276J
Thallium	(mg/kg)	NC	1.2UJ	1.9UJ	1.3UJ	0.74UJ	0.44UJ	1.5UJ
Vanadium	(mg/kg)	NC	22.3J	31.2J	20.6J	22.2J	9.3	43.4J
Zinc	(mg/kg)	270	106J	146J	[526J]	139J	37.3	[299J]
Mercury	(mg/kg)	1.3	0.09J	0.12J	0.15J	0.06J	0.01J	0.17J
TOC	(mg/kg)	NC	40000J	60000J	40000J	18000J	6100	76000J
AVS/SEM	(ratio)		<1.0UJ	>1.0J	>1.0J	>1.0J	>1.0	<1.0UJ

Notes:
U - Non-detect
J - Estimated
R - Rejected
Shading and [ ] - Indicates exceedance of criteria.

Table 4-6B
Sediment Samples
Inorganic Compounds Exceeding Sediment Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth	Sample Result Units	New York State DEC Sediment Criteria	SD-18 MM-SD18D-033104 Duplicate of MM-SD18-033104	SD-19A MM-SD19A-033104 03/31/2004 0-6 in. bgs	SD-20 MM-SD20-033104 03/31/2004 0-6 in. bgs	SD-21 MM-SD21-040304 04/03/2004 0-6 in. bgs	SD-22 MM-SD22-040304 04/03/2004 0-6 in. bgs	SD-23 MM-SD23-040304 04/03/2004 0-6 in. bgs
Constituent								
Aluminum	(mg/kg)	NC	12900J	11500J	11500J	15800J	18000J	12000J
Arsenic	(mg/kg)	33	7.7J	12.2J	4.1J	2.7UJ	2.7UJ	2UJ
Barium	(mg/kg)	NC	506J	418J	283J	374J	391J	278J
Beryllium	(mg/kg)	NC	1.1J	1.3J	1.6J	0.99J	1.1J	0.74J
Calcium	(mg/kg)	NC	14600J	16400J	10700J	13600J	10600J	11600J
Chromium	(mg/kg)	110	[159]J	[133]J	62.7J	60.5J	78.3J	73.7J
Cobalt	(mg/kg)	NC	35.7J	58.8J	21.3J	34.7J	39.8J	32.4J
Copper	(mg/kg)	110	[230]J	[281]J	[211]J	[403]J	[415]J	[194]J
Iron	(mg/kg)	40000	19600J	17400J	18200J	30100J	35300J	26600J
Lead	(mg/kg)	110	76.4J	91.5J	38.9J	[112]J	53.9J	48.7J
Magnesium	(mg/kg)	NC	10300J	11000J	7400J	8620J	10600J	12400J
Manganese	(mg/kg)	1100	456J	302J	482J	735J	693J	525J
Nickel	(mg/kg)	50	[364]J	[365]J	[200]J	[180]J	[170]J	[155]J
Potassium	(mg/kg)	NC	618J	440J	747J	1460J	1970J	1440J
Selenium	(mg/kg)	NC	8.8J	10.1J	10.8J	12.4J	7.7J	6.7J
Silver	(mg/kg)	2.2	0.55UJ	0.69UJ	1.1UJ	1.2UJ	1.2UJ	0.91UJ
Sodium	(mg/kg)	NC	638J	620J	401J	427UJ	471J	490J
Thallium	(mg/kg)	NC	3.4J	2.2UJ	3.6UJ	3.8UJ	3.7UJ	2.8UJ
Vanadium	(mg/kg)	NC	42.2J	61J	28.5J	38J	44.7J	31J
Zinc	(mg/kg)	270	259J	176J	258J	191J	195J	270J
Mercury	(mg/kg)	1.3	0.16J	0.14J	0.15J	0.22J	0.25J	0.14J
TOC	(mg/kg)	NC	60000J	89000J	100000J	49000J	12000J	10000J
AVS/SEM	(ratio)		>1.0J	>1.0J	<1.0UJ	>1.0J	<1.0UJ	<1.0UJ

Notes:
U - Non-detect
J - Esti
R - Reje
Shading and [ ] - Indicates exceedance of criteria.

Table 4-6B
Sediment Samples
Inorganic Compounds Exceeding Sediment Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date Sample Depth	Sample Result Units	New York State DEC Sediment Criteria	SD-24 MM-SD24-040304 04/03/2004 0-6 in. bgs	SD-25 MM-SD25-040304 04/03/2004 0-6 in. bgs	SD-26 MM-SD26-040304 04/03/2004 0-6 in. bgs
Constituent					
Aluminum	(mg/kg)	NC	14400J	3310	6310
Arsenic	(mg/kg)	33	2.7UJ	0.4U	1.4J
Barium	(mg/kg)	NC	331J	65.3J	209J
Beryllium	(mg/kg)	NC	1J	0.17J	0.28J
Calcium	(mg/kg)	NC	10400J	2170	2580
Chromium	(mg/kg)	110	76.3J	81.2	75.4
Cobalt	(mg/kg)	NC	39.7J	26.7	21.5
Copper	(mg/kg)	110	[218J]	[137J]	[150J]
Iron	(mg/kg)	40000	34700J	17500	16300
Lead	(mg/kg)	110	42.2J	10.1J	18.5J
Magnesium	(mg/kg)	NC	10800J	18600	12400
Manganese	(mg/kg)	1100	338J	301	549
Nickel	(mg/kg)	50	[161J]	[140]	[120]
Potassium	(mg/kg)	NC	1500J	324J	471J
Selenium	(mg/kg)	NC	4.7J	0.53U	0.56U
Silver	(mg/kg)	2.2	1.2UJ	0.19J	0.19UJ
Sodium	(mg/kg)	NC	423UJ	119J	67.1U
Thallium	(mg/kg)	NC	3.8UJ	0.55UJ	0.6UJ
Vanadium	(mg/kg)	NC	42J	14.5J	21.8J
Zinc	(mg/kg)	270	170J	82.8	68.8
Mercury	(mg/kg)	1.3	0.2J	0.02	0.04
TOC	(mg/kg)	NC	140000J	100000	100000
AVS/SEM	(ratio)		<1.0UJ	>1.0	>1.0

Notes:
U - Non-detect
J - Estimated
R - Rejected
Shading and [ ] - Indicates exceedance of criteria.

TABLE 4-7
Summary of Detected Constituents
Surface Soil Analytical Results

	NYSDEC Recommended Soil Clean-up Objectives	Most Stringent of Soil Clean-up Objective or Maximum Site Background	Downgradient (SS-1, SS-2, SS-3)	Background (SS-4, SS-5)
Semi-Volatile Organics (ug/kg)				
2-Methylphenol	100	NA	--	ND - 39 J
Phenanthrene	50,000	NA	11 J - 45 J	21 J - 55 J
Anthracene	50,000	NA	ND - 8 J	--
Di-n-butylphthalate	8,100	NA	ND - 610 JB	--
Fluoranthene	50,000	NA	19 J - 57 J	27 J - 97 J
Pyrene	50,000	NA	22 J - 86 J	66 J - 100 J
Butylbenzylphthalate	50,000	NA	ND - 370 J	--
Benzo(a)anthracene	224	NA	ND - 23 J	13 J - 39 J
Chrysene	400	NA	ND - 28 J	19 J - 62 J
bis(2-Ethylhexyl)phthalate	50,000	NA	ND - 4,900 B	--
Benzo(b)fluoranthene	1,100	NA	ND - 21 J	ND - 49 J
Benzo(k)fluoranthene	1,100	NA	ND - 26 J	ND - 48 J
Benzo(a)pyrene	61	NA	ND - 97 J	ND - 29 J
Indeno(1,2,3-cd)pyrene	3,200	NA	ND - 81 J	ND - 41 J
Benzo(g,h,i)perylene	50,000	NA	ND - 46 J	--
Semi-Volatile TICs	NA	NA	8,550 JN - 28,330 JN	14,090 JN - 15,990 JN
Pesticides/PCBs (ug/kg)				
4,4'-DDE	2,100	NA	5.3 - 10	ND - 8
4,4'-DDD	2,900	NA	ND - 7.1 JPN	--
4,4'-DDT	2,100	NA	5 JP - 6.6 JPN	4.3 - 8.9
Aroclor-1254	1,000	NA	ND - 62 J	--
Aroclor-1260	1,000	NA	ND - 46 J	--
Inorganics (mg/kg)				
Aluminum	SB	19,100	7,510 - 8,830	12,600 - 19,100
Arsenic	7.5 or SB	7.5	1.6 B - 2.5	2.9 - 3.1
Barium	300 or SB	300	42.6 B - 52	70 - 83.2
Beryllium	0.16 or SB	0.59	0.3 B - 0.35 B	0.54 B - 0.59 B

TABLE 4-7
Summary of Detected Constituents
Surface Soil Analytical Results

	NYSDEC Recommended Soil Clean-up Objectives	Most Stringent of Soil Clean-up Objective or Maximum Site Background	Downgradient (SS-1, SS-2, SS-3)	Background (SS-4, SS-5)
Calcium	SB	847	1,280 - 1,540	808 B - 847 B
Chromium	10 or SB	21.1	10.5 - 19	14.1 - 21.1
Cobalt	30 or SB	30	5.2 B - 7.3 B	7.6 B - 8.5 B
Copper	25 or SB	25	18 - 177 J	12.8 - 14.8
Iron	2,000 or SB	19,100	10,900 - 13,700	14,800 - 19,100
Lead	SB	18.1	8 - 10.8	12.2 - 18.1
Magnesium	SB	3,270	2,130 - 2,880	2,380 - 3,270
Manganese	SB	241	168 - 225	161 - 241
Nickel	13 or SB	18.8	10.2 - 15	16.2 - 18.8
Potassium	SB	475	526 B - 768 B	385 B - 475 B
Selenium	2 or SB	2	1 J - 1.3 J	1.2 J - 1.6 J
Sodium	SB	96.4	74.4 B - 93.1 B	72.3 B - 96.4 B
Vanadium	150 or SB	150	ND - 18.8	24.1 - 38.8
Zinc	20 or SB	41.1	41.5 J - 124	34.2 J - 41.1 J

Notes:

--/ND = Constituent not detected.

J = Constituent value is estimated.

P = Constituent had a greater than 25 percent difference for the detected concentration values between two gas chromatograph columns.

N = Presumptive evidence exists for the presence of the constituent.

B (organics) = Constituent also present in an associated blank sample.

B (inorganics) = Constituent value is less than the required detection limit but greater than the instrument detection limit.

NA = Not analyzed/not available.

Shaded entries exceed the comparison criteria in at least the maximum amount per concentration range.

Table 4-8
Surface Soil Samples
Compounds Exceeding Soil Cleanup Criteria
Magna Metals - Cortlandt, New York

Site	NYSDEC	SS-06	SS-07	SS-08	SS-09	SS-10	SS-11
Sample ID	Recommended	MM-SS06-073003	MM-SS07-072903	MM-SS08-072903	MM-SS09-073003	MM-SS10-073003	MM-SS11-072903
Sample Date	Soil Cleanup	07/30/2003	07/29/2003	07/29/2003	07/30/2003	07/30/2003	07/29/2003
Sample Depth (in. bgs)	Criteria	0-2	0-2	0-2	0-2	0-2	0-2
Constituent							
Arsenic	7.5	5.5	[92.7]	3.5	[14.9]	[54.7]J	1.6
Barium	300	69.4	82.4	75.3	[407]	260J	48.2
Beryllium	0.59*	0.41J	0.3J	0.23J	[0.85]	0.53J	0.21J
Calcium	5060**	1220	3470	1890	[5470]	[7210]J	3310
Chromium	70.5**	27.4	[962]	14.2	[232]	[210]J	10.8
Cobalt	30	7.8	8	6.3J	13.2	[40.3]J	6.6
Copper	25	[545]	[370]	[627]	[1980]	[1120]J	[302]
Iron	21100**	[39900]	14800	11100	12900	[34800]J	11000
Lead	91.7**	[95.3]	[96.1]	37.6	44.8	[122]J	12.1
Magnesium	7830**	2470	6220	2200	2980	[8410]J	2440
Manganese	408**	392	393	134	267	[699]J	251
Nickel	87.5**	26.4	[483]	27.3	[335]	[1360]J	11.6
Potassium	496**	381J	[575]J	402J	[886]J	[1090]J	[665]J
Selenium	2	1.3J	[18.7]	0.82J	[28.9]	[49.5]J	0.4U
Sodium	96.4*	47.3U	[969]J	52.2U	[279]J	[517]J	92.8J
Zinc	50.7**	[183]J	[3830]J	[76.4]J	[869]J	[1050]J	[250]J
Mercury	0.15**	0.12J	0.09J	[0.52]J	0.15J	[0.21]J	0.03J

Notes:

All results are in mg/kg.

U - Non-detect

J - Estimated

R - Rejected

Shading & [ ] - Indicates exceedance of criteria.

* - Criteria is based on the maximum site background concentration from background locations SS-4 and SS-5 as stated in the November 1998 RI/FS.

** - Criteria is based on the maximum site background concentration from background locations SS-13, SS-14, and SS-55 as stated in the July 2004 RI/FS.

Table 4-8
Surface Soil Samples
Compounds Exceeding Soil Cleanup Criteria
Magna Metals - Cortlandt, New York

Site	NYSDEC	SS-12	SS-13	SS-14	SS-15
Sample ID	Recommended	MM-SS12-072903	MM-SS13-072903	MM-SS14-072903	MM-SS15-072903
Sample Date	Soil Cleanup	07/29/2003	07/29/2003	07/29/2003	07/29/2003
Sample Depth (in. bgs)	Criteria	0-2	0-2	0-2	0-2
Constituent					
Arsenic	7.5	1.7	2.6	4.3	3.7
Barium	300	71.6	76.1	139	80.9
Beryllium	0.59*	0.21J	0.59J	0.26J	0.29J
Calcium	5060**	1640	5060	2630	1690
Chromium	70.5**	10.6	19.5	15.4	70.5
Cobalt	30	5.9	5J	7.7	26.5
Copper	25	[136]	22.8	21.2	22.4
Iron	21100**	9830	17900	13700	21100
Lead	91.7**	20.8	67.4	91.7	39.2
Magnesium	7830**	2280	1910	2730	7830
Manganese	408**	214	95.4	408	335
Nickel	87.5**	11.1	17.8	17.3	87.5
Potassium	496**	[651]J	387J	496J	442J
Selenium	2	0.38U	0.5U	1.1J	0.63J
Sodium	96.4*	[122]J	60.3U	54.1U	53.4U
Zinc	50.7**	[160]J	19.8J	50.7J	44.4J
Mercury	0.15**	0.01R	0.14J	0.15J	0.13J

Notes:
All results are in mg/kg.
U - Non-detect
J - Estimated
R - Rejected
Shading & [ ] - Indicates exceedance of criteria.
* - Criteria is based on the maximum site background concentration from background locations SS-4 and SS-5 as stated in the November 1998 RI/FS.
** - Criteria is based on the maximum site background concentration from background locations SS-13, SS-14, and SS-55 as stated in the July 2004 RI/FS.

TABLE 4-9
Summary of Detected Constituents
Subsurface Soil Analytical Results

	NYSDEC Recommended Soil Clean-up Objectives	Most Stringent of Soil Clean-up Objective or Maximum Site Background	Septic Tank/Leach Pit Soil Borings (SB-1 through SB-7)	Monitoring Well Soil Borings (MW-2 through MW-4)	Background Monitoring Well Soil Boring (MW-1)
Volatile Organics (ug/kg)					
Methylene Chloride	100	NA	ND - 8 J	ND - 4 JB	ND - 5 JB
Acetone	200	NA	--	5 JB - 7 JB	5 JB - 6 JB
2-Butanone	300	NA	--	ND - 4 J	--
Trichloroethene	700	NA	ND - 35	ND - 4 J	--
4-Methyl-2-Pentanone	1,000	NA	--	ND - 4 J	--
2-Hexanone	NC	NA	--	ND - 5 J	--
1,1,2,2-Tetrachloroethane	600	NA	--	ND - 3 J	--
Volatile TICs	NC	NA	21 JN - 200 JN	--	--
Semi-Volatile Organics (ug/kg)					
Diethylphthalate	7,100	NA	--	ND - 13 JB	--
Phenanthrene	50,000	NA	ND - 19 J	--	--
Anthracene	50,000	NA	ND - 4 J	--	--
Di-n-butylphthalate	8,100	NA	ND - 660 B	12 JB - 42 JB	22 JB - 31 JB
Fluoranthene	50,000	NA	ND - 17 J	--	--
Pyrene	50,000	NA	ND - 16 J	--	--
Butylbenzylphthalate	50,000	NA	ND - 43 J	--	--
bis(2-Ethylhexyl)phthalate	50,000	NA	--	12 JB - 100 JB	ND - 43 JB
Di-n-octylphthalate	50,000	NA	--	--	--
Benzo(a)pyrene	61	NA	--	ND - 18 J	--
Benzo(g,h,i)perylene	50,000	NA	--	ND - 160 J	--
Pesticides/PCBs (ug/kg)					
alpha-BHC	110	NA	--	0.05 JP	NA
Heptachlor	100	NA	--	0.19 JP	NA
Endosulfan I	900	NA	--	0.32 JP	NA
Dieldrin	44	NA	--	0.28 JP	NA
Endosulfan II	900	NA	--	0.15 JP	NA
4,4'-DDD	2,900	NA	--	0.98 JP	NA
4,4'-DDT	2,100	NA	--	0.92 JP	NA

TABLE 4-9
Summary of Detected Constituents
Subsurface Soil Analytical Results

	NYSDEC Recommended Soil Clean-up Objectives	Most Stringent of Soil Clean-up Objective or Maximum Site Background	Septic Tank/Leach Pit Soil Borings (SB-1 through SB-7)	Monitoring Well Soil Borings (MW-2 through MW-4)	Background Monitoring Well Soil Boring (MW-1)
alpha-Chlordane	NC	NA	ND - 2 JPN	0.27 JP	NA
Aroclor-1254	10,000	NA	ND - 280 JP	--	NA
Inorganics (mg/kg)					
Aluminum	SB	5,040	4,554.3 - 21,295	3,190 - 8,480	2,260 - 5,040
Arsenic	7.5 or SB	7.5	3.5 - 30.8 J	0.87 B - 20.4	ND - 1.6 B
Barium	300 or SB	300	34.1 B - 721	19.7 B - 434	74 - 81.9
Beryllium	0.16 or SB	0.32	ND - 0.43 B	ND - 0.4 B	0.24 B - 0.32 B
Calcium	SB	1,690	925 - 5,124.1	664 B - 5,110	1,560 - 1,690
Chromium	10 or SB	10	5.7 - 48.7	3.1 - 61.1	2.2 B - 6.8
Cobalt	30 or SB	30	3.2 B - 24.3 J	2.3 B - 20.8	3.2 B - 4.6 B
Copper	25 or SB	25	40.4 - 1,309	19.4 - 695	13.7 - 20.6
Iron	2,000 or SB	10,000	6,198.5 - 24,435	3,880 - 13,400	4,350 - 10,000
Lead	SB	3.7	2.9 - 12.9	1.1 - 5.2	2.2 - 3.7
Magnesium	SB	2,100	1,408.3 - 11,389	770 B - 5,480	1,030 B - 2,100
Manganese	SB	250	140 J - 282 J	121 - 304	171 - 250
Mercury	0.1	0.1	ND - 0.12	ND - 0.25	--
Nickel	13 or SB	15	11.9 J - 108 J	7.4 B - 39	6.7 B - 15.2
Potassium	SB	864	398 B - 6,993.6 J	267 B - 3,190	487 B - 864 B
Selenium	2 or SB	2	ND - 11.7	ND - 8.6	ND - 0.9 B
Sodium	SB	86.8	98.7 B - 485 B	52.8 B - 548 B	50 B - 86.8 B
Thallium	SB	DL	ND - 1.8 J	--	--
Vanadium	150 or SB	150	8.2 - 69	4.5 B - 37.3	7.2 B - 11.6
Zinc	20 or SB	23.3	28.7 - 764	10.3 - 39.3	11.2 - 23.3
Cyanide	NC	NA	ND - 225	ND - 19.9	--

Notes:
--/ND = Constituent not detected.
J = Constituent value is estimated.

TABLE 4-9
Summary of Detected Constituents
Subsurface Soil Analytical Results

	NYSDEC Recommended Soil Clean-up Objectives	Most Stringent of Soil Clean-up Objective or Maximum Site Background	Septic Tank/Leach Pit Soil Borings (SB-1 through SB-7)	Monitoring Well Soil Borings (MW-2 through MW-4)	Background Monitoring Well Soil Boring (MW-1)

P = Constituent had a greater than 25 percent difference for the detected concentration values between two gas chromatograph columns.
E = Constituent value exceeded calibration range.
N = Presumptive evidence exists for the presence of the constituent.
B (organics) = Constitent also present in an associated blank sample.
B (inorganics) = Constituent value is less than the required detection limit but greater than the instrument detection limit.
DL = Not to be detected above the detection limit for the applicable analytical method.
NC = No criteria available.
NA = Not analyzed/not available.
Shaded entries exceed the comparison criteria in at least the maximum amount per concentration range.

TABLE 4-10
Summary of Detected Constituents
Groundwater Analytical Results

	NYSDEC Water Quality Standards/ Guidance Values (Class GA)	Downgradient (GW-2, GW-3, GW-4)	Background (GW-1)
Volatile Organics (ug/L)			
Trichloroethene	5	3.7 - 4,700	--
Tetrachloroethene	5	ND - 90 E	--
Semi-Volatile Organics (ug/L)			
bis(2-Ethylhexyl)phthalate	50	ND - 0.9 JB	--
Semi-Volatile TICs	NC	ND - 13 J	--
Pesticides/PCBs (ug/L)			
beta-BHC	ND	0.00022 JP - 0.11 P	0.00078 JP
delta-BHC	ND	ND - 0.0013 JPB	0.00088 JP
gamma-BHC (Lindane)	ND	ND - 0.009 J	--
Heptachlor	ND	ND - 0.0029 J	--
Heptachlor epoxide	ND	ND - 0.035 P	0.001 JP
Dieldrin	ND	ND - 0.0038 JP	0.00072 JP
Endrin	ND	0.003 JP - 0.019 JP	--
Endosulfan II	NC	ND - 0.0044 JP	--
4,4'-DDT	ND	0.0046 JP - 0.026 P	--
alpha-Chlordane	0.1	ND - 0.004 JP	--
gamma-Chlordane	0.1	ND - 0.0063 JP	--
Inorganics (ug/L)			
Aluminum	NC	965 - 7,400	51.1 B
Antimony	3	ND - 5.1 B	--
Arsenic	25	15.7 - 64.3	--
Barium	1,000	56.5 B - 204	89.5 B
Cadmium	10	ND - 1.5 B	1.4 B
Calcium	NC	16,500 - 28,100	10,700
Chromium	50	14.5 - 112	2.2 B
Cobalt	NC	1.4 B - 20.2 B	--
Copper	200	8.3 B - 148	1.7 B
Iron	300	1,420 - 18,900	122
Lead	25	1.3 B - 3.2	1.2 B

TABLE 4-10
Summary of Detected Constituents
Groundwater Analytical Results

	NYSDEC Water Quality Standards/ Guidance Values (Class GA)	Downgradient (GW-2, GW-3, GW-4)	Background (GW-1)
Magnesium	35,000	2,140 B - 18,300	6,980
Manganese	300	56.6 - 1,600	5.9 B
Nickel	NC	7.9 B - 262	6.1 B
Potassium	NC	1,640 B - 8,250	1,210 B
Selenium	10	60.1 - 96.8	2.5 B
Sodium	20,000	7,950 - 57,600	27,700
Vanadium	NC	2.8 B - 37.3 B	--
Zinc	300	4 B - 516	7.8 B
Cyanide	100	14 - 416	--

Notes:
--/ND = Constituent not detected.
J = Constituent value is estimated.
P = Constituent had a greater than 25 percent difference for the detected concentration values between two gas chromatograph columns.
E = Constituent value exceeded calibration range.
N = Presumptive evidence exists for the presence of the constituent.
B (organics) = Constitent also present in an associated blank sample.
B (inorganics) = Constituent value is less than the required detection limit but greater than the instrument detection limit.
ND (criteria) = Not to be detected above the detection limit for the applicable analytical method.
NC = No criteria available.
NA = Not analyzed/not available.
Shaded entries exceed the comparison criteria in at least the maximum amount per concentration range.

Table 4-11
Groundwater Samples
Compounds Exceeding Groundwater Criteria
Magna Metals - Cortlandt, New York

Site Sample ID Sample Date	NYSDEC Groundwater Quality Standards	MW-01 MM-GWMW01-100603 10/06/2003	MW-02 MM-GWMW02-100803 10/08/2003	MW-04 MM-GWMW04-100803 10/08/2003	MW-04D MM-GWMW04D-100803 10/08/2003	MW-04D MM-GWMW05D-100803 Duplicate of MM-GWMW04D-100803
Constituent						
Tetrachloroethene	5	0.70UJ	0.70U	[13]	[13]	[14]
Trichloroethene	5	0.72U	[9.4]	[910]D	[870]D	[870]D
cis-1,2-Dichloroethene	5	0.62U	0.62U	[7.7]	4.9J	[5.5]
Arsenic	25	4.0U	4.0U	[133]	6.9J	4.8J
Barium	1000	156J	294	[1140]	395	350
Beryllium	3	0.12J	0.10U	[5.6]	0.10U	0.13J
Chromium	50	17.8	11.4	[139]	2.5J	2.0J
Copper	200	8.4J	8.8J	[240]	3.6U	3.6U
Iron	300	[1540]	[346]	[37200]	[3810]	[3510]
Magnesium	35000	14800	[48900]	[38600]	[44300]	[39400]
Manganese	300	45.3	29.4	[6400]	[9500]	[8510]
Nickel	100	18.2J	88.1	[108]	15.8J	13.8J
Selenium	10	1.3U	[30.8]	[131]	[30.4]	[23.9]
Sodium	20000	12700J	[264000]J	[76900]J	[126000]J	[111000]J
Thallium	0.5	5.3U	5.3U	[10.5]	[8.6]J	[8.3]J
Cyanide	200	10U	10U	[555]	74J	27J
Arsenic - Dissolved	25	4.0U	NS	[46.8]	NS	NS
Iron - Dissolved	300	55.0J	NS	[14300]	NS	NS
Manganese - Dissolved	300	3.2J	NS	[5810]	NS	NS
Selenium - Dissolved	10	1.3U	NS	[71.1]	NS	NS
Sodium - Dissolved	20000	12900J	NS	[77800]J	NS	NS

Notes:
All results are in ug/l.
U - Non-detect
J - Estimated
D - Dilution
NS - Not Sampled
Shading & [ ] - Indicates exceedance of criteria.

Table 4-11
Groundwater Samples
Compounds Exceeding Groundwater Criteria
Magna Metals - Cortlandt, New York

Site **Sample ID** **Sample Date**	NYSDEC Groundwater Quality Standards	MW-05 MM-GWMW05-100603 10/06/2003	MW-07 MM-GWMW07-100703 10/07/2003	MW-08 MM-GWMW08-100703 10/07/2003
Constituent				
Tetrachloroethene	5	0.70UJ	0.70UJ	0.70UJ
Trichloroethene	5	0.72U	0.72U	0.72U
cis-1,2-Dichloroethene	5	0.62U	0.62U	0.62U
Arsenic	25	7.7J	4.0U	4.0U
Barium	1000	170J	266	68.9J
Beryllium	3	0.36J	0.10U	0.10J
Chromium	50	44.8	1.4U	20.6
Copper	200	15.8J	3.6U	52.8
Iron	300	[33900]	33.2J	[3180]
Magnesium	35000	14600	[74700]	[66200]
Manganese	300	[5660]	63.4	174
Nickel	100	29.5J	8.2J	89.9
Selenium	10	1.6J	1.3U	3.5J
Sodium	20000	[62900]J	[57200]J	[36800]J
Thallium	0.5	[14.4]	5.3U	5.3U
Cyanide	200	10U	10U	10U
Arsenic - Dissolved	25	NS	NS	NS
Iron - Dissolved	300	NS	NS	NS
Manganese - Dissolved	300	NS	NS	NS
Selenium - Dissolved	10	NS	NS	NS
Sodium - Dissolved	20000	NS	NS	NS

Notes:
All results are in ug/l.
U - Non-detect
J - Estimated
D - Dilution
NS - Not Sampled
Shading & [ ] - Indicates exceedance of criteria.

Table 4-12
Detected Volatile Organic Compounds for Groundwater Samples
February 2006
Magna Metals

	Site ID	MW-02	MW-03	MW-04	MW-04
	Sample ID	MM-GWMW02-022406	MM-GWMW03-022406	MM-GWMW04-022406	MM-GWMW94-022406
	Sample Date	02/24/2006	02/24/2006	02/24/2006	Duplicate of MM-GWMW04-022406
	Units	µg/L	µg/L	µg/L	
CONSTITUENT	**NY-GWQS**				
cis-1,2-Dichloroethene	5*	--	--	2.2 J	2.2 J
Tetrachloroethene	5	--	2.6 J	**7.5 J**	**8.2 J**
Trichloroethene	5	--	**17**	**270 D**	**260 D**

Notes:
Bold values exceed criteria.
*Criteria provided for 1,2-dichloroethene (total) are the most conservative values for the cis- and trans- isomers.
-- Non-detect
D - From a diluted sample
J - Estimated
NY-GWQS - New York Ambient Water Quality Standards

References:
NYSDEC Values are from Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, June 1998; Errata Sheet for the June 1998 TOGS 1.1.1, January 1999; and April 2000 Addendum to the June 1998 TOGS 1.1.1, April 2000.

Table 4-12
Detected Volatile Organic Compounds for Groundwater Samples
February 2006
Magna Metals

	Site ID	MW-06	MW-09	MW-10	MW-11
	Sample ID	MM-GWMW06-022306	MM-GWMW09-022406	MM-GWMW10-022406	MM-GWMW11-022306
	Sample Date	02/23/2006	02/24/2006	02/24/2006	02/23/2006
	Units	µg/L	µg/L	µg/L	µg/L
CONSTITUENT	**NY-GWQS**				
cis-1,2-Dichloroethene	5*	**8.1**	--	--	1.3 J
Tetrachloroethene	5	2.6 J	--	--	2.2 J
Trichloroethene	5	**180 D**	--	4.5 J	**190**

Notes:
Bold values exceed criteria.
*Criteria provided for 1,2-dichloroethene (total) are the most conservative values for the cis- and trans- isomers.
-- - Non-detect
D - From a diluted sample
J - Estimated
NY-GWQS - New York Ambient Water Quality Standards

References:
NYSDEC Values are from Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, June 1998; Errata Sheet for the June 1998 TOGS 1.1.1, January 1999; and April 2000 Addendum to the June 1998 TOGS 1.1.1, April 2000.

Table 4-13
Detected Volatile Organic Compounds for Soil Vapor Samples
January 2006
Magna Metals

Site ID	SV-01	SV-02	SV-03	SV-04	SV-05
Sample ID	MM-SV-01-010506	MM-SV-02-010506	MM-SV-03-010506	MM-SV-04-010506	MM-SV-05-010606
Sample Date	1/5/2006	1/5/2006	1/5/2006	1/5/2006	1/6/2006
Units	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$
CONSTITUENT					
1,1,1-Trichloroethane	1.6	--	1.1	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	12	--	--
1,2,4-Trimethylbenzene	3.9	3.3	2	--	4.8
1,2-Dichloroethene	--	--	1.5	83	2.1
1,3,5-Trimethylbenzene	1.1	--	--	11	3.4
1,3-Butadiene	18 NJ	35 NJ	8.4	38 NJ	35
1,4-Dichlorobenzene	--	--	--	--	--
1,4-Dioxane	16	--	--	--	--
2,2,4-Trimethylpentane	--	17	--	32	1.5
2-Butanone	14	29	9.1	25	29
2-Hexanone	--	--	--	190	--
Acetone	69	110	36	--	97
Benzene	8	45	19	130	54
Carbon disulfide	25	110	4.7	18	28
Chloroform	2.4 NJ	--	--	--	--
Chloromethane	0.89	5.6	--	--	7.2
cis-1,2-Dichloroethene	--	--	1.5	44	2.1
Cyclohexane	6.5	21	0.96	83	2.8
Dichlorodifluoromethane	--	--	2.2	--	--
Ethylbenzene	2.3	6.9	4.3	650	10
Isopropyl alcohol	--	--	--	--	--
(m+p)xylene	6.1	11	6.1	1900	12
Methyl tert-butyl ether	--	--	--	--	--
n-Heptane	3.7	21	4.1	780	13
n-Hexane	7.4	32	6.3	150	17
o-Xylene	2.4	4.3	2.5	380	6.5
p-Ethyltoluene	3	3.3	2.3	22	4.7
Styrene	--	4	1.7	--	3.2
Tetrachloroethene	1.2	--	8.8	--	10

Notes:
-- Non-detect
NJ - Tentative in identification and estimated in value
Currently, there are no soil vapor criteria in New York State to compare results against.

Table 4-13
Detected Volatile Organic Compounds for Soil Vapor Samples
January 2006
Magna Metals

Site ID	SV-01	SV-02	SV-03	SV-04	SV-05
Sample ID	MM-SV-01-010506	MM-SV-02-010506	MM-SV-03-010506	MM-SV-04-010506	MM-SV-05-010606
Sample Date	1/5/2006	1/5/2006	1/5/2006	1/5/2006	1/6/2006
Units	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$
CONSTITUENT					
Tetrahydrofuran	--	--	--	--	--
Toluene	9	26	14	210	38
trans-1,2-Dichloroethene	--	--	--	38	--
Trichloroethene	31	11	59	64	7
Trichlorofluoromethane	--	--	--	--	2
Vinyl chloride	--	1.2	--	22	0.92
Xylene (total)	8.3	16	8.3	2200	18

Notes:
-- Non-detect
NJ - Tentative in identification and estimated in value
Curr[illegible] there are no soil vapor criteria in New York State to compare results ag[illegible]t.

Table 4-13
Detected Volatile Organic Compounds for Soil Vapor Samples
January 2006
Magna Metals

Site ID	SV-06	SV-07	SV-08	SV-09
Sample ID	MM-SV-06-010606	MM-SV-07-010606	MM-SV-08-010606	MM-SV-09-010506
Sample Date	1/6/2006	1/6/2006	1/6/2006	1/5/2006
Units	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$
CONSTITUENT				
1,1,1-Trichloroethane	0.93	28	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	--	--
1,2,4-Trimethylbenzene	2.1	7.9	1.9	5.9
1,2-Dichloroethene	--	--	--	--
1,3,5-Trimethylbenzene	--	2.7	--	1.9
1,3-Butadiene	27	3.1 NJ	22 NJ	1.1 NJ
1,4-Dichlorobenzene	--	3	--	--
1,4-Dioxane	--	--	--	--
2,2,4-Trimethylpentane	--	3.2	--	2.2
2-Butanone	13	8	9.4	41
2-Hexanone	--	4.1	--	--
Acetone	59	29	38	52
Benzene	31	14	17	3.8
Carbon disulfide	5.3	3.1	5.3	3.7
Chloroform	1.3	--	--	--
Chloromethane	1.9	1.1	1	--
cis-1,2-Dichloroethene	--	--	--	--
Cyclohexane	1.5	9.3	1	1.4
Dichlorodifluoromethane	--	4	3.1	5.9
Ethylbenzene	4.3	7.4	2.6	3.9
Isopropyl alcohol	--	47	--	17
(m+p)xylene	7.4	23	4.8	12
Methyl tert-butyl ether	--	28	--	6.9
n-Heptane	4.5	9.8	3.9	3.8
n-Hexane	8.5	8.8	6.3	5.3
o-Xylene	2.5	7.8	1.6	--
p-Ethyltoluene	2	6.9	1.7	4.9
Styrene	1	2.1	0.85	--
Tetrachloroethene	130	4	8.1	--

Notes:
-- Non-detect
NJ - Tentative in identification and estimated in value
Currently, there are no soil vapor criteria in New York State to compare results against.

Table 4-13
Detected Volatile Organic Compounds for Soil Vapor Samples
January 2006
Magna Metals

Site ID	SV-06	SV-07	SV-08	SV-09
Sample ID	MM-SV-06-010606	MM-SV-07-010606	MM-SV-08-010606	MM-SV-09-010506
Sample Date	1/6/2006	1/6/2006	1/6/2006	1/5/2006
Units	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$
CONSTITUENT				
Tetrahydrofuran	--	--	--	35
Toluene	25	22	12	15
trans-1,2-Dichloroethene	--	--	--	--
Trichloroethene	40	14	4.2	1.1
Trichlorofluoromethane	1.4	1.7	1.5	2.6
Vinyl chloride	--	--	--	--
Xylene (total)	9.6	30	6.1	11

Notes:
-- Non-detect
NJ - Tentative in identification and estimated in value
Curr[illegible] there are no soil vapor criteria in New York State to compare results a[illegible]t.

Table 4-14
Magna Metals
New York, NY
Soil Vapor Analytical Results

Client ID Date Sampled Lab Sample ID Units Compound	NYSDOH Soil Vapor Intrusion Guidance Values (ug/m3)	EPA BASE 90th percentile (ug/m3)	SV-13 DUP(S.S) 4/5/2007 17:06 JTPH11AD ug/m3	SV-11(S.S) 4/5/2007 16:34 JTPG31AD ug/m3	SV-12(S.S) 4/5/2007 16:38 JTPHF1AD ug/m3	SV-13(S.S) 4/5/2007 17:06 JTPH51AD ug/m3	SV-14(S.S) 4/5/2007 17:28 JTPH91AD ug/m3	SV-15(S.S) 4/5/2007 16:56 JTPJG1AD ug/m3
1,1,1-Trichloroethane	100/1000	20.6	4.4 U	8.7 U	680 U	4.4 U	0.87 U	0.87 U
1,1,2,2-Tetrachloroethane		20.6	5.5 U	11 U	860 U	5.5 U	1.1 U	1.1 U
1,1,2-Trichloroethane		<1.5	4.4 U	8.7 U	680 U	4.4 U	0.87 U	0.87 U
1,1-Dichloroethane		<0.7	3.2 U	6.5 U	500 U	3.2 U	0.65 U	0.65 U
1,1-Dichloroethene		<1.4	3.2 U	6.3 U	490 U	3.2 U	0.63 U	0.63 U
1,2-Dibromoethane (EDB)		<1.5	6.1 U	12 U	960 U	6.1 U	1.2 U	1.2 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane		<1.5	5.6 U	11 U	870 U	5.6 U	1.1 U	1.1 U
1,2-Dichloroethane		<0.9	3.2 U	6.5 U	500 U	3.2 U	0.65 U	0.65 U
1,2-Dichloropropane		<1.6	3.7 U	7.4 U	580 U	3.7 U	0.74 U	0.74 U
1,3,5-Trimethylbenzene		3.7	3.9 U	7.9 U	610 U	3.9 U	0.79 U	0.79 U
1,3-Butadiene		<3.0	3.5 U	7.1 U	550 U	3.5 U	0.71 U	0.71 U
2,2,4-Trimethylpentane		<4.8	9.3 U	19 U	1500 U	9.3 U	1.9 U	1.9 U
3-Chloropropene		250	2.5 U	5 U	390 U	2.5 U	0.5 U	0.5 U
4-Ethyltoluene		3.6	7.9 U	16 U	1200 U	7.9 U	1.6 U	1.6 U
Benzene		9.4	2.6 U	5.1 U	400 U	2.9	2.6	2.2
Bromodichloromethane		<6.8	5.4 U	11 U	840 U	5.4 U	1.1 U	1.1 U
Bromoform		<6.8	8.3 U	17 U	1300 U	8.3 U	1.7 U	1.7 U
Bromomethane		<1.7	3.1 U	6.2 U	480 U	3.1 U	0.62 U	0.62 U
Carbon tetrachloride	5/50/250	<1.3	2.5 U	5 U	390 U	2.5 U	0.5 U	0.53
Chloroethane		<1.1	2.1 U	4.2 U	330 U	2.1 U	0.42 U	0.42 U
Chloroform		1.1	3.9 U	7.8 U	610 U	3.9 U	0.78 U	0.78 U
cis-1,2-Dichloroethene		<1.9	3.2 U	6.3 U	11000	3.2 U	0.63 U	0.63 U
cis-1,3-Dichloropropene		<2.3	3.6 U	7.3 U	570 U	3.6 U	0.73 U	0.73 U
Cyclohexane		<2.3	87	170	1100 U	97	17	56
Dibromochloromethane		<2.3	6.8 U	14 U	1100 U	6.8 U	1.4 U	1.4 U
Dichlorodifluoromethane		16.5	4 U	7.9 U	620 U	4 U	2.3	3.2
Ethylbenzene		5.7	6.1	6.9 U	540 U	9.4	0.69 U	0.69 U
Methyl tert-butyl ether		22.2	14 U	29 U	2200 U	14 U	3.3	4.4
m-Xylene & p-Xylene		10	14	16	540 U	22	0.69 U	0.69 U
n-Heptane		<3.6	27	16 U	1300 U	31	1.6 U	1.6 U
n-Hexane		10.2	86	84	1400	88	18	26
o-Xylene		7.9	6.1	6.9 U	540 U	9.6	0.69 U	0.69 U
Tetrachloroethene	100/1000	15.9	5.5	11 U	850 U	7.8	1.1 U	1.1 U
Toluene		43	450	450	3300	600	6.2	19
trans-1,2-Dichloroethene		43	3.2 U	6.3 U	490 U	3.2 U	0.63 U	0.63 U
trans-1,3-Dichloropropene		<1.3	3.6 U	7.3 U	570 U	3.6 U	0.73 U	0.73 U
Trichloroethene	5/50/250	4.2	3.9	1200	66000	4.8	0.46	0.43 U
Trichlorofluoromethane		18.1	4.5 U	9 U	700 U	4.5 U	1.5	2.3
Vinyl bromide		3.5	3.5 U	7 U	550 U	3.5 U	0.7 U	0.7 U
Vinyl chloride		<1.9	2 U	4.1 U	320 U	2 U	0.41 U	0.41 U

Soil vapor guidance values for monitoring and mitigation presented in Matrices 1 & 2 of New York State Department of Health Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006.

LEGEND

MW-01 ⌖ MONITORING WELL LOCATION

P-02 ▽ LEACH PIT LOCATION

APPROXIMATE REFUSE AREA

APPROXIMATE WETLAND AREA

GROUNDWATER FLOW DIRECTION

NOTES:
1. LOCATIONS OF FORMER MAGNA METALS BUILDING, 1 STORY CONCRETE BLOCK BUILDING, SHED, GEOPHYSICAL SURVEY AREA, AND MONITORING WELLS ARE BASED ON SURVEY DATA.

2. [BRACKETS] INDICATE CONCENTRATION EQUALS OR EXCEEDS NY-GWQS.

3. NY-GWQS – NEW YORK GROUNDWATER QUALITY STANDARD.

4. ALL CONCENTRATIONS ARE IN µg/L.

5. ft bgs – FEET BELOW GROUND SURFACE

SOURCES:
1. CONTOUR LINES, FURNACE DOCK ROAD, AND FURNACE BROOK BELOW POND BASED ON MOHEGAN LAKE, NY AND PEEKSKILL, NY TOPOGRAPHIC QUADRANGLES, 7.5–MINUTE SERIES, DATED 1956 AND 1957, RESPECTIVELY, AND PHOTOREVISED IN 1981.

2. ADDITIONAL SURFACE FEATURES BASED ON WESTCHESTER COUNTY DEPARTMENT OF PLANNING AERIAL PHOTOGRAPH (SPRING 1990), DECEMBER 18, 1999 AERIAL PHOTOGRAPH, AND SURVEY DATA.

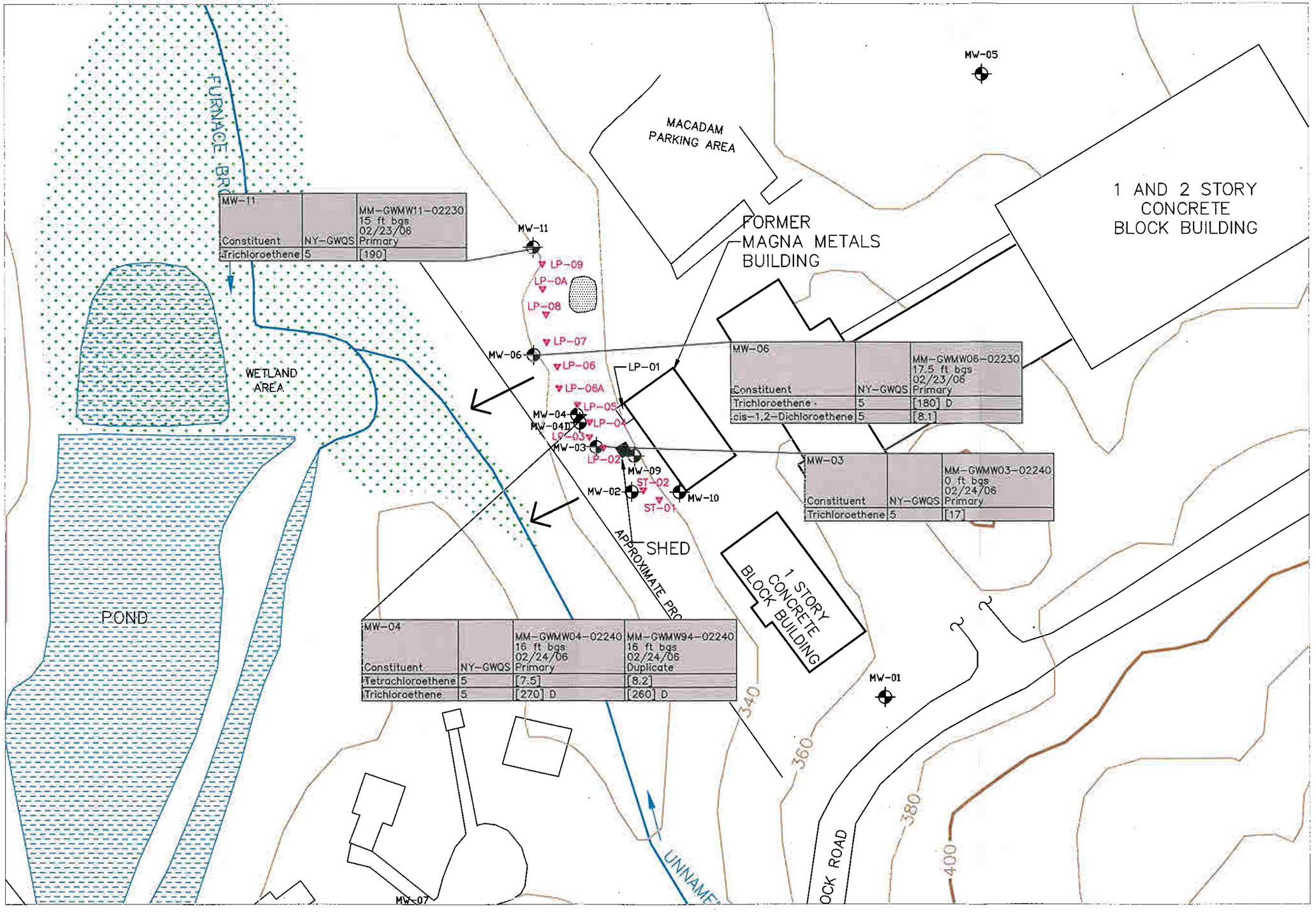
3. APPROXIMATE REFUSE AREA BASED ON NYSDEC DRAWING.

4. APPROXIMATE WETLAND AREA BASED ON FIELD OBSERVATIONS.

5. TOPOGRAPHIC LINES ARE APPROXIMATE ESTIMATIONS.

N

0 50 100
FEET



MW-11		MM-GWMW11-02230 15 ft bgs 02/23/06
Constituent	NY-GWQS	Primary
Trichloroethene	5	[190]

MW-06		MM-GWMW06-02230 17.5 ft bgs 02/23/06
Constituent	NY-GWQS	Primary
Trichloroethene	5	[180] D
cis-1,2-Dichloroethene	5	[8.1]

MW-03		MM-GWMW03-02240 0 ft bgs 02/24/06
Constituent	NY-GWQS	Primary
Trichloroethene	5	[17]

MW-04		MM-GWMW04-02240 16 ft bgs 02/24/06	MM-GWMW94-02240 16 ft bgs 02/24/06
Constituent	NY-GWQS	Primary	Duplicate
Tetrachloroethene	5	[7.5]	[8.2]
Trichloroethene	5	[270] D	[260] D

TETRA TECH EC, INC.

TITLE:
Groundwater Exceedences – February 2006
Supplemental RI/FS – Additional Data Collection Summary Letter Report
Magna Metals, Cortlandt, New York

DWN: LMB	DES.: CTS	PROJECT NO.: 1172.0003
CHKD:	APPD:	FIGURE NO.: 4–5
DATE: 06/12/2006	REV.: 0	

N:\GIS\GISKEY\GISPROJ31\MAGNA METALS\DRAFT FINAL RI\FIGURE 4-5 082207.MXD

5.0 HABITAT BASED ASSESSMENTS

In summary, the results of the 1998 RI/FS investigation indicated the following:

(1) Presence of ecological receptors in the habitats adjacent to the Magna Metals property.
(2) Presence of potential site-related contaminants in these habitats.
(3) Complete exposure pathways for receptors to be exposed to the contaminants.
(4) The observed concentrations of PAHs and metals that exceeded pertinent eco-screening level values.

These findings indicated that a toxic effect based assessment (Step IIC of the FWIA process) was warranted to collect site-specific data for assessing risk to ecological receptors and assist in remedial decision making for this site. The site-specific biological/chemical study was performed as part of the June 2004 Supplemental RI Report to reduce inherent uncertainties. The Step IIC included:

- Community level analysis using benthic macroinvertebrate studies;
- Organism level analysis using surface water and sediment toxicity testing; and
- Supplemental sediment and surface water sampling.

Presented below are the details of the ecological analysis.

5.1 Fish and Wildlife Resources and Environmental Setting (Step I)

The Step I - Site Description impact analysis was the first step of the phased approach. The objectives of the Step I - Site Description were to 1) identify fish and wildlife resources that may potentially be affected by site-related contaminants, and 2) if resources are present, provide the appropriate information for designing additional investigation studies (NYSDEC, 1994). To achieve these objectives, information regarding fish and wildlife resources is provided in the form of maps, habitat descriptions, and an evaluation of the value of such resources.

Identification of applicable fish and wildlife regulatory criteria, both contaminant-specific and site-specific, was also prepared for this Step-1 Site Description. This information was necessary to identify potential pathways of contamination migration that may affect fish and wildlife resources. The information obtained in Step I was used in subsequent phases.

5.1.1 Description of Fish and Wildlife Resources

Pursuant to the NYSDEC guidance, documented fish and wildlife resources within a two-mile radius of the site were identified as part of the Step I - Site Description. An in-office document search was performed within a two-mile radius of the site to identify documented fish and wildlife resources including, but not limited, to NYSDEC Significant Habitats; habitats supporting endangered, threatened, or rare species, species of concern; regulated wetlands; wild and scenic rivers, streams, lakes; and other major resources.

A qualitative field assessment of vegetation covertypes and habitats was performed on October 3 and 4, 1996, on the Magna Metals Site and within a 0.5 mile radius of the site perimeter. This assessment included documentation of vegetation communities and wildlife observations.

Observations at a total of eight sample stations were recorded during the investigation. Sample stations chosen were representative of vegetation throughout the general area. At each station, vegetation was identified and observations of wildlife were noted. The information obtained from this qualitative assessment was then used to identify fish and wildlife resources and habitats within a 0.5-mile radius study area.

5.1.1.1 Terrestrial Habitats

Most of the site provides little wildlife habitat, because of the impervious structures and surfaces on-site. The north, west, and east boundaries of the site consist of a broad-leaf deciduous woodland. An extensive wetland area is present to the northwest and west of the site. This wetland complex is composed of broad-leaf deciduous forest and emergent communities, which could provide habitat to a variety of wildlife species. The wetland complex comprises approximately 15 acres, including several stream channels, two ponds, and several additional small ponded areas. At the time of the 1998 RI/FS, the area was not a NYS regulated wetland area. However, per revisions made to the New York State Freshwater Wetlands Map effective July 28, 2004, regulated wetland A-48, a Class 2 wetland is adjacent to and contains a portion of the Magna Metals Site.

Wetlands and stream channels account for approximately five percent of the 0.5-mile radius. Wetlands within the study area are located in low lying or depressional areas usually associated with streams or other water bodies. Approximately 75 percent of the 0.5-mile radius is composed of broad-leaf deciduous forest habitat. Secondary growth hardwood species, i.e. black cherry (*Prunus serotina*), red and white oak (*Quercus rubra*, and *Q. alba*), shagbark hickory (*Carya ovata*), gray birch (*Betula populifolia*), American beech (*Fagus grandifolia*), and sassafras (*Sassafras albidum*) dominate the forest canopy. Ironwood (*Carpinus caroliniana*), spicebush (*Lindera benzoin*), young sassafras and black cherry dominated the shrub layer, and multiflora rose (*Rosa multiflora*), dewberry (*Rubus flagellaris*), black raspberry (*Rubus occidentalis*), ferns and violets (*Viola* sp.) make up the herbaceous layer.

Approximately 20 percent of the study area is composed of residential properties consisting of single family dwellings. Large mowed lawns and wooded lots are scattered throughout the residential areas. These areas provide limited wildlife habitat for urban/suburban species.

Several documented fish and wildlife resources are present within the two-mile radius study area, including: nine NYS regulated wetland areas, the New Croton Reservoir, and Blue Mountain Reservation County Park (Figure 5-1).

5.1.1.2 Aquatic Habitats

Within the 0.5-mile radius study area, several streams, ponds and wetland areas are present. Two streams enter this wetland area and one stream exits the pond via an outlet pipe located near the southwest end of the pond (Figure 5-3). The first stream channel, Stream #1, is located to the southwest of the Magna Metals site. The stream flows to the north into the large wetland complex. It converges with the second stream, Stream #2, and continues flowing southwest through the wetland complex into the man-made pond (Figure 5-3). The stream exits the pond via a conduit and continues flowing to the southwest. Stream #2 flows from the north into the wetland complex.

Stream #1 was approximately 1.5 feet wide and six inches deep at the center of the channel. Stream substrate consisted of silt. Chemical and physical parameters of the stream are listed in the

following table. Aquatic vegetation was not present within the stream channel. Fish and aquatic life were not observed in the stream during the field investigation. Raccoon tracks were observed along the stream banks. Limited amounts of emergent vegetation, consisting of common reed (*Phragmites australis*), white grass (*Leersia virginica*), and sedges (*Carex* spp.) were present within the channel. The stream channel was surrounded by a broad-leaf deciduous forest. The area was predominantly vegetated by red oak (*Quercus rubra*), cottonwood (*Populus deltoides*), with tuliptree (*Liriodendron tulipifera*), gray birch (*Betula populifolia*), and white oak (*Quercus alba*). Spicebush (*Lindera bezoin*), northern arrowwood (*Viburnum recognitum*), and New York fern (*Thelypteris noveboracensis*) made up the sparse understory.

Water Parameter Results Collected on October 3 and 4, 1996
Magna Metals Site
Town of Cortlandt, Westchester County, New York

Water Parameters	Stream #1	Stream #2	Pond #1	Pond #2
Water Temperature (°C)	15	14	14	16
Dissolved Oxygen (mg/L)	8.9	8.5	9	8.4
Conductivity (mS)	0.46	0.36	0.36	0.38
Turbidity	0	0	0	0
Salinity (o/oo)	0	0	0	0

Stream #2 was approximately three feet wide and six to eight inches deep at the center of the channel. Stream substrate consisted of silty sand with leaf litter. Chemical and physical parameters of the stream are also listed. Aquatic vegetation was not present in the channel during the field investigation. Fingernail clams and caddisflies were observed during the stream characterization. Deer tracks and a buck rub were also observed along the stream banks. The stream channel is immediately surrounded by a broad-leaf deciduous wetland forest. This area was predominantly vegetated by red maple (*Acer rubrum*) and elm (*Ulmus sp.*) in the canopy layer. Within the shrub layer, alder (*Alnus sp.*), winterberry (*Ilex verticillata*), and blackhaw (*viburnum prunifolium*) were present. Skunk cabbage (*Symplocarpus foetidus*), sensitive fern (*Onoclea sensibilis*), false nettles (*Boehmeria cylindrica*), and halberd-leaf tearthumb (*Polygonum arifolium*) made up the sparse herbaceous layer.

Streams #1 and #2 converge within the southwestern portion of the wetland complex and discharge into a man-made pond, Pond #1. The pond was approximately 2.0 acres in size. It was approximately one foot deep near the edge. Due to turbidity and distance limitations, the depth at the center of the pond could not be determined. Aquatic vegetation within the pond consisted of duckweed (*Lemna sp.*). Filamentous algae was also dominant within the pond. Emergent aquatic vegetation along the pond's shoreline consisted of purple loosestrife (*Lythrum salicaria*). Vegetation surrounding the pond was primarily composed of tree and shrub/scrub species.

Cottonwood, oaks, and willow (*Salix sp.*) were dominant in the canopy layer; and staghorn sumac (*Rhus typhina*), catalpa (*Catalpa speciosa*), alder, and red-osier dogwood (*Cornus stolonifera*) in the shrub layer. An island vegetated by scrub/shrub species was present within the center of the pond. Canada geese and mallards were observed foraging and wading on the pond.

Two pipes were located along the southern boundary of the pond. The northern pipe appeared to be an outlet discharging water from the pond. Water exiting the pond flowed southwest through the conduit under Cross Road and several private properties. It is believed that the conduit discharges into a wetland south of the pond. However, this wetland was surrounded by private properties and not accessible. The southern pipe appears to be an inlet to the pond. Stormwater runoff from Cross Road is discharged into the pond through this pipe.

A second man-made pond, Pond #2, was present within the 0.5-mile radius study area. The pond was located to the north of the Magna Metals Site on Stream #2. The stream entered the pond on the north side and exited the pond on the west side. A dam and spillway were present on the western side. The pond was approximately 2.0 acres in size. Water depth varied throughout the pond. Near the dam and spillway, the depth of the pond is approximately three feet deep. The pond substrate was composed of a thick organic layer several feet deep. The organic layer was primarily composed of leaf litter from the broad-leaf deciduous forest surrounding the pond. Dominant tree species surrounding the pond consisted of red and white oaks, gray birch, and beech. The shrub layer was composed of young shagbark hickory, and American beech. Stream #2 continued flowing west past the pond, then turned sharply to the south and converges with Stream #1. The stream channel flowed through the large wetland complex.

Percent saturation of oxygen at the measured temperature was determined by using an oxygen saturation nomogram (Wetzel, 1983). Results for the streams and ponds located within the 0.5-mile radius study area are indicated below.

Percent Oxygen Saturation for Streams and Ponds within Magna Metals Site Study Area Town of Cortlandt, Westchester County, New York.

Water Body	Percent Saturation of Oxygen
Stream #1	88%
Stream #2	83%
Pond #1	89%
Pond #2	85%

5.1.1.3 Wetlands

Wetlands within the 0.5 mile radius are located in the north and southwest portion of the study area. These wetlands were classified as Class 2 wetlands effective July 28, 2004. The largest wetland area within the 0.5-mile radius study area is the wetland complex located to the northwest of the Magna Metals Site. The wetland complex is approximately 15 acres in size, and includes the two stream channels and ponds. Streams #1 and #2 converge within this wetland area, and Pond #1 is located within the southwest portion of the wetland complex (Figure 5-3). This wetland complex is composed of a bottomland hardwoods, surrounded to the east by a steep, fairly rocky slope, which is predominantly vegetated by a broad-leaved deciduous upland forest. The bottomland hardwood forest is composed of red maple and elm in the canopy layer; alder, winterberry, and to a lesser degree blackhaw in the shrub layer. A sparse herbaceous layer was dominated by sensitive fern, and New York fern, smartweeds (*Polygonum sp.*). Sedges were present in the open woodland areas. The two stream channels, Streams #1 and #2, flow through the forested wetland. To the west of Stream #2, within the vicinity of the Magna Metals Site, an emergent wetland is present. This

wetland is predominantly vegetated by sedges, rushes (*Juncus spp.*), smartweeds, and arrow-leaf tearthumb (*Polygonum sagittatum*). Young red maple trees are also present throughout. To the south and southwest of the emergent wetland is Pond #1.

A broad-leaf deciduous woodland composed of red and white oak, gray birch, and beech in the canopy surrounds man-made pond #2. Submergent vegetation was not observed in the pond. The pond discharges into Stream #2, which flows through a bottomland hardwood in the large wetland complex. The bottomland hardwood is predominately vegetated by red maple, elm, and green ash (*Fraxinus pennsylvanica*) in the canopy, and ironwood (*Carpinsus caroliniana*), northern arrowwood, spicebush, New York fern, and sensitive fern in the understory.

Nine NYS regulated wetland areas are present within the two-mile radius study area (Figure 5-1). The NYS regulated wetland areas have all been classified as Class 2 wetlands, with the exception of A-9, which was classified as a Class I wetland. The wetland areas identified as P-2 and P-6 are both located within the 0.5-mile radius study area. Wetland P-2 is composed of an open water/emergent wetland and surrounded by broad-leaf deciduous forest wetlands. Wetland P-6 consists of a mixed scrub/shrub and broad-leaf deciduous forest wetlands.

5.1.1.4 Fauna Expected Within Each Covertype and Aquatic Habitat

A total of ten bird species, and six mammal species, were observed within the 0.5 mile radius area of the Magna Metals site during the October 3 and 4, 1996 site investigation. The species observed within the study area are included in Table 5-1. Most of the birds observed during the October 3 and 4, 1996 field investigation of the 0.5-mile radius study area are considered year-round or winter residents. By October, most migrating birds would have departed from the area. Thus, the bird species observed during the field investigation do not accurately reflect the breeding and transient species which may also be present in the study area during the spring, summer, and fall.

Four of the ten bird species recorded were observed in the hardwood forest habitat. These species included the black-capped chickadee (*Pares articapillus*), red-tailed hawk (*Buteo jamaicensis*), American crow (*Corvus brachyrhynchos*), and wood duck (*Aix sponsa*). The gray catbird (*Dumetella carolinensis*), blue jay (*Cyanocitta cristata)* and northern cardinal (*Cardinalis cardinalis*) were observed within an ecotone, or edge habitat. An ecotone is the zone between two adjacent habitat areas. In this study area, the ecotone is generally the interface between hardwoods and more open habitats; i.e. lawns and fields. The gray catbird, blue jay, and northern cardinal typically inhabit edge habitats and open woods, feeding primarily on berries, seed stock, and insects. Other species often associated with edge habitats include the American robin (*Turdus migratorius*), northern mockingbird (*Mimus polyglottos*), brown thrasher (*Toxostoma rufum*), various warblers and sparrows.

The green heron (*Butorides striatus*), Canada goose (*Branta canadensis*), and mallard (*Anas platyrhynchos*) were observed using the open water and wetland habitats for foraging and resting. Mallards and Canada geese were observed within two ponds in the large wetland complex located to the northwest of the Magna Metals site and a ponded area located downslope to the west of the Magna Metals Site. These species were also observed in the ponds and wetlands outside of the 0.5-mile radius.

The green heron was observed within one of the ponded areas located in the large wetland complex. Mallards, Canada geese, and green herons inhabit marshes, bays, estuaries, ponds, rivers, and lakes throughout northeastern North America. The mallard and Canada geese are surface feeders, primarily herbivores with the bulk of their diets consisting of aquatic vegetation, and a limited amount of mollusks, insects, and small fish. Additional duck species, such as the American black duck (*Anas rubripes*), may also inhabit ponds and wetlands within the study area.

The green heron inhabits nearly all fresh and salt water habitats, including lakes, ponds, wetlands, wooded wetlands, and streams. Their diet is primarily carnivorous with main food sources consisting of small fish, crustaceans (mainly crayfish), frogs, salamanders, and an occasional mouse or shrew. Additional wading bird species that could be found in the wetlands, ponds, and streams within the study area include great blue heron (*Ardea herodias*), and black-crowned night-heron (*Nycticorax nycticorax*)

Several mammal species including the raccoon (*Procyon lotor*), eastern chipmunk (*Tamias striatus*), gray squirrel (*Sciurus carolinensis*), white-tailed deer (*Odocoileus virginianus*), and vole (*Microtus sp.*) were observed in the hardwood forest areas near the wetlands and stream channels. A beaver lodge was observed on one of the ponded areas within the large wetland complex located to the northwest of the Magna Metals site.

The hardwood forests within the 0.5-mile radius study area provide habitat conditions suitable for the gray squirrel, and eastern chipmunk. Eastern gray squirrels are primarily arboreal, rarely venturing far from trees; and chipmunks are ground dwellers. Both species typically feed on nuts, seeds, fungi, and fruits. The large portion of nut and seed bearing trees within the study area provide a substantial food source for these species. Raccoon, white-tailed deer, and voles were also observed in the forest habitats. Tracks of the raccoon and white-tailed deer were observed in the open woodland areas and near water bodies. The mole was observed in an open woodland area. The variety of covertypes, i.e., successional fields, open woodland, and upland and bottomland forests; and presence of water sources throughout provide suitable habitat for wildlife species. These woodland areas could also provide habitat for the striped skunk (*Mephitis mephitis*), opossum (*Didelphis marsupialis*), woodchuck (*Marmota monax*), eastern cottontail (*Sylvilagus floridanus*), and various mice (*Microtus sp.*) species.

A beaver (*Castor canadensis)* lodge was observed on the northern most ponded area in the large wetland complex. Beavers are chiefly aquatic; their habitats are usually associated with open water, i.e., slow flowing streams, rivers, lakes, and ponds. The beaver is a herbivore whose diet consists mainly of bark from deciduous trees and some herbaceous vegetation. The pond and wetland habitats within the 0.5-mile radius study area, would also provide ideal habitat for muskrats (*Ondatra zibethica*), which reside in marshes, and along open water. They are chiefly aquatic and feed on aquatic vegetation, and occasionally clams, frogs and fish.

Herpetofauna species were not encountered during the field investigation. The wetland and pond habitats throughout the 0.5-mile radius study area would provide necessary requirements for several species common throughout the Northeast, including the bullfrog (*Rana catesbeiana*), and green frog (*Rana clamitans*), snapping turtle (*Chelydra serpentina*), and stinkpot (*Sternothaerus odoratus*). Additional herpetofuana species which could utilize the upland forest and successional fields include the Eastern painted turtle (*Chrysemys picta picta*), and the common garter snake

(*Thamnophis sirtalis*). Herpetofauna species feed on a variety of food sources, from insects, small mammals, and fish, to mushrooms and berries.

5.1.2 Endangered and Threatened Species

The U.S. Fish and Wildlife Service (USFWS) and the NYSDEC were contacted to determine the presence of endangered and threatened species, or species of special concern within a two-mile radius of the Magna Metals Site. The NYSDEC, Natural Heritage Program has documented habitat for the bog turtle (*Clemmys muhlenbergii*), a New York State and Federal endangered species, within the northern portion of two-mile radius (NYSDEC, 1996). The documented habitat is located upslope from the Magna Metals site in a separate watershed. The USFWS has no documented records of endangered or threatened species within a two-mile radius of the Magna Metals Site (USFWS, 1996).

5.1.3 Observations of Stress

As part of the site investigation, vegetation and wildlife within the 0.5 mile radius were investigated for signs of stress potentially related to site contaminants. Two areas used for debris dumping were observed to the north and northwest of the site. The larger dump area was located to the north of the Magna Metals Site, within the same industrial/commercial park as the Magna Metals Site. This area was being used to dispose of building material. Several excavated underground storage tanks were also present. This dump area is not associated with the former activities of Magna Metals. A second smaller refuse area was also encountered within the commercial park. This area was observed in the woodland adjacent to the northwest portion of the Magna Metals Site. Two empty 55-gallon drums were observed at this location. A small intermittent drainage channel was noticed coming from the dump area and discharging into the large wetland complex.

Field observations related to stressed wildlife or vegetation were limited to that present on or adjacent to the Magna Metals Site. Methodology for classifying stressed vegetation included in the observation of bare areas lacking vegetation or associated with stained soils, clustering of dead or dying vegetation associated to discrete areas surrounded by healthy vegetation. For stressed wildlife observations, these included any observations of dead wildlife present on or in vicinity of the site or wildlife displaying abnormal behaviors or appearing sickly. It is important to note that none of the above characteristics were noted in the vegetation or wildlife observed on the Magna Metals Site.

The field survey for wildlife was conducted in early October, a period of time in which reptiles and amphibians may not be readily observed given the cooler temperatures. Additionally, the scope of work to complete the Step I, required a qualitative survey of fish and wildlife and as such no intensive survey for any single group of organisms was performed. The lack of reptiles and amphibian observations may be related to time of year of their reclusive habits and not to "stress" potentially related to the site. A list of herpetofuna expected to occur on the site is provided herein.

5.1.4 Description of Fish and Wildlife Resource Value

As part of a Fish and Wildlife Impact Analysis, Step I - Site Description, the habitat value for both wildlife and humans is assessed. Wildlife habitat is assessed, within the 0.5 mile study area, based on availability of food, seasonal cover, bedding areas, breeding and roosting sites, etc. For humans,

the value of habitats within the 0.5-mile study area is assessed based on the current and potential use of fish and wildlife resources. Human resources may include hunting, fishing, observation of wildlife, scientific studies, agriculture, forestry, and other recreational and economic activities.

5.1.4.1 Value of Habitat to Associated Fauna

The broad-leaf deciduous forests and bottomland hardwood wetlands provide valuable wildlife habitat within the 0.5 mile radius study area (see Figure 5-2). The stream and ponds within the study area provide important water sources for the wildlife that resides within the study area. Two NYS regulated, Class 2 wetlands, P-2 and P-6, are both located within the southwest portion of the 0.5-mile radius, documented fish and wildlife resources are not present within the 0.5-mile. Habitat for the bog turtle, State and Federal endangered species, was identified within the northern most portion of the 2.0-mile radius.

Portions of Furnace Brook and its tributaries adjacent to Magna Metals Site have been classified by NYSDEC as Class B waters and are subject to Class B New York water quality standards.

5.1.4.2 Value of Resources to Humans

For humans, the value of habitats within the 0.5 mile study area is assessed based on the current and potential use of fish and wildlife resources for such activities as hunting, fishing, observation of wildlife, agriculture, forestry, scientific study, and other recreational and economic opportunities. The 0.5-mile radius is largely forested, however, due to private ownership and steep slopes, access to much of the area is limited. Several wetland and pond areas, which could be used for recreational fishing and wildlife observation, have limited access due to private ownership of the properties and surrounding areas.

5.1.5 Identification of Applicable Fish and Wildlife Regulatory Criteria

Both contaminant-specific and site-specific criteria applicable to the remediation of fish and wildlife resources were identified for the Magna Metals Site. Contaminant-specific criteria involves reviewing NYSDEC rules, regulations, and guidance to identify regulatory compliance, permits, or standards which may be applicable to the site. Soils, sediment, and surface and ground water samples were collected on the Magna Metals Site. Sample results should be compared to the following rules, regulations, and guidances:

- Water Quality Standards and Guidance Values for the Protection of Aquatic Life (6 New York Codes, Rules, and Regulations [NYCRR] Part 701);
- Technical Guidance for Screening Contaminated Sediment;
- Division of Water, Technical and Operational Guidance Series (TOGS) 1.1.1., Ambient Water Quality Standards and Guidance Values; and
- Division Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels.

5.2 Pathway Analysis (Step II)

The objectives of the Step IIA-C are the 1) identification of applicable fish and wildlife regulatory criteria, for both contaminant-specific and site-specific screening analysis, 2) identification of potential pathways of contamination migration that may affect fish and wildlife resources and 3) a toxic effect analysis to determine if impacts to fish and wildlife are present.

The primary means for disposal of the wastes was by discharge to a series of leaching pits and possibly a facility septic system. The principal media to which ecological receptors may be exposed to site-related contaminants include:

- Surface soils which may have been contaminated as a result of historical operations, spills or disposal practices;
- Surface water through direct contact or consumption of contaminants through drinking; and
- Sediments through direct contact or incidental consumption of contaminants during feeding.

Upland environments, wetlands and streams located downgradient from and adjacent to the site provide limited potential to support populations of ecological receptors. The wetlands and streams located downgradient from the site receive drainage from the site and act as both potential pathways and sinks for site-related contaminants. Migratory pathways which could act as conduits for transporting site-related contaminants to areas supporting ecological receptors include:

- Mobilization of site-related contaminants via surface water runoff into the adjoining channels and wetlands;
- Introduction of site-related contaminants via groundwater to surface water discharge; and
- Deabsorption of contaminants from sediments into overlying waters.

Direct contact with groundwater and deep subsurface soils are not considered as complete exposure pathways as these media typically remain unavailable to most ecological receptors. Ecological receptors may be exposed to contaminants in groundwater if the potential migration pathway for groundwater to surface water discharge is complete. The point of exposure for ecological receptors for the groundwater to surface water discharge pathway will be considered as the surface water exposure, as this represents the exposure point for ecological receptors. If groundwater contaminants are not detected in surface waters, then the groundwater to surface water pathway will not be considered as complete for these contaminants or that the fate and transport characteristics of the contaminants do not result in significant exposure concentrations in surficial media.

The site is located within a cluster of buildings in a commercial/industrial park in Cortlandt, New York. The commercial/industrial park represents the only significant development in the surrounding area and the former Magna Metals facility is located on the outer perimeter of the developed area. Surface water drainage is directed via several small unnamed tributaries of

Furnace Brook and includes a 15-acre forested wetland to the southwest of the site. Additional forested wetland was found to the north as was undeveloped, forested uplands.

The unnamed tributaries, ponds and wetland areas adjacent to the site offer the only surface water resources within the two-mile radius which could be affected by site-related contaminants. No fish kills or wildlife mortality have been documented in the streams or wetlands within the vicinity of the site. Site-related constituents (heavy metals) were identified in surface water and sediments of the unnamed tributaries and ponds. Elevated concentrations of heavy metals and volatile organics were detected at concentrations above applicable NYSDEC groundwater standards. Additionally, elevated concentrations of metals were detected in site surface soils which were potentially susceptible to erosion into the adjacent aquatic and wetland environments.

The presence of site-related constituents in the surface soils, surface water and groundwater environments suggest that the groundwater to surface water discharge pathway and the surface water runoff pathway are complete for exposing aquatic receptors in the streams, ponds, and wetlands.

Since the surface water pathway is both the principal migratory pathway and exposure pathway for aquatic receptors, resident aquatic (i.e., benthic communities in the sediments) species would have a greater potential for adverse ecological effects than migratory species or species which have large home ranges due to longer periods of exposure. For surface soils, the principal exposure source is contaminated surficial soil material and the exposure pathway would be contacted with surface soils by ecological receptors.

Results of the site investigation revealed that both fish and wildlife resources were associated with areas adjacent to the site but that the site provides limited value for fish and wildlife resources based upon the following observations:

- The small size of the site and absence of any significant vegetation communities on the site proper;
- The majority of the site is paved and developed for storage and maintenance operations; and
- The site boundary is partially enclosed by a chain linked fence.

Surface soil, surface water and sediment contamination were evaluated as potential exposure sources for ecological receptors. The majority of the site is covered by impervious structures which would limit wildlife contact with soils. Surface soil samples were collected from the outer fringes of the developed portions of site near the on-site leach pits. The extremely limited vegetation on the site proper provides limited feeding and resting habitat for transient species, and therefore, habitation of the developed portions of the site by wildlife is not anticipated.

5.3 Criteria Specific Analysis (Step IIB)

Surface water, sediments, and surface soils were sampled. Surface water and sediment samples were obtained from two unnamed tributaries to Furnace Brook and an unnamed pond. Analytical results from surface water, sediment, and surface soil samples collected were used to compare

concentrations of contaminants to numerical criteria. Furnace Brook and its tributaries adjacent to the Magna Metals Site are subject to Class C standards by the NYSDEC.

Criteria for metals that were hardness dependent were normalized using sample specific hardness values. NYSDEC sediment criteria were used in screening sediment contamination. Screening the sediment data, where applicable, organic compound concentration data were normalized to sample specific TOC values. The hardness and TOC values were derived from site-specific samples obtained during the field effort. Ambient background soil concentration data and NYSDEC benchmarks were utilized for the screening of surface soils.

5.3.1 Surface Water Evaluation

Table 5-2 provides the comparisons of surface water data to applicable benchmarks. NYSDEC water quality standards were used for surface water criteria when possible. NYSDEC water quality criteria were not available for the detected VOCs. USEPA water quality criteria were available for vinyl chloride, methylene chloride, chloroform, and trichloroethene. VOCs were not detected at the background location in the surface water samples. Vinyl chloride was present in the surface water at sites SW-4, SW-9, and SW-10. Methylene chloride was detected at site SW-7. Cis-1,2-dichloroethene occurred in samples SW-1, SW-1 DUP, SW-2 through SW-6, and SW-8 through SW-10. Chloroform was found in surface water samples from sites SW-6, SW-8, SW-10, and SW-11. Trichloroethene was detected in samples SW-1, SW-1 DUP, SW-2 through SW-6, and SW-8 through SW-10. Trichloroethene exceeded USEPA water quality criteria in samples SW-1, SW-1 DUP, and SW-4. However, the detection of methylene chloride and chloroform is likely to be associated with laboratory cleaning.

Table 5-3 provides the comparison of detected semivolatile compounds to applicable benchmarks. NYSDEC water quality criteria were not available for all of the detected semi-volatile organic compounds. USEPA water quality criteria were available for the semi-volatile organic compounds diethylphthalate, hexachlorobenzene, and fluoranthene. Bis(2-ethylhexyl)phthalate was the only semi-volatile detected at the background location. It also occurred in the down-gradient samples SW-1 DUP, and SW-5 through SW-7. Fluoranthene and pyrene were present at site SW-9, and 4-methylphenol was detected at site SW-7. Hexachlorobenzene occurred in samples SW-1 DUP, SW-3, and SW-6, and diethylphthalate was present in samples SW-1, SW-3, and SW-8. Bis(2-ethylhexyl)phthalate exceed chronic in sample SW-1 DUP Hexachlorobenzene exceeded water quality criteria in samples SW-3, SW-6, and SW-8.

Table 5-4 provides the comparison of metals detected in surface water to applicable benchmarks. NYSDEC water quality criteria were not available for antimony, barium, calcium, magnesium, potassium, and sodium. Arsenic, cadmium, chromium, cobalt, mercury, selenium, vanadium, and cyanide were not detected at the background location.

Mercury was detected in only the site SW-7 sample, this level did not exceed the NYSDEC water quality standard. Arsenic, cadmium, and cobalt occurred at the down-gradient sites SW-7 and SW-9. Cobalt exceeded the NYSDEC chronic water quality criteria in samples SW6, SW7, and SW9. In addition, arsenic was also present at site SW-6, and cobalt was also present at sites SW-5 and SW-6. Selenium and cyanide were present in samples SW-1 DUP, SW-6, SW-7, and

SW-9. Selenium was also detected at sites SW-3 and SW-8. Levels of selenium exceeded the NYSDEC chronic water quality criteria at sites SW-6, SW-7, and SW-8, and exceeded the severe effects level at site SW-7. Cyanide levels were above both the NYSDEC chronic and acute water quality standards in samples SW-1 DUP, SW-6, and SW-7. Lead was detected at sites SW-2, SW-3, SW-6, SW-7, and SW-9. Data regarding the presence of lead were rejected in the background samples, SW-1 DUP, and SW-5. Lead exceeded NYSDEC chronic water quality criteria in samples SW-6, SW-7, and SW-9.

Chromium and vanadium were present at sites SW-3, SW-5 through SW-7, and SW-9. In addition, chromium also occurred at detectable levels at sites SW-2 and SW-10. Chromium exceeded NYSDEC chronic water quality criteria in sample SW-7 and vanadium exceeded chronic in samples SW-7 and SW-9. Antimony was detected at the background location and at down-gradient sites SW-4 through SW-7. The level of antimony exceeded the background level at site SW-7.

The remaining 11 metals (aluminum, barium, calcium, copper, iron, magnesium, manganese, nickel, potassium, sodium, and zinc) were detected in samples from the background location and from all down-gradient sites. Concentrations of aluminum exceeded the background level at site SW-8, and exceeded the NYSDEC criteria value in samples SW-1 DUP, SW-2 through SW-7, SW-9 and SW-10. Levels of barium exceeded the background concentration in all samples but SW-1 and SW-2. Metals occurred in the following samples at a greater concentration than at the background location: calcium, SW-1 DUP, SW-5, and SW-9; copper, SW-1, SW-1 DUP, SW-2 through SW-5, SW-8, SW-10, and SW-11; magnesium, all samples except SW-7; manganese, all samples except SW-11; nickel, all samples except SW-1; potassium, SW-1,SW-1 DUP, SW-2 through SW-7, and SW-9; sodium, all samples; and zinc, SW-3, Table 5-4. SVOAs in surface SW-5, SW-6, and SW-9. The background level of iron exceeded the NYSDEC criteria as did all the down-gradient samples except SW-8 and SW-11. The concentration of copper at sites SW-5 exceeded NYSDEC chronic H_20 quality criteria. SW-6, SW-7, and SW-9 exceeded NYSDEC chronic water quality criteria. Zinc at sites SW-6 and SW-7 exceeded both the NYSDEC chronic and acute water quality criteria. Manganese exceeded the NYSDEC chronic water quality criteria in samples SW-1, SW-1 DUP, SW-2 through SW-7 and SW-9. Nickel exceeded the chronic NYSDEC water quality criteria in samples SW-6 and SW-9 and both the chronic and acute in SW-7.

5.3.2 Sediment Evaluation

Samples from 11 down-gradient sites and one background site were analyzed for the presence of VOCs. Table 5-5 provides the comparison of detected volatile organics in sediments to applicable benchmarks. Severe effects level and lowest effect level was only available for toluene. All volatile organic compounds data were rejected for site SD-3. No VOCs were detected at the background location or at site SD-11. Chloromethane and toluene were present only at site SD-7. Vinyl chloride was detected in the sample from SD-9. Carbon disulfide and tetrachloroethene were detected only at sites SD-4 and SD-10 respectively. 4-Methyl-2-pentanone and 2-Hexanone were detected at site SD-2 and SD-10. Trichloroethane was present in samples from sites SD-5 and SD-9. Acetone was found in samples from sites SD-4, SD-5, SD-8, and SD-9. 2 Butanone was found in the following samples: SD-1, SD-1 DUP, SD-2, and SD-4 through SD-9. VOC concentrations did not exceed NYSDEC sediment screening levels.

Table 5-6 provides the comparison of detected semi-volatile organics in sediments to applicable benchmarks. Semi-volatile organic compounds were not detected at the background location. 4-Chloro-3-methylphenol exceeded the lowest effect level in sample SD-3. Fluorene exceeded the lowest level effect in the sample from site SD-1. Benzo(a)anthracene exceeded the lowest level in samples SD-1 and SD-10.

The following compounds were detected at only one of the down-gradient locations: naphthalene and 2-methylnaphthalene, site SD-1; 4-chloro-3-methylphenol and butylbenzylphthalate, site SD-3; and hexachloroethane, site SD-10. Acenaphthylene, acenaphthene, dibenzofuran, fluorene, and carbazole were present at sites SD-1 and SD-8. Acenaphthene was also detected in the sample from site SD-3. Indeno(1,2,3-cd)pyrene and benzo(g,h,i)perylene were found at sites SD-1, and SD-7 through SD-11. Phenanthrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, and benzo(k)fluoranthene were detected at sites SD-1 and SD-5 through SD-11. Benzo(b)fluoranthene, and benzo(k)fluoranthene were also present in samples from site SD-4. Fluoranthene, pyrene, and benzo(a)pyrene were found in samples SD-1, SD-1 DUP, SD-4, SD-5, and SD-7 through SD-11. In addition, benzo(a)pyrene was present at site SD-2, fluoranthene was detected in samples from site SD-6, and pyrene was found at sites SD-3 and SD-6. Di-n-butylphthalate and bis-2-ethylhexyl)phthalate were present in samples SD-1 DUP, and SD-4 through SD-6. Anthracene was detected at sites SD-1, SD-5, and SD-7 through SD-11.

Table 5-7 provides the comparisons of detected pesticides/PCBs in sediments to applicable benchmarks. Samples from three down-gradient sites were tested for pesticides. The pesticides alpha-Chlordane and gamma-Chlordane were detected in the site SD-10 sample at concentrations that exceed the lowest effect level.

Table 5-8 provides the comparisons of detected TAL metals and cyanide in sediments to applicable benchmarks. No severe effects level or lowest effect level was available for aluminum, barium, beryllium, calcium, cobalt, magnesium, potassium, selenium, sodium, vanadium, and cyanide. Arsenic and cadmium were not detected at the background location, but they were detected in samples from all of the down-gradient sites. The concentration of arsenic in samples SD-1 DUP, and SD-4 through SD-7, also exceeded the lowest effect level. The concentration of cadmium exceeded the lowest effect level in samples from all sites except SD-10, SD-11, and SD-12. Beryllium, selenium, and cyanide were also not detected at the background location. Beryllium was detected in samples from three sites (SD-5, SD-6, and SD-8). Selenium was detected at all sites except SD-11, and cyanide was detected in samples SD-1 DUP, SD-3, and SD-6 through SD-8.

Aluminum, calcium, cobalt, lead, magnesium, nickel, potassium, sodium, vanadium, and zinc were detected at higher levels in all the down-gradient samples than at the background location. The lowest effect level for lead was exceeded in samples from sites SD-5 through SD-7, and SD-9. All sites, including the background, exceeded the lowest effect level for nickel. Nickel levels also exceeded the severe effects level at all down-gradient sites except SD-8, SD-10, and SD-11. The lowest effect level for zinc was exceeded in samples from all sites except SD-8, SD-10, and SD-11, and the severe effects level was exceeded at sites SD-5 through SD-7. Levels of barium were higher than at the background location in all sites but SD-10. Chromium data were rejected for samples from the background station and five down-gradient stations. The levels of chromium exceeded the lowest effect level in samples SD-1, SD-2, SD-3, SD-8, and SD-9, and levels exceeded the severe effects level at SD-9. Copper was detected at levels higher than at the background at all down-gradient locations. Levels of copper exceeded the lowest effect level at

all sites but SD-10 and exceeded the severe effects level at all sites but SD-8 and SD-11. Site SD-2 was the only down-gradient site that had lower iron levels than the background site. Iron levels exceeded lowest effect level in samples SD-1, SD-1 DUP, SD-3, SD-5 through SD-7, and SD-9. Silver was detected in samples SD-1 DUP, and SD-3 through SD-7. These levels were all higher than the level at the background location. Silver levels in samples SD-1 DUP and SD-4 also exceeded the lowest effect level.

5.3.3 Surface Soil Evaluation

Two background and three down-gradient locations were sampled for concentrations of semi-volatiles. No regional background data were available for semi-volatiles in surface soils, and benchmark criteria were available for only di-n-butylphthalate. Table 5-9 provides the comparisons of detected semi-volatiles and applicable benchmarks. The compound 2-methylphenol was detected only at the background station SS-05. Phenanthrene, fluoranthene, and pyrene were detected in all background and down-gradient samples. Down-gradient levels did not exceed the background range. Anthracene and benzo(g,h,i)perylene were present only in the sample from site SS-03. Di-n-butylphthalate and butylbenzylphthalate occurred only in samples SS-01 and SS-01 DUP from site SS-01. Levels of di-n-butylphthalate exceeded the benchmark criteria in both samples from site SS-01. Benzo(a)anthracene and chrysene were detected at both background locations and at the down-gradient site SS-03. Down-gradient levels did not exceed the background range. Bis(2-ethylhexyl)phthalate was not present in the background samples, but it did occur in the down-gradient samples SS-01, SS-01 DUP, and SS-02. Benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, and indeno(1,2,3-cd)pyrene were detected at the background location SS-05 and at the down-gradient station SS-03. Down-gradient levels were lower than background levels. Benzo(a)pyrene, and indeno(1,2,3-cd)pyrene were also present in the SS-01 sample at levels that exceed background levels. Semi-volatile TICs at the SS-03 site exceeded the background range.

Table 5-10 provides the comparison of detected pesticides/PCBs compared to NYSDEC background concentrations. The pesticides 4,4'-DDE, 4,4'-DDD, 4,4'-DDT, and the PCBs Aroclor-1254 and 1260 were also detected in the surface soils. No regional background data were available for pesticides, and benchmark criteria were available only for the PCBs. 4,4'-DDE was present at the background location SS-04, and 4,4'-DDT was detected at both background sites. Levels of 4,4'-DDE in the down-gradient samples SS-01 and SS-03 did not exceed background levels. However, the SS-01 DUP sample from site SS-01 did exceed the background level. 4,4'-DDE was detected in all samples from down-gradient sites at levels below the background range. 4,4'-DDD was present only in the sample from site SS-02. Aroclor-1254 and 1260 were not detected in the background samples, but they were present in samples SS-01, SS-01 DUP, and SS-02. Levels of PCBs in these down-gradient samples exceeded the benchmark criteria.

Table 5-11 provides the comparison of detected metals compared to NYSDEC background concentrations. The following metals were detected in the surface soils: aluminum, arsenic, barium, beryllium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, potassium, selenium, sodium, vanadium, and zinc. Screening levels were not available for calcium, iron, magnesium, potassium, and sodium. Regional background data were not available for calcium, copper, iron, lead, magnesium, potassium, and sodium. All metals were detected in all background and down-gradient samples with the exception of vanadium, which was not

present in the SS-01 sample from site SS-01. Calcium, copper, potassium, and zinc were at greater concentrations in the down-gradient samples than at the background locations. The remaining metals occurred in the down-gradient samples at lower levels than the background range. Levels of arsenic, barium, beryllium, cobalt, manganese, nickel from the background and down-gradient sites, did not exceed either the screening benchmarks or the regional background range. Concentrations of aluminum, chromium, selenium, and vanadium from the background and down-gradient sites, did not exceed the regional background range, but they did exceed the screening benchmark. Zinc levels were present at concentrations lower than the regional background range at the background and down-gradient sites. However, levels of zinc exceeded the screening benchmark level in samples from sites SS-01 and SS-02. Levels of copper and lead, at the background and down-gradient sites, were lower than the screening benchmark.

5.4 Analysis of Toxic Effects (Step IIC)

The results of the previous steps indicated the following: (1) Presence of ecological receptors in the habitats adjacent to the Magna Metals property, (2) Presence of potential site related contaminants in these habitats, (3) complete exposure pathways for receptors to be exposed to the contaminants, and (4) the observed concentrations of PAHs and metals that exceeded pertinent eco-screening level values. These findings indicated that a toxic effect based assessment (Step IIC of the FWIA process) was warranted to collect site-specific data for assessing risk to ecological receptors and assist in remedial decision-making for this site.

Concentrations of metals and PAHs were found to exceed sediment-screening level benchmarks in the creek and pond basin areas downstream from the Site. Surface water samples collected from three locations proximal to former leach pits exceeded background levels and the NYSDEC water quality criterion. These exceedences suggest that survival of aquatic life may be impaired by local sources or discharges of contaminants from the site.

As required by NYSDEC regulations, investigations were conducted to determine what effects (if any) were being manifested in the aquatic habitats present. A site-specific biological/chemical study was performed to reduce inherent uncertainties.

The Step IIC includes:

- Community level analysis using benthic macroinvertebrate studies;
- Organism level analysis using surface water and sediment toxicity testing; and
- Supplemental sediment and surface water sampling.

This three-study method approach was used to supplement the existing Step II A-B analysis. The data collected supplied a site-specific basis for identifying risks to ecological resources present and assisted in the identification and selection of specific remedial action alternatives for the site.

5.4.1 Areas of Concern for Ecological Receptors

Two streams receive surface water runoff and groundwater discharge from the former Magna Metals Site. Furnace Brook drains to the south into the unnamed pond located between Crossroad Avenue and the former Magna Metals site. Furnace Brook varies in width, depth and

flow. The brook was observed to be 20-25 feet wide at its widest and 2 feet deep at its deepest. Moderate water flow is evident at stations (SW/SD-13 and SW/SD 14) north of the confluence with the unnamed tributary. Furnace Brook at stations south of the confluence was wider (20-25 feet wide) and deeper (0.5-2 feet deep) with little water flow. The second stream is an unnamed tributary of Furnace Brook that drains from the northeast into Furnace Brook. The unnamed tributary channel is not as well defined as Furnace Brook. The stream is generally 2 to 6 inches deep and approximately 1-4 feet wide with a slow water flow.

The unnamed pond is an impoundment of Furnace Brook. The dimensions of the unnamed pond are approximately 100 feet wide and 300 feet long. The pond varies in depth by location ranging from observed depths of 1.0 to 5.0 feet deep.

Outflow from the pond drains into a drainage culvert that directs flow downstream via an underground conduit beneath a residential housing development. The Furnace Brook channel reemerges approximately ½ mile in linear distance from the upstream culvert entrance. Furnace Brook below the pond outlet is a well-defined stream channel with higher water velocities characteristic of a riffle-run streambed. Boulders, cobbles and medium to fine sand make up the substrates present in the streambed.

The wetland area north of the unnamed tributary (at station SW-22) is characterized by a thick stand of *Phragmites australis* observed in the area. The sediment in the wetland was saturated and small pools of standing water were present throughout the area. The wetland area south of the unnamed tributary (stations SW/SD-18 and SW-21) had a small back channel that does not connect to the unnamed tributary nor Furnace Brook. The area is a characteristic palustrine, emergent swamp with areas of iron flocculent present. This wetland is a lowland area having a saturated sediment of black silt with skunk cabbage *Symplocarpus foctidus* present throughout the area. Evidence of anthrogenic debris such as ladders, pails, and targets/shelters for paintball refuse are also present in this area.

5.4.2 Sampling Station Locations

Sample stations were chosen based on the results Step IIB Criteria Specific Analysis and historic data. These stations were chosen based upon the following data needs:

- Provide site-specific background locations for chemical and biological assessments;
- Evaluate nature and extent of chemical distribution observed in the Step IIB analysis using site-specific sediment and surface water samples;
- Support biological assessments in adjacent streams;
- Stations with high potential for biological effects as determined from the Step IIB analysis;
- Determine nature and extent of potential site related contaminants and biological assessment in the unnamed pond; and
- Evaluate the nature and extent of potential site-related contaminants below the pond.

A total of 16 sampling stations (three on Furnace Brook, two from the unnamed tributary of Furnace Brook, three in the wetland areas, four from the unnamed pond, two downgradient from

the site and two references areas) were sampled in support of the Phase IIC Toxic Effects Evaluation:

- SW/SD 13 Reference station for samples collected on Furnace Brook. Located upstream from the site;
- SW/SD 14 Located on Furnace Brook upstream from where the brook and tributary converge;
- SW/SD 15 Located on unnamed tributary of Furnace Brook upstream from where both streams converge;
- SW/SD 16 Located on unnamed tributary of Furnace Brook approximately 75 feet upstream from station SW/SD 15;
- SW/SD 17 Reference station for samples collected on unnamed tributary of Furnace Brook, and not influenced by Site activities, approximately 300 feet upstream of station SW/SD 16;
- SW/SD 18 Located in a small back channel in the wetland below unnamed tributary of Furnace Brook, approximately 250 feet southeast from the confluence of the two streams;
- SW/SD 19 Located on Furnace Brook approximately 150 feet downstream from the confluence of the two streams.
- SW/SD 20 Located on Furnace Brook approximately 100 feet downstream from station SW/SD 19;
- SW 21 Located in a small back channel in the wetland below unnamed tributary of Furnace Brook, approximately 100 feet southeast of station SW/SD 20;
- SW 22 Located north of unnamed tributary of Furnace Brook in a wetland area approximately 100 feet east from station SW/SD 14;
- SD 21 Northeastern most point of the pond situated between Cross Road Ave. and the former Magna Metals Site;
- SD 22 Located in the middle of the unnamed pond;
- SD 23 Located in the southernmost point of the unnamed pond before the drainage culvert;
- SD 24 Westernmost point of the pond, approximately 30 feet from the shore line and 100 feet from the Krishnamurthy's residence;
- SD 25 South of Cross Road Ave. downstream from the pond and drainage culvert approximately 20 feet from the point of discharge; and
- SD 26 Farther downstream from sample SW/SD 25 approximately ½ mile from the site.

The locations for the sampling stations were located and mapped using a global positioning system (GPS) and depicted in Figure 5-3.

Each Step IIC sediment sample was collected and analyzed for target analyte list (TAL) metals, polycyclic aromatic hydrocarbons (PAHs), total organic carbon (TOC), and acid volatile sulfide/soluble extractable metals (AVS/SEM). Each surface water sample was collected and analyzed for TAL metals only. Three replicate benthic samples were collected from select stations on the two streams and the two background locations for the benthic community survey.

Surface water from five locations and a background station were collected for use in a 3 brood *Ceriodaphnia dubia* toxicity test. In addition to the surface water toxicological evaluation, ten-day whole sediment toxicity tests were performed at three locations from the streams, two background stations and two stations from the unnamed pond receiving drainage from the site. The test species included the amphipod *Hyalella azteca* and the midge, *Chironomus tentans*. Survival was the primary endpoint for this test with growth as a secondary endpoint for both protocols. The sampling approach for the individual locations are summarized as follows:

5.4.3 Analytical Sampling

Sediment samples were collected from two background stations and twelve sampling stations using a petite ponar dredge. A ponar dredge was used to sample the first 0-0.5 feet below the surface of sediment at each proposed location. The sample was homogenized, iced, shipped and analyzed for TAL metals, PAHs, TOC, and AVS/SEM. Surface water samples were collected at ten stations: two background stations and eight sampling stations from Furnace Brook and its unnamed tributary. The unfiltered water samples were collected from the surface and disturbance of the sediment was avoided. Each surface water sample was collected and analyzed for TAL metals only.

5.4.4 Surface Water Toxicity Tests

Bulk water samples were collected from five locations and a background station and used in a 3 brood *Ceriodaphina dubia* toxicity test. Surface water toxicity samples were collected from the following locations:

- SW-14 Located on Furnace Brook upstream from where its confluence with the unnamed tributary;
- SW-15 Located on the unnamed tributary of Furnace Brook upstream from where its confluence with Furnace Brook;
- SW-17 Reference station for samples collected on the unnamed tributary of Furnace Brook;
- SW-19 Located on Furnace Brook downstream from where its confluence with the unnamed tributary;
- SW-21 Located in a small back channel in the wetland below the unnamed tributary, approximately 100 feet southeast of station SW/SD-20; and
- SW-22 Located north of unnamed tributary in a wetland area approximately 100 feet east from station SW/SD-14.

Methods for conducting the tests followed guidance set forth in EPA (2002) for estimating the chronic toxicity of effluents and receiving waters to freshwater organisms. Results of the toxicity tests were used in conjunction with co-located surface water samples to determine if existing metal concentrations in the stream near the site have the potential to impact pelagic, aquatic life.

5.4.5 Sediment Toxicity Tests

Whole sediment toxicity testing was performed on sediment from the site to determine if elevated concentrations of contaminants are toxic to benthic organisms. Sediment toxicity tests

were performed at five stations and two background stations. Bulk sediment samples were collected using a petite ponar dredge and subsampled for chemical analysis. Bulk samples were used to perform ten-day acute tests using the amphipod *Hyalella azteca* and the midge *Chironomus tentans*. Bulk sediment samples were collected from the following locations:

- SD-13 Reference station for samples collected on Furnace Brook;
- SD-14 Located on Furnace Brook upstream from where its confluence with the unnamed tributary;
- SD-15 Located on the unnamed tributary of Furnace Brook upstream from where its confluence with Furnace Brook;
- SD-17 Reference station for samples collected on the unnamed tributary of Furnace Brook;
- SD-19 Located on Furnace Brook downstream from where its confluence with the unnamed tributary;
- SD 21 Northeastern most point of the unnamed pond situated between Cross Road Ave and the former Magna Metals Site; and
- SD 23 Located in the southernmost point of the unnamed pond before the drainage culvert.

Methods for conducting the tests followed the guidance set forth in USEPA (2000) for EPA method 100.1 for *Hyalella azteca* and method 100.2 for *Chironomus tentans*. Results of the toxicity tests were used in conjunction with co-located sediment samples to determine if the observed metal concentrations correlate to any toxic responses to representative benthic organisms.

5.4.6 Macroinvertebrate Benthic Survey

The objective of the macroinvertebrate survey was to analyze the benthic macroinvertebrate community present in Furnace Brook and the unnamed tributary. The survey was designed to determine the overall health and to assess potential risks (defined by this survey as taxa richness and density) to the benthic community subject to site related contaminants.

Sampling of the benthic macroinvertebrate community followed guidance provided in Barbour et al. (1999) and Bode et. al. (1990). Three replicate benthic macroinvertebrate samples were collected at each of seven sampling stations where co-located chemistry or toxicological evaluations were performed. Benthic surveys were performed at each of the following seven locations:

- SW/SD-13 Reference station for samples collected on Furnace Brook;
- SW/SD-14 Located on Furnace Brook upstream from where its confluence with the unnamed tributary;
- SW/SD-15 Located on the unnamed tributary of Furnace Brook upstream from where its confluence with Furnace Brook;
- SW/SD-16 Located on the unnamed tributary of Furnace Brook upstream from station SW/SD-15;
- SW/SD-17 Reference station for samples collected on the unnamed tributary of Furnace Brook;

- SW/SD-19 Located on Furnace Brook downstream from where its confluence with the unnamed tributary; and
- SW/SD-20 Located on Furnace Brook downstream from sample station SW/SD-20.

A total of 21 benthic samples (7 sample stations x 3 replicates per station) were collected. The benthic macroinvertebrate community was sampled using a petite ponar, which sampled a benthic area of 0.023 m^2/grab. The benthic grabs were sieved through a 500 µm sieve, and collected invertebrates were preserved in 70% isopropyl alcohol. Invertebrates were identified to the lowest practical taxon and enumerated by a contracted laboratory.

Identification and enumeration data were subjected to QA/QC and tabulated to determine total number of individuals, mean taxa richness by station replicate, total taxa richness (i.e., taxa richness being defined as the number of distinct invertebrate taxa present) and relative densities of benthic organisms. Trends in taxa richness and density data were compared among stations relative to the background station adjacent to the site. Using these measures, the community metrics for samples were compared to the benthic community metrics from the background areas in order to determine the effects (if any) from the Magna Metals Site.

5.4.7 Water Quality and Benthic Substrate Descriptions

Water temperature, specific conductivity, turbidity, dissolved oxygen, oxidation and reduction potential (ORP), and pH were measured at each sample station during sampling using a Horiba U-10 water quality meter (Horiba Ltd., Kyoto, Japan). Percent dissolved oxygen saturation was estimated from water temperature and dissolved oxygen concentration data using a dissolved oxygen saturation nomogram (Wetzel and Likens, 1991). The benthic substrate was described using visual observations and grain size classifications for characterizing benthic substrates provided in Barbour et al. (1999).

Water quality parameters are summarized in Table 5-12. Specific conductivity ranged from 0.184 to 1.54 mS/cm, pH ranged from 6.24 to 8.03, and temperature ranged from 6.19 to 15.28 °C. Dissolved oxygen and turbidity varied greatly among the stations. Dissolved oxygen ranged from 8.33 to 11.22 mg/l, and turbidity ranged from 0 to 80 NTUs. Salinity among the ten sampling stations ranged 0.1 to 0.6 parts per thousand (ppt) and is classified as freshwater. Dissolved oxygen ranged from 8.33 to 11.2 mg/L. None of the observed parameters appeared to have the potential to limit aquatic life in the aquatic habitats sampled. These observed water quality field parameters are typical of a warmwater environment.

During the sediment sampling, water quality parameters were also measured and revealed similar results to those observed during the surface water sampling effort. Specific conductivity ranged from 0.447 to 7.43 mS/cm, pH ranged from 5.68 to 8.18, and temperature ranged from 7.21 to 28.86 °C. Dissolved oxygen ranged from 0 to 13.63 mg/l, and turbidity ranged from 0 to 145 NTUs. The reading of 0.0 mg/L of dissolved oxygen was associated with a very shallow ponded wetland area. Salinity among the 14 sampling stations ranged 0.2 to 0.7 parts per thousand (ppt) (of 0.02 to 0.07 %). This water chemistry quality is typical of warmwater aquatic environments.

The benthic substrates by sediment sampling location are presented in Table 5-13. In general, the sediment samples collected in Furnace Brook and its unnamed tributary north of the unnamed

pond were similar. These sediments were dark brown to black silts with varying amounts of organic matter. A layer of root mat was present at stations SW/SD-19 and SW/SD-20. At SW/SD-17, light brown sand with gravel and minimal organic matter was observed. The sample collected in the southern wetland area (SW/SD-18) was generally dark brown to black silt with a lot of coarse organic matter and leaf pack. Samples from the pond (SD-21, 22, 23, and 24) generally were black fine silts with coarse organic matter and a slight odor similar to hydrogen sulfide. The two northern samples from the pond (SD-21 and 22) contained evidence of a drowned forest with fine wood chips and pieces of tree stumps in the sample grabs. The two stream samples below the pond were slightly different benthic substrates. Sample SD-25, located directly downstream from the point of discharge from the culvert, consisted of black silt with some sand and coarse organic material. Station SD-26, located further downstream from SD-25, was characterized as medium brown to black silt with fine to medium sand, intermixed with gray silt.

5.5 Data Analysis and Interpretation

5.5.1 Surface Water Screening

Detected concentrations collected from each sample location were compared to ecological screening criteria to determine if potential risks to aquatic life were present. The primary screening values and hardness derived AWQC values were calculated from NYSDEC (2004). EPA Water Quality Criteria (1999) and Efroymson et al. (1997) were used as secondary sources. Measured hardness was used to calculate the hardness dependent screening criteria for metals for each sample. Detected concentrations were screened against both acute and chronic screening values (Table 5-14). The surface water samples were analyzed for TAL metals. The samples were grouped by water body and habitat type: Furnace Brook, the unnamed tributary of Furnace Brook, the wetland South of the unnamed tributary and wetland north of the unnamed tributary. Antimony, beryllium, cadmium, mercury, and silver were undetected in all samples from the above locations.

5.5.1.1 Furnace Brook

Four samples (one background (SW-13) and three site-related samples (SW-14, SW-19, and SW-20)) were collected from Furnace Brook. From the Furnace Brook samples, aluminum, barium, chromium, copper, iron, magnesium, manganese, nickel, vanadium and zinc were detected in at least one sample. Aluminum and barium were detected in all three samples at concentrations (358 to 728 ug/L for aluminum and 74.6 to 119 ug/L for barium), all exceeding the respective chronic screening values of 87 and 4 ug/L, for aluminum and barium. No NYSDEC acute screening values were available for barium or aluminum. No acute screening values were available for iron and manganese, therefore detected concentrations were only screened against available chronic benchmarks. Iron and manganese concentrations in all three site samples and ranged between 363 to 2,180 ug/L for iron and 93.9 to 499 ug/L for manganese. Samples SW-14 and SW-19 had detected iron and manganese concentrations exceeding their respective chronic screening value. Nickel and zinc were detected in all three samples but did not exceed the acute and chronic screening values for these metals. Copper was detected in SW-14 and SW-19 at concentrations exceeding their respective chronic screening benchmarks. The copper concentration at SW-14 also exceeded its hardness derived acute criterion.

Aluminum, barium, iron, magnesium and manganese were also detected in the background Furnace Brook sample. The detected aluminum and barium concentrations in the three samples were comparable to the background concentration of 366 and 53.5 ug/L, aluminum and barium respectively, which also exceeded the chronic screening value of 100 and 4 ug/L, aluminum and barium respective. Iron and manganese were detected in the background at a concentration of 327 and 73.8 ug/L. Iron was above chronic screening value of 300 and manganese concentrations was lower than the screening value of 120 ug/L, respectively. Although screening values for magnesium were not available, the detected concentrations in the three samples were comparable to the detected concentration in the background sample.

5.5.1.2 Unnamed Tributary of Furnace Brook

Two samples (SW-15 and SW-16) and one background sample (SW-17) were collected from the unnamed tributary of Furnace Brook and analyzed for TAL metals (Table 5-15). Aluminum, barium, iron, magnesium, manganese, nickel, and zinc were detected in at least one of the two on-site samples. Acute water quality criteria were not available for aluminum, barium, iron or manganese; therefore detected concentrations were only screened against chronic criteria values. Aluminum and barium were detected at concentrations (316 and 328 ug/L for aluminum and 99.7 and 105 ug/L for barium) that exceeded their chronic screening criteria. Iron and manganese were detected in both samples, however the detected concentrations did not exceed the corresponding chronic values for these metals. Zinc and nickel were detected at low concentrations that did not exceed the acute and chronic water quality criteria for these metals.

Aluminum, barium, chromium, iron, magnesium, manganese, nickel, and zinc were detected in the unnamed tributary background sample (SW-17). Detected aluminum and barium concentrations in the background sample exceeded the chronic water quality value for these metals. Detected aluminum and barium concentrations in the two samples were comparable to the concentration detected in the background sample. Chromium was detected in the background concentration, but was undetected in the two on-site samples. The detected chromium concentration did not exceed with the acute or chronic water quality criterion. Iron and manganese were detected in the background sample at concentrations that did not exceed the screening criteria. Nickel and zinc were also detected in the background sample at concentrations that did not exceed the acute or chronic criteria for these metals. The observed trends in the concentration of metals in the unnamed tributary did not reflect an obvious point source introduction of metals from the site into this aquatic habitat.

5.5.1.3 Wetland South of the Unnamed Tributary

Three samples (SW-18, SW-18D, and SW-21) were taken in a back wetland channel area located in the wetland south of the unnamed tributary (Table 5-16). Aluminum, barium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, thallium, vanadium and zinc were detected in at least one of the three samples from this wetland. Aluminum and barium were detected at concentrations that exceeded the chronic screening values of 100 and 4 ug/L respectively. Manganese and iron concentrations in all samples exceeded the chronic screening values. Nickel and zinc were detected in both samples at concentrations below their respective screening values. Cobalt, copper, lead, thallium and vanadium were detected in SW-21, at concentrations below the chronic and acute screening values. Detected aluminum, barium, cobalt, iron, manganese, thallium and vanadium concentrations could not be screened against acute values because of the absence of acute screening values for these metals.

5.5.1.4 Wetland North of the Unnamed Tributary

One sample (SW-22) was collected in the wetland north of the unnamed tributary (Table 5-17). Aluminum, barium, cobalt, iron, manganese, and selenium concentrations were not screened against acute values because of the absence of acute screening values for these metals. Aluminum, barium, iron, cobalt. manganese, and selenium concentrations were detected at concentrations that exceeded their respective chronic criteria. Nickel was detected in SW-22 at a concentration that exceeded the chronic value, but below the acute value. Copper and zinc were detected in SW-22 at concentrations above the acute and chronic screening values.

Based upon field observations, site topography, groundwater flow direction and general water chemistry, this wetland area receives both overland surface runoff and shallow ground water discharge from the Magna Metals site. A clear divergence in water hardness was apparent at this location relative to the samples collected from Furnace Brook and the unnamed tributary. Water hardness in the two stream channels ranged from 159 to 200 mg/L $CaCO_3$ which is considered moderately hard in nature. Water hardness in shallow ground water ranges 49 to 147 mg/L $CaCO_3$ which is considered to be soft to moderately hard in nature. Water hardness in the North wetland was 49.8 mg/L $CaCO_3$ and is more characteristic of ground water than surface waters associated with either Furnace Brook or the unnamed tributary.

5.5.2 Sediment Screening

Concentrations of contaminants collected from each sample location were screened against ecological sediment screening criteria to determine if potential risks to benthic communities. The primary screening values were taken and calculated from NYSDEC (1999). Persaud et al (1993) and Efroymson et al. (1997) were used as secondary sources. Detected concentrations were compared to chronic and acute sediment screening values. The organic carbon content does influence partitioning and bioavailability of hydrophobic organic compounds in sediments. Therefore, all PAH concentrations were normalized to station specific units of organic carbon normalized concentrations of µg/g-OC. These converted PAH concentrations were then compared to µg/g OC screening values for organic compounds given in NYSDEC (1999). Sediment samples were grouped by water body for comparison purposes: Furnace Brook, unnamed tributary of Furnace Brook, wetland south of unnamed tributary and wetland north of unnamed tributary. Acenaphthene, acenaphthylene, dibenz(a,h) anthracene, naphthalene, antimony and cadmium were undetected in all sediment samples and were not assessed in the considered further in the evaluation.

5.5.2.1 Furnace Brook

Three samples (SD-14, SD-19A and SD-20) and one background sample (SD-13) were collected from Furnace Brook (Table 5-18). Fluoranthene, pyrene, aluminum, arsenic, barium, beryllium, chromium, copper, iron, lead, magnesium, manganese, mercury, nickel, selenium, vanadium and zinc were all detected in at least one sample. Fluoranthene and pyrene were detected in one sample, SD-19A, at a TOC normalized concentration of 2.81 and 2.47 mg/Kg OC, which was below the OC normalized chronic value and above the undetected concentrations noted at the background sample. Nickel at all four samples exceeded both the acute and chronic screening values of 50 and 30 mg/Kg. Copper was detected in all four samples. Samples SD-14, SD-19A and SD-20 had detected concentrations that exceeded the background chronic and acute value. Lead concentrations exceeded the background and the chronic screening value, but remained

below the SEL value of 110 mg/Kg in all three samples. All three samples had zinc concentrations that exceeded the background concentration and chronic screening values of 106 and 120 mg/Kg but were below the acute value of 270 mg/Kg. Chromium and cobalt were detected at concentrations that exceeded the background and chronic screening values, but remained below the SEL value at SD-19A. The remaining two samples (SD-14 and SD-20) detected concentrations above the chronic screening values, and exceeded the detected background concentration (Table 5-18).

Detected antimony, iron, manganese, and mercury concentrations were below the acute and chronic, but above the detected background concentrations for these metals. No screening values were available for aluminum, barium, beryllium, magnesium, selenium, thallium and vanadium. Therefore detected concentrations of these analytes could not be screened against benchmarks, but could be compared to background concentrations. All detected concentrations of aluminum, barium, beryllium, magnesium, selenium, and vanadium exceeded background concentrations.

5.5.2.2 Unnamed Tributary

Two samples (SD-15 and SD-16) and one background sample (SD-17) were collected in the unnamed tributary of Furnace Brook (Table 5-19). Eleven SVOCs (anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, fluorene, phenanthrene, and pyrene) and 16 metals (aluminum, arsenic, barium, beryllium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, selenium, vanadium, and zinc) were detected in at least one of the samples collected. Detected SVOCs were normalized to station specific TOC concentrations and compared to the NYSDEC acute and chronic screening values. Benzo(a)anthracene, benzo(a)pyrene, benzo(ghi)perylene, benzo(k)fluoranthene, and phenanthrene were detected at all three sample locations, however, only the background sample SD-17 had detected concentrations that exceeded the chronic value. Fluoranthene and pyrene were detected in all site associated samples at concentrations below acute and chronic screening values. Fluorene was only detected at the background sample (SD-17) and exceeded the chronic screening value of 8 µg/g-OC, but was below the acute value of 73 µg/g-OC. No screening values were available for chrysene, therefore detected concentrations were compared against detected background concentrations. Chrysene was detected in samples SD-15 and SD-16 at concentrations of 16.75 and 10.56 µg/g-OC, respectively, which did not exceed the background concentration of 80.33 µg/g-OC.

Nickel was detected in samples SD-15 and SD-16 exceeding the acute and chronic screening criteria of 50 and 16 mg/Kg and the background concentration (Table 5-19). The background sample had a concentration of 35.6 mg/Kg which exceeded the chronic value. Chromium, copper and zinc were detected in all three samples from the tributary. Sample SD-15 concentrations exceeded both the acute and chronic screening values as well as the background concentrations for these metals. Sample SD-16 had concentrations of copper and zinc which exceeded the chronic values and background concentrations. Mercury was also detected in all three samples from the tributary. Only SD-15 had a detected mercury concentration that exceeded the chronic value, but remained below the acute value. Detected cobalt and iron concentrations were below both screening criteria, but above the detected background concentrations. No screening values were available for aluminum, barium, beryllium, magnesium, selenium, thallium or vanadium. Therefore, detected concentrations of these analytes could not be screened with sediment

benchmarks, but were compared to background concentrations. All detected concentrations of aluminum, barium, beryllium, magnesium, selenium, and vanadium exceeded background concentrations.

5.5.2.3 South Wetland of Unnamed Tributary

Two samples (SD-18 and SD-18D) were collected in the wetland south of the unnamed tributary (Table 5-20). Eight SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, fluoranthene, phenanthrene, and pyrene) and seventeen metals (aluminum, arsenic, barium, beryllium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, selenium, vanadium and zinc) were detected in sample SD18. Chromium, copper, nickel and zinc concentrations in the sediments at this station exceeded both the chronic and acute screening level benchmarks. Arsenic, copper, lead and mercury exceeded the chronic screening level but not the acute level at this location. No detected SVOCs exceeded corresponding sediment benchmarks.

5.5.2.4 Unnamed Pond

Four samples (SD-21, SD-22, SD-23, and SD-24) were collected in the unnamed pond adjacent to the Site (Table 5-21). Seven SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, fluoranthene, phenanthrene and pyrene) were detected in only one sample, SD-23. These detected SVOC concentrations were converted to TOC normalized concentrations and compared with acute and chronic screening criteria from the NYSDEC. All detected SVOC normalized concentrations except for chrysene remained below the chronic and acute screening values. Screening values and background concentrations were not available for chrysene; therefore the detected concentration in sample SD-23 could not be evaluated used sediment benchmarks.

Sixteen metals (aluminum, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead magnesium, manganese, mercury, nickel, selenium, vanadium, and zinc) were detected in all four samples collected from the unnamed pond. All detected nickel concentrations exceeded the chronic and acute screening criteria of 16 and 50 mg/Kg. Iron and zinc were detected in all samples and exceeded the chronic criteria, but remained below the acute screening benchmark for these metals. Copper was detected in all four samples exceeding the chronic screening criterion of 70 mg/Kg. Detected copper concentrations in sample SD-21 and SD-22 also exceeded the acute value of 110 mg/Kg. Lead was detected in all samples that exceeded the chronic screening values of 31mg/Kg. Sample SD-21 was the only sample with a detected lead concentration that also exceeded the acute screening value of 110 mg/Kg. Mercury was detected in samples SD-21, SD-22 and SD-24 at concentrations that exceeded the chronic value of 0.15 mg/Kg, but remained below the acute value of 1.3 mg/Kg. No screening values were available for aluminum, barium, beryllium, magnesium, selenium, thallium and vanadium. Therefore detected concentrations for these analytes could not be evaluated.

5.5.2.5 Furnace Brook below the Unnamed Pond

Two samples (SD-25 and SD-26) were collected in Furnace Brook below the Unnamed Pond (Table 5-22). Eight SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, fluoranthene, phenanthrene, and pryene) were detected in at least one sample. These detected SVOC concentrations were normalized to site specific TOC

concentrations. All detected SVOC normalized concentrations except for chrysene remained below the chronic and acute screening values. Screening values and background concentrations were not available for chrysene; therefore the detected concentration in sample SD-23 was not evaluated.

Sixteen metals (aluminum, arsenic, barium, beryllium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, silver, vanadium, and zinc) were detected in at least one of the two samples collected from Furnace Brook below the unnamed pond. Nickel was detected in both samples at concentrations exceeding the chronic and acute screening level benchmarks for this metal. Copper was also detected in both samples at concentrations that exceeded both the chronic and acute screening values. Chromium was detected at a concentration that exceeded the chronic value of 2.6 mg/Kg, but remained below the acute value of 110 mg/Kg at both samples. All other detected concentrations remained below the acute and chronic screening values. No screening values were available for aluminum, barium, beryllium, magnesium, selenium, thallium and vanadium. Therefore, detected concentrations for these analytes could not be evaluated.

5.5.3 Macroinvertebrate Benthic Survey

The principal exposure pathway for the benthic community in Furnace Brook and its unnamed tributary is through direct contact with contaminated sediments. A subset of sampling sites were chosen to characterize the benthic community present given their proximity to the Magna Metals Site and similarity in aquatic microhabitats. Taxa richness in the Furnace Brook and its unnamed tributary displayed a wide variation across the stations sampled. The benthic laboratory report is provided as Appendix I.

5.5.3.1 Taxa Richness

Tables 5-23 through 5-26 presents the total taxa richness, total number of individuals and relative density, for each of the four sample stations located in Furnace Brook. The total taxa, total number of individuals and relative density observed in the three samples taken from the unnamed tributary are presented in Tables 5-27 through 5-29. A non-impacted background sample (SD-13) was taken as a benthic reference sample for samples collected from Furnace Brook. Sample SD-17 was taken as a reference sample for samples taken from the unnamed tributary. A total of 72 individual benthic macroinvertebrate taxa were identified from the collected samples.

5.5.3.1.1 Furnace Brook

At the reference station SD-13 (Table 5-23), the number of taxa collected among the replicates ranged 10-16 taxa per replicate, and the total number of individuals ranged 108-208 individuals per replicate. The dominant group of taxa at this station was represented by the Tubificidae (64%) (Table 5-23). Ten to 12 taxa were collected among each replicate at station SD-14 and the total number of individuals ranged 20-64 individuals per replicate. The dominant taxa at this station were represented by Chironomidae (78%) of which almost half of this percentage was comprised of the midge genus, *Procladius* sp. (Table 5-24). At station SD-19, the number of taxa collected ranged 5-12, and the total number of individuals ranged 10-113 individuals per replicate. Similar to SD-14, the dominant group of taxa was Chironomidae (95%) dominated by

the midge genus *Chironomus* sp. which represented 62.4% of the total number of individuals present (Table 5-25). The number of taxa at SD-20 ranged 10-12 taxa and the total number of individuals collected ranged 12-38 individuals per replicate (Table 5-26). Numerical dominance was represented by Chironomidae (85%) at this station.

In looking at the total number of taxa within each sampled station, the background station demonstrated the most diverse community and taxa richness gradually decreased with increasing distance away from the background station SD13. The lowest taxa richness was observed in station SD-19 located directly downstream from where the unnamed tributary and Furnace Brook converge.

5.5.3.1.2 Unnamed Tributary of Furnace Brook

The dominant taxa at the background station SD-17, was the Chironomidae (83%). The number of taxa collected by replicate with a ranged 6-9 taxa and abundance ranged 66-174 individuals per replicate (Table 5-27). At station SD-15, 11-17 taxa per replicate and abundance of individuals ranged 51-152 individuals per replicate. The family Chironomidae (82.8%) dominated the community at this location, and was largely comprised of the genera *Thienemannimyia gr.* (30.4%) and *Orthocladius* sp. (21.6%) (Table 5-28). SD-16 produced the greatest number of taxa among the samples taken from the unnamed tributary. A range of 16-19 taxa per replicate and 84-93 individuals were observed at this station. The families Tubificidae (45.3%) and Chironomidae (44.9%) dominated the community at this location (Table 5-29).

In looking at the taxa richness at each of the sampled stations from the unnamed tributary, the background reference station SD-17 demonstrated the least diverse areas while the most diverse were stations SD-15 and SD-16, located in areas suspected to be influenced by site activities.

5.5.3.2 Relative Density

The mean number of individuals collected from the three replicates was utilized to calculate the relative density of invertebrates at each sampling station. The relative density was expressed as the total number of individuals per cubic meter. Across all the stations, mean density of individuals remained highly variable. The range in observed relative densities was 1043 to 6580 individuals/m^2 from samples taken from Furnace Brook and 5870 to 5087 individuals/m^2 from samples taken from the unnamed tributary (Table 5-30).

5.5.3.2.1 Furnace Brook

The highest relative density of 6580 individuals/m^2 was observed at the background station SD-13 and the lowest of 1043 individuals/m^2 was at site SD20, located the farthest downstream before the unnamed pond. Relative densities of individuals at the sampling stations were 6580 (SD-13 – Background station), 1609 (SD-14), 3043 (SD-19), and 1043 individuals/m^2 (SD-20). All three samples (SD-14, SD-19 and SD-20) had lower relative densities than the background station SD-13.

Due to the dominance of the Chironomidae, this family of dipterans was evaluated separately to determine if relative densities of this family in the benthic communities differed between the

Furnace Brook and the background area. In comparing the percent composition for chironomid taxa between the reference and the Furnace Brook communities, the background sample SD-13 exhibited the lowest percent composition of Chironomidae midges.

Trends in the relative densities of non-Chironomidae dipterans including crane flies, biting midges and others did not illustrate clear distributions across the sampling stations. Station SD-13 had the highest number of non-Chironomidae dipiteran taxa. No trend in the relative density of non-chironomid dipterans was observed between the Furnace Brook stations and the background community. Tubificids were observed in the highest numbers at station SD-13 (64%) and the lowest numbers at station SD-20 (0%). The percent composition of tubificids decreased with increasing distance from the background station. Coleopterans (beetles), megalopterans (dobsonflies, fishflies), and collembolans (springtails) were collected in low numbers from all sampling stations.

5.5.3.2.2 Unnamed Tributary of Furnace Brook

The highest relative density of 5087 individuals/m^2 was observed at the background station at SD-17. The remaining two stations were similar with relative densities of 4623 individuals/m^2 at station SD-15 and 3870 individuals/m^2 at station SD-16. Due to the dominance of the family Chironomidae, this family of dipterans was evaluated separately to determine if relative densities for this taxonomic family differed between the unnamed tributary and its background benthic community. Sample SD-16 had the lowest percent composition of Chironomidae, but the highest percent of Tubificida. In observing the non-chironomidae dipterans, samples SD-15 and SD-16 had similar percent compositions. The background station had the lowest percent representation of non-Chironomidae dipterans. Coleopterans (beetles), bivalves (clams), gastropods (snails), and amphipods (scuds) were collected in low numbers from all sampling stations that distinct trends in distribution could not be evaluated.

Results of the benthic community analysis revealed the following observations:

- Sampling revealed wide variation in benthic community richness and density. Benthic communities were dominated by aquatic and semi-aquatic insect taxa with a minor representation of tubificid worms;
- The benthic taxa observed from Furnace Brook and the Unnamed Tributary were representative of benthic communities indigenous to freshwater streams and community assemblages were present at all locations sampled;
- The Furnace Brook background benthic community generally displayed much wider variations in density and taxa richness than did the samples collected from Furnace Brook below the suspected site influence;
- The family Chironomidae (non-biting midges) were the dominant taxon at the Furnace Brook stations below the site while the Tubificidae was the dominant taxonomic group at the Furnace Brook background station;
- A slight trend of decreasing taxa richness and relative density with increasing distance away from the background station was observed from the samples taken from Furnace Brook;
- The observed reductions in the benthic metrics corresponded in close proximity to SD-20, the most downgradient sample collected for benthic macroinvertebrate surveys.

- In the unnamed tributary, the background station SD-17 exhibited the lowest diversity, but the highest relative density. The benthic community at this location was dominated by the family Chironomidae (98%);
- The benthic community observed at station SD-17 is characteristically different from the other stations sampled from the unnamed tributary. This may be the result of the slight difference in the benthic substrate sampled. The benthic substrate at SD-17 was characterized as a more sandy substrate, while the other two samples contained a sandy benthic substrate with a minor silt component; and
- Station SD-15 and the background station SD-17 were dominated by Chironomidae, while station SD-16 was dominated by Tubificidae (45.3%) and Chironomidae (44.9%).

Results of the benthic community survey did reveal an apparent reduction in taxa richness and density as well as an alteration in the community structure in Furnace Brook downstream from the Magna Metals Site. The most apparent decrease in these metrics was observed at SD-20 in Furnace Brook. A benthic survey of the unnamed tributary revealed no apparent decreasing trends in taxa richness or relative density relative to the Magna Metals Site.

5.5.4 Surface Water Toxicity Tests

Bulk surface water samples were collected from six sample locations situated on Furnace Brook (SW-14, SW-19), the unnamed tributary (SW-15 and SW-17 (background)), the wetland south of the unnamed tributary (SW-21) and the wetland north of the unnamed tributary, closest to the Site (SW-22). Bulk water samples were collected and used in chronic *Ceriodaphina dubia* toxicity testing from the five locations and a background station. Methods for conducting the tests followed EPA's (2002) method for estimating the chronic toxicity of effluents and receiving waters to freshwater organisms. Results of the toxicological evaluations conditionally met the performance criteria for the laboratory methodology provided in EPA (2002) for the chronic *Ceriodaphnia dubia* test. Temperature, dissolved oxygen and pH were measured throughout the testing period. Two test endpoints, survival and reproduction, were recorded at the completion of the chronic test. The laboratory test report for the *Ceriodaphnia dubia* test is provided in Appendix I.

Two test endpoints, survival and reproduction, were monitored during the three brood generation testing period of six days (Table 5-31). Survival was presented as the mean percent of surviving individuals originally exposed to surface water from the Magna Metals site. Observations of the number of live or dead animals were made daily. Reproduction was monitored daily by counting the number of neonates produced by each individual female. The test was terminated when 60% of the surviving females had their third brood (at either the sixth or seventh day).

Reference stations and control data were statistically compared for both endpoints to determine if laboratory negative controls and non-impacted site-specific references were comparable to determine if surface water based effects were apparent at the background station. Sample SW-22 (wetland area North of the unnamed tributary) was the only sample that observed no survival (0%) of test organisms exposed to surface water from this sample location. For the survival endpoint, results from sample SW-22 were noted to be significantly different from the control. In

the 3-brood survival and reproduction endpoint test, results from station SW-20 and SW-22 were observed to be statistically different from the control.

Trends in the observed survival and reproduction of *Ceriodaphnia dubia* did not reveal any significant relationship with an increasing distance from the vicinity of the Magna Metals site (Figures 5-4 and 5-5). However, sample SW-22 was the closest sample that was collected from a pool of water to the suspected point of discharge from the on-site leachate pits and was not subjected to dilution from a perennial water body. Sample station SW-22 was also situated in a down slope wetland directly downgradient from the Magna Metals site. The dissolved oxygen, temperature and pH of SW-22 were similar to the results of the other samples and were not suspected to have contributed to the observed toxicity. Therefore, the significantly reduced survival at SW-22 is attributable to the presence of metals likely contributed to by historical Site activities.

5.5.5 Sediment Toxicity Tests

Bulk sediment samples were collected from seven sample locations (SD-13 (background)), SD - 14, SD- 19), the unnamed tributary (SD-15 and SD-17 background), and the unnamed pond (SD 21 and SD 23). Each bulk sample was used to perform ten-day survival and growth tests on the amphipod *Hyalella azteca* and the midge *Chironomus tentans*. Methods for conducting the tests followed the guidance set forth in USEPA (1994, 2000) for EPA method 100.1 for *Hyalella azteca* and method 100.2 for *Chironomus tentans*. Results of the toxicological evaluations conditionally met the performance criteria in part provided in EPA (1994, 2000) for both species. Temperature, dissolved oxygen and pH were measured throughout the sampling period. The primary endpoint for the test was survival and the secondary endpoint was growth for both test species. The toxicity test reports for both *H. azteca* and *C. tentans* are presented in Appendix I.

5.5.5.1 Survival and Growth of Chironomus tentans

Results of the toxicological evaluations were found to meet the performance criteria provided in EPA (1994, 2000) for the 10-day *Chironomus tentans* midge test. Two endpoints, growth and survival, were recorded at the completion of the 10-day exposure period. Survival was determined as the mean percent of surviving individuals originally exposed to Magna Metals Site related sediments. Growth was measured as the mean body weight (dry weight in milligrams) of the surviving individuals at the end of the 10-day exposure period. Statistical comparisons were completed using Dunnett's multiple comparisons test ($\alpha = 0.05$).

Reference stations and control data were statistically compared for both endpoints to determine if laboratory negative controls and non-impacted background samples remained comparable in result or if non-site related water body specific effects may be influencing the test outcomes. The negative control survival was 88.8%, lower than the survival observed from the two background samples that ranged from 90.0 – 91.25%. No statistically significant differences in survival were observed between the negative controls and the background samples from SD-13 (Furnace Brook background) and SD-17 (unnamed tributary background).

The toxicity tests revealed no statistically significant reductions in survival of *Chironomus tentans* at samples collected near the Magna Metals site compared to the their respective

background sediment samples (Table 5-32). The survival observed from station SD-23 was the only station with a survival lower than the survival observed in the negative control (Table I-33). The observed survival data were compared to water specific background stations. In the unnamed tributary, station SD-15 had a survival of 91.25% compared with the 90% survival at the background station SD-17. The two Furnace Brook samples and the two unnamed pond samples were compared against the Furnace Brook background sample (SD-13). Trends in the observed survival of *Chironomus tentans* did not reveal any relationship with an increasing distance from the vicinity of the Magna Metals Site (Figure 5-6).

The growth endpoint in the 10-day test represented a less robust endpoint in observed effects than the survival endpoint. Growth was measured as the mean dry weight body mass (grams) of surviving individuals following the 10-day exposure period. The tests revealed no observed reduction in growth of *Chironomus tentans* in the samples evaluated (Table 5-7). The negative control growth was 1.07 mg and the two reference samples had similar growths of 1.04 and 1.11 mg for stations SD-13 and SD-17, respectively.

Statistical comparisons of growth between stations and their respective background stations from the unnamed tributary revealed statistically significant reductions in growth at station SD-15. Station SD-15 from the unnamed tributary observed a mean growth of 0.86 mg, which was significantly lower than that observed at the background station SD-17 (Figure 5-7). The two Furnace Brook samples and the two unnamed pond samples were compared against the Furnace Brook background sample SD-13. The two Furnace Brook (SD-14 and SD-19A) samples observed significant reductions of growth in comparison to the reference station SD-13. The observed growth from Furnace Brook was 0.68 and 0.71 mg for SD-19A and SD-14, respectively. The remaining two samples from the unnamed Pond observed a growth of 0.997 and 1.16 mg for stations SD-21 and SD-23, respectively. These two stations were not significantly different from the respective background station and negative controls. Trends in the observed growth of *Chironomus tentans* did reveal lower growth in areas immediately downgradient from the Magna Metals Site.

5.5.5.2 Survival and Growth of Hyalella azteca

Results of the toxicological evaluations were found to meet the performance criteria provided in EPA (2000) for the 10-day *Hyalella azteca* amphipod test. Two test endpoints, survival and growth, were recorded at the completion of the 10-day exposure period. Survival was expressed as the mean percent of surviving individuals originally exposed to Magna Metals sediments. Growth was measured as the mean body weight (grams) of the surviving individuals at the end of the 10-day exposure period. Statistical comparisons were completed using Dunnett's multiple comparisons test ($\alpha = 0.05$).

The two background stations (SD-13 and SD-17) and control data were statistically compared for each endpoint to determine if laboratory negative controls and non-impacted site-specific background samples remained comparable in result. Statistically significant differences in survival and growth were observed between the negative controls and the background samples from SD-13 and SD-17 (Table 5-32). The negative control survival was 90.0%, significantly higher than the survival observed from the two background samples, which ranged from 65.0 – 66.3%.

Observed survival of *Hyalella azteca* exposed to Furnace Brook and the unnamed pond sediments remained comparable to or higher than the background station SD-13. The two Furnace Brook stations had an observed survival range between 67.5 and 87.5%. The two unnamed pond stations (SD-23 and SD-21) had a mean survival of 67.50% and 70.00%, respectively. The observed survival from these four stations was not statistically different from the survival observed in the background station SD-13 in Furnace Brook.

In the unnamed tributary, the mean survival at SD-15 for *H. azteca* was 61.25%, higher than the background station SD-17 (54%). When compared to their respective background station data, no statistically significant reductions in survival were associated any of the stations evaluated. Trends in the observed survival of *Hyalella azteca* did not reveal any relationship with distance from the vicinity of the Magna Metals Site (Figure 5-8).

The growth endpoint in the 10-day test represented a less robust endpoint in observed effects than the survival endpoint. Growth was measured as the mean body mass (milligrams) of surviving individuals following the 10-day exposure period. Statistical comparisons of growth between the negative controls and reference data sets revealed statistically significant differences. The growth for the negative control was 0.075 mg while growth for the two background stations were 0.037 and 0.063 mg. The mean growth in *H. azteca* observed from Furnace Brook and the unnamed pond were compared to the growth observed in the background station SD-13 (Figure 5-9). No statistically significant reductions in growth were observed at the Furnace Brook or pond stations. The unnamed tributary sample was compared with the unnamed tributary background station SD-17. A statistically significant reduction in growth of *Hyalella azteca* was observed at station SD-15.

5.6 Summary of Fish and Wildlife Impact Analysis

The following summary captures the major findings of the FWIA evaluation:

5.6.1 Fish and Wildlife Resources and Environmental Setting (Step I)

Both terrestrial and aquatic ecological communities are associated with the Magna Metals investigation area. These communities include a palustrine, deciduous wetland complex, two perennial streams, a small, unnamed pond and an unnamed tributary. Smaller fragmented areas of terrestrial covertypes present on the site property.

A portion of the palustrine wetlands present are NYSDEC regulated wetlands (Class 2) and Furnace Brook, the unnamed pond and the unnamed tributary are classified as Class B waters.

Ten bird species and six mammal species were observed in the habitats present within the investigation area. Observations or evidence of all the species present were associated with the terrestrial, wetland and aquatic habitats present.

No records of the occurrence of endangered, threatened or species of special concern from the site were noted. However, the presence of habitat for the endangered bog turtle (*Clemmys muhlenbergii*) was noted on the perimeter of a two-mile radius for the site.

5.6.2 Pathway Analysis and Criteria Specific Analysis (Steps IIA and IIB)

Major migration pathways for contaminants to be mobilized from historical source areas (leach pits, spills or releases to surface and subsurface soils, groundwater, etc.) include (1) erosion of contaminated soils via surface water runoff and deposition in aquatic habitats and (2) mobilization of subsurface contaminants via groundwater and subsequent discharge to surface waters; (3) Deabsorption of contaminants in contaminated sediments; (4) historical discharge of wastewater to leach pits and percolation to groundwater discharging to the on-site streams and wetlands.

Review of the ecological pathway analysis (Step IIB) for the Magna Metals Site identified the following exposure pathway/route for ecological receptors at the site:

Direct contact with or ingestion of surface soils; and
Direct contact with or ingestion of surface water and sediments.

Comparison of the surface water data to NYSDEC ambient water quality criteria revealed exceedances of copper and zinc above background and corresponding acute and chronic criteria. Other metals also exceeded the background concentration for metals in surface waters.

Comparison of the surface sediment data to NYSDEC sediment quality guidelines revealed exceedances of metals (primarily copper, nickel, and zinc) above background and corresponding acute and chronic surface water and sediment criteria.

5.6.3 Toxic Effects Analysis (Step IIC)

A multiple line of evidence approach was applied as part of the Step IIC Toxic Effects Analysis to address potential impacts to the wetland and aquatic communities present in the palustrine wetland, Furnace Brook and its unnamed tributary. The multiple lines of evidence included:

- Community level analysis using benthic macroinvertebrate studies;
- Organism level analysis using surface water and sediment toxicity testing; and
- Supplemental sediment and surface water sampling.

Results of the above lines of evidence were used to define areas where site related contaminants may be impacting ecological receptors associated with the aquatic and wetland habitats present.

Benthic macroinvertebrate surveys revealed an altered benthic community structure at locations in Furnace Brook downstream from the site. Impacts took the form of altered community structure and reductions in relative densities of invertebrates downstream from the site. Sample stations in Furnace Brook where changes in the benthic community were identified at SD-14, SD-19 and SD-20. No apparent decreasing trend in taxa richness or density was identified from the unnamed tributary sampling.

Surface water toxicity testing with *Ceriodaphnia dubia* revealed 100% survival at all locations except at SW-22 in the ponded wetland area suspected of receiving historical surface water runoff and/or shallow groundwater discharge from the site. Survival and reproduction of *C.*

dubia at SW-22 was 0% for both endpoints. Reproduction of C. *dubia* was slightly impaired (a 30% reduction in progeny) at SW-20 located downstream from the site. No other effects were noted in samples from Furnace Brook or the unnamed tributary.

Whole sediment toxicity testing with the epifaunal amphipod *Hyalella azteca* and the infaunal midge *Chironomus tentans* revealed no overt effects on survival relative to background stations for Furnace Brook or its unnamed tributary. Statistically significant reductions in growth of *C. tentans* were observed at Furnace Brook stations SD-14 and SD-19 and at the unnamed tributary station SD-15. Statistically significant reductions in growth of *H. azteca* was observed at the unnamed tributary station SD-15. No other impacts were noted based upon comparison to corresponding background stations. Impaired reproduction (a 30% reduction in progeny) was observed at SW-20 located downstream from the site.

5.7 Conclusions

Impacts to pelagic and benthic aquatic life were observed in indigenous and laboratory based analyses. The primary environmental media of concern are surface waters and sediments of Furnace Brook, its unnamed tributary and the palustrine wetlands associated with the site. These media are specific to individual habitats and are not problematic in all habitats.

The benthic community expressed different degrees of community structure alteration from the stations sampled in Furnace Brook and the unnamed tributary. Subtle differences in the microhabitats sampled may have contributed to the observed changes in community structure and could not be discounted entirely from the evaluation.

Using all three lines of evidence, the following habitats, media and contaminants are identified for remedial consideration:

Habitat Area	Media and Ecological Receptor Group	Stations Impacted and Contaminants	Weight of Evidence
Wetland Area, North of Unnamed Tributary	Surface water –Pelagic Aquatic Life	SW-22, Copper and Zinc	1) Exceedance of Acute and Chronic AWQC. 2) 0% Survival and Reproduction in *C. dubia.*
Unnamed Tributary	Sediment – Benthic Communities	SD-15, Copper and Nickel	1) Exceedance of Acute and Chronic Sediment Quality Value 2) Altered Benthic Community Structure 3) Impaired Growth in *C. tentans and H. azteca.* 4) SEM/AVS Ratio is >1.0.
Furnace Brook	Sediment – Benthic Communities	SD-14 and SD-19, Copper and Nickel	1) Exceedance of Acute and Chronic Sediment Quality Value 2) Altered Benthic Community Structure 3) Impaired Growth in *C. tentans and H. azteca.* 4) SEM/AVS Ratio is >1.0.

5.7.1 Site-Specific Preliminary Remedial Goal Development (PRG)

For the above areas, the following ecological values are presented for PRG clean up objectives. The PRGs are presented by the waterbody and lines of evidence used for determination:

Furnace Brook - Sediments

COPEC	Site Specific Maximum No Observed Effect Concentration[1]		NYSDEC Acute Sediment Value	NYSDEC Chronic Sediment Value	Background Concentration Range
	(mg/Kg)	SEM/AVS	(mg/Kg)	(mg/Kg)	(mg/Kg)
Nickel	**200.0**	**<1.0**	50.0	30.0	17.3-63.5
Copper	**415.0**	**<1.0**	390	70.0	4.4-24.4

[1] No observed impairment in survival or growth in *Hyalella azteca* and *Chironomus tentans* relative to the background location.
Bolded values are recommended site-specific preliminary remedial goals.

Unnamed Tributary - Sediments

COPEC	Site Specific Maximum No Observed Effect Concentration[1]		NYSDEC Acute Sediment Value	NYSDEC Chronic Sediment Value	Background Concentration Range
	(mg/Kg)	SEM/AVS	(mg/Kg)	(mg/Kg)	(mg/Kg)
Nickel	**143.0**	**<1.0**	50.0	30.0	17.3-63.5
Copper	**107.0**	**<1.0**	390	70.0	4.4-24.4

[1] No observed impairment in survival or growth in *Hyalella azteca* and *Chironomus tentans* relative to the background location.
Bolded values are recommended site-specific preliminary remedial goals.

Wetland North at Base of Slope – Surface Water

COPEC	Site Specific Maximum No Observed Effect Concentration[1]	NYSDEC* Acute Water Quality Criteria	NYSDEC* Acute Water Quality Criteria	Furnace Brook Background Concentration Range
	(ug/L)	(ug/L)	(ug/L)	(ug/L)
Copper	57.6	**6.98**	**4.94**	<0.74-2.7
Zinc	23.7	**64.9**	**46.3**	23.7-27.3

[1] No observed impairment in survival or reproduction in *Ceriodaphnia dubia* relative to the background location based upon total metal concentrations.
Ambient water quality criteria for NYSDEC **Bolded** values are recommended site-specific preliminary remedial goals based upon dissolved metals concentration.
* Dissolved Concentrations

In order to fully address the extent and toxicity of contaminated media during site remediation, the ensuing Feasibility Study (FS) will include the following additional alternatives to these proposed clean up goals presented herein. Specifically,

- An alternative that would result in pre-release conditions for all areas impacted by Magna Metals; and
- An alternative to remediate to Lowest Effect Level (LEL) concentrations for metals.

Table 5-1

**Wildlife Species Observed in the Magna Metals Site Study Area
Town of Cortlandt, Westchester County, New York**

	Common Name	Scientific Name
BIRDS		
	Black-capped Chickadee	*Pares articapillus*
	Red-tailed Hawk	*Buteo jamaicensis*
	Blue Jay	*Cyanocitta cristata*
	Green-backed Heron	*Butorides striatus*
	Wood Duck	*Aix sponsa*
	Mallard	*Anas platyrhynchos*
	Canada Goose	*Branta canadensis*
	American Crow	*Corvus brachyrhynchos*
	Gray Catbird	*Dumetella carolinensis*
	Northern Cardinal	*Cardinalis cardinalis*
MAMMALS		
	Raccoon	*Procyon lotor*
	Eastern Chipmunk	*Tamias striatus*
	Gray Squirrel	*Sciurus carolinensis*
	White-tail Deer	*Odocoileus virginianus*
	Beaver	*Castor canadensis*
	Vole	*Microtus* sp.

Table 5-2
Magna Metals Site
Surface Water Screening Assessment

Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name: SW-12 (background) Sample Date: 5/22/97 Criteria	Rslt	Val qual	Det Limit	SW-1 5/22/97 Criteria	Rslt	Val qual	Det Limit	SW-1-DUP 5/22/97 Criteria	Rslt	Val qual	Det Limit
VOC	Vinyl Chloride	75-01-4	ug/L	2		U	1	2		U	1	2		U	1
VOC	Methylene Chloride	75-09-2	ug/L	4.6		U	2	4.6		U	2	4.6		U	2
VOC	cis-1,2-Dichloroethene	156-59-2	ug/L	NC		U	1	NC	3.5		1	NC	4.2		1
VOC	Chloroform	67-66-3	ug/L	5.7		U	1	5.7		U	1	5.7		U	1
VOC	Trichlorothene	79-01-6	ug/L	2.5		U	1	2.5	**5.5**		1	2.5	**2.7**		1

Note
Since there is no NYSDEC criteria for class C aquatic life for these anayltes, the US EPA water quality(2002) criteria was used.
BOLD Detected concentration exceeds the federal screening concentration
Detected concentration exceeds the detected background concentration

Table 5-2
Magna Metals Site
Surface Water Screening Assessment

Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name:	SW-2				SW-3				SW-4			
				Sample Date:	5/22/97				5/22/97				5/22/97			
					Criteria	Rslt	Val qual	Det Limit	Criteria	Rslt	Val qual	Det Limit	Criteria	Rslt	Val qual	Det Limit
VOC	Vinyl Chloride	75-01-4	ug/L		2		U	1	2		U	1	2	0.7	J	1
VOC	Methylene Chloride	75-09-2	ug/L		4.6		U	2	4.6		U	2	4.6		U	2
VOC	cis-1,2-Dichloroethene	156-59-2	ug/L		NC	3.2		1	NC	3.3		1	NC	4.5		1
VOC	Chloroform	67-66-3	ug/L		5.7		U	1	5.7		U	1	5.7		U	1
VOC	Trichlorothene	79-01-6	ug/L		2.5	2.4		1	2.5	2.3		1	2.5	2.6		1

Table 5-2
Magna Metals Site
Surface Water Screening Assessment

Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name:	SW-5				SW-6				SW-7			
				Sample Date:	5/22/97				5/22/97				5/22/97			
					Criteria	Rslt	Val qual	Det Limit	Criteria	Rslt	Val qual	Det Limit	Criteria	Rslt	Val qual	Det Limit
VOC	Vinyl Chloride	75-01-4	ug/L		2		U	1	2		U	1	2		U	1
VOC	Methylene Chloride	75-09-2	ug/L		4.6		U	2	4.6		U	2	4.6	2.3		2
VOC	cis-1,2-Dichloroethene	156-59-2	ug/L		NC	2.1		1	NC	5.1		1	NC		U	1
VOC	Chloroform	67-66-3	ug/L		5.7		U	1	5.7	0.79	J	1	5.7		U	1
VOC	Trichlorothene	79-01-6	ug/L		2.5	2.2		1	2.5	0.97	J	1	2.5		U	1

Table 5-2
Magna Metals Site
Surface Water Screening Assessment

Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name: / Sample Date:	SW-8 5/22/97			SW-9 5/22/97				SW-10 5/22/97				SW-11 5/22/97			
				Criteria	Rslt	Val qual	Det Limit	Criteria	Rslt	Val qual	Det Limit	Criteria	Rslt	Val qual	Det Limit	Criteria	Rslt	Val qual	Det Limit
VOC	Vinyl Chloride	75-01-4	ug/L	2		U	1	2	2.5		1	2	0.91	J	1	2		U	1
VOC	Methylene Chloride	75-09-2	ug/L	4.6		U	2	4.6		U	2	4.6		U	2	4.6		U	2
VOC	cis-1,2-Dichloroethene	156-59-2	ug/L	NC	7.4		1	NC	18		1	NC	9		1	NC		U	1
VOC	Chloroform	67-66-3	ug/L	5.7	0.77	J	1	5.7		U	1	5.7	0.89	J	1	5.7		U	1
VOC	Trichlorothene	79-01-6	ug/L	2.5	1.4		1	2.5	0.73	J	1	2.5	1		1	2.5		U	1

Table 5-3
Magna Metals Site
Surface Water Screening Assessment
SVOC Results

Furnace Brook

		Sample Name:		SW-12 (background)					SW-1					SW-1-DUP				
		Sample Date:				5/13/97					5/12/97					5/12/97		
Chemical Group	Analyte	Cas No.	Units	Acute	Chronic	Rslt	Val qual	Det Limit	Acute	Chronic	Rslt	Val qual	Det Limit	Acute	Chronic	Rslt	Val qual	Det Limit
SVOC	4-Methylphenol	106-44-5	ug/L	NC	NC		U	20	NC	NC		U	6	NC	NC		U	5
SVOC	Diethylphtalate	84-66-2	ug/L		17000*		U	5		17000*	0.3	J	6		17000*		U	5
SVOC	Hexachlorobenzene	118-74-1	ug/L		0.00028*		U	5		0.00028*		U	6		0.00028*	0.2	J	5
SVOC	Fluoranthene	206-44-0	ug/L		130*		U	5		130*		U	6		130*		U	5
SVOC	Pyrene	129-00-0	ug/L	42	4.6		U	5	42	4.6		U	6	42	4.6		U	5
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	ug/L		0.6	**3**	J	5		0.6		UJ	6		0.6	**2**	J	5

Note:
*Since no NYSDEC criteria for class C aquatic life for these anayltes, the US EPA water quality(2002) criteria was used.
BOLD Detected concentration exceeds the chronic screening concentration
Detected concentration exceeds the detected background concentration

Table 5-3
Magna Metals Site
Surface Water Screening Assessment
SVOC Results

Furnace Brook

Chemical Group	Analyte	Sample Name: / Sample Date:	Cas No.	Units	SW-2 5/12/97 Acute	Chronic	Rslt	Val qual	Det Limit	SW-3 5/12/97 Acute	Chronic	Rslt	Val qual	Det Limit	SW-4 5/14/97 Acute	Chronic	Rslt	Val qual	Det Limit
SVOC	2-Methylphenol		95-48-7	ug/L	NC	NC		U	6	NC	NC		U	6	NC	NC		U	5
SVOC	Diethylphtalate		84-66-2	ug/L		17000*		U	6		17000*		U	6		17000*		U	5
SVOC	Hexachlorobenzene		118-74-1	ug/L		0.00028*		U	6		0.00028*	**0.2**	J	6		0.00028*		U	5
SVOC	Fluoranthene		206-44-0	ug/L		130*		U	6		130*	0.3	J	6		130*		U	5
SVOC	Pyrene		129-00-0	ug/L	42	4.6		U	6	42	4.6		U	6	42	4.6		U	5
SVOC	bis(2-Ethylhexyl)phthalate		117-81-7	ug/L		0.6		UJ	6		0.6		UJ	6		0.6		UJ	5

Note:
*Since no NYSDEC criteria for class C aquatic life for these anayltes, the US EPA water quality(2002) criteria was used.
BOLD Detected concentration exceeds the chronic screening concentration
Detected concentration exceeds the detected background concentration

Table 5-3
Magna Metals Site
Surface Water Screening Assessment
SVOC Results

Furnace Brook

Chemical Group	Analyte	Sample Name: / Sample Date: / Cas No.	Units	SW-5 5/14/97 Acute	Chronic	Rslt	Val qual	Det Limit	SW-6 5/14/97 Acute	Chronic	Rslt	Val qual	Det Limit	SW-7 5/14/97 Acute	Chronic	Rslt	Val qual	Det Limit
SVOC	2-Methylphenol	95-48-7	ug/L	NC	NC	U		5	NC	NC	U		5	NC	NC	0.2	J	6
SVOC	Diethylphtalate	84-66-2	ug/L		17000*	U		5		17000*	U		5		17000*	U		6
SVOC	Hexachlorobenzene	118-74-1	ug/L		0.00028*	U		5		0.00028*	**0.3**	J	5		0.00028*	U		6
SVOC	Fluoranthene	206-44-0	ug/L		130*	U		5		130*	U		5		130*	U		6
SVOC	Pyrene	129-00-0	ug/L	42	4.6	0.6	J	5	42	4.6	0.7	J	5	42	4.6	U		6
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	ug/L		0.6	UJ		5		0.6	UJ		5		0.6	UJ		6

Note:
*Since no NYSDEC criteria for class C aquatic life for these anaylites, the US EPA water quality(2002) criteria was used.
BOLD Detected concentration exceeds the chronic screening concentration
Detected concentration exceeds the detected background concentration

Table 5-3
Magna Metals Site
Surface Water Screening Assessment
SVOC Results

Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name: SW-8 Sample Date: 5/12/97 Acute	Chronic	Rslt	Val qual	Det Limit	SW-9 5/12/97 Acute	Chronic	Rslt	Val qual	Det Limit	SW-10 5/12/97 Acute	Chronic	Rslt	Val qual	Det Limit	SW-11 5/12/97 Acute	Chronic	Rslt	Val qual	Det Limit
SVOC	2-Methylphenol	95-48-7	ug/L	NC	NC		U	6	NC	NC		U	6	NC	NC		U	6	NC	NC		U	5
SVOC	Diethylphtalate	84-66-2	ug/L		17000*		U	6		17000*		U	6		17000*		U	6		17000*		U	5
SVOC	Hexachlorobenzene	118-74-1	ug/L		0.00028*	**0.2**	J	6		0.00028*		U	6		0.00028*		U	6		0.00028*		U	5
SVOC	Fluoranthene	206-44-0	ug/L		130*		U	6		130*	0.3	J	6		130*		U	6		130*		U	5
SVOC	Pyrene	129-00-0	ug/L	42	4.6		U	6	42	4.6	0.3	J	6	42	4.6		U	6	42	4.6		U	5
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	ug/L		0.6		UJ	6		0.6		UJ	6		0.6		UJ	6		0.6		UJ	5

Note:
*Since no NYSDEC criteria for class C aquatic life for these anayltes, the US EPA water quality(2002) criteria was used.
BOLD Detected concentration exceeds the chronic screening concentration
Detected concentration exceeds the detected background concentration

Table 5-4
Magna Metals Site
Surface Water Screening Assessment
Metals Results

Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name: / Sample Date:	SW12 (Background) 05/12/1997					SW1 05/12/1997					SW1-DUP 05/12/1997				
					Acute	Chronic	Rslt	Val qual	Det limit	Acute	Chronic	Rslt	Val qual	Det limit	Acute	Chronic	Rslt	Val qual	Det limit
METAL	Aluminum	7429-90-5	ug/L		NC	100	64.8	B		NC	100	54.2	B		NC	100	135	B	
METAL	Antimony	7440-36-0	ug/L		NC	NC	3.6	B	3	NC	NC		U	3	NC	NC		U	3
METAL	Arsenic	7440-38-2	ug/L		340	150		U	3	340	150		U	3	340	150		U	3
METAL	Barium	7440-39-3	ug/L		NC	NC	33.4	B		NC	NC	27.2	B		NC	NC	56	B	
METAL	Cadmium[1]	7440-43-9	ug/L		4.46	4.16		U	1	5.31	4.7		U	1	5.44	4.76		U	1
METAL	Calcium	7440-70-2	ug/L		NC	NC	23000			NC	NC	22200			NC	NC	23500		
METAL	Chromium[1]	7440-47-3	ug/L		323.78	73.03		U	1	367.26	82.83		U	1	373.65	84.27		U	1
METAL	Cobalt	7440-48-4	ug/L		NC	5		U	1	NC	5		U	1	NC	5		U	1
METAL	Copper[1]	7440-50-8	ug/L		16.81	12.86	2.7	B		19.43	14.66	4.9	B		19.82	14.93	6.5	B	
METAL	Iron	7439-89-6	ug/L		NC	300	**363**	J		NC	300	**658**			NC	300	**1060**	J	
METAL	Lead[1]	7439-92-1	ug/L		112.25	4.37		R	2	132.57	5.17		U	2	135.62	5.28		R	2
METAL	Magnesium	7439-95-4	ug/L		NC	NC	13800			NC	NC	18900			NC	NC	18800		
METAL	Manganese	7439-96-5	ug/L		NC	NC	60.3			NC	NC	209			NC	NC	422		
METAL	Mercury	7439-97-6	ug/L		1.4	0.77		U	0.2	1.4	0.77		U	0.2	1.4	0.77		U	0.2
METAL	Nickel[1]	7440-02-0	ug/L		370.36	57.69	3.5	B	1	421.85	65.71	2.3	B	1	429.42	66.89	10.6	B	1
METAL	Potassium	7440-09-7	ug/L		NC	NC	1970	JB		NC	NC	2230	B		NC	NC	2300	B	
METAL	Selenium	7782-49-2	ug/L		NC	4.6		U	3	NC	4.6		U	3	NC	4.6	3.4	B	3
METAL	Sodium	7440-23-5	ug/L		NC	NC	17600		1	NC	NC	20300		1	NC	NC	20400		1
METAL	Vanadium	7440-62-2	ug/L		NC	14		U	1	NC	14		U	1	NC	14		U	1
METAL	Zinc[1]	7440-66-6	ug/L		117.2	103.316	27.3	J		133.52	117.7	10.7	B		135.93	119.82	21.8	J	
METAL	Cyanide	57-12-5	ug/L		22	5.2		U	10	22	5.2		U	10	22	5.2	39.6	J	10

Note:
Surface water screening values from NYSDEC Ambient water quality standards guidance, unless otherwise noted.
1 - Calculated hardness derived screening criteria
* - Background Samples for the samples taken from Furnance Brook
Shaded — Detected concentration exceeds acute screening concentration
BOLD — Detected concentration exceeds chronic screening concentration
Boxed — Detected concentration exceeds the detected background concentration
NC — No Criteria

Table 5-4
Magna Metals Site
Surface Water Screening Assessment
Metals Results

Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name: SW2 Sample Date: 05/12/1997 Acute	Chronic	Rslt	Val qual	Det limit	SW3 05/12/1997 Acute	Chronic	Rslt	Val qual	Det limit	SW4 05/14/1997 Acute	Chronic	Rslt	Val qual	Det limit
METAL	Aluminum	7429-90-5	ug/L	NC	100	**126**	B		NC	100	**454**			NC	100	**103**	B	
METAL	Antimony	7440-36-0	ug/L	NC	NC		U	3	NC	NC		U	3	NC	NC	3.5	B	3
METAL	Arsenic	7440-38-2	ug/L	340	150		U	3	340	150		U	3	340	150		U	3
METAL	Barium	7440-39-3	ug/L	NC	NC	25.4	B		NC	NC	33.7	B		NC	NC	37.7	B	
METAL	Cadmium[1]	7440-43-9	ug/L	4.85	4.41		U	1	5.05	4.53		U	1	5.22	4.65		U	1
METAL	Calcium	7440-70-2	ug/L	NC	NC	20700			NC	NC	21500			NC	NC	22600		
METAL	Chromium[1]	7440-47-3	ug/L	343.77	77.54	1.4	B	1	353.97	79.84	3.5	B	1	363	81.87		U	1
METAL	Cobalt	7440-48-4	ug/L	NC	5		U	1	NC	5		U	1	NC	5		U	1
METAL	Copper[1]	7440-50-8	ug/L	18.01	13.69	8	B		18.63	14.11	14	B		19.17	14.49	4.3	B	
METAL	Iron	7439-89-6	ug/L	NC	300	**908**			NC	300	**1510**			NC	300	**856**	J	
METAL	Lead[1]	7439-92-1	ug/L	121.5	4.73	2.2	JB	2	126.29	4.92	2	JB	2	130.55	5.09		U	2
METAL	Magnesium	7439-95-4	ug/L	NC	NC	17300			NC	NC	17900			NC	NC	18200		
METAL	Manganese	7439-96-5	ug/L	NC	NC	188			NC	NC	182			NC	NC	336		
METAL	Mercury	7439-97-6	ug/L	1.4	0.77		U	0.2	1.4	0.77		U	0.2	1.4	0.77		U	0.2
METAL	Nickel[1]	7440-02-0	ug/L	394	61.38	4.6	B	1	406.08	63.26	4	B	1	416.8	64.93	8.9	B	1
METAL	Potassium	7440-09-7	ug/L	NC	NC	2080	B		NC	NC	2160	B		NC	NC	2360	JB	
METAL	Selenium	7782-49-2	ug/L	NC	4.6		U	3	NC	4.6	4.5	B	3	NC	4.6		U	3
METAL	Sodium	7440-23-5	ug/L	NC	NC	18600		1	NC	NC	19200		1	NC	NC	19600		1
METAL	Vanadium	7440-62-2	ug/L	NC	14		U	1	NC	14	1.6	B	1	NC	14		U	1
METAL	Zinc[1]	7440-66-6	ug/L	124.7	109.92	16.7	B		128.53	113.3	37			131.92	116.29	17.8	B	
METAL	Cyanide	57-12-5	ug/L	22	5.2		U	10	22	5.2		U	10	22	5.2		UJ	10

Note:
Surface water screening values from NYSDEC Ambient water quality standards guidance, unless otherwise noted.
1 - Calculated hardness derived screening criteria
* - Background Samples for the samples taken from Furnance Brook
Shaded - Detected concentration exceeds acute screening concentration
BOLD Detected concentration exceeds chronic screening concentration
Detected concentration exceeds the detected background concentration
NC No Criteria

Table 5-4
Magna Metals Site
Surface Water Screening Assessment
Metals Results

Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name: / Sample Date:	SW5 05/14/1997				SW6 05/14/1997				SW7 05/14/1997			
				Acute	Chronic	Rslt	Val qual	Det limit	Acute	Chronic	Rslt	Val qual	Det limit	Acute	Chronic	Rslt	Val qual	Det limit
METAL	Aluminum	7429-90-5	ug/L	NC	100	**178**	B		NC	100	**2660**			NC	100	**13100**		
METAL	Antimony	7440-36-0	ug/L	NC	NC	3.1	B	3	NC	NC	3.5	B	3	NC	NC	4.9	B	3
METAL	Arsenic	7440-38-2	ug/L	340	150		U	3	340	150	4	B	3	340	150	18.3	B	3
METAL	Barium	7440-39-3	ug/L	NC	NC	68	B		NC	NC	154	B		NC	NC	**250**	B	
METAL	Cadmium[1]	7440-43-9	ug/L	4.76	4.36		U	1	5.5	4.82		U	1	4	3.86	1.7	B	1
METAL	Calcium	7440-70-2	ug/L	NC	NC	23400			NC	NC	21800			NC	NC	18800		
METAL	Chromium[1]	7440-47-3	ug/L	339.39	76.54	1.5	B	1	377.06	85.04	39.6		1	299.23	67.49	**253**		1
METAL	Cobalt	7440-48-4	ug/L	NC	5	1.4	B	1	NC	5	**6.7**	B	1	NC	5	**32.8**	B	1
METAL	Copper[1]	7440-50-8	ug/L	17.75	13.5	**14.1**	B		20.03	15.07	**491**			15.35	11.84	**3960**		
METAL	Iron	7439-89-6	ug/L	NC	300	**1110**	J		NC	300	**7240**	J		NC	300	**34100**	J	
METAL	Lead[1]	7439-92-1	ug/L	119.47	4.66		R	2	137.25	5.35	**14.2**		2	101.11	3.94	**88**		2
METAL	Magnesium	7439-95-4	ug/L	NC	NC	15200			NC	NC	20200			NC	NC	13800		
METAL	Manganese	7439-96-5	ug/L	NC	NC	888			NC	NC	625			NC	120	**1010**		
METAL	Mercury	7439-97-6	ug/L	1.4	0.77		U	0.2	1.4	0.77		U	0.2	1.4	0.77	0.22		0.2
METAL	Nickel[1]	7440-02-0	ug/L	388.83	60.57	15.7	B	1	433.48	67.53	**136**		1	341.39	53.18	**558**		1
METAL	Potassium	7440-09-7	ug/L	NC	NC	2060	JB		NC	NC	1990	JB		NC	NC	2790	JB	
METAL	Selenium	7782-49-2	ug/L	NC	4.6		U	3	NC	4.6	**10.2**		3	NC	4.6	**40.1**		3
METAL	Sodium	7440-23-5	ug/L	NC	NC	18800		1	NC	NC	27000		1	NC	NC	21700		1
METAL	Vanadium	7440-62-2	ug/L	NC	14	1.3	JB	1	NC	14	8.6	B	1	NC	14	25.7	B	1
METAL	Zinc[1]	7440-66-6	ug/L	123.06	108.48	28.1	J		137.21	120.95	**282**	J		108.02	95.22	**2090**	J	
METAL	Cyanide	57-12-5	ug/L	22	5.2		U	10	22	5.2	**220**		10	22	5.2	**858**		10

Note:
Surface water screening values from NYSDEC Ambient water quality standards guidance, unless otherwise noted.
1 - Calculated hardness derived screening criteria
* - Background Samples for the samples taken from Furnance Brook
Shaded — Detected concentration exceeds acute screening concentration
BOLD — Detected concentration exceeds chronic screening concentration
Detected concentration exceeds the detected background concentration
NC — No Criteria

Table 5-4
Magna Metals Site
Surface Water Screening Assessment
Metals Results

Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name: SW8 Sample Date: 05/12/1997 Acute	Chronic	Rslt	Val qual	Det limit	SW9 05/12/1997 Acute	Chronic	Rslt	Val qual	Det limit	SW10 05/12/1997 Acute	Chronic	Rslt	Val qual	Det limit	SW11 05/12/1997 Acute	Chronic	Rslt	Val qual	Det limit
METAL	Aluminum	7429-90-5	ug/L	NC	100	84.8	B		NC	100	**8960**			NC	100	**118**	B		NC	100	41.9	B	
METAL	Antimony	7440-36-0	ug/L	NC	NC		U	3	NC	NC		U	3	NC	NC		U	3	NC	NC		U	3
METAL	Arsenic	7440-38-2	ug/L	340	150		U	3	340	150	4.1	B	3	340	150		U	3	340	150		U	3
METAL	Barium	7440-39-3	ug/L	NC	NC	69.7	B		NC	NC	631			NC	NC	68.5	B		NC	NC	52.4	B	
METAL	Cadmium[1]	7440-43-9	ug/L	4.99	4.5		U	1	17.51	10.78	1.1	B	1	4.92	4.46		U	1	3.8	3.73		U	1
METAL	Calcium	7440-70-2	ug/L	NC	NC	18700			NC	NC	40600			NC	NC	18100			NC	NC	16300		
METAL	Chromium[1]	7440-47-3	ug/L	351.17	79.21		U	1	873.54	197.03	69.7		1	347.76	78.44	1.1	B	1	288.33	65.03		U	1
METAL	Cobalt	7440-48-4	ug/L	NC	5		U	1	NC	5	**31.4**	B	1	NC	5		U	1	NC	5		U	1
METAL	Copper[1]	7440-50-8	ug/L	18.46	13.99	6.2	B		52.66	36.21	**954**			18.25	13.86	5.3	B		14.71	11.39	2.8	B	
METAL	Iron	7439-89-6	ug/L	NC	300	272			NC	300	**24000**			NC	300	**346**			NC	300	94.2		
METAL	Lead[1]	7439-92-1	ug/L	124.97	4.87		U	2	404.86	15.78	**43.6**		2	123.37	4.81		U	2	96.25	3.75		U	2
METAL	Magnesium	7439-95-4	ug/L	NC	NC	19300			NC	NC	68600			NC	NC	19300			NC	NC	14200		
METAL	Manganese	7439-96-5	ug/L	NC	NC	109			NC	NC	1760			NC	NC	110			NC	NC	57.4		
METAL	Mercury	7439-97-6	ug/L	1.4	0.77		U	0.2	1.4	0.77		U	0.2	1.4	0.77		U	0.2	1.4	0.77		U	0.2
METAL	Nickel[1]	7440-02-0	ug/L	402.77	62.74	11.9	B	1	1032.45	160.83	**204**	B	1	398.72	62.11	6.2	B	1	328.56	51.18	5.5	B	1
METAL	Potassium	7440-09-7	ug/L	NC	NC	1900	B		NC	NC	5980	B		NC	NC	1820	B		NC	NC	1510	B	
METAL	Selenium	7782-49-2	ug/L	NC	4.6	**6.7**		3	NC	4.6	3	B	3	NC	4.6		U	3	NC	4.6		U	3
METAL	Sodium	7440-23-5	ug/L	NC	NC	27900		1	NC	NC	30300		1	NC	NC	26400		1	NC	NC	23600		1
METAL	Vanadium	7440-62-2	ug/L	NC	14		U	1	NC	14	**29.6**	B	1	NC	14		U	1	NC	14		U	1
METAL	Zinc[1]	7440-66-6	ug/L	127.48	112.37	20.8			327.25	288.47	146			126.19	111.24	27.3			103.96	91.64	18.3	B	
METAL	Cyanide	57-12-5	ug/L	22	5.2		U	10	22	5.2	**18.7**		10	22	5.2		U	10	22	5.2		U	10

Note:
Surface water screening values from NYSDEC Ambient water quality standards guidance, unless otherwise noted.
1 - Calculated hardness derived screening criteria
* - Background Samples for the samples taken from Furnance Brook
Shaded Detected concentration exceeds acute screening concentration
BOLD Detected concentration exceeds chronic screening concentration
Detected concentration exceeds the detected background concentration
NC No Criteria

Table 5-5
Magna Metals Site
Sediment Screening Assessment
VOC Results

Furnace Brook

		Sample Name:		SD -12 (Background)					SD-1					SD-1-DUP				
		Sample Date:		5/14/1997					5/12/1997					5/12/1997				
Chemical Group	Analyte	Cas No.	Units	Acute	Chronic	Rslt	Val qual	Det Limit	Acute	Chronic	Rslt	Val qual	Det Limit	Acute	Chronic	Rslt	Val qual	Det Limit
VOC	Chloromethane	74-87-3	ug/gOC	NC	NC		U	12	NC	NC		U	16	NC	NC		UJ	67
VOC	Vinyl Chloride	75-01-4	ug/gOC	NC	NC		U	12	NC	NC		U	16	NC	NC		UJ	67
VOC	Acetone	67-64-1	ug/gOC	NC	NC		UJ	12	NC	NC		UJ	74	NC	NC		UJ	320
VOC	Carbon Disulfide	75-15-0	ug/gOC	NC	NC		U	12	NC	NC		U	16	NC	NC		U	67
VOC	2-Butanone	78-93-3	ug/gOC	NC	NC		U	12	NC	NC	0.55			NC	NC	0.46		
VOC	Trichloroethene	79-01-6	ug/gOC	NC	NC		U	12	NC	NC		U	16	NC	NC		UJ	67
VOC	4-Methyl-2-Pentanone	108-10-1	ug/gOC	NC	NC		U	12	NC	NC		U	16	NC	NC		UJ	67
VOC	2-Hexanone	591-78-6	ug/gOC	NC	NC		UJ	12	NC	NC		UJ	16	NC	NC		UJ	67
VOC	Tetrachlorothene	127-18-4	ug/gOC	NC	NC		U	12	NC	NC		U	16	NC	NC		UJ	67
VOC	Toluene	108-88-3	ug/gOC	235	49		U	12	235	49		U	16	235	49		UJ	67
	Total Organic Carbon					2590					38100					>160000	J	

Note:

	Detected concentration exceeds the detected background concentration
NC	No Criteria

Table 5-5
Magna Metals Site
Sediment Screening Assessment
VOC Results

Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name: SD-2 Sample Date: 5/12/1997 Acute	Chronic	Rslt	Val qual	Det Limit	SD-3 5/12/1997 Acute	Chronic	Rslt	Val qual	Det Limit	SD-4 5/14/1997 Acute	Chronic	Rslt	Val qual	Det Limit
VOC	Chloromethane	74-87-3	ug/gOC	NC	NC		UJ	34	NC	NC		R		NC	NC		UJ	40
VOC	Vinyl Chloride	75-01-4	ug/gOC	NC	NC		UJ	34	NC	NC		R		NC	NC		UJ	40
VOC	Acetone	67-64-1	ug/gOC	NC	NC		UJ	80	NC	NC		R		NC	NC	2.13	JB	
VOC	Carbon Disulfide	75-15-0	ug/gOC	NC	NC		UJ	34	NC	NC		R		NC	NC	0.075	J	
VOC	2-Butanone	78-93-3	ug/gOC	NC	NC	0.12	J		NC	NC		R		NC	NC	0.59	J	
VOC	Trichloroethene	79-01-6	ug/gOC	NC	NC		UJ	34	NC	NC		R		NC	NC		UJ	40
VOC	4-Methyl-2-Pentanone	108-10-1	ug/gOC	NC	NC	0.13	J		NC	NC		R		NC	NC		UJ	40
VOC	2-Hexanone	591-78-6	ug/gOC	NC	NC	0.19	J		NC	NC		R		NC	NC		UJ	40
VOC	Tetrachlorothene	127-18-4	ug/gOC	NC	NC		UJ	34	NC	NC		R		NC	NC		UJ	40
VOC	Toluene	108-88-3	ug/gOC	235	49		UJ	34	235	49		R		235	49		UJ	40
	Total Organic Carbon					93200					169000	J				>160000	J	

Table 5-5
Magna Metals Site
Sediment Screening Assessment
VOC Results

Furnace Brook

		Sample Name:		SD-5					SD-6					SD-7				
		Sample Date:		5/12/1997					5/12/1997					5/12/1997				
Chemical Group	Analyte	Cas No.	Units	Acute	Chronic	Rslt	Val qual	Det Limit	Acute	Chronic	Rslt	Val qual	Det Limit	Acute	Chronic	Rslt	Val qual	Det Limit
VOC	Chloromethane	74-87-3	ug/gOC	NC	NC		UJ	33	NC	NC		UJ	33	NC	NC	0.083	J	
VOC	Vinyl Chloride	75-01-4	ug/gOC	NC	NC		UJ	33	NC	NC		UJ	33	NC	NC		UJ	26
VOC	Acetone	67-64-1	ug/gOC	NC	NC	8.67	JB		NC	NC		UJ	88	NC	NC		UJ	96
VOC	Carbon Disulfide	75-15-0	ug/gOC	NC	NC		UJ	33	NC	NC		UJ	33	NC	NC		UJ	26
VOC	2-Butanone	78-93-3	ug/gOC	NC	NC	2.93	J		NC	NC	0.2	J		NC	NC	0.46	J	
VOC	Trichloroethene	79-01-6	ug/gOC	NC	NC	0.23	J		NC	NC		UJ	33	NC	NC		UJ	26
VOC	4-Methyl-2-Pentanone	108-10-1	ug/gOC	NC	NC		UJ	33	NC	NC		UJ	33	NC	NC		UJ	26
VOC	2-Hexanone	591-78-6	ug/gOC	NC	NC		UJ	33	NC	NC		UJ	33	NC	NC		UJ	26
VOC	Tetrachlorothene	127-18-4	ug/gOC	NC	NC		UJ	33	NC	NC		UJ	33	NC	NC		UJ	26
VOC	Toluene	108-88-3	ug/gOC	235	49		UJ	33	235	49		UJ	33	235	49	0.14	J	
	Total Organic Carbon					88800	J				110000	J				84800	J	

Table 5-5
Magna Metals Site
Sediment Screening Assessment
VOC Results

Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name: SD-8 Sample Date: 5/12/1997 Acute	Chronic	Rslt	Val qual	Det Limit	SD-9 5/12/1997 Acute	Chronic	Rslt	Val qual	Det Limit	SD-10 5/12/1997 Acute	Chronic	Rslt	Val qual	Det Limit	SD-11 5/12/1997 Acute	Chronic	Rslt	Val qual	Det Limit
VOC	Chloromethane	74-87-3	ug/gOC	NC	NC		UJ	21	NC	NC		UJ	53	NC	NC		U	12	NC	NC		U	12
VOC	Vinyl Chloride	75-01-4	ug/gOC	NC	NC		UJ	21	NC	NC	0.16			NC	NC		U	12	NC	NC		U	12
VOC	Acetone	67-64-1	ug/gOC	NC	NC	4.63	JB		NC	NC	3.31	JB		NC	NC		UJ	14	NC	NC		UJ	12
VOC	Carbon Disulfide	75-15-0	ug/gOC	NC	NC		UJ	21	NC	NC		UJ	53	NC	NC		U	12	NC	NC		U	12
VOC	2-Butanone	78-93-3	ug/gOC	NC	NC	1.11	J		NC	NC	1	J		NC	NC		U	12	NC	NC		U	12
VOC	Trichloroethene	79-01-6	ug/gOC	NC	NC		UJ	21	NC	NC	0.14	J		NC	NC		U	12	NC	NC		U	12
VOC	4-Methyl-2-Pentanone	108-10-1	ug/gOC	NC	NC		UJ	21	NC	NC		UJ	53	NC	NC	1.99	J		NC	NC		U	12
VOC	2-Hexanone	591-78-6	ug/gOC	NC	NC		UJ	21	NC	NC		UJ	53	NC	NC	3.98	J		NC	NC		UJ	12
VOC	Tetrachlorothene	127-18-4	ug/gOC	NC	NC		UJ	21	NC	NC		UJ	53	NC	NC	1.59	J		NC	NC		U	12
VOC	Toluene	108-88-3	ug/gOC	235	49		UJ	21	235	49		UJ	53	235	49		U	12	235	49		U	12
	Total Organic Carbon			32400					160000 J					2510					8300				

Table 5-6
Magna Metals Site
Sediment Screening Assessment
SVOC Results

Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name: SD-12 (background) Sample Date: 5/13/97 Acute	Chronic	Rslt	Val qual	Det Limit	SD-1 5/12/97 Acute	Chronic	Rslt	Val qual	Det Limit	SD-1-DUP 5/12/97 Acute	Chronic	Rslt	Val qual	Det Limit
SVOC	Hexachloroethane	67-72-1	ug/gOC	NC	NC		U	400	NC	NC		U	530	NC	NC		UJ	2100
SVOC	Naphthalene	91-20-3	ug/gOC	258	30		U	400	258	30	1.10	J		258	30		UJ	2100
SVOC	4-Chloro-3-methylphenol	59-50-7	ug/gOC	NC	0.6		U	400	NC	0.6		U	530	NC	0.6		UJ	2100
SVOC	2-Methylnaphthalene	91-57-6	ug/gOC	340	34		U	400	340	34	1.00	J		340	34		UJ	2100
SVOC	Dimethylphthalate	131-11-3	ug/gOC	NC	NC		U	400	NC	NC		U	530	NC	NC		UJ	2100
SVOC	Acenaphthylene	208-96-8	ug/gOC	NC	NC		U	400	NC	NC	4.72	J		NC	NC		UJ	2100
SVOC	Acenaphthene	83-32-9	ug/gOC	NC	140		U	400	NC	140	3.67	J		NC	140		UJ	2100
SVOC	2,4-Dinitrophenol	51-28-5	ug/gOC	NC	0.5		U	1000	NC	0.5		UJ	1300	NC	0.5		UJ	5200
SVOC	Dibenzofuran	132-64-9	ug/gOC	NC	NC		U	400	NC	NC	5.77	J		NC	NC		UJ	2100
SVOC	2,4-Dinitrotoluene	121-14-2	ug/gOC	NC	NC		U	400	NC	NC		U	530	NC	NC		UJ	2100
SVOC	Fluorene	86-73-7	ug/gOC	73	8		U	400	73	8	**14.17**			73	8		UJ	2100
SVOC	Phenanthrene	85-01-8	ug/gOC	NC	120		U	400	NC	120	70.87			NC	120		UJ	2100
SVOC	Anthracene	120-12-7	ug/gOC	986	107		U	400	986	107	18.37			986	107		UJ	2100
SVOC	Carbazole	86-74-8	ug/gOC	NC	NC		U	400	NC	NC	8.92	J		NC	NC		UJ	2100
SVOC	Di-n-butylphthalate	84-74-2	ug/gOC	NC	NC		U	400	NC	NC		U	530	NC	NC	1.06	J	
SVOC	Fluoranthene	206-44-0	ug/gOC	NC	1020		U	400	NC	1020	62.99			NC	1020	1.69	J	
SVOC	Pyrene	129-00-0	ug/gOC	8775	961		U	400	8775	961	60.37			8775	961	1.38	J	
SVOC	Butylbenzylphthalate	85-68-7	ug/gOC	NC	NC		U	400	NC	NC		U	530	NC	NC		UJ	2100
SVOC	Benzo(a)anthracene	56-55-3	ug/gOC	94	12		U	400	94	12	**31.50**			94	12		UJ	2100
SVOC	Chrysene	218-01-9	ug/gOC	NC	NC		U	400	NC	NC	34.12			NC	NC		UJ	2100
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	ug/gOC	NC	199.5		U	400	NC	199.5		U	530	NC	199.5	1.88	J	
SVOC	Benzo(b)fluoranthene	205-99-2	ug/gOC	NC	NC		UJ	400	NC	NC	22.05			NC	NC		UJ	2100
SVOC	Benzo(k)fluoranthene	207-08-9	ug/gOC	NC	NC		U	400	NC	NC	24.93			NC	NC		UJ	2100
SVOC	Benzo(a)pyrene	50-32-8	ug/gOC	NC	NC		U	400	NC	NC	26.25			NC	NC	1.44	J	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	ug/gOC	NC	NC		U	400	NC	NC	2.89	J		NC	NC		UJ	2100
SVOC	Benzo(g,h,i)perylene	191-24-2	ug/gOC	NC	NC		U	400	NC	NC	1.44	J		NC	NC		UJ	2100

Note:
Sediment screening values from NYDEC Technical Guidance of Screening Contaminated Sediment (1999) used unless otherwise noted.

Shaded — Detected concentration exceeds acute screening concentration
BOLD — Detected concentration exceeds chronic screening concentration
Detected concentration exceeds the detected background concentration
NC — No Criteria

Table 5-6
Magna Metals Site
Sediment Screening Assessment
SVOC Results

Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name: SD-2 Sample Date: 5/12/97 Acute	Chronic	Rslt	Val qual	Det Limit	SD-3 5/12/97 Acute	Chronic	Rslt	Val qual	Det Limit	SD-4 5/14/97 Acute	Chronic	Rslt	Val qual	Det Limit
SVOC	Hexachloroethane	67-72-1	ug/gOC	NC	NC		U	470	NC	NC		UJ	1000	NC	NC		UJ	1800
SVOC	Naphthalene	91-20-3	ug/gOC	258	30		U	470	258	30		UJ	1000	258	30		UJ	1800
SVOC	4-Chloro-3-methylphenol	59-50-7	ug/gOC	NC	0.6		U	470	NC	0.6	0.947	J		NC	0.6		UJ	1800
SVOC	2-Methylnaphthalene	91-57-6	ug/gOC	340	34		U	470	340	34		UJ	1000	340	34		UJ	1800
SVOC	Dimethylphthalate	131-11-3	ug/gOC	NC	NC		U	470	NC	NC		UJ	1000	NC	NC		UJ	1800
SVOC	Acenaphthylene	208-96-8	ug/gOC	NC	NC		U	470	NC	NC		UJ	1000	NC	NC		UJ	1800
SVOC	Acenaphthene	83-32-9	ug/gOC	NC	140		U	470	NC	140	0.521	J		NC	140		UJ	1800
SVOC	2,4-Dinitrophenol	51-28-5	ug/gOC	NC	0.5		UJ	1200	NC	0.5		UJ	2600	NC	0.5		UJ	4600
SVOC	Dibenzofuran	132-64-9	ug/gOC	NC	NC		U	470	NC	NC		UJ	1000	NC	NC		UJ	1800
SVOC	2,4-Dinitrotoluene	121-14-2	ug/gOC	NC	NC		U	470	NC	NC		UJ	1000	NC	NC		UJ	1800
SVOC	Fluorene	86-73-7	ug/gOC	73	8		U	470	73	8		UJ	1000	73	8		UJ	1800
SVOC	Phenanthrene	85-01-8	ug/gOC	NC	120		U	470	NC	120		UJ	1000	NC	120		UJ	1800
SVOC	Anthracene	120-12-7	ug/gOC	986	107		U	470	986	107		UJ	1000	986	107		UJ	1800
SVOC	Carbazole	86-74-8	ug/gOC	NC	NC		U	470	NC	NC		UJ	1000	NC	NC		UJ	1800
SVOC	Di-n-butylphthalate	84-74-2	ug/gOC	NC	NC		U	470	NC	NC		UJ	1000	NC	NC	0.53	J	
SVOC	Fluoranthene	206-44-0	ug/gOC	NC	1020		U	470	NC	1020		UJ	59	NC	1020	1.75	J	
SVOC	Pyrene	129-00-0	ug/gOC	8775	961		U	470	8775	961	1.065	J		8775	961	1.38	J	
SVOC	Butylbenzylphthalate	85-68-7	ug/gOC	NC	NC		U	470	NC	NC	5.917	J		NC	NC		UJ	1800
SVOC	Benzo(a)anthracene	56-55-3	ug/gOC	94	12		U	470	94	12		UJ	1000	94	12		UJ	1800
SVOC	Chrysene	218-01-9	ug/gOC	NC	NC		U	470	NC	NC		UJ	1000	NC	NC		UJ	1800
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	ug/gOC	NC	199.5		U	470	NC	199.5		UJ	1000	NC	199.5	1.31	J	
SVOC	Benzo(b)fluoranthene	205-99-2	ug/gOC	NC	NC		U	470	NC	NC		UJ	1000	NC	NC	0.94	J	
SVOC	Benzo(k)fluoranthene	207-08-9	ug/gOC	NC	NC		U	470	NC	NC		UJ	1000	NC	NC	0.94	J	
SVOC	Benzo(a)pyrene	50-32-8	ug/gOC	NC	NC	0.62	J		NC	NC		UJ	1000	NC	NC	0.75	J	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	ug/gOC	NC	NC		U	470	NC	NC		UJ	1000	NC	NC		UJ	1800
SVOC	Benzo(g,h,i)perylene	191-24-2	ug/gOC	NC	NC		U	470	NC	NC		UJ	1000	NC	NC		UJ	1800

Note:
Sediment screening values from NYDEC Technical Guidance of Screening Contaminated Sediment (1999) used unless otherwise noted.

Shaded — Detected concentration exceeds acute screening concentration
BOLD — Detected concentration exceeds chronic screening concentration
Boxed — Detected concentration exceeds the detected background concentration
NC — No Criteria

Table 5-6
Magna Metals Site
Sediment Screening Assessment
SVOC Results

Furnace Brook

		Sample Name:		SD-5					SD-6					SD-7				
		Sample Date:		5/14/97					5/14/97					5/14/97				
Chemical Group	Analyte	Cas No.	Units	Acute	Chronic	Rslt	Val qual	Det Limit	Acute	Chronic	Rslt	Val qual	Det Limit	Acute	Chronic	Rslt	Val qual	Det Limit
SVOC	Hexachloroethane	67-72-1	ug/gOC	NC	NC		UJ	1300	NC	NC		UJ	1100	NC	NC		UJ	1000
SVOC	Naphthalene	91-20-3	ug/gOC	258	30		UJ	1300	258	30		UJ	1100	258	30		UJ	1000
SVOC	4-Chloro-3-methylphenol	59-50-7	ug/gOC	NC	0.6		UJ	1300	NC	0.6		UJ	1100	NC	0.6		UJ	1000
SVOC	2-Methylnaphthalene	91-57-6	ug/gOC	340	34		UJ	1300	340	34		UJ	1100	340	34		UJ	1000
SVOC	Dimethylphthalate	131-11-3	ug/gOC	NC	NC		UJ	1300	NC	NC		UJ	1100	NC	NC		UJ	1000
SVOC	Acenaphthylene	208-96-8	ug/gOC	NC	NC		UJ	1300	NC	NC		UJ	1100	NC	NC		UJ	1000
SVOC	Acenaphthene	83-32-9	ug/gOC	NC	140		UJ	1300	NC	140		UJ	1100	NC	140		UJ	1000
SVOC	2,4-Dinitrophenol	51-28-5	ug/gOC	NC	0.5		UJ	3200	NC	0.5		UJ	2900	NC	0.5		UJ	2600
SVOC	Dibenzofuran	132-64-9	ug/gOC	NC	NC		UJ	1300	NC	NC		UJ	1100	NC	NC		UJ	1000
SVOC	2,4-Dinitrotoluene	121-14-2	ug/gOC	NC	NC		UJ	1300	NC	NC		UJ	1100	NC	NC		UJ	1000
SVOC	Fluorene	86-73-7	ug/gOC	73	8		UJ	1300	73	8		UJ	1100	73	8		UJ	1000
SVOC	Phenanthrene	85-01-8	ug/gOC	NC	120	3.04	J		NC	120	0.91	J		NC	120	4.13	J	
SVOC	Anthracene	120-12-7	ug/gOC	986	107	0.39	J		986	107		UJ	1100	986	107	0.53	J	
SVOC	Carbazole	86-74-8	ug/gOC	NC	NC		UJ	1300	NC	NC		UJ	1100	NC	NC		UJ	1000
SVOC	Di-n-butylphthalate	84-74-2	ug/gOC	NC	NC	1.04	J		NC	NC	0.88	J		NC	NC		UJ	1000
SVOC	Fluoranthene	206-44-0	ug/gOC	NC	1020	5.52	J		NC	1020	2.09	J		NC	1020	7.67	J	
SVOC	Pyrene	129-00-0	ug/gOC	8775	961	4.39	J		8775	961	1.82	J		8775	961	8.37	J	
SVOC	Butylbenzylphthalate	85-68-7	ug/gOC	NC	NC		UJ	1300	NC	NC		UJ	1100	NC	NC		UJ	1000
SVOC	Benzo(a)anthracene	56-55-3	ug/gOC	94	12	2.03	J		94	12	0.86	J		94	12	3.54	J	
SVOC	Chrysene	218-01-9	ug/gOC	NC	NC	3.38	J		NC	NC	1.36	J		NC	NC	4.83	J	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	ug/gOC	NC	199.5	2.82	J		NC	199.5	1.27	J		NC	199.5		UJ	1100
SVOC	Benzo(b)fluoranthene	205-99-2	ug/gOC	NC	NC	2.93	J		NC	NC	1.18	J		NC	NC	4.25	J	
SVOC	Benzo(k)fluoranthene	207-08-9	ug/gOC	NC	NC	2.36	J		NC	NC	1.09	J		NC	NC	3.77	J	
SVOC	Benzo(a)pyrene	50-32-8	ug/gOC	NC	NC	2.03	J		NC	NC		UJ	1100	NC	NC	3.54	J	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	ug/gOC	NC	NC		UJ	1300	NC	NC		UJ	1100	NC	NC	3.42	J	
SVOC	Benzo(g,h,i)perylene	191-24-2	ug/gOC	NC	NC		UJ	1300	NC	NC		UJ	1100	NC	NC	2.95	J	

Note:
Sediment screening values from NYDEC Technical Guidance of Screening Contaminated Sediment (1999) used unless otherwise noted.

Shaded	Detected concentration exceeds acute screening concentration
BOLD	Detected concentration exceeds chronic screening concentration
	Detected concentration exceeds the detected background concentration
NC	No Criteria

Table 5-6
Magna Metals Site
Sediment Screening Assessment
SVOC Results

Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name: SD-8 Sample Date: 5/12/97					Sample Name: SD-9 Sample Date: 5/12/97					Sample Name: SD-10 Sample Date: 5/12/97					Sample Name: SD-11 Sample Date: 5/12/97				
				Acute	Chronic	Rslt	Val qual	Det Limit	Acute	Chronic	Rslt	Val qual	Det Limit	Acute	Chronic	Rslt	Val qual	Det Limit	Acute	Chronic	Rslt	Val qual	Det Limit
SVOC	Hexachloroethane	67-72-1	ug/gOC	NC	NC		UJ	690	NC	NC		UJ	1600	NC	NC	382.47			NC	NC		U	380
SVOC	Naphthalene	91-20-3	ug/gOC	258	30		UJ	690	258	30		UJ	1600	258	30		U	410	258	30		U	380
SVOC	4-Chloro-3-methylphenol	59-50-7	ug/gOC	NC	0.6		UJ	690	NC	0.6		UJ	1600	NC	0.6		U	410	NC	0.6		U	380
SVOC	2-Methylnaphthalene	91-57-6	ug/gOC	340	34		UJ	690	340	34		UJ	1600	340	34		U	410	340	34		U	380
SVOC	Dimethylphthalate	131-11-3	ug/gOC	NC	NC		UJ	690	NC	NC		UJ	1600	NC	NC		U	410	NC	NC		U	380
SVOC	Acenaphthylene	208-96-8	ug/gOC	NC	NC	0.59	J		NC	NC		UJ	1600	NC	NC		U	410	NC	NC		U	380
SVOC	Acenaphthene	83-32-9	ug/gOC	NC	140	1.64	J		NC	140		UJ	1600	NC	140		U	410	NC	140		U	380
SVOC	2,4-Dinitrophenol	51-28-5	ug/gOC	NC	0.5		UJ	1700	NC	0.5		UJ	4200	NC	0.5		UJ	1000	NC	0.5		UJ	950
SVOC	Dibenzofuran	132-64-9	ug/gOC	NC	NC	0.90	J		NC	NC		UJ	1600	NC	NC		U	410	NC	NC		U	380
SVOC	2,4-Dinitrotoluene	121-14-2	ug/gOC	NC	NC		UJ	690	NC	NC		UJ	1600	NC	NC		U	410	NC	NC		U	380
SVOC	Fluorene	86-73-7	ug/gOC	73	8	2.28	J		73	8		UJ	1600	73	8		U	410	73	8		U	380
SVOC	Phenanthrene	85-01-8	ug/gOC	NC	120	29.32	J		NC	120	1.56	J		NC	120	34.66	J		NC	120	4.217	J	
SVOC	Anthracene	120-12-7	ug/gOC	986	107	4.01	J		986	107	0.23	J		986	107	6.77	J		986	107	0.723	J	
SVOC	Carbazole	86-74-8	ug/gOC	NC	NC	3.70	J		NC	NC		UJ	1600	NC	NC		U	410	NC	NC		U	380
SVOC	Di-n-butylphthalate	84-74-2	ug/gOC	NC	NC		UJ	690	NC	NC		UJ	1600	NC	NC		U	410	NC	NC		U	380
SVOC	Fluoranthene	206-44-0	ug/gOC	NC	1020	43.21	J		NC	1020	3.69	J		NC	1020	55.78	J		NC	1020	8.554	J	
SVOC	Pyrene	129-00-0	ug/gOC	8775	961	46.30	J		8775	961	4.00	J		8775	961	55.78	J		8775	961	8.675	J	
SVOC	Butylbenzylphthalate	85-68-7	ug/gOC	NC	NC		UJ	690	NC	NC		UJ	1600	NC	NC		U	410	NC	NC		U	380
SVOC	Benzo(a)anthracene	56-55-3	ug/gOC	94	12	21.91	J		94	12	1.63	J		94	12	24.70	J		94	12	3.735	J	
SVOC	Chrysene	218-01-9	ug/gOC	NC	NC	30.86	J		NC	NC	2.31	J		NC	NC	32.27	J		NC	NC	5.542	J	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	ug/gOC	NC	199.5		UJ	690	NC	199.5		UJ	1600	NC	199.5		U	410	NC	199.5		U	380
SVOC	Benzo(b)fluoranthene	205-99-2	ug/gOC	NC	NC	25.31	J		NC	NC	2.00	J		NC	NC	23.90	J		NC	NC	3.855	J	
SVOC	Benzo(k)fluoranthene	207-08-9	ug/gOC	NC	NC	24.07	J		NC	NC	1.88	J		NC	NC	25.90	J		NC	NC	4.578	J	
SVOC	Benzo(a)pyrene	50-32-8	ug/gOC	NC	NC	25.00	J		NC	NC	2.00	J		NC	NC	23.90	J		NC	NC	3.976	J	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	ug/gOC	NC	NC	2.69	J		NC	NC	0.94	J		NC	NC	16.33	J		NC	NC	2.41	J	
SVOC	Benzo(g,h,i)perylene	191-24-2	ug/gOC	NC	NC	1.57	J		NC	NC	0.75	J		NC	NC	13.55	J		NC	NC	2.169	J	

Note:
Sediment screening values from NYDEC Technical Guidance of Screening Contaminated Sediment (1999) used unless otherwise noted.

Shaded — Detected concentration exceeds acute screening concentration
BOLD — Detected concentration exceeds chronic screening concentration
Detected concentration exceeds the detected background concentration
NC — No Criteria

Table 5-7
Magna Metals Site
Sediment Screening Assessment
Pesticide and PCBs Results

Furnace Brook

		Sample Name:		SD-1-DUP					SD-4					SD-10				
		Sample Date:		05/12/1997					05/14/1997					05/12/1997				
Chemical Group	Analyte	Cas No.	Units	Acute	Chronic	Rslt	Val qual	Det Limit	Acute	Chronic	Rslt	Val qual	Det Limit	Acute	Chronic	Rslt	Val qual	Det Limit
PEST	alpha-Chlordane	5103-71-9	ug/gOC	1.4	0.03		UJ	11	1.4	0.03		UJ	6.8	1.4	0.03	**1.39**	JP	
PEST	gamma-Chlordane	5103-74-2	ug/gOC	1.4	0.03		UJ	11	1.4	0.03		UJ	6.8	1.4	0.03	**1.35**		

Note
Sediment screening values from NYDEC Technical Guidance of Screening Contaminated Sediment (1999) used unless otherwise noted.
BOLD Detected concentration exceeds chronic screening concentration

Table 5-8
Magna Metals Site
Sediment Screening Assessment Metals Results

Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name: SD-12 (Background) Sample Date: 05/14/1997 Acute	Chronic	Rslt	Val qual	Det limit	SD-1 05/12/1997 Acute	Chronic	Rslt	Val qual	Det limit	SD-1-DUP 05/12/1997 Acute	Chronic	Rslt	Val qual	Det limit
METAL	Aluminum	7429-90-5	mg/kg	--	--	2920			--	--	11700	J		--	--	10100	J	
METAL	Antimony	7440-36-0	mg/kg	25	2		UJ	0.68	25	2	1.1	UJ	1.1	25	2		UJ	3.1
METAL	Arsenic	7440-38-2	mg/kg	33	6		U	0.68	33	6	3.2	JB		33	6	**10.6**	J	
METAL	Barium	7440-39-3	mg/kg	--	--	33.8	B		--	--	132	J		--	--	289	J	
METAL	Beryllium		mg/kg	--	--		U	0.23	--	--	0.37	UJ	0.37	--	--		UJ	1
METAL	Cadmium	7440-43-9	mg/kg	9	0.6		U	0.23	9	0.6	**1**	JB		9	0.6	**1.3**	JB	
METAL	Calcium		mg/kg	--	--	882	B		--	--	7560	J		--	--	11500	J	
METAL	Chromium	7440-47-3	mg/kg	110	26		R		110	26	**78.1**	J		110	26		R	
METAL	Cobalt	7440-48-4	mg/kg	--	--	4.6	B		--	--	35.6	J		--	--	31.9	JB	
METAL	Copper	7440-50-8	mg/kg	110	16	4.4	B		110	16	[redacted]	J		110	16	[redacted]	J	
METAL	Iron	7439-89-6	mg/kg	40000	20000	7320			40000	20000	**34200**	J		40000	20000	**21100**	J	
METAL	Lead	7439-92-1	mg/kg	110	31	3			110	31	16.6	J		110	31	29.2	J	
METAL	Magnesium	7439-95-4	mg/kg	--	--	2130			--	--	23400	J		--	--	10700	J	
METAL	Manganese	7439-96-5	mg/kg	1100	460	87			1100	460		R		1100	460	154	J	
METAL	Nickel	7440-02-0	mg/kg	50	16	**17.3**			50	16	[redacted]	J		50	16	[redacted]	J	
METAL	Potassium		mg/kg	--	--	207	B		--	--	1240	JB		--	--	906	JB	
METAL	Selenium	7782-49-2	mg/kg	--	--		U	0.68	--	--	3.2	J		--	--	14.6	J	
METAL	Silver		mg/kg	2.2	1	0.26	B		2.2	1	0.37	UJ	0.37	2.2	1	**1.4**	JB	
METAL	Sodium		mg/kg	--	--	59.8	B		--	--	228	JB		--	--	384	JB	
METAL	Vanadium		mg/kg	--	--	5.8	B		--	--	23.5	J		--	--	44.1	JB	
METAL	Zinc	7440-66-6	mg/kg	270	120	29.3	J		270	120	**142**	J		270	120	**180**	J	
METAL	Cyanide		mg/kg	--	--		U	0.59	--	--	0.99	UJ	0.99	--	--	45.3	J	

Note:
Sediment screening values from NYDEC Technical Guidance of Screening Contaminated Sediment (1999) used unless otherwise noted.

* - Background Samples for the samples taken from Furnance Brook
Shaded Detected concentration exceeds acute screening concentration
BOLD Detected concentration exceeds chronic screening concentration
Detected concentration exceeds the detected background concentration
NC No Criteria

Table 5-8
Magna Metals Site
Sediment Screening Assessment Metals Results

Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name: / Sample Date:	Acute	Chronic	SD-2 05/12/1997 Rslt	Val qual	Det limit	Acute	Chronic	SD-3 05/12/1997 Rslt	Val qual	Det limit	Acute	Chronic	SD-4 05/14/1997 Rslt	Val qual	Det limit
METAL	Aluminum	7429-90-5	mg/kg		--	--	9900			--	--	7770	J		--	--	10600	J	
METAL	Antimony	7440-36-0	mg/kg		25	2		U	1	25	2		UJ	1.6	25	2		UJ	2.6
METAL	Arsenic	7440-38-2	mg/kg		33	6	3	B		33	6	4.4	JB		33	6	9.1	J	
METAL	Barium	7440-39-3	mg/kg		--	--	135			--	--	261	J		--	--	256	J	
METAL	Beryllium		mg/kg		--	--		U	0.35	--	--		UJ	0.53	--	--		UJ	0.86
METAL	Cadmium	7440-43-9	mg/kg		9	0.6	0.78	B		9	0.6	1.1	JB		9	0.6	1	JB	
METAL	Calcium		mg/kg		--	--	4600			--	--	4490	J		--	--	9530	J	
METAL	Chromium	7440-47-3	mg/kg		110	26	43			110	26	106	J		110	26		R	
METAL	Cobalt	7440-48-4	mg/kg		--	--	14.2	B		--	--	37.3	J		--	--	24.6	JB	
METAL	Copper	7440-50-8	mg/kg		110	16	162			110	16	398	J		110	16	603	J	
METAL	Iron	7439-89-6	mg/kg		40000	20000	2160			40000	20000	27000	J		40000	20000	19500	J	
METAL	Lead	7439-92-1	mg/kg		110	31	19.4			110	31	15.4	J		110	31	29.3	J	
METAL	Magnesium	7439-95-4	mg/kg		--	--	6160			--	--	21800	J		--	--	8670	J	
METAL	Manganese	7439-96-5	mg/kg		1100	460		R		1100	460		R		1100	460	167	J	
METAL	Nickel	7440-02-0	mg/kg		50	16	160			50	16	312	J		50	16	234	J	
METAL	Potassium		mg/kg		--	--	976	B		--	--	668	JB		--	--	894	JB	
METAL	Selenium	7782-49-2	mg/kg		--	--	8.4			--	--	4.8	J		--	--	14	J	
METAL	Silver		mg/kg		2.2	1		U	0.35	2.2	1	0.58	JB		2.2	1	1.3	JB	
METAL	Sodium		mg/kg		--	--	193	B		--	--	324	JB		--	--	343	JB	
METAL	Vanadium		mg/kg		--	--	25.4			--	--	26.9	J		--	--	39.8	JB	
METAL	Zinc	7440-66-6	mg/kg		270	120	155			270	120	133	J		270	120	209	J	
METAL	Cyanide		mg/kg		--	--		U	0.98	--	--	3.33	J		--	--		UJ	2.66

Note:
Sediment screening values from NYDEC Technical Guidance of Screening Contaminated Sediment (1999) used unless otherwise noted.

* - Background Samples for the samples taken from Furnance Brook
Shaded — Detected concentration exceeds acute screening concentration
BOLD — Detected concentration exceeds chronic screening concentration
Detected concentration exceeds the detected background concentration
NC — No Criteria

Table 5-8
Magna Metals Site
Sediment Screening Assessment Metals Results

Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name: / Sample Date:	SD-5 05/14/1997					SD-6 05/14/1997					SD-7 05/14/1997				
					Acute	Chronic	Rslt	Val qual	Det limit	Acute	Chronic	Rslt	Val qual	Det limit	Acute	Chronic	Rslt	Val qual	Det limit
METAL	Aluminum	7429-90-5	mg/kg		--	--	19800	J		--	--	17800	J		--	--	12700	J	
METAL	Antimony	7440-36-0	mg/kg		25	2		UJ	1.5	25	2		UJ	1.7	25	2		UJ	1.2
METAL	Arsenic	7440-38-2	mg/kg		33	6	7	J		33	6	**19.3**	J		33	6	**16.9**	J	
METAL	Barium	7440-39-3	mg/kg		--	--	364	J		--	--	460	J		--	--	142	J	
METAL	Beryllium		mg/kg		--	--	0.62	JB		--	--	0.6	JB		--	--		UJ	0.4
METAL	Cadmium	7440-43-9	mg/kg		9	0.6	**1.1**	JB		9	0.6	**1.4**	JB		9	0.6	**1**	JB	
METAL	Calcium		mg/kg		--	--	7760	J		--	--	13000	J		--	--	4020	J	
METAL	Chromium	7440-47-3	mg/kg		110	26		R		110	26		R		110	26		R	
METAL	Cobalt	7440-48-4	mg/kg		--	--	22.2	JB		--	--	24.7	JB		--	--	20.4	J	
METAL	Copper	7440-50-8	mg/kg		110	16	690	J		110	16	2510	J		110	16	2080	J	
METAL	Iron	7439-89-6	mg/kg		40000	20000	28000	J		40000	20000	20200	J		40000	20000	23600	J	
METAL	Lead	7439-92-1	mg/kg		110	31	46.2	J		110	31	48.2	J		110	31	62.9	J	
METAL	Magnesium	7439-95-4	mg/kg		--	--	7000	J		--	--	7830	J		--	--	7120	J	
METAL	Manganese	7439-96-5	mg/kg		1100	460	321	J		1100	460	841	J		1100	460	220	J	
METAL	Nickel	7440-02-0	mg/kg		50	16	238	J		50	16	835	J		50	16	494	J	
METAL	Potassium		mg/kg		--	--	1400	JB		--	--	906	JB		--	--	831	JB	
METAL	Selenium	7782-49-2	mg/kg		--	--	19.2	J		--	--	68.2	J		--	--	46	J	
METAL	Silver		mg/kg		2.2	1	0.66	JB		2.2	1	0.72	JB		2.2	1	0.66	JB	
METAL	Sodium		mg/kg		--	--	546	JB		--	--	586	JB		--	--	311	JB	
METAL	Vanadium		mg/kg		--	--	41.6	J		--	--	36.2	J		--	--	30.6	J	
METAL	Zinc	7440-66-6	mg/kg		270	120	801	J		270	120	938	J		270	120	1090	J	
METAL	Cyanide		mg/kg		--	--		UJ	1.54	--	--	52.4	J		--	--	519	J	

Note:
Sediment screening values from NYDEC Technical Guidance of Screening Contaminated Sediment (1999) used unless otherwise noted.

* - Background Samples for the samples taken from Furnance Brook
Shaded — Detected concentration exceeds acute screening concentration
BOLD — Detected concentration exceeds chronic screening concentration
Boxed — Detected concentration exceeds the detected background concentration
NC — No Criteria

Table 5-8
Magna Metals Site
Sediment Screening Assessment Metals Results

Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name: / Sample Date:	SD-8 05/12/1997					SD-9 05/12/1997					SD-10 05/12/1997					SD-11 05/12/1997				
					Acute	Chronic	Rslt	Val qual	Det limit	Acute	Chronic	Rslt	Val qual	Det limit	Acute	Chronic	Rslt	Val qual	Det limit	Acute	Chronic	Rslt	Val qual	Det limit
METAL	Aluminum	7429-90-5	mg/kg		--	--	9370			--	--	14900	J		--	--	3490			--	--	4970		
METAL	Antimony	7440-36-0	mg/kg		25	2		U	0.76	25	2		UJ	2.4	25	2		U	0.53	25	2		U	0.71
METAL	Arsenic	7440-38-2	mg/kg		33	6	4.7			33	6	5.8	BJ		33	6	1.1	B		33	6	1.2	B	
METAL	Barium	7440-39-3	mg/kg		--	--	91.6			--	--	604	J		--	--	32.6	B		--	--	52		
METAL	Beryllium		mg/kg		--	--	0.28	B		--	--		UJ	0.82	--	--		U	0.18	--	--		U	0.24
METAL	Cadmium	7440-43-9	mg/kg		9	0.6	**0.63**	B		9	0.6	**1.8**	BJ		9	0.6	0.31	B		9	0.6	0.37	B	
METAL	Calcium		mg/kg		--	--	2750			--	--	11200	J		--	--	3840			--	--	2590		
METAL	Chromium	7440-47-3	mg/kg		110	26	**34**			110	26	144	J		110	26	11.4			110	26	13.1		
METAL	Cobalt	7440-48-4	mg/kg		--	--	13			--	--	41.7	J		--	--	4.9	B		--	--	7.9	B	
METAL	Copper	7440-50-8	mg/kg		110	16	**46.2**			110	16	129	J		110	16	12.3			110	16	**17.2**		
METAL	Iron	7439-89-6	mg/kg		40000	20000	17900			40000	20000	38600	J		40000	20000	9820			40000	20000	12800		
METAL	Lead	7439-92-1	mg/kg		110	31	7.9			110	31	63.2	J		110	31	3.9			110	31	5		
METAL	Magnesium	7439-95-4	mg/kg		--	--	7080			--	--	9420	J		--	--	4060			--	--	3950		
METAL	Manganese	7439-96-5	mg/kg		1100	460		R		1100	460		R		1100	460		R		1100	460		R	
METAL	Nickel	7440-02-0	mg/kg		50	16	**45.6**			50	16	261	J		50	16	**26.9**			50	16	**36**		
METAL	Potassium		mg/kg		--	--	1880	J		--	--	1040	BJ		--	--	413	B		--	--	805	B	
METAL	Selenium	7782-49-2	mg/kg		--	--	2.7			--	--	9.6	J		--	--	0.61	B		--	--		U	0.71
METAL	Silver		mg/kg		2.2	1		U	0.25	2.2	1		UJ	0.82	2.2	1		U	0.18	2.2	1		U	0.24
METAL	Sodium		mg/kg		--	--	208	B		--	--	454	BJ		--	--	92.7	B		--	--	104	B	
METAL	Vanadium		mg/kg		--	--	32.8			--	--	49.5	J		--	--	8.1	B		--	--	14.1		
METAL	Zinc	7440-66-6	mg/kg		270	120	67.7			270	120	**226**	J		270	120	36.8			270	120	47.2		
METAL	Cyanide		mg/kg		--	--	1.43			--	--		UJ	2.37	--	--		U	0.54	--	--		U	0.57

Note:
Sediment screening values from NYDEC Technical Guidance of Screening Contaminated Sediment (1999) used unless otherwise noted.

* - Background Samples for the samples taken from Furnance Brook
Shaded — Detected concentration exceeds acute screening concentration
BOLD — Detected concentration exceeds chronic screening concentration
☐ — Detected concentration exceeds the detected background concentration
NC — No Criteria

Table 5-9
Magna Metals Site
Surface Soil Screening Assessment
SVOC Results

Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name: SS-04 (Background) Sample Date: 4/11/97 Sample Depth: 00"-12" Benchmark Screening Data	Regional Background Data	Rslt	Val qual	Sample Name: SS-05 (Background) Sample Date: 4/11/97 Sample Depth: 00"-12" Benchmark Screening Data	Regional Background Data	Rslt	Val qual	Sample Name: SS-01 Sample Date: 4/11/97 Sample Depth: 00"-12" Benchmark Screening Data	Regional Background Data	Rslt	Val qual
SVOC	2-Methylphenol	95-48-7	mg/kg	NC	NC		U	NC	NC	39	J	NC	NC		U
SVOC	Phenanthrene	85-01-8	mg/kg	NC	NC	21	J	NC	NC	55	J	NC	NC	28	J
SVOC	Anthracene	120-12-7	mg/kg	NC	NC		U	NC	NC		U	NC	NC		U
SVOC	Di-n-butylphthalate	84-74-2	mg/kg	200	NC		U	200	NC		U	200	NC	2530	JB
SVOC	Fluoranthene	206-44-0	mg/kg	NC	NC	27	J	NC	NC	97	J	NC	NC	49	J
SVOC	Pyrene	129-00-0	mg/kg	NC	NC	66	J	NC	NC	100	J	NC	NC	86	J
SVOC	Butylbenzylphthalate	85-68-7	mg/kg	NC	NC		U	NC	NC		U	NC	NC	370	J
SVOC	Benzo(a)anthracene	56-55-3	mg/kg	NC	NC	13	J	NC	NC	39	J	NC	NC		U
SVOC	Chrysene	218-01-9	mg/kg	NC	NC	19	J	NC	NC	62	J	NC	NC		U
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	mg/kg	NC	NC		U	NC	NC		U	NC	NC	4900	B
SVOC	Benzo(b)fluoranthene	205-99-2	mg/kg	NC	NC		U	NC	NC	49	J	NC	NC		U
SVOC	Benzo(k)fluoranthene	207-08-9	mg/kg	NC	NC		U	NC	NC	48	J	NC	NC		U
SVOC	Benzo(a)pyrene	50-32-8	mg/kg	NC	NC		U	NC	NC	29	J	NC	NC	97	J
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	mg/kg	NC	NC		U	NC	NC	41	J	NC	NC	81	J
SVOC	Benzo(g,h,i)perylene	191-24-2	mg/kg	NC	NC		U	NC	NC		U	NC	NC		U
SVOC	Semi-Volatile TICs			NC	NC	15990	JN	NC	NC	14090	JN	NC	NC	11260	JN

Shaded: Detected concentration exceeds benchmark screening concentration
Detected concentration exceeds the highest detected background concentration
NC No Criteria

Table 5-9
Magna Metals Site
Surface Soil Screening Assessment
SVOC Results

Furnace Brook

		Sample Name:		SS-01 (DUP)				SS-02				SS-03			
		Sample Date:		4/11/97						4/11/97				4/11/97	
		Sample Depth:		00"-12"					00"-12"				00"-12"		
Chemical Group	Analyte	Cas No.	Units	Benchmark Screening Data	Regional Background Data	Rslt	Val qual	Benchmark Screening Data	Regional Background Data	Rslt	Val qual	Benchmark Screening Data	Regional Background Data	Rslt	Val qual
SVOC	2-Methylphenol	95-48-7	mg/kg	NC	NC		U	NC	NC		U	NC	NC		U
SVOC	Phenanthrene	85-01-8	mg/kg	NC	NC	26	J	NC	NC	11	J	NC	NC	45	J
SVOC	Anthracene	120-12-7	mg/kg	NC	NC		U	NC	NC		U	NC	NC	8	J
SVOC	Di-n-butylphthalate	84-74-2	mg/kg	200	NC	610	JB	200	NC		U	200	NC		U
SVOC	Fluoranthene	206-44-0	mg/kg	NC	NC	45	J	NC	NC	19	J	NC	NC	57	J
SVOC	Pyrene	129-00-0	mg/kg	NC	NC	43	J	NC	NC	22	J	NC	NC	55	J
SVOC	Butylbenzylphthalate	85-68-7	mg/kg	NC	NC	360	J	NC	NC		U	NC	NC		U
SVOC	Benzo(a)anthracene	56-55-3	mg/kg	NC	NC		U	NC	NC		U	NC	NC	23	J
SVOC	Chrysene	218-01-9	mg/kg	NC	NC		U	NC	NC		U	NC	NC	28	J
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	mg/kg	NC	NC	4300	B	NC	NC	780	B	NC	NC		U
SVOC	Benzo(b)fluoranthene	205-99-2	mg/kg	NC	NC		U	NC	NC		U	NC	NC	21	J
SVOC	Benzo(k)fluoranthene	207-08-9	mg/kg	NC	NC		U	NC	NC		U	NC	NC	26	J
SVOC	Benzo(a)pyrene	50-32-8	mg/kg	NC	NC		U	NC	NC		U	NC	NC	20	J
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	mg/kg	NC	NC		U	NC	NC		U	NC	NC	22	J
SVOC	Benzo(g,h,i)perylene	191-24-2	mg/kg	NC	NC		U	NC	NC		U	NC	NC	46	J
SVOC	Semi-Volatile TICs			NC	NC	9860	JN	NC	NC	8550	JN	NC	NC	28330	JN

Table 5-10
Magna Metals Site
Surface Soil Assessment
Pesticide and PCB Results

Chemical Group	Analyte	Cas No.	Units	Sample Name: Sample Date: Sample Depth:	SS-04 (Background) 4/11/97 00"-12"			SS-05 (Background) 4/11/97 00"-12"			SS-01 4/11/97 00"-12"		
				Benchmark Screening Data	Regional Background Data	Rslt	Val qual	Benchmark Screening Data	Regional Background Data	Rslt	Val qual	Benchmark Screening Data	Regional Background Data	Rslt	Val qual
PEST	4,4'-DDE	72-55-9	mg/kg	NC	NC	8		NC	NC		U	NC	NC		U
PEST	4,4'-DDD	72-54-8	mg/kg	NC	NC		U	NC	NC		U	NC	NC	28	J
PEST	4,4'-DDT	50-29-3	mg/kg	NC	NC	8.9		NC	NC	4.3		NC	NC		U
PCB	Aroclor-1254	11097-69-1	mg/kg	40	NC		U	40	NC		U	200	NC	560	JB
PCB	Aroclor-1260	11096-82-5	mg/kg	40	NC		U	NC	NC		U	NC	NC	29	J

Shaded Detected concentration exceeds benchmark screening concentration
Detected concentration exceeds the highest detected background concentration
NC No Criteria

Table 5-10
Magna Metals Site
Surface Soil Assessment
Pesticide and PCB Results

Chemical Group	Analyte	Sample Name: Sample Date: Sample Depth: Cas No.	Units	SS-01 (DUP) 4/11/97 00"-12" Benchmark Screening Data	Regional Background Data	Rslt	Val qual	SS-02 Benchmark Screening Data	00"-12" Regional Background Data	4/11/97 Rslt	Val qual	SS-03 Benchmark Screening Data	00"-12" Regional Background Data	4/11/97 Rslt	Val qual
PEST	4,4'-DDE	72-55-9	mg/kg	NC	NC	10		NC	NC	6.5		NC	NC	5.3	
PEST	4,4'-DDD	72-54-8	mg/kg	NC	NC		U	NC	NC	7.1	JPN	NC	NC		U
PEST	4,4'-DDT	50-29-3	mg/kg	NC	NC	5	JP	NC	NC	6.2	JPN	NC	NC	6.2	
PCB	Aroclor-1254	11097-69-1	mg/kg	40	NC	[illegible]62	J	40	NC	[illegible]40	JP	40	NC		U
PCB	Aroclor-1260	11096-82-5	mg/kg	NC	NC	38	J	NC	NC	[illegible]6	JP	NC	NC		U

Shaded Detected concentration exceeds benchmark screening concentration
Detected concentration exceeds the highest detected background concentration
NC No Criteria

Table 5-11
Magna Metals Site
Surface Soil Assessment
Metals Results

Chemical Group	Analyte	Cas No.	Units	Sample Name: / Sample Date: / Sample Depth:	SS-04 (Background) 4/11/97 00"-12"			SS-05 (Background) 4/11/97 00"-12"			SS-01 4/11/97 00"-12"		
				Benchmark Screening Data	Regional Background Data	Rslt	Val qual	Benchmark Screening Data	Regional Background Data	Rslt	Val qual	Benchmark Screening Data	Regional Background Data	Rslt	Val qual
METALS	Aluminum	7429-90-5	mg/kg	50	4500-100000	10100		50	4500-100000	12600		50	4500-100000	8660	
METALS	Arsenic	7440-38-2	mg/kg	10	1.0-93 (7)	3.1		10	1.0-93 (7)	2.9		10	1.0-93 (7)	2.4	
METALS	Barium	7440-39-3	mg/kg	500	70-300 (560)	83.2		500	70-300 (560)	70		500	70-300 (560)	46	
METALS	Beryllium	7440-41-7	mg/kg	10	1-5 (1.6)	0.59	B	10	1-5 (1.6)	0.54	B	10	1-5 (1.6)	0.95	B
METALS	Calcium	7440-70-2	mg/kg	NC	NC	847	B	NC	NC	808	B	NC	NC	1480	
METALS	Chromium	7440-47-3	mg/kg	1	7-1500 (50)	21.1		1	7-1500 (50)	24.6		1	7-1500 (50)	19	
METALS	Cobalt	7440-48-4	mg/kg	20	3-50 (10.5)	8.5	B	20	3-50 (10.5)	7.6	B	20	3-50 (10.5)	6.8	B
METALS	Copper	7440-50-8	mg/kg	100	NC	14.8		100	NC	12.8		100	NC	177	J
METALS	Iron	7439-89-6	mg/kg	NC	NC	19100		NC	NC	14800		NC	NC	13700	
METALS	Lead	7439-92-1	mg/kg	50	NC	12.2		50	NC	18.1		50	NC	10.1	
METALS	Magnesium	7439-95-4	mg/kg	NC	NC	3270		NC	NC	2380		NC	NC	2830	
METALS	Manganese	7439-96-5	mg/kg	500	20-3000 (490)	161		500	20-3000 (490)	241		500	20-3000 (490)	225	
METALS	Nickel	7440-02-0	mg/kg	30	5-150 (18.5)	18.8		30	5-150 (18.5)	16.2		30	5-150 (18.5)	15	
METALS	Potassium	7440-097	mg/kg	NC	NC	475	B	NC	NC	385	B	NC	NC	703	B
METALS	Selenium	7782-49-2	mg/kg	1	0.1-4 (0.31)	1.2	J	1	0.1-4 (0.31)	1.6	J	1	0.1-4 (0.31)	1.3	J
METALS	Sodium	7440-23-5	mg/kg	NC	NC	96.4	B	NC	NC	72.3	B	NC	NC	78.9	B
METALS	Vanadium	7440-62-2	mg/kg	2	0.7-98	38.8		2	0.7-98	45.1		2	0.7-98		U
METALS	Zinc	7440-66-6	mg/kg	50	13-300 (73.5)	41.1	J	50	13-300 (73.5)	34.2	J	50	13-300 (73.5)	124	

Shaded: Detected concentration exceeds acute screening concentration
Detected concentration exceeds the highest detected background concentration
NC No Criteria

Table 5-11
Magna Metals Site
Surface Soil Assessment
Metals Results

Chemical Group	Analyte	Cas No.	Units	Sample Name: / Sample Date: / Sample Depth:	Benchmark Screening Data	SS-01 (DUP) 4/11/97 00"-12" Regional Background Data	Rslt	Val qual	Benchmark Screening Data	SS-02 4/11/97 00"-12" Regional Background Data	Rslt	Val qual	Benchmark Screening Data	SS-03 4/11/97 00"-12" Regional Background Data	Rslt	Val qual
METALS	Aluminum	7429-90-5	mg/kg		50	4500-100000	8860		50	4500-100000	7510		50	4500-100000	8440	
METALS	Arsenic	7440-38-2	mg/kg		10	1.0-93 (7)	2.5		10	1.0-93 (7)	2.2		10	1.0-93 (7)	1.6	B
METALS	Barium	7440-39-3	mg/kg		500	70-300 (560)	52		500	70-300 (560)	46.7		500	70-300 (560)	42.6	B
METALS	Beryllium	7440-41-7	mg/kg		10	1-5 (1.6)	0.34	B	10	1-5 (1.6)	0.3	B	10	1-5 (1.6)	0.32	B
METALS	Calcium	7440-70-2	mg/kg		NC	NC	1430		NC	NC	1280		NC	NC	1540	
METALS	Chromium	7440-47-3	mg/kg		1	7-1500 (50)	15.8		1	7-1500 (50)	11.6		1	7-1500 (50)	10.5	
METALS	Cobalt	7440-48-4	mg/kg		20	3-50 (10.5)	7.3	B	20	3-50 (10.5)	5.2	B	20	3-50 (10.5)	5.5	B
METALS	Copper	7440-50-8	mg/kg		100	NC	51.7	J	100	NC	39		100	NC	18	
METALS	Iron	7439-89-6	mg/kg		NC	NC	12600		NC	NC	10900		NC	NC	11500	
METALS	Lead	7439-92-1	mg/kg		50	NC	10.8		50	NC	9.5		50	NC	8	
METALS	Magnesium	7439-95-4	mg/kg		NC	NC	2880		NC	NC	2130		NC	NC	2300	
METALS	Manganese	7439-96-5	mg/kg		500	20-3000 (490)	214		500	20-3000 (490)	168		500	20-3000 (490)	189	
METALS	Nickel	7440-02-0	mg/kg		30	5-150 (18.5)	13.9		30	5-150 (18.5)	11.4		30	5-150 (18.5)	10.2	
METALS	Potassium	7440-097	mg/kg		NC	NC	768	B	NC	NC	526	B	NC	NC	587	B
METALS	Selenium	7782-49-2	mg/kg		1	0.1-4 (0.31)	1.1	J	1	0.1-4 (0.31)	1	J	1	0.1-4 (0.31)	1.3	J
METALS	Sodium	7440-23-5	mg/kg		NC	NC	81.9	B	NC	NC	74.4	B	NC	NC	93.1	B
METALS	Vanadium	7440-62-2	mg/kg		2	0.7-98	18.8		2	0.7-98	14.6		2	0.7-98	17	
METALS	Zinc	7440-66-6	mg/kg		50	13-300 (73.5)	94.9	J	50	13-300 (73.5)	68.7	J	50	13-300 (73.5)	41.5	J

Shaded Detected concentration exceeds acute screening concentration
Detected concentration exceeds the highest detected background concentration
NC No Criteria

Table 5-12
Magna Metals Site
Water Quality Parameters

Surface Water and Surface Water Toxicity Sampling

Date	03/29/2004	03/29/2004	03/29/2004	03/29/2004	03/29/2004	03/29/2004	03/29/2004	03/29/2004	03/29/2004	03/29/2004
Time	1018	1057	0946	0935	0921	0902	1324	1335	0842	1003
Sample Station	SW-13	SW-14	SW-15	SW-16	SW-17	SW-18	SW-19	SW-20	SW-21	SW-22
Physical Parameters										
pH (su)	7.72	7.72	7.70	7.62	7.63	7.02	8.03	8.24	6.24	7.45
Conductivity (ms/cm)	0.609	1.3	1.54	0.778	0.721	0.798	0.752	0.977	0.89	0.184
Turbidity (NTU)	-7.8	-4.3	10.4	-0.9	-9.0	76.9	-10.0	-8.4	80	14.1
Dissolved O_2 (mg/L)	10.31	10.33	11.20	11.22	10.87	8.33	9.28	10.61	8.50	8.21
Temperature (°C)	10.88	9.99	7.53	7.21	6.81	7.26	15.28	15.15	6.19	10.54
Measured Depth (in)	-0.2	-0.1	-0.3	-0.3	-0.3	-0.4	-0.1	-0.1	-0.4	-0.2
Salinity (%)	0.03	0.05	0.06	0.03	0.03	0.03	0.03	0.04	0.04	0.01
TDS (g/L)	0.44	0.7	0.8	0.50	0.47	0.51	0.48	0.63	0.55	0.11
ORP (mV)	128	152	91	30	99	55	70	129	90	137

Sediment, Benthic and Sediment Toxicity Sampling

Date	03/30/2004	03/30/2004	03/30/2004	03/30/2004	03/31/2004	03/31/2004	03/31/2004	03/31/2004	04/03/2004	04/03/2004	########	########	########	########
Time	1035	0905	1604	1505	1208	1140	0945	0752	1040	1120	1150	1140	1250	1422
Sample Station	SD-13	SD-14	SD-15	SD-16	SD-17	SD-18	SD-19	SD-20	SD-21	SD-22	SD-23	SD-24	SD-25	SD-26
Physical Parameters														
pH (su)	7.33	5.68	7.83	7.68	7.56	7.23	6.84	6.25	6.49	6.71	7.8	7.55	8.03	8.18
Conductivity (ms/cm)	0.897	0.92	1.05	1.72	0.983	0.922	7.43	1.03	0.455	0.447	0.451	0.447	0.473	0.458
Turbidity (NTU)	-10.0	9.9	6.8	-10.0	0.3	0.6	9.3	0.0	27.9	20.0	18.0	18.4	145	30.3
Dissolved O_2 (mg/L)	11.46	9.78	9.71	10.43	10.05	0.0	13.85	18.40	9.21	13.35	13.63	13.4	12.73	11.99
Temperature (°C)	8.04	7.28	8.48	8.66	27.21	28.61	28.18	28.86	7.21	7.5	7.87	7.91	8.81	9.53
Measured Depth (in)	0.1	-0.4	-0.1	-0.5	-1.0	-0.8	-0.6	-0.7	0.7	1.2	0.1	0.3	0.0	-0.1
Salinity (%)	0.04	0.04	0.06	0.07	0.04	0.04	0.03	0.05	0.02	0.02	0.02	0.02	0.02	0.02
TDS (g/L)	0.58	0.59	0.8	1.1	0.63	0.60	0.49	0.7	30	0.31	0.29	0.29	0.30	0.3
ORP (mV)	180	120	170	83	108	100	168	235	-9	-114	74	41	83	84

Note:
Data collected on 3/29/04, 3/30/04 and 3/31/04 had an error 2 reading

Table 5-13
Mage Metals Site
Benthic Substrate Characteristics

SAMPLE STATION	SEDIMENT DESCRIPTION	AREA DESCRIPTIONS
SD-13	Sediment is dark brown to black silt with a trace of sand. A layer of black fine to coarse organic matter present on top.	Sampling area is in a well defined streambed with leaf clutter, fallen trees and braches. The stream is approximately 7-9' wide and 9-12" deep. Moderate flow is evident.
SD-14	Sediment is dark brown to black silt with a lot of fine to coarse organic matter on top, slight odor.	Sampling location is in a stream approximately 1' deep and 15-20' wide. Floating pollen, plant matter, leaf debris and branches present in the water. The flow is stagnant.
SD-15	Sediment is dark brown to black silt with a trace of sand. Black fine to coarse debris (I.e. leaves, braches approximately 6" long) observed.	Sample location is located in the unnamed tributary approximately 4-6" deep and 3-4' wide. Poorly defined stream with a slight flow and a lot of leaf debris. Phragmites present in the area along with naturally downed trees approximately 2 1/2' wide.
SD-16	Sediment is dark brown to black silt with a trace of sand. A layer of black fine to coarse organic matter and root mat present on top.	Sample location is located in the unnamed tributary approximately 2-3" deep and 3' wide at the maximum. The area is surrounded by branches, with a lot of leaf debris present.
SD-17	Sediment is light brown sand with angular gravel and minimal organic matter present.	Sampling area is a stream with a well defined stream bed approximately 6-10" deep and 1-1 1/2 ' wide. Minimal leaf clutter and organic matter present. The stream water flow is slow.
SD-18	Sediment is dark brown to black silt with a lot of fine to coarse organic matter on top.	Sampling location is a pooled area in the wetland surrounded by a ladder and other anthropogenic debris. The water is shallow with an organic sheen.
SD-19	Sediment is black fine silt, with a layer of root mat and fine to coarse black organic material on top. Has a hint of sulfur odor present. Large branches, logs and tree stumps present in grabs.	Sampling location is in a stream approximately 2' deep with leaf clutter, green pollen and flotsam present on the surface. The water is stagnant.
SD-20	Sediment is black fine silt, with a layer of root mat and fine to coarse black organic material on top. Has a hint of sulfur odor present. Large branches, logs and tree stumps present in grabs.	Sediment sampling areas is 1-3' deep and 20-25' wide. A sulfur odor is detected, leaf debris and some flotsam present on the surface.
SD-21	Sediment is black fine silt with trace of fine brown wood chips, little organic matter on top, with a slight odor	Sampling area is located on the northeastern portion of the pond.
SD-22	Sediment is brownish black silt with no organic materials present. Took two grabs, first grab had no sediment, the grab was compromised by a tree stump.	Sampling area is located in the middle of the pond with a depth of 4.75' below water surface.
SD-23	Sediment is black silt with a trace of dark brown sediment. Coarse organic matter present (branches, leaves) with no odor.	Sampling location was situated where the pond and stream channel meet at the southeastern most point of the pond approximately 1.5' below the water surface.
SD-24	Sediment is dark brown, black fine silt with little coarse organic material and a strong sulfuric organic odor	Sampling station was located on the north western portion of the pond at a depth of 2.75' from the surface of the water.

Table 5-13
Mage Metals Site
Benthic Substrate Characteristics

SAMPLE STATION	SEDIMENT DESCRIPTION	AREA DESCRIPTIONS
SD-25	Sediment is black silt with some sand and coarse organic material on top. No odor present and there is a slight, slow water flow present.	Sample area is a basin approximately 10-15' wide, 1' deep at the maximum and 30-35' at the longest point. The basin had and in and out-let for the water to pass and is surrounded by boulders, trees and upland vegetation. The basin is filled with boulders and debris (leaves, trees, metal pipe).
SD-26	Sediment is medium brown and black silt with sand. Traces of gray silt is also present. Coarse organic material on top (leaves).	Sampling areas is a well defined stream with rapidly flowing water characteristic of a "babbling brook". Rocks, cobbles and sediment make up the stream bed. Layer of leaves in the areas on the upland floor with scattered skunk cabbage. Corroding drum in the area.

Table 5-14
Magna Metals Site
Surface Water Screening Assessment

Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name: MM-SW13-032904 (Background) Sample Date: 03/29/2004 Acute	Chronic	Rslt	Val qual	Det limit	MM-SW14-032904 03/29/2004 Acute	Chronic	Rslt	Val qual	Det limit	MM-SW19-032904 03/29/2004 Acute	Chronic	Rslt	Val qual	Det limit	MM-SW20-032904 03/29/2004 Acute	Chronic	Rslt	Val qual	Det limit
METAL	Aluminum	7429-90-5	ug/L	NC	100	**366**		180	NC	100	**690**		180	NC	100	**728**	N	180	NC	100	**358**	N	180
METAL	Antimony	7440-36-0	ug/L	NC	NC		U	6.6	NC	NC		U	6.6	NC	NC		U	6.6	NC	NC		U	6.6
METAL	Arsenic	7440-38-2	ug/L	340	150		U	4.8	340	150		U	4.8	340	150		U	4.8	340	150		U	4.8
METAL	Barium	7440-39-3	ug/L	NC	NC	53.5	J	11	NC	NC	79	J	11	NC	NC	119	J	11	NC	NC	74.6	J	11
METAL	Beryllium	7440-41-7	ug/L	NC	NC		U	1.1	NC	NC		U	1.1	NC	NC		U	1.1	NC	NC		U	1.1
METAL	Cadmium[1]	7440-43-9	ug/L	6.75	5.55		U	0.99	7.24	5.83		U	0.99	8.08	6.29		U	0.99	7.56	6.01		U	0.99
METAL	Chromium[1]	7440-47-3	ug/L	437.12	95.59		U	1.2	460.2	130.8	1.3	J	1.2	498.1	112.35	2.6	J	1.2	474.9	107.12		U	1.2
METAL	Cobalt	7440-48-4	ug/L	NC	5		U	2.4	NC	5		U	2.4	NC	5		U	2.4	NC	5		U	2.4
METAL	Copper[1]	7440-50-8	ug/L	23.74	17.58		U	0.74	25.19	18.55	57.6		0.74	27.59	20.15	**22.6**	JN	0.74	26.12	19.17		UN	0.74
METAL	Iron	7439-89-6	ug/L	NC	300	**327**	N	29	NC	300	**1670**	N	29	NC	300	**2180**	N	29	NC	300	**363**	N	29
METAL	Lead[1]	7439-92-1	ug/L	166.59	6.49		U	1.8	178.16	6.94		U	1.8	197.49	7.70		U	1.8	185.62	7.23		U	1.8
METAL	Magnesium	7439-95-4	ug/L	NC	NC	20200	N	254	NC	NC	21400	N	254	NC	NC	27000		254	NC	NC	25800		254
METAL	Manganese	7439-96-5	ug/L	NC	NC	73.8		0.2	NC	NC	234		0.2	NC	NC	499	N	0.2	NC	NC	93.9	N	0.2
METAL	Nickel[1]	7440-02-0	ug/L	504.99	78.66		U	5.5	532.5	82.96	24.8	J	5.5	577.9	90.03	22.4	J	5.5	550.2	85.7	7	J	5.5
METAL	Selenium	7782-49-2	ug/L	NC	4.6		U	5.2	NC	4.6		U	5.2	NC	4.6		U	5.2	NC	4.6		U	5.2
METAL	Silver[1]	7440-22-4	ug/L	0.0877	NC		U	3.4	0.098	NC		U	3.4	0.115	NC		U	3.4	0.104	NC		U	3.4
METAL	Thallium	7440-28-0	ug/L	NC	8		U	5.8	NC	8		U	5.8	NC	8		U	5.8	NC	8		U	5.8
METAL	Vanadium	7440-62-2	ug/L	NC	14		U	1.9	NC	14		U	1.9	NC	14	2	J	1.9	NC	14		U	1.9
METAL	Zinc[1]	7440-66-6	ug/L	159.88	140.94		UN	8.1	168.6	148.64	23.7	N	8.1	183.02	161.33	57.3	N	8.1	174.2	153.56	9.3	JN	8.1

Note:
Surface water screening values from NYDEC Ambient water quality standards guidance, unless otherwise noted.
1 - Calculated hardness derived screening criteria
* - Background Samples for the samples taken from Furnance Brook
Shaded — Detected concentration exceeds acute screening concentration
BOLD — Detected concentration exceeds chronic screening concentration
Box — Detected concentration exceeds the detected background concentration
NC — No Criteria

Table 5-15
Magna Metals Site
Surface Water Screening Assessment

Unnamed Tributary of Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name: / Sample Date:	MM-SW17-032904 3/29/2004					MM-SW15-032904 3/29/2004					MM-SW16-032904 3/29/2004				
					Acute	Chronic	Rslt	Val qual	Det limit	Acute	Chronic	Rslt	Val qual	Det limit	Acute	Chronic	Rslt	Val qual	Det limit
METAL	Aluminum	7429-90-5	ug/L		NC	100	**282**		180	NC	100	**328**		180	NC	100	**316**		180
METAL	Antimony	7440-36-0	ug/L		NC	NC		U	6.6	NC	NC		U	6.6	NC	NC		U	6.6
METAL	Arsenic	7440-38-2	ug/L		340	150		U	4.8	340	150		U	4.8	340	150		U	4.8
METAL	Barium	7440-39-3	ug/L		NC	NC	82.2	J	11	NC	NC	105	J	11	NC	NC	99.7	J	11
METAL	Beryllium	7440-41-7	ug/L		NC	NC		U	1.1	NC	NC		U	1.1	NC	NC		U	1.1
METAL	Cadmium[1]	7440-43-9	ug/L		6.49	5.4		U	0.99	8.46	6.49		U	0.99	7.86	6.18		U	0.99
METAL	Chromium	7440-47-3	ug/L		424.84	95.82	2.2	J	1.2	514.976	116.15		U	1.2	488.49	110.18		U	1.2
METAL	Cobalt	7440-48-4	ug/L		NC	5		U	2.4	NC	5		U	2.4	NC	5		U	2.4
METAL	Copper[1]	7440-50-8	ug/L		22.98	17.07		U	0.74	28.67	20.86		U	0.74	26.98	19.75		U	0.74
METAL	Iron	7439-89-6	ug/L		NC	300	107	N	29	NC	300	212	N	29	NC	300	205	N	29
METAL	Lead[1]	7439-92-1	ug/L		160.50	6.25		U	1.8	206.21	8.04		U	1.8	192.55	7.50		U	1.8
METAL	Magnesium	7439-95-4	ug/L		NC	NC	23500	N	254	NC	NC	30100	N	254	NC	NC	28200	N	254
METAL	Manganes	7439-96-5	ug/L		NC	NC	35.2		0.2	NC	NC	118		0.2	NC	NC	112		0.2
METAL	Nickel[1]	7440-02-0	ug/L		490.76	76.38	12.5	J	5.5	598.15	93.18	20.9	J	5.5	556.404	88.23	19.9	J	5.5
METAL	Selenium	7782-49-2	ug/L		NC	4.6		U	5.2	NC	4.6		U	5.2	NC	4.6		U	5.2
METAL	Silver[1]	7440-22-4	ug/L		0.0826	NC		U	3.4	0.12	NC		U	3.4	0.11	NC		U	3.4
METAL	Thallium	7440-28-0	ug/L		NC	8		U	5.8	NC	8		U	5.8	NC	8		U	5.8
METAL	Vanadium	7440-62-2	ug/L		NC	14		U	1.9	NC	14		U	1.9	NC	14		U	1.9
METAL	Zinc[1]	7440-66-6	ug/L		155.237	136.842	13	JN	8.1	189.43	166.98	11.5	JN	8.1	179.362	158.108	14.4	JN	8.1

Note:
Surface water screening values from NYDEC Ambient water quality standards guidance, unless otherwise noted.
1 - Calculated hardness derived screening criteria
* - Background Samples for the samples taken from the unnamed tributary of Furnance Brook
Detected concentration exceeds acute screening concentration
BOLD Detected concentration exceeds chronic screening concentration
Detected concentration exceeds the detected background concentration
NC No Criteria

Table 5-16
Magna Metals Site
Surface Water Screening Assessment

Wetland South of the Unnamed Tributary of Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name: MM-SW18-032904 Sample Date: 3/29/2004 Acute	Chronic	Rslt	Val qual	Det limit	MM-SW18D-032904 3/29/2004 Acute	Chronic	Rslt	Val qual	Det limit	MM-SW21-032904 3/29/2004 Acute	Chronic	Rslt	Val qual	Det limit
METAL	Aluminum	7429-90-5	ug/L	NC	100	**342**		180	NC	100	**383**	N	180	NC	100	**725**	N	180
METAL	Antimony	7440-36-0	ug/L	NC	NC		U	6.6	NC	NC		U	6.6	NC	NC		U	6.6
METAL	Arsenic	7440-38-2	ug/L	340	150		U	4.8	340	150		U	4.8	340	150		U	4.8
METAL	Barium	7440-39-3	ug/L	NC	NC	132	J	11	NC	NC	141	J	11	NC	NC	185	J	11
METAL	Beryllium	7440-41-7	ug/L	NC	NC		U	1.1	NC	NC		U	1.1	NC	NC		U	1.1
METAL	Cadmium[1]	7440-43-9	ug/L	13.51	9		U	0.99	13.89	9.18		U	0.99	12.54	8.55		U	0.99
METAL	Chromium	7440-47-3	ug/L	723.51	163.19		U	1.2	738.72	166.62		U	1.2	685.58	154.63	3.4	J	1.2
METAL	Cobalt	7440-48-4	ug/L	NC	5		U	2.4	NC	5		U	2.4	NC	5	2.8	J	2.4
METAL	Copper[1]	7440-50-8	ug/L	42.39	29.75		U	0.74	43.42	30.4		UN	0.74	39.85	28.12	5.5	JN	0.74
METAL	Iron	7439-89-6	ug/L	NC	300	**583**	N	29	NC	300	**903**	N	29	NC	300	**4790**	N	29
METAL	Lead[1]	7439-92-1	ug/L	319.08	12.43		U	1.8	327.64	12.77		U	1.8	297.94	11.61	3.5	J	1.8
METAL	Magnesium	7439-95-4	ug/L	NC	NC	55200	N	254	NC	NC	56500		254	NC	NC	49700		254
METAL	Manganese	7439-96-5	ug/L	NC	NC	134		0.2	NC	NC	157	N	0.2	NC	NC	319	N	0.2
METAL	Nickel[1]	7440-02-0	ug/L	849.82	132.38	16	J	5.5	868.3	135.26	19.4	J	5.5	803.85	125.22	29.9	J	5.5
METAL	Selenium	7782-49-2	ug/L	NC	4.6		U	5.2	NC	4.6		U	5.2	NC	4.6		U	5.2
METAL	Silver[1]	7440-22-4	ug/L	0.25	NC		U	3.4	0.26	NC		U	3.4	0.23	NC		U	3.4
METAL	Thallium	7440-28-0	ug/L	NC	8		U	5.8	NC	8		U	5.8	NC	8	6.9	J	5.8
METAL	Vanadium	7440-62-2	ug/L	NC	14		U	1.9	NC	14		U	1.9	NC	14	2	J	1.9
METAL	Zinc[1]	7440-66-6	ug/L	269.28	237.37	10.6	JN	8.1	275.14	242.54	16.8	JN	8.1	254.69	224.51	27.4	N	8.1

Note:
Surface water screening values from NYDEC Ambient water quality standards guidance, unless otherwise noted.
1 - Calculated hardness derived screening criteria
Shaded Detected concentration exceeds acute screening concentration
BOLD Detected concentration exceeds chronic screening concentration
NC No Criteria

Table 5-17
Magna Metals Site
Surface Water Screening Assessment

Wetland North of the Unnamed Tributary of Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name: / Sample Date:		MM-SW22-032904 3/29/2004		
				Acute	Chronic	Rslt	Val qual	Det limit
METAL	Aluminum	7429-90-5	ug/L	NC	100	**381**	N	180
METAL	Antimony	7440-36-0	ug/L	NC	NC		U	6.6
METAL	Arsenic	7440-38-2	ug/L	340	150	6.9	J	4.8
METAL	Barium	7440-39-3	ug/L	NC	NC	33.4	J	11
METAL	Beryllium	7440-41-7	ug/L	NC	NC		U	1.1
METAL	Cadmium[1]	7440-43-9	ug/L	1.75	2.17		U	0.99
METAL	Chromium[1]	7440-47-3	ug/L	164.17	37.03	26.7		1.2
METAL	Cobalt	7440-48-4	ug/L	NC	5	**5.1**	J	2.4
METAL	Copper[1]	7440-50-8	ug/L	7.7	6.33	**772**	N	0.74
METAL	Iron	7439-89-6	ug/L	NC	300	**2020**	N	29
METAL	Lead[1]	7439-92-1	ug/L	45.18	1.76		U	1.8
METAL	Magnesium	7439-95-4	ug/L	NC	NC	5680		254
METAL	Manganese	7439-96-5	ug/L	NC	NC	244	N	0.2
METAL	Nickel[1]	7440-02-0	ug/L	183.63	28.6	161		5.5
METAL	Selenium	7782-49-2	ug/L	NC	4.6	**8.7**	J	5.2
METAL	Silver[1]	7440-22-4	ug/L	0.01	NC		U	3.4
METAL	Thallium	7440-28-0	ug/L	NC	8		U	5.8
METAL	Vanadium	7440-62-2	ug/L	NC	14		U	1.9
METAL	Zinc[1]	7440-66-6	ug/L	58.05	51.17	**343**	N	8.1

Note:
Surface water screening values from NYDEC Ambient water quality standards guidance, unless otherwise noted.
1 - Calculated hardness derived screening criteria
Shaded — Detected concentration exceeds acute screening concentration
BOLD — Detected concentration exceeds chronic screening concentration
NC — No Criteria

Table 5-18
Magna Metals Site
Sediment Screening Assessment

Furnace Brook

Chemical Group	Analyte	Cas No.	Units	Sample Name: / Sample Date: / Sediment Screening Benchmarks Acute	Chronic	MM-SD13-033004* 03/30/2004 Rslt	Val qual	Det lim	MM-SD14-033004 03/30/2004 Rslt	Val qual	Det lim	MM-SD19A-033104 03/31/2004 Rslt	Val qual	Det lim	MM-SD20-033104 03/31/2004 Rslt	Val qual	Det lim
SVOC	Acenaphth	83-32-9	µg/g OC	NC	140		U	0.675		U	0.716667		U	0.539326		U	0.81
SVOC	Acenaphth	208-96-8	µg/g OC	NC	NC		U	0.9		U	0.966667		U	0.730337		U	1.1
SVOC	Anthracene	120-12-7	µg/g OC	986	107		U	0.725		U	0.766667		U	0.58427		U	0.87
SVOC	Benzo(a)ar	56-55-3	µg/g OC	94	12		U	0.45		U	0.483333		U	0.370787		U	0.55
SVOC	Benzo(a)py	50-32-8	µg/g OC	94	12		U	0.525		U	0.566667		U	0.426966		U	0.63
SVOC	Benzo(b)flu	205-99-2	µg/g OC	94	12		U	1.625		U	1.666667		U	1.348315		U	1.9
SVOC	Benzo(g,h,	191-24-2	µg/g OC	94	12		U	1.325		U	1.416667		U	1.067416		U	1.6
SVOC	Benzo(k)flu	207-08-9	µg/g OC	94	12		U	1.05		U	1.1		U	0.831461		U	1.2
SVOC	Chrysene	218-01-9	µg/g OC	NC	NC		U	0.975		U	1.033333		U	0.775281		U	1.2
SVOC	Dibenz(a,h	53-70-3	µg/g OC	NC	NC		U	0.9		U	0.95		U	0.719101		U	1.1
SVOC	Fluoranthe	206-44-0	µg/g OC	NC	1020		U	0.425		U	0.45	2.81	J	0.337079		U	0.51
SVOC	Fluorene	86-73-7	µg/g OC	73	8		U	0.875		U	0.916667		U	0.696629		U	1
SVOC	Indeno(1,2,	193-39-5	µg/g OC	NC	NC		U	0.725		U	0.783333		U	0.595506		U	0.88
SVOC	Naphthaler	91-20-3	µg/g OC	258	30		U	0.675		U	0.7		U	0.52809		U	0.79
SVOC	Phenanthre	85-01-8	µg/g OC	NC	120		U	0.675		U	0.733333		U	0.550562		U	0.82
SVOC	Pyrene	129-00-0	µg/g OC	6775	961		U	0.55		U	0.583333	2.47	J	0.438202		U	0.65
TOC	Total Orgar	TOC	mg/Kg	NC	NC	40000		170	60000		250	89000		290	100000		480
METAL	Aluminum	7429-90-5	mg/Kg	NC	NC	9920		2.4	13800		3.6	11500		4.1	11500		6.8
METAL	Antimony	7440-36-0	mg/Kg	25	2		UN	2.1		UN	3.2		UN	3.7		UN	6.1
METAL	Arsenic	7440-38-2	mg/Kg	33	6	2.3	J	0.89	8.3		1.4	12.2		1.6	4.1	J	2.6
METAL	Barium	7440-39-3	mg/Kg	NC	NC	229		0.08	334		0.13	418		0.14	283		0.24
METAL	Beryllium	7440-41-7	mg/Kg	NC	NC	0.86	J	0.01	1.2	J	0.02	1.3	J	0.03	1.6	J	0.04
METAL	Cadmium	7440-43-9	mg/Kg	9	0.6		U	0.17		U	0.26		U	0.3		U	0.5
METAL	Calcium	7440-70-2	mg/Kg			4940		1.3	13400		2	16400		2.3	10700		3.8
METAL	Chromium	7440-47-3	mg/Kg	110	2.6	31.1	N	0.35	49.1	N	0.55	133	N	0.62	62.7	N	1
METAL	Cobalt	7440-48-4	mg/Kg	NC	50	14.4	J	0.3	22.5	J	0.45	58.8		0.52	21.3	J	0.85
METAL	Copper	7440-50-8	mg/Kg	110	16	24.4		0.43	67.2		0.66	261		0.75	52.1		1.2
METAL	Iron	7439-89-6	mg/Kg	40000	20000	11500		6.6	13600		10.1	17400		11.6	18200		19
METAL	Lead	7439-92-1	mg/Kg	110	31	23.6		0.38	39.5		0.59	91.5		0.68	38.9		1.1
METAL	Magnesium	7439-95-4	mg/Kg	NC	NC	4400		0.06	6310		0.09	11000		0.11	7400		0.17
METAL	Manganese	7439-96-5	mg/Kg	1100	460	391		3	598		4.6	302		5.3	482		8.6
METAL	Mercury	7439-97-6	mg/Kg	1.3	0.15	0.09		0.02	0.12		0.03	0.14		0.04	0.15		0.06
METAL	Nickel	7440-02-0	mg/Kg	50	16	23.5		0.56	30.1		0.87	365		0.99	200		1.6
METAL	Potassium	7440-09-7	mg/Kg			444	J	12.3	726	J	18.9	440	J	21.6	747	J	35.4
METAL	Selenium	7782-49-2	mg/Kg	NC	NC	2.1	J	1.2	12		1.8	10.1		2.1	10.8	J	3.4
METAL	Silver	7440-22-4	mg/Kg	2.2	1		U	0.39		U	0.6		U	0.69		U	1.1
METAL	Sodium	7440-23-5	mg/Kg			281	J	139	770	J	214	620	J	245	401	J	400
METAL	Thallium	7440-28-0	mg/Kg	NC	NC		U	1.2		U	1.9		U	2.2		U	3.6
METAL	Vanadium	7440-62-2	mg/Kg	NC	NC	22.3		0.38	31.2		0.59	61		0.67	28.5	J	1.1
METAL	Zinc	7440-66-6	mg/Kg	270	120	106		0.21	146		0.32	176		0.37	258		0.6
SEM/AVS	SEM/AVS 1	SEM/AVS		NC	NC		<1			>1			>1			<1	

Note:
Sediment screening values from NYDEC Technical Guidance of Screening Contaminated Sediment (1999) used unless otherwise noted.
* Reference sample for samples taken at specified water body
a - Screening Values for Benz(a)anthracene used in the absence of specified criterion
1 - TEC Value from Persaud et al. (1993)

Shaded — Detected concentration exceeds acute screening concentration
BOLD — Detected concentration exceeds chronic screening concentration
Detected concentration exceeds the detected background concentration
NC — No Criteria
SEM/AVS >1 - Metals were measured to be bioavailable

U — Undetected
J — Estimated
N — Spiked recovery not within control limits
E — Estimated due to interference

Table 5-19
Magna Metals Site
Sediment Screening Assessment

Unnamed Tributary

Chemical Group	Analyte	Cas No.	Units	Sediment Screening Benchmarks Acute	Chronic	MM-SD17-033104* 3/31/2004 Rslt	Val qual	Det lim	MM-SD15-033004 3/30/2004 Rslt	Val qual	Det lim	MM-SD16-033004 3/30/2004 Rslt	Val qual	Det lim
SVOC	Acenaphth	83-32-9	µg/g OC	NC	140		U	1.606557		U	0.725		U	0.888889
SVOC	Acenaphth	208-96-8	µg/g OC	NC	NC		U	2.131148		U	0.975		U	1.222222
SVOC	Anthracen	120-12-7	µg/g OC	986	107	31.15	J	1.803279		U	0.775		U	0.944444
SVOC	Benzo(a)a	56-55-3	µg/g OC	94	12	**73.77**		1.098361	12	J	0.5	8.33	J	0.611111
SVOC	Benzo(a)p	50-32-8	µg/g OC	94	12	**73.77**		1.245902	16	J	0.55	10.56	J	0.722222
SVOC	Benzo(b)fl	205-99-2	µg/g OC	94	12	[illegible]		3.934426	24.5	J	1.725	14.44	J	2.166667
SVOC	Benzo(g,h,	191-24-2	µg/g OC	94	12	**26.23**	J	3.114754	6.75	J	1.425		U	1.777778
SVOC	Benzo(k)fl	207-08-9	µg/g OC	94	12	**81.97**		2.459016	16.75	J	1.125	12.22	J	1.388889
SVOC	Chrysene	218-01-9	µg/g OC	NC	NC	80.33		2.295082	16.75	J	1.025	10.56	J	1.277778
SVOC	Dibenz(a,h	53-70-3	µg/g OC	NC	NC		U	2.131148		U	0.95		U	1.166667
SVOC	Fluoranthe	206-44-0	µg/g OC	NC	1020	196.72		1.016393	35		0.45	22.78	J	0.555556
SVOC	Fluorene	86-73-7	µg/g OC	73	8	**11.15**	J	2.131148		U	0.925		U	1.166667
SVOC	Indeno(1,2	193-39-5	µg/g OC	NC	NC		U	1.803279		U	0.8		U	1
SVOC	Naphthaler	91-20-3	µg/g OC	258	30		U	1.57377		U	0.7		U	0.888889
SVOC	Phenanthr	85-01-8	µg/g OC	NC	120	**144.26**		1.622951	15	J	0.725	10.56	J	0.888889
SVOC	Pyrene	129-00-0	µg/g OC	8775	961	213.11		1.295082	30	J	0.575	22.78	J	0.722222
TOC	Total Orga	TOC	mg/Kg	NC	NC	6100		60	40000		180	18000		99
METAL	Aluminum	7429-90-5	mg/Kg	NC	NC	4080		0.84	10100		2.5	9080		1.4
METAL	Antimony	7440-36-0	mg/Kg	25	2		UN	0.75		UN	2.3		UN	1.3
METAL	Arsenic	7440-38-2	mg/Kg	33	6	1.5		0.32	**8.3**		0.95	3.7		0.53
METAL	Barium	7440-39-3	mg/Kg	NC	NC	47.5		0.03	266		0.09	154		0.05
METAL	Beryllium	7440-41-7	mg/Kg	NC	NC	0.28	J	0.01	0.82	J	0.02	0.55	J	0.01
METAL	Cadmium	7440-43-9	mg/Kg	9	0.6		U	0.06		U	0.18		U	0.1
METAL	Calcium	7440-70-2	mg/Kg			16200		0.47	7130		1.4	7190		0.78
METAL	Chromium	7440-47-3	mg/Kg	110	2.6	**16.4**	N	0.13	158	N	0.38	**43.4**	N	0.21
METAL	Cobalt	7440-48-4	mg/Kg	NC	50	5.4	J	0.11	16.5	J	0.32	12.8		0.18
METAL	Copper	7440-50-8	mg/Kg	110	16	9.9		0.15	1040		0.46	**107**		0.26
METAL	Iron	7439-89-6	mg/Kg	40000	20000	6590		2.4	10900		7.1	12400		4
METAL	Lead	7439-92-1	mg/Kg	110	31	6.7		0.14	32.2		0.41	22.9		0.23
METAL	Magnesiur	7439-95-4	mg/Kg	NC	NC	11900		0.02	5280		0.06	6880		0.04
METAL	Manganes	7439-96-5	mg/Kg	1100	460	337		1.1	958		3.2	313		1.8
METAL	Mercury	7439-97-6	mg/Kg	1.3	0.15	0.01	J	0.01	0.15		0.02	0.06		0.01
METAL	Nickel	7440-02-0	mg/Kg	50	16	**35.6**		0.2	332		0.61	[illegible]		0.34
METAL	Potassium	7440-09-7	mg/Kg			560	J	4.4	585	J	13.2	833	J	7.4
METAL	Selenium	7782-49-2	mg/Kg	NC	NC		U	0.42	18.2		1.3	2	J	0.7
METAL	Silver	7440-22-4	mg/Kg	2.2	1		U	0.14		U	0.42		U	0.24
METAL	Sodium	7440-23-5	mg/Kg			127	J	49.8	766	J	149	348	J	83.3
METAL	Thallium	7440-28-0	mg/Kg	NC	NC		U	0.44		U	1.3		U	0.74
METAL	Vanadium	7440-62-2	mg/Kg	NC	NC	9.3		0.14	20.6		0.41	22.2		0.23
METAL	Zinc	7440-66-6	mg/Kg	270	120	37.3		0.08	526		0.22	139		0.13
SEM/AVS	SEM/AVS	SEM/AVS		NC	NC		>1			>1			>1	

Note:
Sediment screening values from NYDEC Technical Guidance of Screening Contaminated Sediment (1999) used unless otherwise noted.
* Reference sample for samples taken at specified water body
a - Screening Values for Benz(a)anthracene used in the absence of specified criterion
1 - TEC Value from Persaud et al. (1993)

[illegible]	Detected concentration exceeds acute screening concentration	U	Undetected
BOLD	Detected concentration exceeds chronic screening concentration	J	Estimated
	Detected concentration exceeds the detected background concentration	N	Spiked recovery not within control limits
NC	No Criteria	E	Estimated due to interference

SEM/AVS >1 - Metals were measured to be bioavailable

Table 5-20
Magna Metals Site
Sediment Screening Assessment

						South Wetland					
		Sample Name:		Sediment		MM-SD18-033104			MM-SD18D-033104		
		Sample Date:		Screening Benchmarks		03/31/2004			03/31/2004		
Chemical Group	Analyte	Cas No.	Units	Acute	Chronic	Rslt	Val qual	Det lim	Rslt	Val qual	Det lim
SVOC	Acenaphth	83-32-9	µg/g OC	NC	140		U	0.447368		U	0.633333
SVOC	Acenaphth	208-96-8	µg/g OC	NC	NC		U	0.605263		U	0.866667
SVOC	Anthracene	120-12-7	µg/g OC	986	107		U	0.486842		U	0.683333
SVOC	Benzo(a)ar	56-55-3	µg/g OC	94	12	2.11	J	0.302632		U	0.433333
SVOC	Benzo(a)p	50-32-8	µg/g OC	94	12	2.89	J	0.355263		U	0.5
SVOC	Benzo(b)fl	205-99-2	µg/g OC	94	12	3.42	J	1.092105		U	1.533333
SVOC	Benzo(g,h,	191-24-2	µg/g OC	94	12		U	0.894737		U	1.25
SVOC	Benzo(k)flu	207-08-9	µg/g OC	94	12	2.89	J	0.697368		U	0.983333
SVOC	Chrysene	218-01-9	µg/g OC	NC	NC	2.37	J	0.644737		U	0.916667
SVOC	Dibenz(a,h	53-70-3	µg/g OC	NC	NC		U	0.605263		U	0.85
SVOC	Fluoranthe	206-44-0	µg/g OC	NC	1020	5.39	J	0.289474	3	J	0.4
SVOC	Fluorene	86-73-7	µg/g OC	73	8		U	0.578947		U	0.816667
SVOC	Indeno(1,2,	193-39-5	µg/g OC	NC	NC		U	0.5		U	0.7
SVOC	Naphthaler	91-20-3	µg/g OC	258	30		U	0.447368		U	0.633333
SVOC	Phenanthre	85-01-8	µg/g OC	NC	120	2.24	J	0.460526		U	0.65
SVOC	Pyrene	129-00-0	µg/g OC	8775	961	5	J	0.368421		U	0.516667
TOC	Total Orgar	TOC	mg/Kg	NC	NC	76000		210	60000		230
METAL	Aluminum	7429-90-5	mg/Kg	NC	NC	12700		2.9	12900		3.3
METAL	Antimony	7440-36-0	mg/Kg	25	2		UN	2.6		UN	2.9
METAL	Arsenic	7440-38-2	mg/Kg	33	6	12		1.1	7.7		1.2
METAL	Barium	7440-39-3	mg/Kg	NC	NC	409		0.1	506		0.12
METAL	Beryllium	7440-41-7	mg/Kg	NC	NC	0.98	J	0.02	1.1	J	0.02
METAL	Cadmium	7440-43-9	mg/Kg	9	0.6		U	0.21		U	0.24
METAL	Calcium	7440-70-2	mg/Kg			13300		1.6	14600		1.8
METAL	Chromium	7440-47-3	mg/Kg	110	2.6	166	N	0.44	153	N	0.5
METAL	Cobalt[1]	7440-48-4	mg/Kg	NC	50	36.1		0.37	35.7		0.41
METAL	Copper	7440-50-8	mg/Kg	110	16	327		0.53	230		0.6
METAL	Iron	7439-89-6	mg/Kg	40000	20000	14400		8.2	19600		9.2
METAL	Lead	7439-92-1	mg/Kg	110	31	88.7		0.48	76.4		0.54
METAL	Magnesium	7439-95-4	mg/Kg	NC	NC	9190		0.07	10300		0.08
METAL	Manganes	7439-96-5	mg/Kg	1100	460	241		3.7	456		4.2
METAL	Mercury	7439-97-6	mg/Kg	1.3	0.15	0.17		0.03	0.16		0.03
METAL	Nickel	7440-02-0	mg/Kg	50	16	49.6		0.7	54.4		0.79
METAL	Potassium	7440-09-7	mg/Kg			584	J	15.3	618	J	17.2
METAL	Selenium	7782-49-2	mg/Kg	NC	NC	9.9		1.5	8.8		1.6
METAL	Silver	7440-22-4	mg/Kg	2.2	1		U	0.49		U	0.55
METAL	Sodium	7440-23-5	mg/Kg			276	J	173	638	J	195
METAL	Thallium	7440-28-0	mg/Kg	NC	NC		U	1.5	3.4	J	1.7
METAL	Vanadium	7440-62-2	mg/Kg	NC	NC	43.4		0.47	42.2		0.53
METAL	Zinc	7440-66-6	mg/Kg	270	120	259		0.26	259		0.29
SEM/AVS	SEM/AVS I	SEM/AVS		NC	NC		<1			>1	

Note:
Sediment screening values from NYDEC Technical Guidance of Screening Contaminated Sediment (1999) used unless otherwise noted.
* Reference sample for samples taken at specified water body
a - Screening Values for Benz(a)anthracene used in the absence of specified criterion
1 - TEC Value from Persaud et al. (1993)

Shaded	Detected concentration exceeds acute screening concentration	U	Undetected
BOLD	Detected concentration exceeds chronic screening concentration	J	Estimated
	Detected concentration exceeds the detected background concentrat	N	Spiked recovery not within Control limits
NC	No Criteria		
SEM/AVS >1 - Metals were measured to be bioavailable		E	Estimated due to interference

Table 5-21
Magna Metals Site
Sediment Screening Assessment

Unnamed Pond

Chemical Group	Analyte	Cas No.	Units	Sample Name: / Sample Date: / Sediment Screening Benchmarks Acute	Chronic	MM-SD21-040304 04/03/2004 Rslt	Val qual	Det lim	MM-SD22-040304 04/03/2004 Rslt	Val qual	Det lim	MM-SD23-040304 04/03/2004 Rslt	Val qual	Det lim	MM-SD24-040304 04/03/2004 Rslt	Val qual	Det lim
SVOC	Acenaphth	83-32-9	µg/g OC	NC	140		U	1.632653		U	6.666667		U	6.1		U	0.571429
SVOC	Acenaphth	208-96-8	µg/g OC	NC	NC		U	2.244898		U	9.166667		U	8.2		U	0.785714
SVOC	Anthracene	120-12-7	µg/g OC	986	107		U	1.755102		U	7.25		U	6.6		U	0.621429
SVOC	Benzo(a)ar	56-55-3	µg/g OC	94	12		U	1.122449		U	4.583333	36	J	4.2		U	0.392857
SVOC	Benzo(a)p	50-32-8	µg/g OC	94	12		U	1.265306		U	5.25	41	J	4.7		U	0.45
SVOC	Benzo(b)fl	205-99-2	µg/g OC	94	12		U	3.877551		U	15.83333	68	J	15		U	1.357143
SVOC	Benzo(g,h,	191-24-2	µg/g OC	94	12		U	3.265306		U	13.33333		U	12		U	1.142857
SVOC	Benzo(k)fl	207-08-9	µg/g OC	94	12		U	2.44898		U	10		U	9.4		U	0.857143
SVOC	Chrysene	218-01-9	µg/g OC	NC	NC		U	2.244898		U	10	51	J	8.7		U	0.857143
SVOC	Dibenz(a,h	53-70-3	µg/g OC	NC	NC		U	2.244898		U	9.166667		U	8.1		U	0.785714
SVOC	Fluoranthe	206-44-0	µg/g OC	NC	1020		U	1.020408		U	4.25	100	J	3.8		U	0.364286
SVOC	Fluorene	86-73-7	µg/g OC	73	8		U	2.040816		U	8.333333		U	7.8		U	0.714286
SVOC	Indeno(1,2	193-39-5	µg/g OC	NC	NC		U	1.77551		U	7.333333		U	6.6		U	0.628571
SVOC	Naphthaler	91-20-3	µg/g OC	258	30		U	1.612245		U	6.583333		U	6		U	0.564286
SVOC	Phenanthre	85-01-8	µg/g OC	NC	120		U	1.653061		U	6.75	45	J	6.1		U	0.585714
SVOC	Pyrene	129-00-0	µg/g OC	8775	961		U	1.306122		U	5.416667	79	J	4.9		U	0.464286
TOC	Total Orga	TOC	mg/Kg	NC	NC	49000		510	12000		490	10000		380	140000		510
METAL	Aluminum	7429-90-5	mg/Kg	NC	NC	15800		7.2	18000		7.1	12000		5.4	14400		7.2
METAL	Antimony	7440-36-0	mg/Kg	25	2		U	6.5		U	6.3		U	4.9		U	6.4
METAL	Arsenic	7440-38-2	mg/Kg	33	6		U	2.7		U	2.7		U	2		U	2.7
METAL	Barium	7440-39-3	mg/Kg	NC	NC	374	N	0.25	391	N	0.25	278	N	0.19	331	N	0.25
METAL	Beryllium	7440-41-7	mg/Kg	NC	NC	0.99	J	0.05	1.1	J	0.04	0.74	J	0.03	1	J	0.05
METAL	Cadmium	7440-43-9	mg/Kg	9	0.6		U	0.53		U	0.52		U	0.4		U	0.52
METAL	Calcium	7440-70-2	mg/Kg			13600		4	10600		3.9	11600		3	10400		4
METAL	Chromium	7440-47-3	mg/Kg	110	2.6	**60.5**		1.1	**78.3**		1.1	**73.7**		0.82	**76.3**		1.1
METAL	Cobalt	7440-48-4	mg/Kg	NC	50	34.7	J	0.91	39.8	J	0.89	32.4	J	0.68	39.7	J	0.9
METAL	Copper	7440-50-8	mg/Kg	110	16	**[redacted]**	N	1.3	**[redacted]**	N	1.3	**[redacted]**	N	0.98	**[redacted]**	N	1.3
METAL	Iron	7439-89-6	mg/Kg	40000	20000	**30100**		20.3	**35300**		19.8	**26600**		15.2	**34700**		20.1
METAL	Lead	7439-92-1	mg/Kg	110	31	**[redacted]**		1.2	**53.9**		1.2	**48.7**		0.89	**42.2**		1.2
METAL	Magnesium	7439-95-4	mg/Kg	NC	NC	8620		0.18	10600		0.18	12400		0.14	10800		0.18
METAL	Manganes	7439-96-5	mg/Kg	1100	460	735		9.2	693		9	525		6.9	338		9.1
METAL	Mercury	7439-97-6	mg/Kg	1.3	0.15	**0.22**		0.06	**0.25**		0.06	0.14		0.05	**0.2**		0.07
METAL	Nickel	7440-02-0	mg/Kg	50	16	**[redacted]**		1.7	**[redacted]**		1.7	**[redacted]**		1.3	**[redacted]**		1.7
METAL	Potassium	7440-09-7	mg/Kg			1460	JE	37.8	1970	JE	37	1440	JE	28.4	1500	JE	37.4
METAL	Selenium	7782-49-2	mg/Kg	NC	NC	12.4		3.6	7.7	J	3.5	6.7	J	2.7	4.7	J	3.6
METAL	Silver	7440-22-4	mg/Kg	2.2	1		UN	1.2		UN	1.2		UN	0.91		UN	1.2
METAL	Sodium	7440-23-5	mg/Kg				U	427	471	J	418	490	J	320		U	423
METAL	Thallium	7440-28-0	mg/Kg	NC	NC		U	3.8		U	3.7		U	2.8		U	3.8
METAL	Vanadium	7440-62-2	mg/Kg	NC	NC	38	JNE	1.2	44.7	JNE	1.1	31	JNE	0.88	42	JNE	1.2
METAL	Zinc	7440-66-6	mg/Kg	270	120	**191**		0.64	**195**		0.63	**270**		0.48	**170**		0.64
SEM/AVS	SEM/AVS	SEM/AVS		NC	NC		>1			<1			<1			<1	

Note:
Sediment screening values from NYDEC Technical Guidance of Screening Contaminated Sediment (1999) used unless otherwise noted.
* Reference sample for samples taken at specified water body
a - Screening Values for Benz(a)anthracene used in the absence of specified criterion
1 - TEC Value from Persaud et al. (1993)
Shaded Detected concentration exceeds acute screening concentration
BOLD Detected concentration exceeds chronic screening concentration
Detected concentration exceeds the detected background concentration
NC No Criteria
SEM/AVS >1 - Metals were measured to be bioavailable

U Undetected
J Estimated
N Spiked recovery not within control limits
E Estimated due to interference

Table 5-22
Magna Metals Site
Sediment Screening Assessment

						Furnace Brook Below Unnamed Pond					
		Sample Name:		Sediment		MM-SD25-040304			MM-SD26-040304		
		Sample Date:		Screening Benchmarks		04/03/2004			04/03/2004		
Chemical Group	Analyte	Cas No.	Units	Acute	Chronic	Rslt	Val qual	Det lim	Rslt	Val qual	Det lim
SVOC	Acenaphthi	83-32-9	µg/g OC	NC	140		U	0.12		U	0.13
SVOC	Acenaphth	208-96-8	µg/g OC	NC	NC		U	0.16		U	0.18
SVOC	Acthracene	120-12-7	µg/g OC	986	107		U	0.13		U	0.14
SVOC	Benzo(a)ar	56-55-3	µg/g OC	94	12		U	0.083	1	J	0.089
SVOC	Benzo(a)py	50-32-8	µg/g OC	94	12		U	0.095	1.2	J	0.1
SVOC	Benzo(b)fl	205-99-2	µg/g OC	94	12	0.76	J	0.29	1.8	J	0.31
SVOC	Benzo(g,h,	191-24-2	µg/g OC	94	12		U	0.24		U	0.26
SVOC	Benzo(k)flu	207-08-9	µg/g OC	94	12		U	0.19	0.85	J	0.2
SVOC	Chrysene	218-01-9	µg/g OC	NC	NC	0.71	J	0.17	1.5	J	0.19
SVOC	Dibenz(a,h	53-70-3	µg/g OC	NC	NC		U	0.16		U	0.17
SVOC	Fluoranthe	206-44-0	µg/g OC	NC	1020	1.6	J	0.077	2.8	J	0.082
SVOC	Fluorene	86-73-7	µg/g OC	73	8		U	0.16		U	0.17
SVOC	Indeno(1,2,	193-39-5	µg/g OC	NC	NC		U	0.13		U	0.14
SVOC	Naphthaler	91-20-3	µg/g OC	258	30		U	0.12		U	0.13
SVOC	Phenanthre	85-01-8	µg/g OC	NC	120	0.8	J	0.12	1.3	J	0.13
SVOC	Pyrene	129-00-0	µg/g OC	8775	961	1.2	J	0.098	2.2	J	0.11
TOC	Total Orgar	TOC	mg/Kg	NC	NC	100000		75	100000		79
METAL	Aluminum	7429-90-5	mg/Kg	NC	NC	3310		1.1	6310		1.1
METAL	Antimony	7440-36-0	mg/Kg	25	2		U	0.94		U	1
METAL	Arsenic	7440-38-2	mg/Kg	33	6		U	0.4	1.4	J	0.43
METAL	Barium	7440-39-3	mg/Kg	NC	NC	65.3	N	0.04	209	N	0.04
METAL	Beryllium	7440-41-7	mg/Kg	NC	NC	0.17	J	0.01	0.28	J	0.01
METAL	Cadmium	7440-43-9	mg/Kg	9	0.6		U	0.08		U	0.08
METAL	Calcium	7440-70-2	mg/Kg			2170		0.59	2580		0.63
METAL	Chromium	7440-47-3	mg/Kg	110	2.6	81.2		0.16	75.4		0.17
METAL	Cobalt	7440-48-4	mg/Kg	NC	50	26.7		0.13	21.5		0.14
METAL	Copper	7440-50-8	mg/Kg	110	16	137	N	0.19	130	N	0.21
METAL	Iron	7439-89-6	mg/Kg	40000	20000	17500		3	16300		3.2
METAL	Lead	7439-92-1	mg/Kg	110	31	10.1		0.17	18.5		0.19
METAL	Magnesium	7439-95-4	mg/Kg	NC	NC	18600		0.03	12400		0.03
METAL	Manganese	7439-96-5	mg/Kg	1100	460	301		1.3	549		1.4
METAL	Mercury	7439-97-6	mg/Kg	1.3	0.15	0.02		0.01	0.04		0.01
METAL	Nickel	7440-02-0	mg/Kg	50	16	149		0.25	121		0.27
METAL	Potassium	7440-09-7	mg/Kg			324	JE	5.5	471	JE	5.9
METAL	Selenium	7782-49-2	mg/Kg	NC	NC		U	0.53		U	0.56
METAL	Silver	7440-22-4	mg/Kg	2.2	1	0.19	JN	0.18		UN	0.19
METAL	Sodium	7440-23-5	mg/Kg			119	J	62.4		U	67.1
METAL	Thallium	7440-28-0	mg/Kg	NC	NC		U	0.55		U	0.6
METAL	Vanadium	7440-62-2	mg/Kg	NC	NC	14.5	NE	0.17	21.8	NE	0.18
METAL	Zinc	7440-66-6	mg/Kg	270	120	82.8		0.09	68.8		0.1
SEM/AVS	SEM/AVS I	SEM/AVS		NC	NC		>1			>1	

Note:
Sediment screening values from NYDEC Technical Guidance of Screening Contaminated Sediment (1999) used unless otherwise noted.
* Reference sample for samples taken at specified water body
a - Screening Values for Benz(a)anthracene used in the absence of specified criterion
1 - TEC Value from Persaud et al. (1993)

Shaded	Detected concentration exceeds acute screening concentration	U	Undetected
BOLD	Detected concentration exceeds chronic screening concentration	J	Estimated
	Detected concentration exceeds the detected background concentrat	N	Spiked recovery not within Control limits
NC	No Criteria		
SEM/AVS >1 - Metals were measured to be bioavailable		E	Estimated due to interference

Table 5-23
Benthic Macroinvertebrates Collected from the Magna Metals Site by Tetra Tech EC.

Station: **MM-SW / SD13**
Sample Date: March 30, 2004
Gear: Petite Ponar Grab (0.023 m^2)

Taxon	Common Name	Replicate / (Lab Sample No.) A (MM1)	B (MM2)	C (MM3)	Total	Density (no./m^2)	Pct.
Nematoda	round worm	7	6	2	15	217	3.3%
Tubificida							
Tubificidae							
Ilyodrilus templetoni	tube worm			3	3	43	0.7%
Limnodrilus hoffmeisteri	tube worm	53			53	768	11.7%
Limnodrilus sp.	tube worm	95	87	53	235	3406	51.8%
Coleoptera							
Dytiscidae							
Agabus sp.	diving beetle	1			1	14	0.2%
Diptera							
Ceratopogonidae							
Culicoides sp.	biting midge	5	3	16	24	348	5.3%
Mallochohelea sp.	biting midge		4		4	58	0.9%
Palpomyia gr.	biting midge		2	2	4	58	0.9%
Probezzia sp.	biting midge	2		7	9	130	2.0%
Sphaeromias sp.	biting midge	6	6	9	21	304	4.6%
Chironomidae							
Diamesa sp.	midge	2			2	29	0.4%
Hydrobaenus sp.	midge	13	25		38	551	8.4%
Orthocladiinae	midge	2			2	29	0.4%
Orthocladius frigidus	midge	3			3	43	0.7%
Orthocladius sp.	midge		1	9	10	145	2.2%
Rheocricotopus unidentatus	midge	6			6	87	1.3%
Stempellinella sp.	midge	1			1	14	0.2%
Stictochironomus sp.	midge			1	1	14	0.2%
Tabanidae							
Chrysops sp.	deer fly	1		1	2	29	0.4%
Tipulidae							
Pilaria sp.	crane fly	10	1	5	16	232	3.5%
Ormosia sp.	crane fly	1	3		4	58	0.9%
Total Taxa		16	10	11	**21**		100.0%
Total Specimens		208	138	108	454		
Total Density (no./m^2)		9043	6000	4696		**6580**	

Table 5-24
Benthic Macroinvertebrates Collected from the Magna Metals Site by Tetra Tech EC.

Station: **MM-SW / SD14**
Sample Date: March 30, 2004
Gear: Petite Ponar Grab (0.023 m^2)

Taxon	Common Name	Replicate / (Lab Sample No.) A (MM4)	B (MM5)	C (MM6)	Total	Density (no./m^2)	Pct.
Tubificida							
Tubificidae							
Limnodrilus sp.	tube worm		1	1	2	29	1.8%
Basommatophora							
Ancylidae							
Ferissia rivularis	limpet snail		1		1	14	0.9%
Amphipoda							
Talitridae							
Hyalella azteca	sideswimmer	1	4	1	6	87	5.4%
Ephemeroptera							
Baetidae	mayfly		2		2	29	1.8%
Caenidae							
Caenis sp.	mayfly	1		1	2	29	1.8%
Isonychiidae							
Isonychia sp.	mayfly			2	2	29	1.8%
Odonata							
Libellulidae							
Plathemis sp.	dragonfly		1		1	14	0.9%
Diptera							
Ceratopogonidae							
Culicoides sp.	biting midge	2			2	29	1.8%
Mallochohelea sp.	biting midge	2	1		3	43	2.7%
Palpomyia gr.	biting midge	2	1		3	43	2.7%
Chironomidae							
Chironomus sp.	midge		1	3	4	58	3.6%
Clinotanypus sp.	midge	8	1	3	12	174	10.8%
Cryptochironomus fulvus gr.	midge		1		1	14	0.9%
Dicrotendipes sp.	midge			7	7	101	6.3%
Einfeldia sp.	midge	1			1	14	0.9%
Orthocladiinae	midge	1			1	14	0.9%
Paratanytarsus sp.	midge	1	5	7	13	188	11.7%
Procladius sp.	midge		8	30	38	551	34.2%
Tanypodinae	midge			4	4	58	3.6%
Tanytarsus sp.	midge	1		5	6	87	5.4%
Total Taxa		10	12	11	**20**		100.0%
Total Specimens		20	27	64	111		
Total Density (no./m^2)		870	1174	2783		**1609**	

Table 5-25
Benthic Macroinvertebrates Collected from the Magna Metals Site by Tetra Tech EC.

Station: **MM-SW / SD19**
Sample Date: March 31, 2004
Gear: Petite Ponar Grab (0.023 m^2)

Taxon	Common Name	Replicate / (Lab Sample No.) A (MM16)	B (MM17)	C (MM18)	Total	Density (no./m^2)	Pct.
Nematoda	round worm	1	2		3	43	1.4%
Tubificida							
Tubificidae							
Limnodrilus sp.	tube worm	2			2	29	1.0%
Naididae	naidid worm		1		1	14	0.5%
Isopoda							
Asellidae							
Caecidotea sp.	sow bug	1			1	14	0.5%
Ephemeroptera							
Caenidae							
Caenis sp.	mayfly	3			3	43	1.4%
Diptera							
Ceratopogonidae							
Palpomyia gr.	biting midge		1		1	14	0.5%
Chironomidae							
Chironomus sp.	midge	66	61	4	131	1899	62.4%
Dicrotendipes sp.	midge	11			11	159	5.2%
Hydrobaenus sp.	midge		4		4	58	1.9%
Kiefferulus sp.	midge	1			1	14	0.5%
Omisus sp.	midge	7			7	101	3.3%
Paratanytarsus sp.	midge			1	1	14	0.5%
Polypedilum tritum	midge			3	3	43	1.4%
Procladius sp.	midge	4			4	58	1.9%
Tanypus sp.	midge	7	7		14	203	6.7%
Tanytarsus sp.	midge	9	9	1	19	275	9.0%
Thienemannimyia gr.	midge		2	1	3	43	1.4%
Zavreliella sp.	midge	1			1	14	0.5%
Total Taxa		12	8	5	**18**		100.0%
Total Specimens		113	87	10	210		
Total Density (no./m^2)		4913	3783	435		**3043**	

Table 5-26
Benthic Macroinvertebrates Collected from the Magna Metals Site by Tetra Tech EC.

Station: **MM-SW / SD20**
Sample Date: March 31, 2004
Gear: Petite Ponar Grab (0.023 m^2)

Taxon	Common Name	Replicate / (Lab Sample No.) A (MM19)	B (MM20)	C (MM21)	Total	Density (no./m^2)	Pct.
Basommatophora							
Physidae							
Physa sp.	pouch snail		1		1	14	1.4%
Ephemeroptera							
Caenidae							
Caenis sp.	mayfly	4		1	5	72	6.9%
Odonata							
Libellulidae							
Leucorrhinia sp.	dragonfly		1		1	14	1.4%
Diptera							
Ceratopogonidae							
Palpomyia gr.	biting midge	1			1	14	1.4%
Sphaeromias sp.	biting midge		2	1	3	43	4.2%
Chironomidae							
Chironomus sp.	midge	4		1	5	72	6.9%
Cladopelma sp.	midge	2			2	29	2.8%
Dicrotendipes sp.	midge	8	1		9	130	12.5%
Endochironomus sp.	midge			1	1	14	1.4%
Einfeldia sp.	midge	3	5		8	116	11.1%
Glyptotendipes sp.	midge			1	1	14	1.4%
Kiefferulus sp.	midge			1	1	14	1.4%
Polypedilum halterale gr.	midge	3		1	4	58	5.6%
Procladius sp.	midge	4	3		7	101	9.7%
Tanypodinae	midge			2	2	29	2.8%
Tanypus sp.	midge	2	3	1	6	87	8.3%
Tanytarsus sp.	midge	2	2	1	5	72	6.9%
Thienemannimyia gr.	midge	1	3	1	5	72	6.9%
Zavrelimyia sp.	midge	4	1		5	72	6.9%
Total Taxa		12	10	11	**19**		100.0%
Total Specimens		38	22	12	72		
Total Density (no./m^2)		1652	957	522		**1043**	

Table 5-27
Benthic Macroinvertebrates Collected from the Magna Metals Site by Tetra Tech EC.

Station: **MM-SW / SD17**
Sample Date: March 31 , 2004
Gear: Petite Ponar Grab (0.023 m^2)

Taxon	Common Name	Replicate / (Lab Sample No.) A (MM13)	B (MM14)	C (MM15)	Total	Density (no./m^2)	Pct.
Tubificida							
Enchytraeidae	tube worm		1		1	14	0.3%
Tubificidae							
Limnodrilus sp.	tube worm	1	1	2	4	58	1.1%
Coleoptera							
Dytiscidae							
Agabus sp.	diving beetle		1		1	14	0.3%
Diptera							
Chironomidae							
Hydrobaenus sp.	midge	92	55	151	298	4319	84.9%
Orthocladiinae	midge			1	1	14	0.3%
Orthocladius sp.	midge	11	6	13	30	435	8.5%
Rheocricotopus unidentatis	midge	4	2	2	8	116	2.3%
Tanytarsus sp.	midge	2			2	29	0.6%
Thienemannimyia gr.	midge			1	1	14	0.3%
Zavrelimyia sp.	midge	1		2	3	43	0.9%
Empididae							
Clinocera sp.	dance fly			1	1	14	0.3%
Tipulidae							
Pedicia sp.	crane fly			1	1	14	0.3%
Total Taxa		6	6	9	**12**		100.0%
Total Specimens		111	66	174	351		
Total Density (no./m^2)		4826	2870	7565		**5087**	

Table 5-28
Benthic Macroinvertebrates Collected from the Magna Metals Site by Tetra Tech EC.

Station: **MM-SW / SD16**
Sample Date: March 30 , 2004
Gear: Petite Ponar Grab (0.023 m^2)

Taxon	Common Name	Replicate / (Lab Sample No.) A (MM10)	B (MM11)	C (MM12)	Total	Density (no./m^2)	Pct.
Nematoda	round worm	1	3		4	58	1.5%
Hoplonemertea							
Tetrastemmatidae							
Prostoma graescense	proboscus worm			1	1	14	0.4%
Tubificida							
Tubificidae							
Ilyodrilus templetoni	tube worm		4	4	8	116	3.0%
Limnodrilus sp.	tube worm	23	19	37	79	1145	29.6%
Limnodrilus hoffmeisteri	tube worm		5	8	13	188	4.9%
Limnodrilus udekemianus	tube worm	11	10		21	304	7.9%
Veneroida							
Sphaeriidae							
Pisidium sp.	pill clam		1	1	2	29	0.7%
Arhynchobdellida							
Erpobdellidae							
Mooreobdella sp.	leech			1	1	14	0.4%
Coleoptera							
Dytiscidae							
Hydroporus sp.	diving beetle		1		1	14	0.4%
Diptera							
Ceratopogonidae							
Ceratopogon sp.	biting midge	1			1	14	0.4%
Culicoides sp.	biting midge	1		1	2	29	0.7%
Palpomyia gr.	biting midge	1			1	14	0.4%
Sphaeromias sp.	biting midge			1	1	14	0.4%
Chironomidae							
Chaetocladius sp.	midge	1			1	14	0.4%
Cryptochironomus fulvus gr.	midge			1	1	14	0.4%
Diplocladius sp.	midge	1			1	14	0.4%
Heterotrissocladius marcidus	midge		3		3	43	1.1%
Hydrobaenus sp.	midge	9	10	27	46	667	17.2%
Orthocladius sp.	midge		7	2	9	130	3.4%
Parametriocnemus sp.	midge	19	3	1	23	333	8.6%
Rheocricotopus sp.	midge	1		3	4	58	1.5%
Rheocricotopus unidentatis	midge	2	5	2	9	130	3.4%
Tanytarsus sp.	midge	3	4	2	9	130	3.4%
Thienemannimyia gr.	midge	2	4		6	87	2.2%
Tvetenia bavarica	midge	1			1	14	0.4%
Zavrelimyia sp.	midge	2	4	1	7	101	2.6%
Tabanidae							
Chrysops sp.	deer fly	1	1		2	29	0.7%
Tipulidae							
Ormosia sp.	crane fly	1			1	14	0.4%
Pilaria sp.	crane fly	3	6		9	130	3.4%
Total Taxa		19	17	16	**29**		100.0%
Total Specimens		84	90	93	267		
Total Density (no./m^2)		3652	3913	4043		**3870**	

Table 5-29
Benthic Macroinvertebrates Collected from the Magna Metals Site by Tetra Tech EC.

Station: **MM-SW / SD15**
Sample Date: March 30, 2004
Gear: Petite Ponar Grab (0.023 m^2)

Taxon	Common Name	Replicate / (Lab Sample No.) A (MM7)	B (MM8)	C (MM9)	Total	Density (no./m^2)	Pct.
Nematoda	round worm			1	1	14	0.3%
Hoplonemertea							
Tetrastemmatidae							
Prostoma graescense	proboscus worm			1	1	14	0.3%
Tubificida							
Tubificidae							
Ilyodrilus templetoni	tube worm			3	3	43	0.9%
Limnodrilus sp.	tube worm	11	2	2	15	217	4.7%
Limnodrilus hoffmeisteri	tube worm	6			6	87	1.9%
Veneroida							
Sphaeriidae							
Pisidium sp.	pill clam	1			1	14	0.3%
Amphipoda							
Talitridae							
Hyalella azteca	sideswimmer	1			1	14	0.3%
Coleoptera							
Dytiscidae							
Hydroporus sp.	diving beetle	3		1	4	58	1.3%
Scirtidae							
Cyphon sp.	marsh beetle	1			1	14	0.3%
Diptera							
Cecidomyiidae	gall gnat		1		1	14	0.3%
Ceratopogonidae							
Culicoides sp.	biting midge	2	1	4	7	101	2.2%
Mallochohelea sp.	biting midge	1		1	2	29	0.6%
Palpomyia gr.	biting midge	5	1	1	7	101	2.2%
Chironomidae							
Ablabesmyia sp.	midge	7			7	101	2.2%
Chaetocladius sp.	midge	1			1	14	0.3%
Cyrptochironomus fulvus gr.	midge		3	8	11	159	3.4%
Heterotrissocladius marcidus	midge			26	26	377	8.2%
Hydrobaenus sp.	midge	3		17	20	290	6.3%
Orthocladius sp.	midge	42	18	9	69	1000	21.6%
Psectrocladius sp.	midge	16			16	232	5.0%
Rheocricotopus sp.	midge		5		5	72	1.6%
Rheocricotopus unidentatis	midge	2	5	2	9	130	2.8%
Tanytarsus sp.	midge	1	1	1	3	43	0.9%
Thienemannimyia gr.	midge	48	13	36	97	1406	30.4%
Tipulidae							
Ormosia sp.	crane fly	1			1	14	0.3%
Pedicia sp.	crane fly			1	1	14	0.3%
Pilaria sp.	crane fly			2	2	29	0.6%
Pseudolimnophila sp.	crane fly		1		1	14	0.3%
Total Taxa		18	11	17	**28**		100.0%
Total Specimens		152	51	116	319		
Total Density (no./m^2)		6609	2217	5043		**4623**	

Table 5-30
Magna Metals Site
Biometrics for Benthics

Biological Impairment Criteria	Furnace Brook BS13(Reference)	Furnace Brook Downstream from Site		
		BS14	BS19	BS20
Taxa Richness (N)	21	20	18	19
Relative Density (No/M^2)	6580	1609	3043	1043
Dominant Taxa	*Limnodrilus*	*Procladius*	*Chironomus*	*Dicrotendipes*
Percent Dominant Taxa	51.8%	34.2%	62.4%	12.5%
*Site specific reference benthic communities present in Furnace Brook				

Biological Impairment Criteria	Unnamed Tributary BS17(Reference)	Unnamed Tributary	
		BS16	BS15
Taxa Richness (N)	12	29	28
Relative Density (No/M2)	5087	3870	4623
Dominant Taxa	*Hydrobaenus*	*Limnodrilus*	*Thienemannimyia*
Percent Dominant Taxa	84.9%	29.6%	30.4%
*Site specific criteria reference benthic communities present in Unnamed Tributary			

Table 5-31
Magna Metals Site
Ceriodaphnia dubia Surface Water Toxicity Test Results

Station	Location	*Ceriodaphnia dubia* Survival (Mean %)	*Ceriodaphnia dubia* Reproduction (Mean # Progeny Produced)
Control	N/A	100%	30.0
MM-SW-14	Furnace Brook	100%	30.7
MM-SW-19	Furnace Brook	100%	22.7*
MM-SW-15	Unnamed Tributary	100%	38.3
MM-SW-17[a]	Unnamed Tributary - Background	100%	32.2
MM-SW-21	Wetland South of the Unnamed Tributary	100%	33.6
MM-SW-22	Wetland North of the Unnamed Tributary	0%*	0*

Note:

[a] Background sample for samples taken from the Unnamed Tributary

* Statistically different from Laboratory Control (α=0.05)

N/A - Not Applicable

Table 5-32
Magna Metals Site
Chironomus tentans and *Hyalella azteca* Sediment Toxicity Test Results

		Chironomus tentans		*Hyalella azteca*	
Station	**Location**	Mean Survival (%)	Mean Weight (mg)	Mean Survival (%)	Mean Weight (mg)
Control	N/A	88.75%	1.0717	90.00%	0.0745
MM-SD-13[a]	Furnace Brook - Background	91.25%	1.0425	66.25%*	0.0371*
MM-SD-14	Furnace Brook	91.25%	0.7056*	67.50%	0.0489
MM-SD-19A	Furnace Brook	93.75%	0.6782*	87.50%	0.0918
MM-SD-15	Unnamed Tributary	91.25%	0.8619*	61.25%	0.0326*
MM-SD-17[b]	Unnamed Tributary - Background	90.00%	1.1075	65%*	0.0628*
MM-SD-21	Unnamed Pond	85.00%	0.9965	70.00%	0.0380
MM-SD-23	Unnamed Pond	81.25%	1.1643	67.50%	0.0737

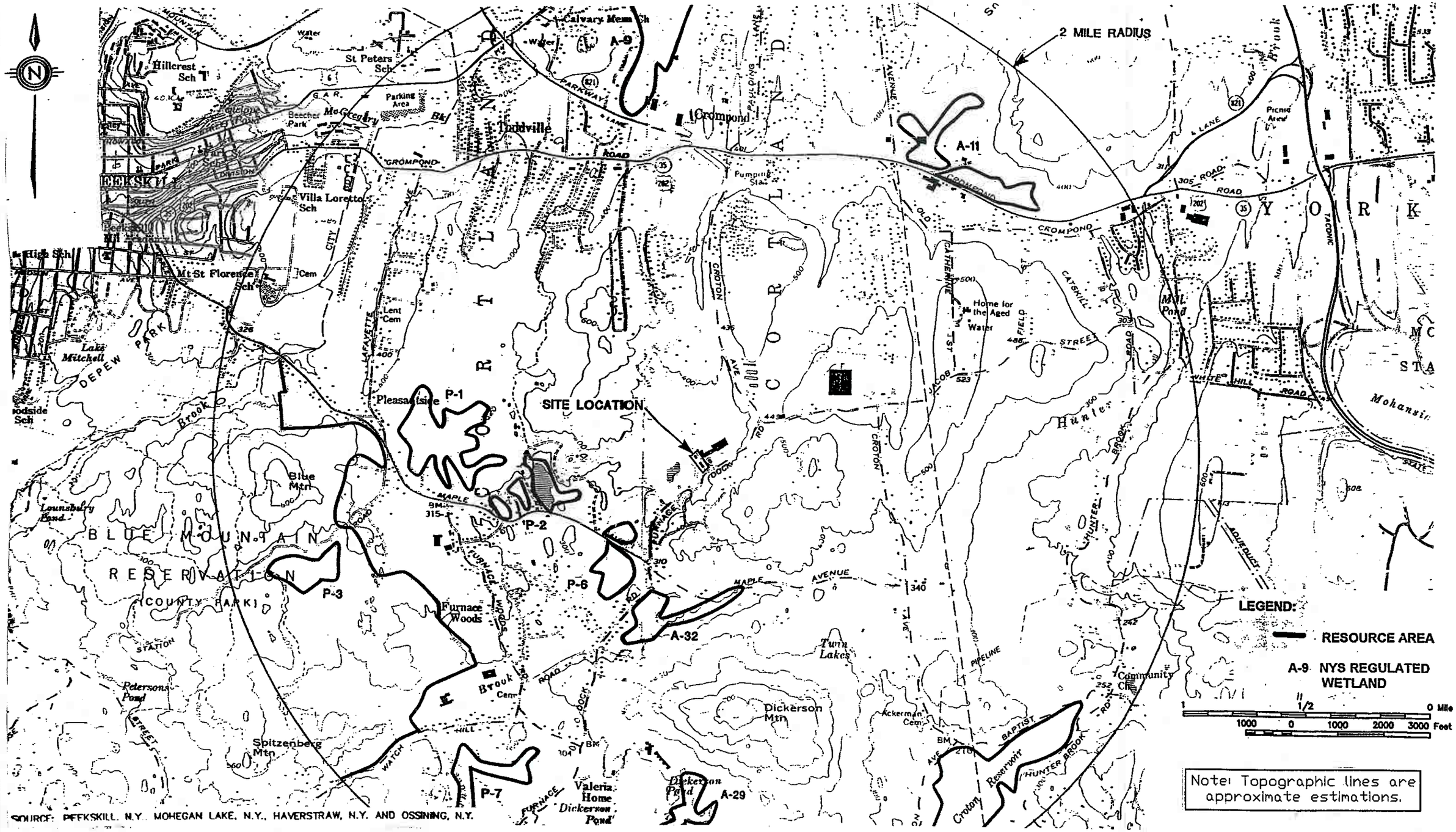
Note:

[a] Background sample for samples taken from the Furnace Brook

[b] Background sample for samples taken from the Unnamed Tributary

* Statistically different from Laboratory Control (α=0.05)

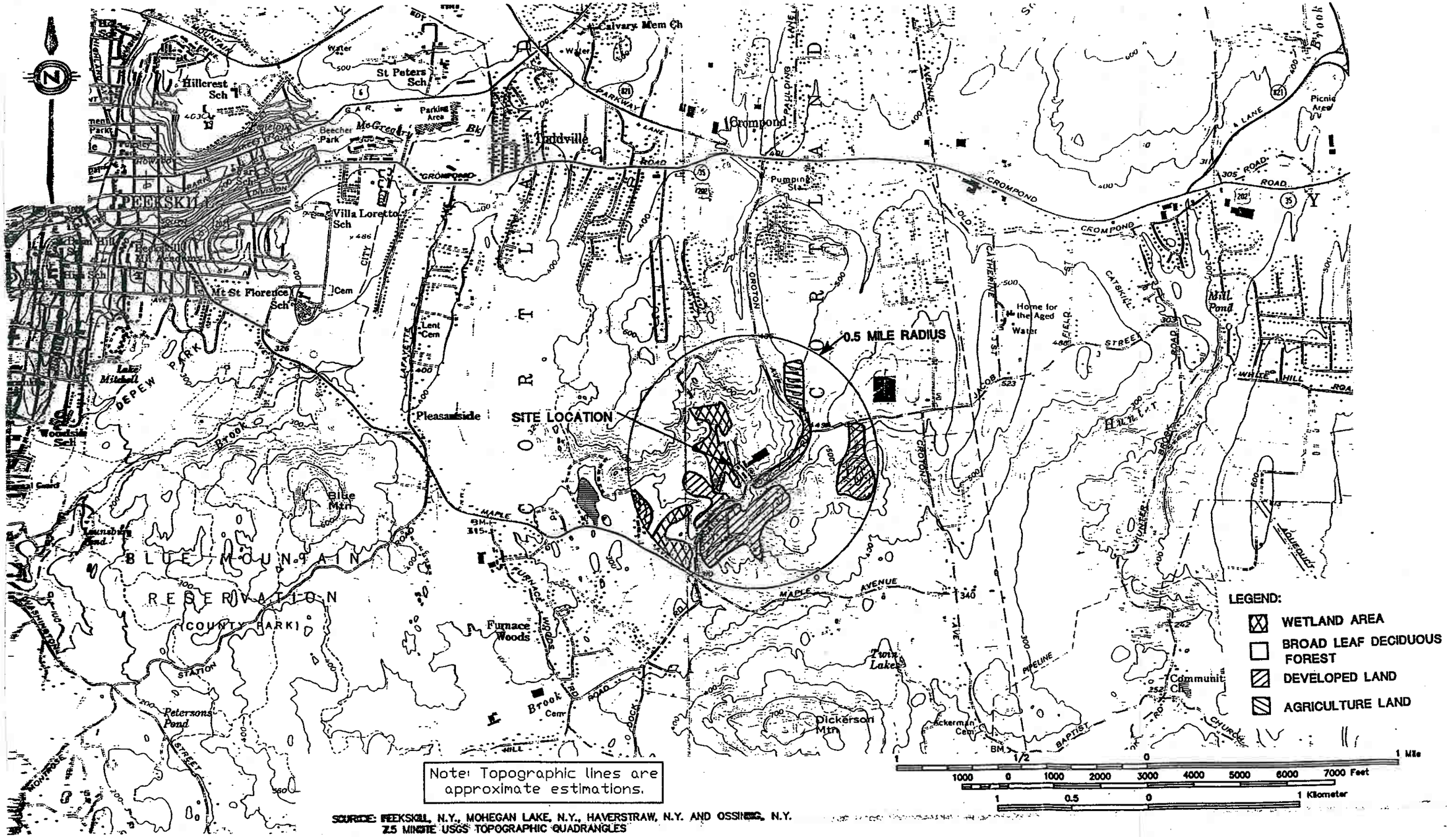
N/A - Not Applicable



TETRA TECH EC, INC.

TITLE:
Documented Fish and Wildlife Resources – 1998 RI Summary
Magna Metals
Cortlandt, New York

DWN.: LMB	DATE: 08/22/07	PROJECT NO.: 106-1172	
CHKD:	REV.: 0	FIGURE NO.: 5-1	
DES.:	APPD:		



Note: Topographic lines are approximate estimations.

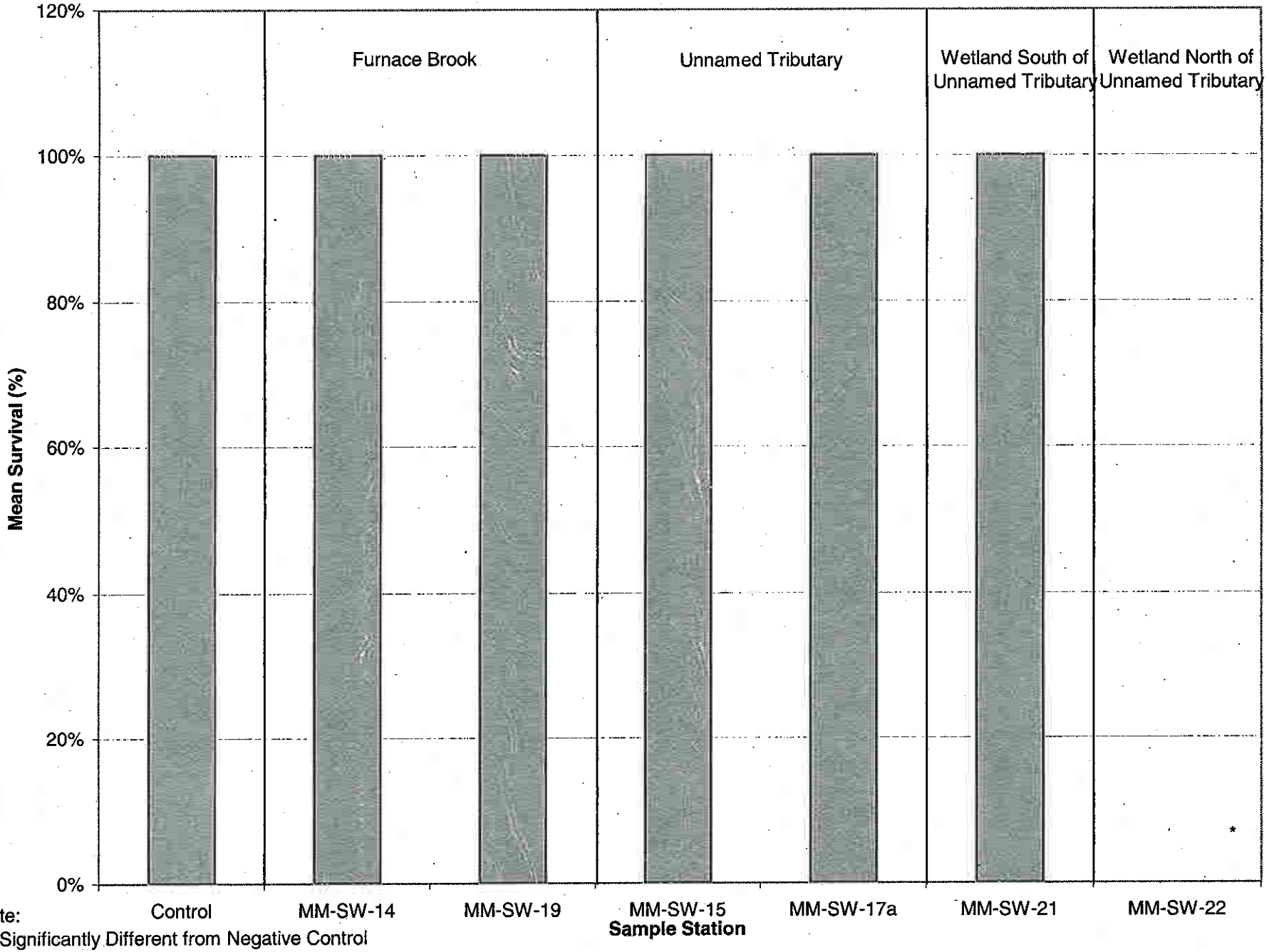
SOURCE: PEEKSKILL, N.Y., MOHEGAN LAKE, N.Y., HAVERSTRAW, N.Y. AND OSSINING, N.Y. 7.5 MINUTE USGS TOPOGRAPHIC QUADRANGLES

TETRA TECH EC, INC.

TITLE:
Cover Type Map – 1998 RI Summary
Magna Metals
Cortlandt, New York

DWN.:	DATE:	PROJECT NO.:
LMB	08/22/07	106-1172
CHKD:	REV.: 0	FIGURE NO.: 5-2
DES.:	APPD:	

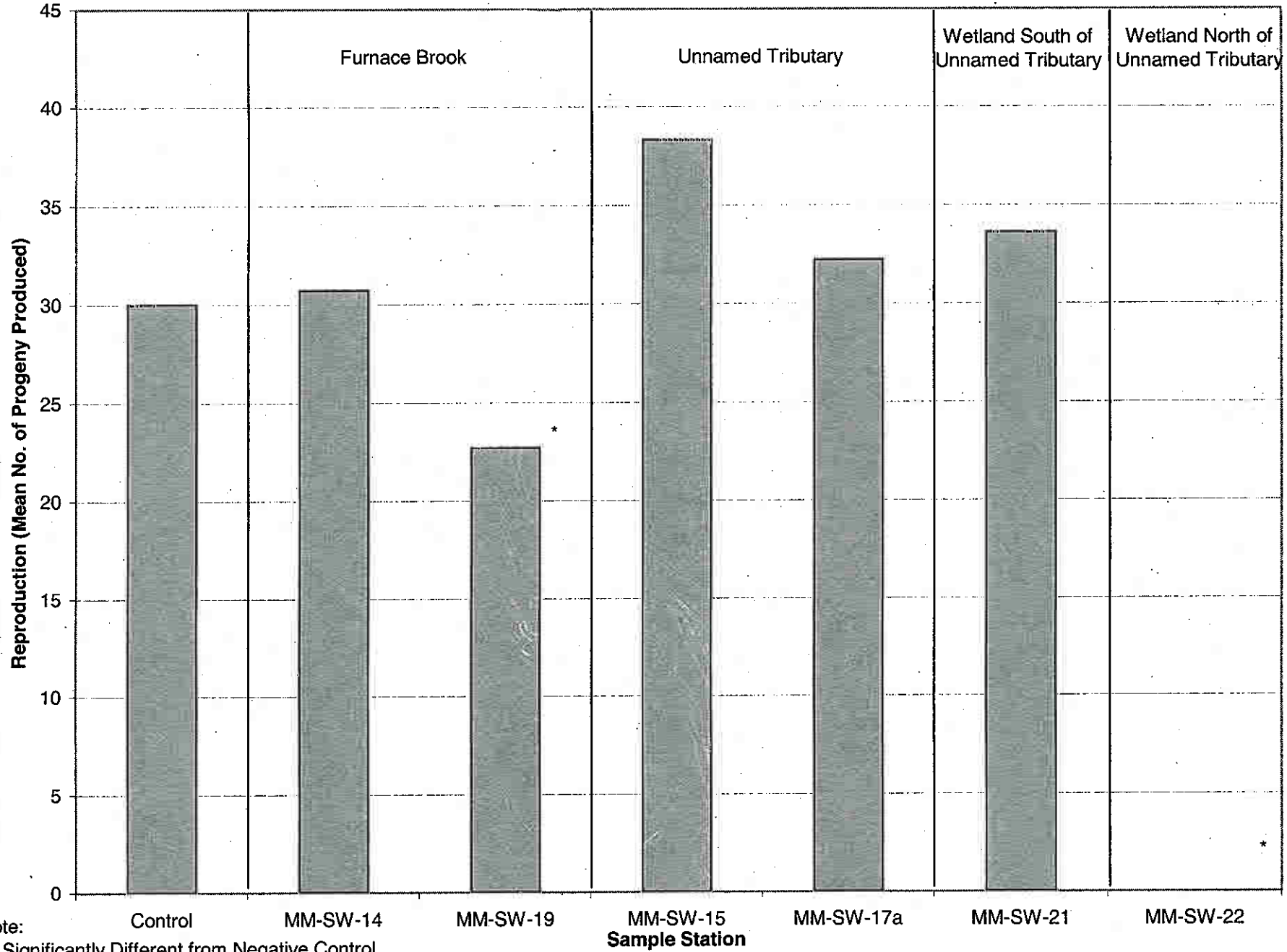
Figure 5-4
Magna Metals Site
Ceriodaphnia dubia Chronic Surface Water Toxicity Test Mean Survival



Note:
* - Significantly Different from Negative Control
a - Background sample for samples taken from Furnace Brook
b - Background sample for samples taken from the Unnamed Tributary

Figure 5-4.xls.[Ceriodaphnia %]

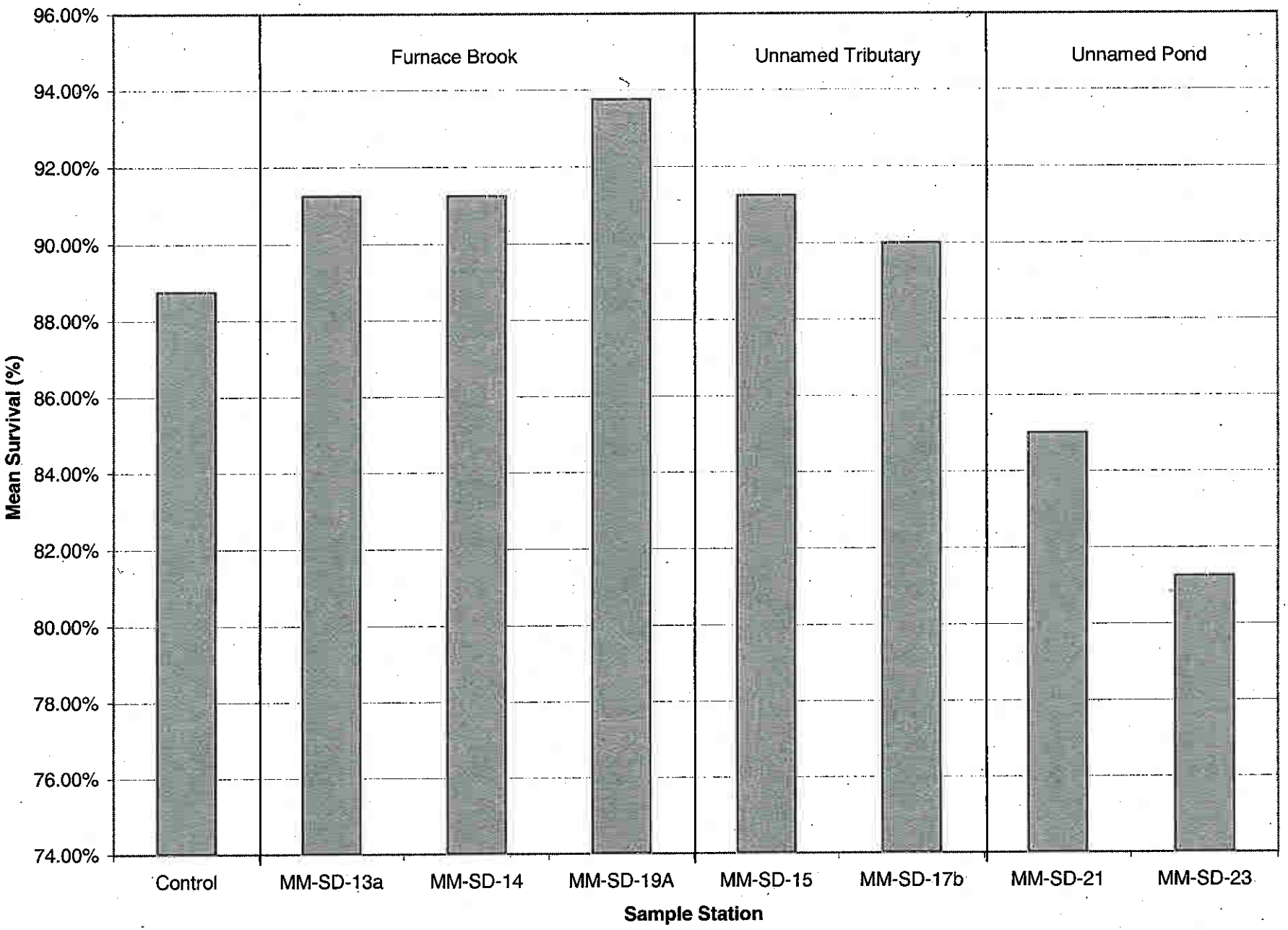
Figure 5-5
Magna Metals Site
Ceriodaphnia dubia Chronic Surface Water Toxicity Test Mean Reproduction Survival



Note:
* - Significantly Different from Negative Control
a - Background sample for samples taken from Furnace Brook
b - Background sample for samples taken from the Unnamed Tributary

Figure 5-5.xls.[Ceriodaphnia birth]

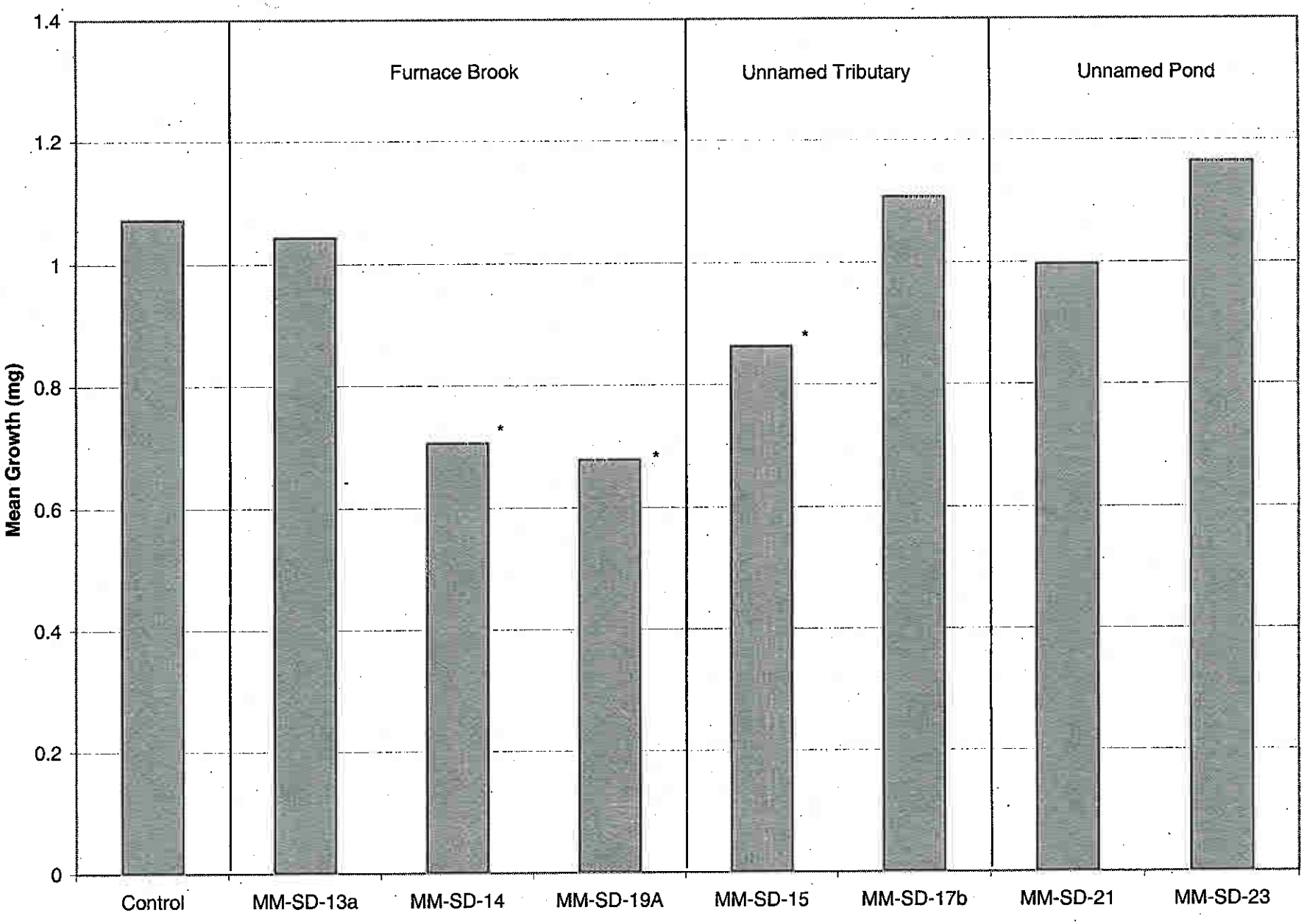
Figre 5-6
Magna Metals Site
Chironomus tentans 10-Day Whole Sediment Toxicity Test Mean Survival



Note:
a - Background sample for samples taken from Furnace Brook
b - Background sample for samples taken from the Unnamed Tributary

Figure 5-6.xls.[Chironomid %]

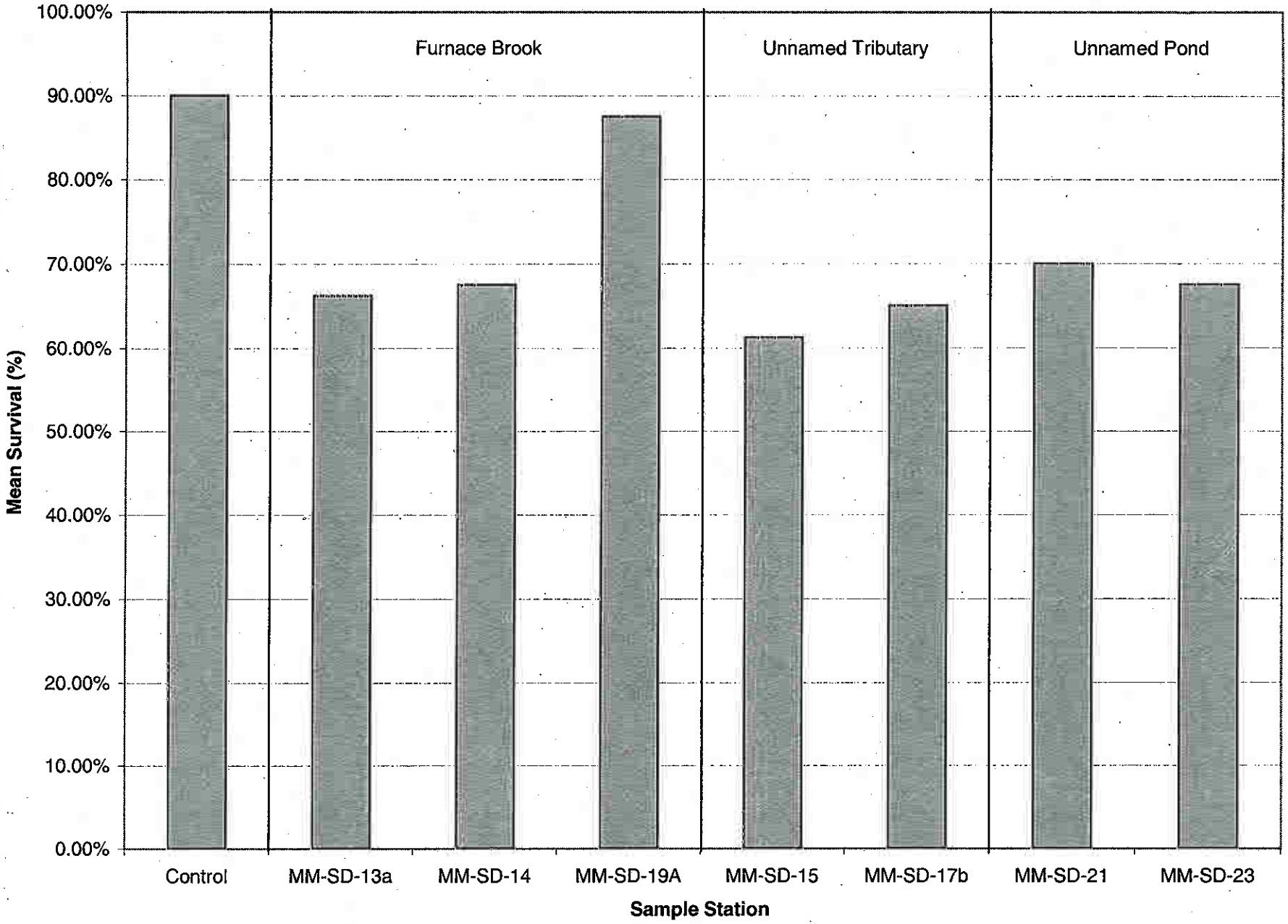
Figure 5-7
Magna Metals Site
Chironomus tentans 10-Day Whole Sediment Toxicity Test Mean Growth



Note:
* - Significantly Different from Negative Control
a - Background sample for samples taken from Furnace Brook
b - Background sample for samples taken from the Unnamed Tributary

Figure 5-7.xls.[Chironomid Wgt]

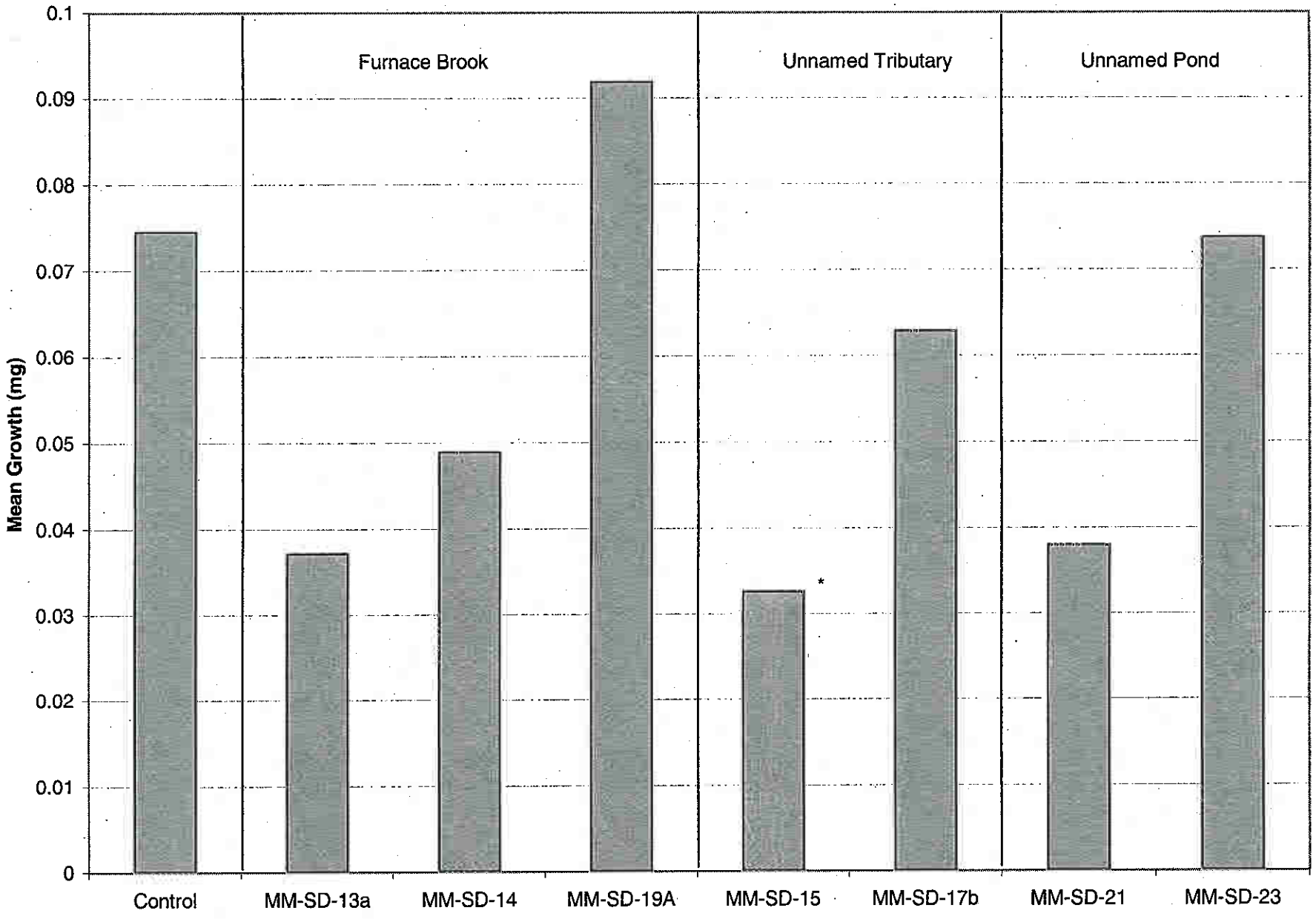
Figure 5-8
Magna Metals Site
Hyalella azteca 10-Day Whole Sediment Toxicity Test Mean Survival



Note:
a - Background sample for samples taken from Furnace Brook
b - Background sample for samples taken from the Unnamed Tributary

Figure 5-8.xls.[Hyalella %]

Figure 5-9
Magna Metals Site
Hyalella azteca 10-Day Whole Sediment Toxicity Test Mean Growth



Note:
* - Significantly Different from Negative Control
a - Background sample for samples taken from Furnace Brook
b - Background sample for samples taken from the Unnamed Tributary

Figure 5-9.xls.[Hyalella wgt]

6.0 SUMMARY AND CONCLUSIONS

6.1 1998 RI/FS Summary

The chemical data collected indicated that the majority of media sampled, i.e., groundwater, surface water, surface soil, sediment, and subsurface soil were affected by organic and inorganic contaminants of concern.

Chlorinated VOCs (e.g., trichloroethene, cis-1,2-dichloroethene, vinyl chloride) were detected at concentrations less than 5 ug/L in the septic tank/leach pit water. VOCs were not present in the sludge from the tank/pit samples. This indicated a decrease from the WCHD and NYSDEC investigation events, as this class of VOCs had been present up to 15,000 ug/L in the tank/pit waters and 2,600 ug/kg in the sludge. A decrease of up to 7.2 times and 108 times in concentration of the chlorinated VOCs in surface water and sediments, respectively, was also noted. VOC occurrences were noted up to 18 ug/L (surface water) and 25 ug/kg (sediment). The groundwater beneath the former Magna Metals property contained concentrations of trichloroethene (maximum of 4,700 ug/L) and tetrachloroethene (maximum of 90 ug/L).

PAH constituents were detected in septic tank/leach pit sludge; containing 8 PAHs, at concentrations up to 1,500 ug/kg. In addition, concentrations greater than applicable criteria occurred in 7 of the 11 sediment samples (64 percent) and 1 of the 5 surface soil samples (20 percent). A majority of the maximum sediment concentrations (16 of 18) for this class of compounds occurred at location SD-1 (the drainage culvert). Runoff from nearby Cross Road Avenue may be a contributing factor to the culvert concentrations. Concentrations of PAHs less than 4 ug/L and 160 ug/kg, respectively, were detected in the surface water and subsurface soils.

Metals and cyanide were detected in the water and sludge samples from the tanks/pits. Exceedance concentrations for the inorganics were detected in the tributary (SW-6/SD-6) and wetlands (SW-7/SD-6 and SW-9/SD-9) samples. In addition, the surface soils, subsurface soils and groundwater samples collected downgradient from the tanks/pits contained inorganic exceedance concentrations.

Regarding groundwater, since on-site overburden monitoring wells had exceedances off-site overburden groundwater, on-site bedrock groundwater, and off-site bedrock groundwater, required additional investigation. Additional groundwater investigation was recommended based on exceedances of NYSDEC Water Quality Standards (Class GA) in two of the three downgradient overburden monitoring wells MW-03 and MW-04.

The Ecological Assessment, which incorporated surface soil, sediment, and surface water data, noted the following.

Down-gradient concentrations of the metals aluminum, copper, iron, mercury, zinc, and cyanide exceeded the NYSDEC Water Quality Standards, and selenium exceeded USEPA chronic and acute criteria in the surface water samples. Down-gradient levels of copper, nickel, chromium, and zinc surpassed the NYSDEC severe effect level for sediments. In the down-gradient surface soil samples, aluminum, chromium, copper, selenium, vanadium, and zinc were detected at concentrations that were greater than the screening benchmark concentrations. Concentrations of

aluminum, chromium, selenium, and vanadium were also higher than the screening benchmark concentrations in the background surface soil samples. In addition, levels of PCBs aroclor-1254 and aroclor-1260, and the semi-volatile organic compound di-n-butylphthalate exceeded the screening benchmark concentrations in the down-gradient surface soil samples.

Based upon these results, it was determined that removal of soils in the leach pit source area would eliminate the potential for exposure. These potential exposures were:

- Surface drainage from the site is directed into adjoining wetlands and streams deemed as sensitive environments (including a NYSDEC regulated wetland) supporting ecological receptors. Given that the principal fate and transport mechanism for site-related contaminants is the surface water pathway, the potential for exposure of ecological receptors to site-related contaminants was viable.

- Elevated concentrations of aluminum, chromium, copper, selenium, vanadium, and zinc were associated with on-site surface soils. While present at elevated concentrations, the developed nature of the site (warehouse/office building/parking lot) limits the surface soil exposure pathway for most ecological receptors. However, contaminated soils may function as a potential source for exposing ecological receptors downstream via erosion and runoff into adjoining streams and wetlands.

- Site-related contaminants including aluminum, copper, iron, mercury, zinc, and cyanide were present in surface water at elevated concentrations above background and corresponding acute and chronic AWQC in the adjoining streams and wetlands.

- Site-related contaminants including copper, nickel, chromium, and zinc were present in the sediments at concentrations above background and corresponding low and severe sediment quality criteria in the adjoining streams and wetlands.

A Step IIC Toxic Effects Analysis was recommended, which would focus on the aquatic communities, surface water and sediments of the tributaries and adjoining wetlands to determine if the potential exposure to site-related contaminants were impacting aquatic communities.

6.2 2004 Supplemental RI Summary

The 2004 Supplemental RI noted the following:

Leach Pits/Tanks

- Thirteen leach pits/septic pits had been discovered at the Magna Metals Site. The total number found was greater than anticipated based on NYSDEC and WCHD archival information.

- There appeared to have been two phases of leach pit construction at the site. The first and older set of leach pits is constructed of concrete cinder blocks with apparently a soil or gravel bottom. Leach pits of this construction are ST-02, LP-02, LP-03, LP-04, LP-05, and LP-06A.

- The second and newer set of leach pits is constructed of prefabricated concrete cylinders with perforated sides and apparently soil or gravel bottoms. Leach pits of this construction are LP-06, LP-07, LP-08, LP-0A, and LP-09. It appears that the pipe exiting from LP-06A was abandoned and additional fill material added to the site prior to the construction of the newer set of pits. The newer set of leach pits ties into the older set of pits at leach pit LP-05.

- Sludge or sludge cakes are still present in 12 of the 13 pits at the site. The pits still containing sludge or sludge cake are ST-02, LP-02, LP-03, LP-04, LP-05, LP-06, LP-06A, LP-07, LP-08, LP-0A, and LP-09.

- Based on observations and investigations in the field, fluids flowed from ST-01 to ST-02 to LP-02 to LP-03 to LP-04 to LP-05 to LP-06A. After abandonment of the pipe leading from LP-06A, flow proceeded from LP-05 to LP-06, to LP-07, to LP-08, to LP-0A to LP-09. LP-09 appears to be the end of the leach pit line, as no pipe exits this pit.

Stream and Wetlands

- Based on inorganic analytical results (particularly copper) for the surface water sample collected at location SW-22, groundwater samples collected from monitoring wells MW-04 and MW-04D, and surface soil samples collected downgradient of the leach pit area and the former Magna Metals building (SS-06, SS-07, SS-08, SS-09, SS-10, SS-11, and SS-12) the wetlands east of Furnace Brook and the unnamed tributary are impacted.

- The Step IIC Toxic Effects Analysis confirmed impacts to pelagic and benthic aquatic life were observed in indigenous and laboratory based analyses. The primary environmental media of concern are surface waters and sediments of Furnace Brook, its unnamed tributary, and the palustrine wetlands associated with the site.

In general, concentrations and distributions of contaminant compounds and analytes detected during the 2004 Supplemental RI were consistent with contaminant concentrations and distributions detected and presented in the 1998 RI/FS. The 2004 Supplemental RI analytical results indicate that all media sampled are affected by either organic or inorganic contaminants of concern at concentrations above criteria. In particular, TCE, PAHs, and Metals.

6.3 2006 Data Findings

The 2006 additional investigation included the collection of groundwater samples from existing wells MW-02, MW-03, MW-04, MW-06; installation of two new wells next to the former Magna Metals building, MW-09 and MW-10; and an additional new well, MW-11, approximately 200 feet north of the former Magna Metals building and adjacent to Leach Pit LP-09. Soil vapor samples were also collected from three exterior locations along the western side of the office/warehouse building, five exterior locations within the area containing the leach pits, and one interior sub-slab sample from the building south of the Magna Metals building and the office/warehouse building.

The sampling results indicated that groundwater collected from the two new monitoring wells, MW-9 and MW-10, did not contain contaminants above NYSDEC water quality standards. One hundred and ninety ppb of TCE was detected in well MW-11, located near Leach Pit-09. MW-11 sample groundwater results were consistent with previous data that is, groundwater adjacent to the leach pits is impacted.

Soil gas results indicated a response to a TCE concentration of 59 micrograms per cubic meter in one soil vapor sample (SV-03) that was collected next to the office/warehouse building. The soil gas sample results documented that VOCs were detected at concentrations ranging from 1 to 1,900 micrograms per cubic meter (ug/m^3).

6.4 2007 AKRF Soil Vapor and Indoor Air Investigation Findings

The following results were presented as part of the July 2007 Soil Vapor Investigation Report, AKRF and are presented herein as an overview. No indoor air samples contained TCE above the air guidance value of 5 ug/m^3 in Table 3.1 of the NYSDOH Soil Vapor Intrusion Guidance. Although there was no evidence of exposure to workers at the site based upon the indoor air sampling results, the elevated concentrations of TCE, and to a lesser extent 1.2-DCE and toluene, were detected in the sub-slab soil gas (SV-11 and SV-12) beneath the Polymedco office area. (AKRF, July 2007). For additional detail, please refer to the July 2007 AKRF report.

6.5 RI Completion

Over the course of the RI, several key issues became apparent. These included the following:

(i) locating the source of groundwater contamination.

Sample data from the 1998, 2004 and 2006 reports consistently showed that the source of the groundwater contamination was the former leach pits. Data from the borings and wells installed closest to the former Magna Metals building did not suggest that an additional or larger groundwater plume source is present. Due to the weakened structural nature of the former Magna Metals building, ISCP's consultant was unable to obtain sample data directly below the floor. Therefore, as part of the FS, the alternative addressing leach pit/soil removal will include building demolition and post-demolition confirmation sampling of subsurface conditions. The alternative will include an estimate of quantities and costs for potential removal of soils below the building floor. The FS alternatives will develop soil excavation quantities based on the known depth to bedrock (which is relatively shallow, approximately 10 x 15 feet) and known aerial extent of contamination which has been already documented within the 1998, 2004, and 2006 reports.

(ii) defining the extent of the groundwater plume.

Over the course of three field investigation events which included monitoring well installation, it became evident that the groundwater plume is defined to a narrow aerial extent extending from the former Magna Metals building area to the steep slope where overburden is terminated. The plume extends along the leach pit system, as expected, as these structures apparently discharged directly, or through a series of pipes into the overburden. No evidence of off-site overburden or

off-site bedrock groundwater contamination was found. The aerial limit of the groundwater plume appeared to be limited to the site property.

(iii) ensuring all underground structures have been located.

After extensive investigation efforts involving two ground cover clearing events, two geophysical studies, a soil boring program, and mechanical/hand dig excavation effort, 13 leach pits/tanks were located in what appeared to be two historic phases of leach pit construction at the site. Interconnections between the pits were hand excavated and significant understanding of their historic operation was derived from the investigation efforts. The actual number of pits were significantly more than identified in historic NYSDEC and WCHD archival materials. As part of the FS alternative, all soils will be removed surrounding the pit area. A figure detailing the soil removal "box" will be presented in the FS based on the leach pit configuration, as previously shown on Figure 2-2 and the known depth to bedrock. The soil removal look will include the leach pit area, and soils on the slope surface as data indicated that the surface soils adjacent to the leach pit and down the slope had exceedances. The alternative will also include following all piping emanating from the pit, even beyond the "box" to fully ensure that soil remediation will be effective. As discussed in (i), the FS alternatives will also include soils beneath the former Magna Metals building floor.

(iv) fully delineating the nature and extent of soil contamination.

Subsurface soils and surface soils have been delineated. As discussed in (i) and (iii) contaminated soils will be included in the FS alternatives for removal. The horizontal extent of subsurface and surface soil contamination is essentially aligned with the leach pit configuration. The bedrock, which is relatively shallow, will be used in the FS alternative, as the bottom for soil excavation depths. The FS alternatives will include post-excavation confirmatory sampling.

(v) collecting additional sediment data points for ecological conformation of PRGs.

The data demonstrated that impacts to plagic and benthic acquatic life were observed. Both surface water and sediment are primary environmental media of concern. Although the ecological studies did derive site-specific preliminary remedial goals, the FS will also include an alternative that will result in pre-release conditions and an alternative to remediate to the Lowest Effort Level (LEL) concentrations for metals at all impacted areas.

The Remedial Investigation is now determined complete. Sufficient data exists to update the FS portion of the 1998 RI/FS. A new Feasibility Study will be prepared and submitted in the Fall of 2007. The Feasibility Study will contain evaluation of various remedial options and considerations as well as estimated costs. In addition, the FS options for remedial action will denote aerial extent of soil and sediment removal on isopleth maps to better define the FS alternative removal box.

In order to address the soil vapor investigation findings, an indoor air and subslab vapor feasibility study will be prepared to address subslab vapor mitigation and to prevent potential future vapor intrusion at the site.

7.0 REFERENCES

AKRF. February 2007 Soil Vapor Work Plan.

AKRF. July 2007. Revised Soil Vapor Investigation Report.

Barbour, M.T., J. Gerritsen, B.D. Snyder and J.B. Stribling. 1999. Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers – Periphyton, Benthic Macroinvertebrates and Fish. – Second Edition. Office of Water, Washington, D.C. EPA 841/B-99/002.

Bode, R.W., M.A. Novak and L.E. Abele. 1990. Biological Impairment Criteria for Flowing Waters in New York State. Stream Biomonitoring Unit, Division of Water, NYSDEC.

Efroymson, R.A., G.W. Suter II, B.E. Sample and D.S. Jones. 1997. Preliminary Remediation Goals for Ecological Receptors. US Department of Energy. Oak Ridge National Laboratory, Oak Ridge, TN.

EPA (US Environmental Protection Agency). 1999. National Recommended Water Quality Criteria – Correction. Office of Water. Washington, DC. EPA 822-Z99-001.

EPA (US Environmental Protection Agency). 2000. Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates – Second Edition. Office of Research and Development – Western Ecology Division. EPA 600/R-99/064.

EPA (US Environmental Protection Agency). 2002. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. Fourth Edition. US. Environmental Protection Agency, Office of Water, Washington, D.C. EPA 821-R-02-013.

NYSDEC, 1994. Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites (FWIA). NYSDEC Division of Fish and Wildlife.

NYSDEC, 1996. NYSDEC Natural Heritage Program Correspondence for the Occurrence of Threatened or Endangered Species at the Magna Metals Site.

NYSDEC, 1999. Technical Guidance for Screening Contaminated Sediments. NYSDEC Division of Fish and Wildlife and Marine Resources.

NYSDEC, 2004. Part 703 Surface Water and Groundwater Quality Standards and Ground water Effluent Limitations. www.dec.state.ny.us/website/regs/703.htm.

USFWS, 1996. USFWS Correspondence for the Occurrence of Threatened or Endangered Species at the Magna Metals Site.

Wetzel, R.G. and G.E. Likens. 1991. Limnological Analyses. Second Edition. Springer Verlag. New York, New York.

LEGEND

- SS-01 ▲ PHASE I SURFACE SOIL LOCATION
- SW/SD-01 ● PHASE I SURFACE WATER AND SEDIMENT LOCATION
- SB-01 ● PHASE I SOIL BORING LOCATION
- LP-02 ▽ LEACH PIT LOCATION
- MW-01 ⌖ MONITORING WELL LOCATION
- SW-15 ⌖ SUPPLEMENTAL RI SURFACE WATER SAMPLE OR ELEVATION LOCATION
- SD-15 ◆ SUPPLEMENTAL RI SEDIMENT SAMPLE LOCATION
- SS-08 ■ SUPPLEMENTAL RI SURFACE SOIL SAMPLE LOCATION
- RA ● SUPPLEMENTAL RI SOIL BORING LOCATION
- 320 CONTOUR LINE (20 FT INTERVAL)
- CROSS-SECTION A – A'
- GEOPHYSICAL SURVEY
- APPROXIMATE REFUSE AREA
- APPROXIMATE WETLAND AREA

NOTES:
1. PHASE I SAMPLE LOCATIONS AND SUPPLEMENTAL RI SOIL BORINGS ARE APPROXIMATE.

2. LOCATIONS OF FORMER MAGNA METALS BUILDING, 1 STORY CONCRETE BLOCK BUILDING, SHED, GEOPHYSICAL SURVEY AREA, AND MONITORING WELLS ARE BASED ON SURVEY DATA.

3. LOCATIONS OF LEACH PITS AND SUPPLEMENTAL RI SURFACE WATER SAMPLES, SEDIMENT SAMPLES, AND SURFACE SOIL SAMPLES ARE BASED ON GPS COORDINATES.

SOURCES:
1. CONTOUR LINES, FURNACE DOCK ROAD, AND FURNACE BROOK BELOW POND BASED ON MOHEGAN LAKE, NY AND PEEKSKILL, NY TOPOGRAPHIC QUADRANGLES, 7.5-MINUTE SERIES, DATED 1956 AND 1957, RESPECTIVELY, AND PHOTOREVISED IN 1981.

2. ADDITIONAL SURFACE FEATURES BASED ON WESTCHESTER COUNTY DEPARTMENT OF PLANNING AERIAL PHOTOGRAPH (SPRING 1990), DECEMBER 18, 1999 AERIAL PHOTOGRAPH, AND SURVEY DATA.

3. APPROXIMATE REFUSE AREA BASED ON NYSDEC DRAWING.

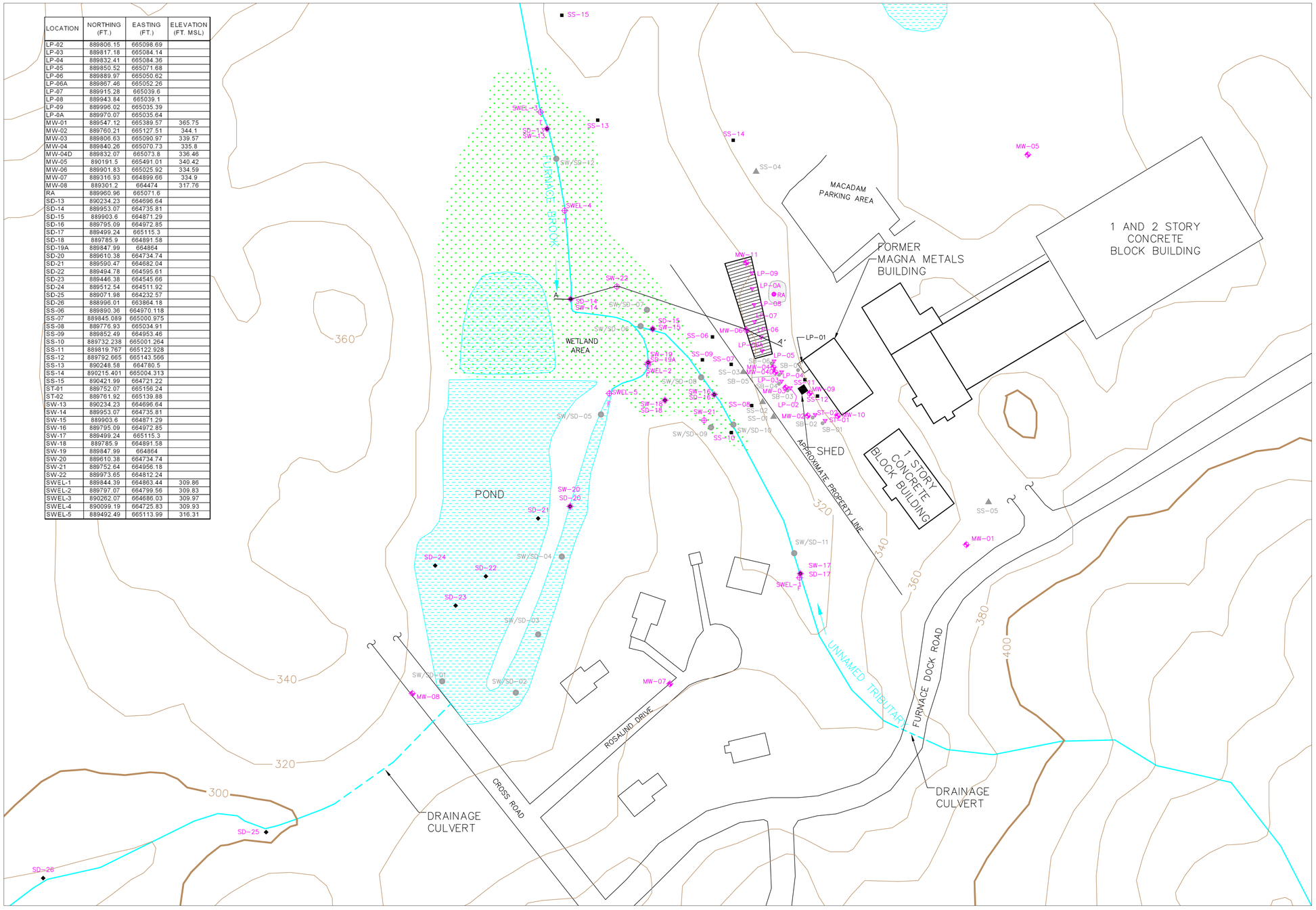
4. APPROXIMATE WETLAND AREA BASED ON FIELD OBSERVATIONS.

5. TOPOGRAPHIC LINES ARE APPROXIMATE ESTIMATIONS.

N

0 40 80
FEET

LOCATION	NORTHING (FT.)	EASTING (FT.)	ELEVATION (FT. MSL)
LP-02	889806.15	665098.69	
LP-03	889817.18	665084.14	
LP-04	889832.41	665084.36	
LP-05	889850.52	665071.68	
LP-06	889889.97	665050.62	
LP-06A	889867.46	665052.26	
LP-07	889915.28	665039.6	
LP-08	889943.84	665039.1	
LP-09	889996.02	665035.39	
LP-0A	889970.07	665035.64	
MW-01	889547.12	665389.57	365.75
MW-02	889760.21	665127.51	344.1
MW-03	889806.63	665090.97	339.57
MW-04	889840.26	665070.73	335.8
MW-04D	889832.07	665073.8	336.46
MW-05	890191.5	665491.01	340.42
MW-06	889901.83	665025.92	334.59
MW-07	889316.93	664899.66	334.9
MW-08	889301.2	664474	317.76
RA	889960.96	665071.6	
SD-13	890234.23	664696.64	
SD-14	889953.07	664735.81	
SD-15	889903.6	664871.29	
SD-16	889795.09	664972.85	
SD-17	889499.24	665115.3	
SD-18	889785.9	664891.58	
SD-19A	889847.99	664864	
SD-20	889610.38	664734.74	
SD-21	889590.47	664682.04	
SD-22	889494.78	664595.61	
SD-23	889446.38	664545.66	
SD-24	889512.54	664511.92	
SD-25	889071.98	664232.57	
SD-26	888996.01	663864.18	
SS-06	889890.36	664970.118	
SS-07	889845.089	665000.975	
SS-08	889776.93	665034.91	
SS-09	889852.49	664953.46	
SS-10	889732.238	665001.264	
SS-11	889819.767	665122.928	
SS-12	889792.665	665143.566	
SS-13	890248.58	664780.5	
SS-14	890215.401	665004.313	
SS-15	890421.99	664721.22	
ST-01	889752.07	665156.24	
ST-02	889761.92	665139.88	
SW-13	890234.23	664696.64	
SW-14	889953.07	664735.81	
SW-15	889903.6	664871.29	
SW-16	889795.09	664972.85	
SW-17	889499.24	665115.3	
SW-18	889785.9	664891.58	
SW-19	889847.99	664864	
SW-20	889610.38	664734.74	
SW-21	889752.64	664956.18	
SW-22	889973.65	664812.24	
SWEL-1	889844.39	664863.44	309.86
SWEL-2	889797.07	664799.56	309.83
SWEL-3	890262.07	664686.03	309.97
SWEL-4	890099.19	664725.83	309.93
SWEL-5	889492.49	665113.99	316.31



TETRA TECH EC, INC.

TITLE:
Site Plan with Sample, Pit and Monitoring Well Locations
Magna Metals
Cortlandt, New York

DWN:	DES.:	PROJECT NO.:
CTS	CTS	106-1172
CHKD:	APPD:	FIGURE NO.:
		2-2
DATE: 08/21/07	REV.: 0	

N:\GIS\GISKEY\GISPROJ31\MAGNA METALS\DRAFT FINAL RI\FIGURE 2-2 082107.DWG

LEGEND

LP-02 LEACH PIT LOCATION

MW-01 MONITORING WELL LOCATION

SV-02 SUPPLEMENTAL SOIL VAPOR LOCATION

MW-10 SUPPLEMENTAL MONITORING WELL LOCATION

320 CONTOUR LINE (20 FT INTERVAL)

APPROXIMATE REFUSE AREA

APPROXIMATE WETLAND AREA

NOTES:
1. LOCATIONS OF FORMER MAGNA METALS BUILDING, 1 STORY CONCRETE BLOCK BUILDING, SHED, GEOPHYSICAL SURVEY AREA, AND MONITORING WELLS ARE BASED ON SURVEY DATA.

2. LOCATIONS OF LEACH PITS ARE BASED ON GPS COORDINATES.

SOURCES:
1. CONTOUR LINES, FURNACE DOCK ROAD, AND FURNACE BROOK BELOW POND BASED ON MOHEGAN LAKE, NY AND PEEKSKILL, NY TOPOGRAPHIC QUADRANGLES, 7.5-MINUTE SERIES, DATED 1956 AND 1957, RESPECTIVELY, AND PHOTOREVISED IN 1981.

2. ADDITIONAL SURFACE FEATURES BASED ON WESTCHESTER COUNTY DEPARTMENT OF PLANNING AERIAL PHOTOGRAPH (SPRING 1990), DECEMBER 18, 1999 AERIAL PHOTOGRAPH, AND SURVEY DATA.

3. APPROXIMATE REFUSE AREA BASED ON NYSDEC DRAWING.

4. APPROXIMATE WETLAND AREA BASED ON FIELD OBSERVATIONS.

5. TOPOGRAPHIC LINES ARE APPROXIMATE ESTIMATIONS.

N

0 15 30
FEET

MW-11
SV-04
LP-09
LP-0A
LP-08
SV-05
LP-07
MW-06
LP-06
LP-06A
LP-05
MW-04
SV-06
LP-04
MW-04D
LP-03
MW-03
LP-02
SV-07
MW-09
MW-02
SV-08
MW-10
LP-01
SV-01
SV-02
SV-03
FORMER MAGNA METALS BUILDING
SHED
APPROXIMATE PROPERTY LINE
320
340
SV-09
1 STORY CONCRETE BLOCK BUILDING
MW-01

TETRA TECH EC, INC.

TITLE:
Soil Vapor Samples, Sub-Slab Vapor Sample, and Monitoring Well Locations
Supplemental RI/FS - September 2005 Work Plan Addendum
Magna Metals, Cortlandt, New York

DWN: CTS	DES.: CTS	PROJECT NO.: 106-1172	
CHKD: DPC	APPD:	FIGURE NO.: 2-4	
DATE: 08/21/2007	REV.: 0		

N:\GIS\GISKEY\GISPROJ31\MAGNA METALS\DRAFT FINAL RI\FIGURE 2-4 082107.DWG

LEGEND

MW-01 MONITORING WELL LOCATION

SW-15 SURFACE WATER SAMPLE OR ELEVATION LOCATION

320 CONTOUR LINE (20 FT INTERVAL)

320 GROUNDWATER CONTOUR

GROUNDWATER FLOW

GEOPHYSICAL SURVEY

APPROXIMATE WETLAND AREA

NOTES:
1. MW-04D AND MW-07 WERE NOT INCLUDED IN THE CONTOURING BECAUSE THEY ARE SCREENED IN BEDROCK.

2. LOCATIONS OF FORMER MAGNA METALS BUILDING, 1 STORY CONCRETE BLOCK BUILDING, SHED, GEOPHYSICAL SURVEY AREA, AND MONITORING WELLS ARE BASED ON SURVEY DATA.

SOURCES:
1. CONTOUR LINES, FURNACE DOCK ROAD, AND FURNACE BROOK BELOW POND BASED ON MOHEGAN LAKE, NY AND PEEKSKILL, NY TOPOGRAPHIC QUADRANGLES, 7.5-MINUTE SERIES, DATED 1956 AND 1957, RESPECTIVELY, AND PHOTOREVISED IN 1981.

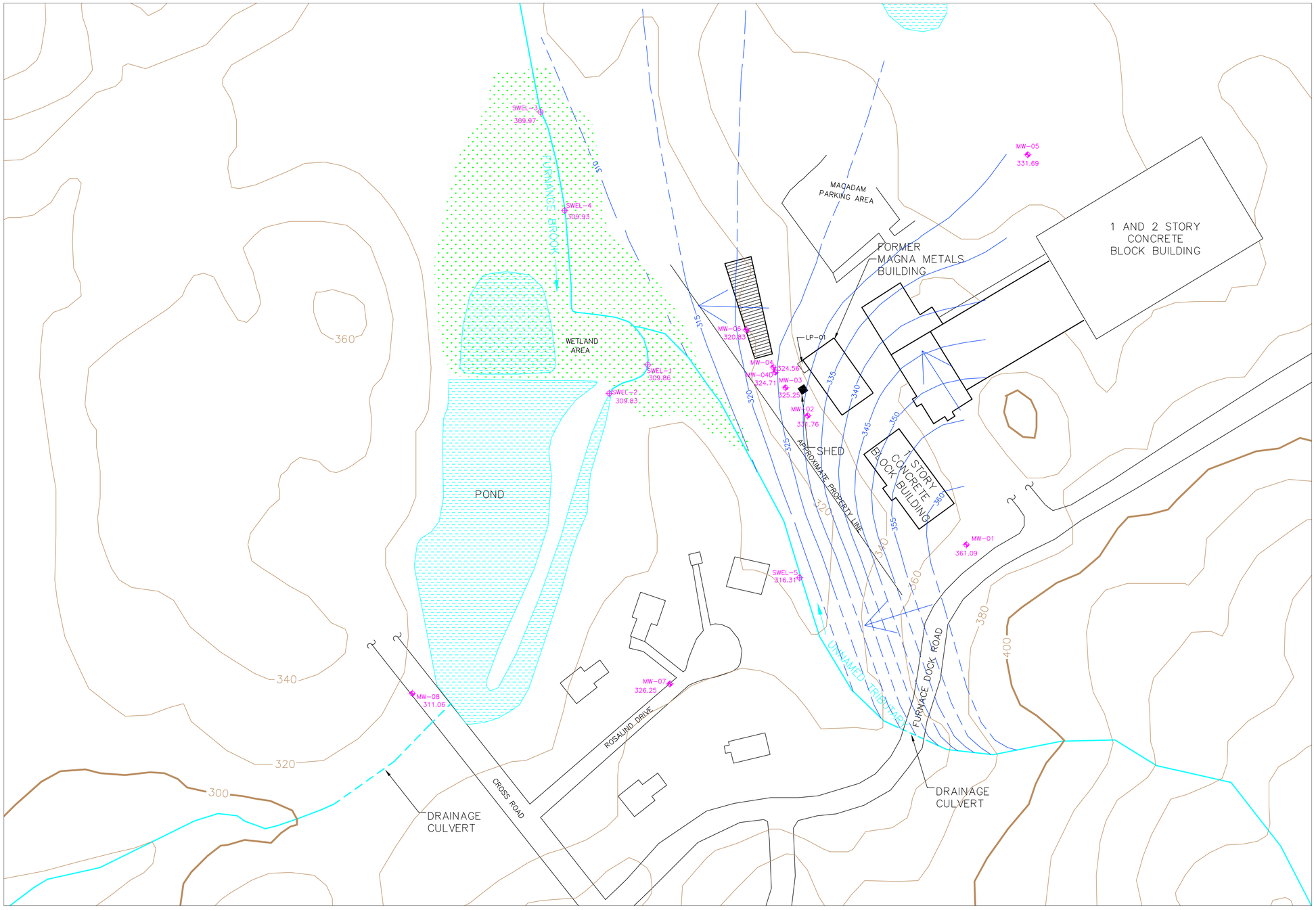
2. ADDITIONAL SURFACE FEATURES BASED ON WESTCHESTER COUNTY DEPARTMENT OF PLANNING AERIAL PHOTOGRAPH (SPRING 1990), DECEMBER 18, 1999 AERIAL PHOTOGRAPH, AND SURVEY DATA.

3. APPROXIMATE WETLAND AREA BASED ON FIELD OBSERVATIONS.

4. TOPOGRAPHIC LINES ARE APPROXIMATE ESTIMATIONS.

N

0 40 80
FEET

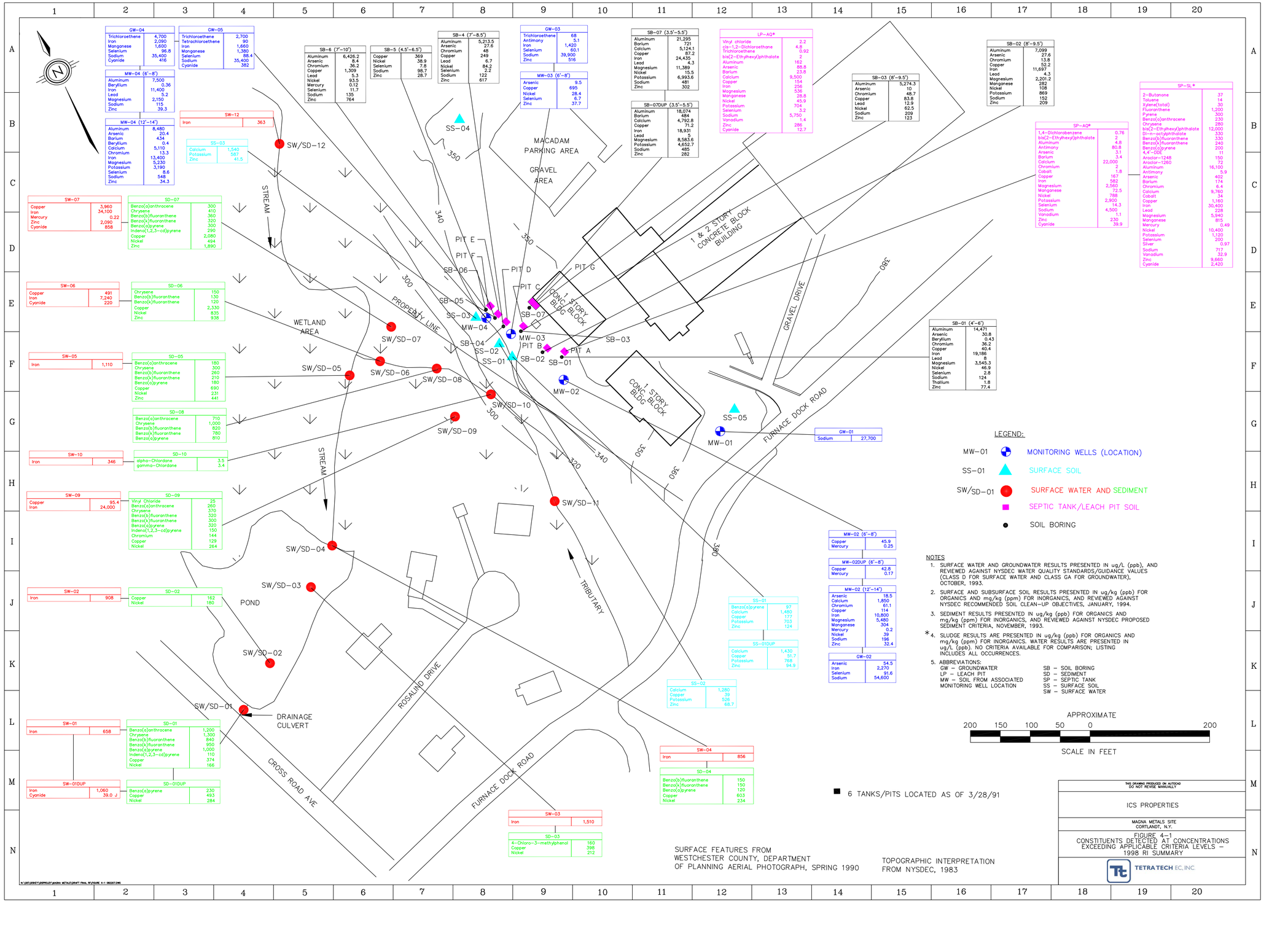


TETRA TECH EC, INC.

TITLE:
Overburden Groundwater Contours – 2004 Supplemental RI
Magna Metals
Cortlandt, New York

DWN:	DES.:	PROJECT NO.:
CTS	CTS	106-1172
CHKD:	APPD:	FIGURE NO.:
DATE: 08/21/07	REV.: 0	3-3

N:\GIS\GISKEY\GISPROJ31\MAGNA METALS\DRAFT FINAL RI\FIGURE 3-3 082107.DWG


GW-04
Trichloroethene 4,700
Iron 2,090
Manganese 1,600
Selenium 96.8
Sodium 35,400
Cyanide 416
GW-05
Trichloroethene 2,700
Tetrachloroethene 90
Iron 1,660
Manganese 1,380
Selenium 88.4
Sodium 35,400
Cyanide 382
MW-04 (6'-8')
Aluminum 7,500
Beryllium 0.36
Iron 11,400
Lead 5.2
Magnesium 2,150
Sodium 115
Zinc 39.3
MW-04 (12'-14')
Aluminum 8,480
Arsenic 20.4
Barium 434
Beryllium 0.4
Calcium 5,110
Chromium 13.3
Iron 13,400
Magnesium 5,230
Potassium 3,190
Selenium 8.6
Sodium 548
Zinc 34.3
SB-6 (7'-10')
Aluminum 6,426.2
Arsenic 8.4
Chromium 36.2
Copper 1,309
Lead 5.3
Nickel 93.5
Mercury 0.12
Selenium 11.7
Sodium 135
Zinc 764
SB-5 (4.5'-6.5')
Copper 369
Nickel 38.9
Selenium 7.8
Sodium 98.7
Zinc 28.7
SB-4 (7'-8.5')
Aluminum 5,213.5
Arsenic 27.6
Chromium 48
Copper 249
Lead 6.7
Nickel 84.2
Selenium 2.2
Sodium 122
Zinc 617
GW-03
Trichloroethene 68
Antimony 5.1
Iron 1,420
Selenium 60.1
Sodium 39,900
Zinc 516
MW-03 (6'-8')
Arsenic 9.5
Copper 695
Nickel 28.4
Selenium 6.7
Zinc 37.7
SB-07 (3.5'-5.5')
Aluminum 21,295
Barium 721
Calcium 5,124.1
Copper 87.2
Iron 24,435
Lead 4.3
Magnesium 11,389
Nickel 15.5
Potassium 6,993.6
Sodium 481
Zinc 302
SB-07DUP (3.5'-5.5')
Aluminum 18,074
Barium 484
Calcium 4,792.8
Copper 71.2
Iron 18,931
Lead 5
Magnesium 8,583.6
Potassium 4,652.7
Sodium 485
Zinc 282
LP-AQ*
Vinyl chloride 2.2
cis-1,2-Dichloroethene 4.8
Trichloroethene 0.92
bis(2-Ethylhexyl)phthalate 2
Aluminum 162
Arsenic 88.8
Barium 23.8
Calcium 9,500
Copper 154
Iron 256
Magnesium 536
Manganese 28.8
Nickel 45.9
Potassium 704
Selenium 3.2
Sodium 5,750
Vanadium 1.4
Zinc 286
Cyanide 12.7
SB-03 (8'-9.5')
Aluminum 5,274.3
Arsenic 10
Chromium 48.7
Copper 83.8
Lead 12.9
Nickel 62.5
Sodium 209
Zinc 123
SB-02 (8'-9.5')
Aluminum 7,099
Arsenic 27.6
Chromium 13.8
Copper 52.2
Iron 11,697
Lead 4.3
Magnesium 2,201.2
Manganese 282
Nickel 108
Potassium 869
Sodium 152
Zinc 209
SP-AQ*
1,4-Dichlorobenzene 0.76
bis(2-Ethylhexyl)phthalate 2
Aluminum 4.8
Antimony 80.8
Arsenic 3.1
Barium 3.4
Calcium 22,000
Chromium 2
Cobalt 1.8
Copper 167
Iron 582
Magnesium 2,560
Manganese 72.5
Nickel 788
Potassium 2,900
Selenium 14.3
Sodium 4,500
Vanadium 1.1
Zinc 230
Cyanide 39.9
SP-SL*
2-Butanone 37
Toluene 14
Xylene(total) 30
Fluoranthene 1,200
Pyrene 300
Benzo(a)anthracene 230
Chrysene 280
bis(2-Ethylhexyl)phthalate 12,000
Di-n-octylphthalate 330
Benzo(b)fluoranthene 330
Benzo(k)fluoranthene 240
Benzo(a)pyrene 200
4,4'-DDE 11
Aroclor-1248 150
Aroclor-1260 72
Aluminum 16,100
Antimony 5.9
Arsenic 402
Barium 174
Chromium 6.4
Calcium 9,760
Cobalt 34
Copper 1,180
Iron 30,400
Lead 228
Magnesium 5,940
Manganese 815
Mercury 0.49
Nickel 10,400
Potassium 1,120
Selenium 200
Silver 0.97
Sodium 717
Vanadium 32.9
Zinc 9,660
Cyanide 2,420
SW-12
Iron 363
SS-03
Calcium 1,540
Potassium 587
Zinc 41.5
SW-07
Copper 3,960
Iron 34,100
Mercury 0.22
Zinc 2,090
Cyanide 858
SD-07
Benzo(a)anthracene 300
Chrysene 410
Benzo(b)fluoranthene 360
Benzo(k)fluoranthene 320
Benzo(a)pyrene 300
Indeno(1,2,3-cd)pyrene 290
Copper 2,080
Nickel 494
Zinc 1,890
SW-06
Copper 491
Iron 7,240
Cyanide 220
SD-06
Chrysene 150
Benzo(b)fluoranthene 130
Benzo(k)fluoranthene 120
Copper 2,330
Nickel 835
Zinc 938
SW-05
Iron 1,110
SD-05
Benzo(a)anthracene 180
Chrysene 300
Benzo(b)fluoranthene 260
Benzo(k)fluoranthene 210
Benzo(a)pyrene 180
Copper 690
Nickel 231
Zinc 441
SD-08
Benzo(a)anthracene 710
Chrysene 1,000
Benzo(b)fluoranthene 820
Benzo(k)fluoranthene 780
Benzo(a)pyrene 810
SW-10
Iron 346
SD-10
alpha-Chlordane 3.5
gamma-Chlordane 3.4
SW-09
Copper 95.4
Iron 24,000
SD-09
Vinyl Chloride 25
Benzo(a)anthracene 260
Chrysene 370
Benzo(b)fluoranthene 320
Benzo(k)fluoranthene 300
Benzo(a)pyrene 320
Indeno(1,2,3-cd)pyrene 150
Chromium 144
Copper 129
Nickel 264
SW-02
Iron 908
SD-02
Copper 162
Nickel 180
SW-01
Iron 658
SD-01
Benzo(a)anthracene 1,200
Chrysene 1,300
Benzo(b)fluoranthene 840
Benzo(k)fluoranthene 950
Benzo(a)pyrene 1,000
Indeno(1,2,3-cd)pyrene 110
Copper 374
Nickel 166
SW-01DUP
Iron 1,060
Cyanide 39.0 J
SD-01DUP
Benzo(a)pyrene 230
Copper 493
Nickel 284
SW-04
Iron 856
SD-04
Benzo(b)fluoranthene 150
Benzo(k)fluoranthene 150
Benzo(a)pyrene 120
Copper 603
Nickel 234
SW-03
Iron 1,510
SD-03
4-Chloro-3-methylphenol 160
Copper 398
Nickel 212
SS-01
Benzo(a)pyrene 97
Calcium 1,480
Copper 177
Potassium 703
Zinc 124
SS-01DUP
Calcium 1,430
Copper 51.7
Potassium 768
Zinc 94.9
SS-02
Calcium 1,280
Copper 39
Potassium 526
Zinc 68.7
MW-02 (6'-8')
Copper 45.9
Mercury 0.25
MW-02DUP (6'-8')
Copper 42.8
Mercury 0.17
MW-02 (12'-14')
Arsenic 18.5
Calcium 1,850
Chromium 61.1
Copper 114
Iron 10,800
Magnesium 5,480
Manganese 304
Mercury 0.2
Nickel 39
Sodium 196
Zinc 32.4
GW-02
Arsenic 54.5
Iron 2,270
Selenium 91.6
Sodium 54,600
SB-01 (4'-6')
Aluminum 14,471
Arsenic 30.8
Beryllium 0.43
Chromium 36.2
Copper 40.4
Iron 19,186
Lead 8
Magnesium 3,545.3
Nickel 46.9
Selenium 2.8
Sodium 124
Thallium 1.8
Zinc 77.4
GW-01
Sodium 27,700
SS-04
SS-03
SS-05
SS-01
SS-02
MW-04
MW-03
MW-02
MW-01
SB-06
SB-05
SB-07
SB-03
SB-04
SB-02
SB-01
SW/SD-12
SW/SD-07
SW/SD-05
SW/SD-06
SW/SD-08
SW/SD-10
SW/SD-09
SW/SD-11
SW/SD-04
SW/SD-03
SW/SD-02
SW/SD-01
PIT A
PIT B
PIT C
PIT D
PIT E
PIT F
PIT G
STREAM
STREAM
WETLAND AREA
PROPERTY LINE
MACADAM PARKING AREA
GRAVEL AREA
1 & 2 STORY CONCRETE BLOCK BUILDING
1 STORY CONC BLOCK BLDG
1 STORY CONC BLDG BLOCK
GRAVEL DRIVE
FURNACE DOCK ROAD
FURNACE DOCK ROAD
ROSALIND DRIVE
CROSS ROAD AVE
TRIBUTARY
POND
DRAINAGE CULVERT
350
340
300
320
360
380
LEGEND:
MW-01 MONITORING WELLS (LOCATION)
SS-01 SURFACE SOIL
SW/SD-01 SURFACE WATER AND SEDIMENT
SEPTIC TANK/LEACH PIT SOIL
SOIL BORING
NOTES
1. SURFACE WATER AND GROUNDWATER RESULTS PRESENTED IN ug/L (ppb), AND REVIEWED AGAINST NYSDEC WATER QUALITY STANDARDS/GUIDANCE VALUES (CLASS D FOR SURFACE WATER AND CLASS GA FOR GROUNDWATER), OCTOBER, 1993.
2. SURFACE AND SUBSURFACE SOIL RESULTS PRESENTED IN ug/kg (ppb) FOR ORGANICS AND mg/kg (ppm) FOR INORGANICS, AND REVIEWED AGAINST NYSDEC RECOMMENDED SOIL CLEAN-UP OBJECTIVES, JANUARY, 1994.
3. SEDIMENT RESULTS PRESENTED IN ug/kg (ppb) FOR ORGANICS AND mg/kg (ppm) FOR INORGANICS, AND REVIEWED AGAINST NYSDEC PROPOSED SEDIMENT CRITERIA, NOVEMBER, 1993.
*4. SLUDGE RESULTS ARE PRESENTED IN ug/kg (ppb) FOR ORGANICS AND mg/kg (ppm) FOR INORGANICS. WATER RESULTS ARE PRESENTED IN ug/L (ppb). NO CRITERIA AVAILABLE FOR COMPARISON; LISTING INCLUDES ALL OCCURRENCES.
5. ABBREVIATIONS:
GW - GROUNDWATER
LP - LEACH PIT
MW - SOIL FROM ASSOCIATED MONITORING WELL LOCATION
SB - SOIL BORING
SD - SEDIMENT
SP - SEPTIC TANK
SS - SURFACE SOIL
SW - SURFACE WATER
APPROXIMATE
200 150 100 50 0 200
SCALE IN FEET
6 TANKS/PITS LOCATED AS OF 3/28/91
SURFACE FEATURES FROM WESTCHESTER COUNTY, DEPARTMENT OF PLANNING AERIAL PHOTOGRAPH, SPRING 1990
TOPOGRAPHIC INTERPRETATION FROM NYSDEC, 1983
THIS DRAWING PRODUCED ON AUTOCAD DO NOT REVISE MANUALLY
ICS PROPERTIES
MAGNA METALS SITE CORTLANDT, N.Y.
FIGURE 4-1
CONSTITUENTS DETECTED AT CONCENTRATIONS EXCEEDING APPLICABLE CRITERIA LEVELS - 1998 RI SUMMARY
TETRA TECH EC, INC.

LEGEND

LP-02 ▽ LEACH PIT LOCATION

SS-08 ■ SUPPLEMENTAL RI SURFACE SOIL SAMPLE LOCATION

RA ● SUPPLEMENTAL RI SOIL BORING LOCATION

320 CONTOUR LINE (20 FT INTERVAL)

GEOPHYSICAL SURVEY

APPROXIMATE WETLAND AREA

NOTES:
1. QUALIFIERS ARE DEFINED ON TABLES 4-1 and 4-3.

2. BRACKETS INDICATE AN EXCEEDANCE OF NYSDEC SOIL CLEANUP CRITERIA (NY-SCOL) OR MAXIMUM SITE BACKGROUND CONCENTRATION.

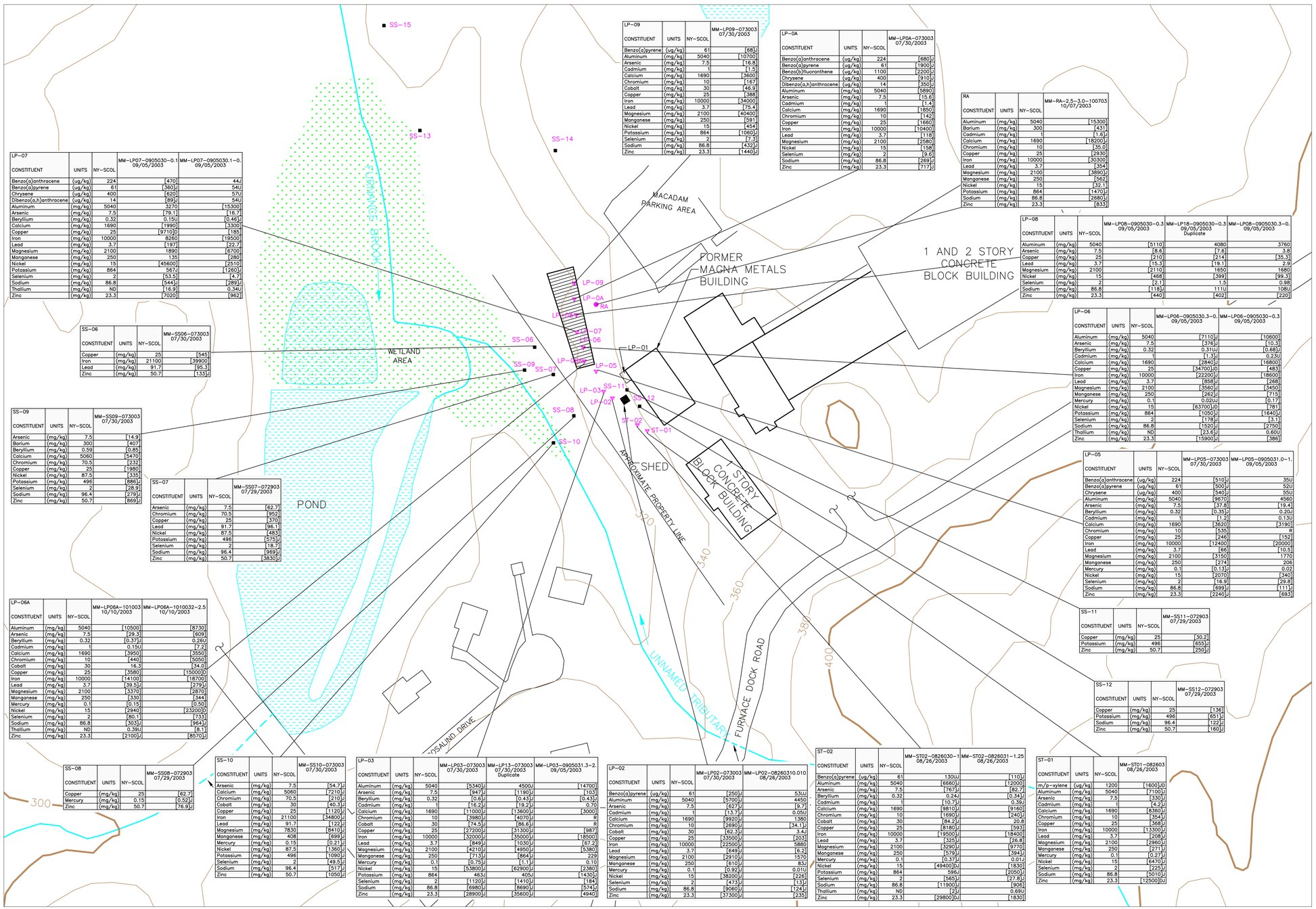
3. LOCATIONS OF FORMER MAGNA METALS BUILDING, 1 STORY CONCRETE BLOCK BUILDING, SHED, GEOPHYSICAL SURVEY AREA, AND MONITORING WELLS ARE BASED ON SURVEY DATA.

SOURCES:
1. CONTOUR LINES, FURNACE DOCK ROAD, AND FURNACE BROOK BELOW POND BASED ON MOHEGAN LAKE, NY AND PEEKSKILL, NY TOPOGRAPHIC QUADRANGLES, 7.5-MINUTE SERIES, DATED 1956 AND 1957, RESPECTIVELY, AND PHOTOREVISED IN 1981.

2. ADDITIONAL SURFACE FEATURES BASED ON WESTCHESTER COUNTY DEPARTMENT OF PLANNING AERIAL PHOTOGRAPH (SPRING 1990), DECEMBER 18, 1999 AERIAL PHOTOGRAPH, AND SURVEY DATA.

3. APPROXIMATE WETLAND AREA BASED ON FIELD OBSERVATIONS.

4. TOPOGRAPHIC LINES ARE APPROXIMATE ESTIMATIONS.



LP-07 CONSTITUENT	UNITS	NY-SCOL	MM-LP07-0905030-0.1 09/05/2003	MM-LP07-0905030.1-0. 09/05/2003
Benzo(a)anthracene	(ug/kg)	224	[470]	44J
Benzo(a)pyrene	(ug/kg)	61	[360]	54U
Chrysene	(ug/kg)	400	[620]	57U
Dibenzo(a,h)anthracene	(ug/kg)	14	[89]	54U
Aluminum	(mg/kg)	5040	3270	[15300]
Arsenic	(mg/kg)	7.5	[79.1]	[16.7]
Beryllium	(mg/kg)	0.32	0.15U	[0.46]
Calcium	(mg/kg)	1690	[1990]	[3300]
Copper	(mg/kg)	25	[9710]D	[185]
Iron	(mg/kg)	10000	8260	[19500]
Lead	(mg/kg)	3.7	[197]	[22.7]
Magnesium	(mg/kg)	2100	1890	[6700]
Manganese	(mg/kg)	250	135	[280]
Nickel	(mg/kg)	15	[45600]	[2510]
Potassium	(mg/kg)	864	567J	[1260]J
Selenium	(mg/kg)	2	[53.5]	[4.7]
Sodium	(mg/kg)	86.8	[544]J	[289]J
Thallium	(mg/kg)	ND	[16.9]	0.34U
Zinc	(mg/kg)	23.3	[7020]	[962]

SS-06 CONSTITUENT	UNITS	NY-SCOL	MM-SS06-073003 07/30/2003
Copper	(mg/kg)	25	[545]
Iron	(mg/kg)	21100	[39900]
Lead	(mg/kg)	91.7	[95.3]
Zinc	(mg/kg)	50.7	[133]J

SS-09 CONSTITUENT	UNITS	NY-SCOL	MM-SS09-073003 07/30/2003
Arsenic	(mg/kg)	7.5	[14.9]
Barium	(mg/kg)	300	407
Beryllium	(mg/kg)	0.59	0.85
Calcium	(mg/kg)	5060	[5470]
Chromium	(mg/kg)	70.5	[232]
Copper	(mg/kg)	25	[1980]
Nickel	(mg/kg)	87.5	[335]
Potassium	(mg/kg)	496	[886]J
Selenium	(mg/kg)	2	[28.9]
Sodium	(mg/kg)	96.4	[279]J
Zinc	(mg/kg)	50.7	[869]J

SS-07 CONSTITUENT	UNITS	NY-SCOL	MM-SS07-072903 07/29/2003
Arsenic	(mg/kg)	7.5	[62.7]
Chromium	(mg/kg)	70.5	[952]
Copper	(mg/kg)	25	[370]
Lead	(mg/kg)	91.7	[96.1]
Nickel	(mg/kg)	87.5	[483]
Potassium	(mg/kg)	496	[575]J
Selenium	(mg/kg)	2	[18.7]
Sodium	(mg/kg)	96.4	[969]J
Zinc	(mg/kg)	50.7	[3830]J

LP-09 CONSTITUENT	UNITS	NY-SCOL	MM-LP09-073003 07/30/2003
Benzo(a)pyrene	(ug/kg)	61	[68]J
Aluminum	(mg/kg)	5040	[10700]
Arsenic	(mg/kg)	7.5	[16.8]
Cadmium	(mg/kg)	1	[1.5]
Calcium	(mg/kg)	1690	[3600]
Chromium	(mg/kg)	10	[167]
Cobalt	(mg/kg)	30	[46.9]
Copper	(mg/kg)	25	[388]
Iron	(mg/kg)	10000	[34000]
Lead	(mg/kg)	3.7	[75.4]
Magnesium	(mg/kg)	2100	[40400]
Manganese	(mg/kg)	250	[591]
Nickel	(mg/kg)	15	[454]
Potassium	(mg/kg)	864	[1060]J
Selenium	(mg/kg)	2	[7.3]
Sodium	(mg/kg)	86.8	[432]J
Zinc	(mg/kg)	23.3	[1440]J

LP-0A CONSTITUENT	UNITS	NY-SCOL	MM-LP0A-073003 07/30/2003
Benzo(a)anthracene	(ug/kg)	224	[680]J
Benzo(a)pyrene	(ug/kg)	61	[1900]J
Benzo(b)fluoranthene	(ug/kg)	1100	[2200]J
Chrysene	(ug/kg)	400	[910]J
Dibenzo(a,h)anthracene	(ug/kg)	14	[350]J
Aluminum	(mg/kg)	5040	[5890]
Arsenic	(mg/kg)	7.5	[15.6]
Cadmium	(mg/kg)	1	[1.4]
Calcium	(mg/kg)	1690	[1850]
Chromium	(mg/kg)	10	[142]
Copper	(mg/kg)	25	[166]
Iron	(mg/kg)	10000	[10400]
Lead	(mg/kg)	3.7	[118]
Magnesium	(mg/kg)	2100	[2580]
Nickel	(mg/kg)	15	[158]
Selenium	(mg/kg)	2	[9.6]
Sodium	(mg/kg)	86.8	[269]J
Zinc	(mg/kg)	23.3	[717]J

RA CONSTITUENT	UNITS	NY-SCOL	MM-RA-2.5-3.0-100703 10/07/2003
Aluminum	(mg/kg)	5040	[15300]
Barium	(mg/kg)	300	[431]
Cadmium	(mg/kg)	1	[1.6]
Calcium	(mg/kg)	1690	[18200]
Chromium	(mg/kg)	10	[35.0]
Copper	(mg/kg)	25	[2930]
Iron	(mg/kg)	10000	[30300]
Lead	(mg/kg)	3.7	[354]
Magnesium	(mg/kg)	2100	[3890]
Manganese	(mg/kg)	250	[562]
Nickel	(mg/kg)	15	[32.1]
Potassium	(mg/kg)	864	[1470]
Sodium	(mg/kg)	86.8	[2680]
Zinc	(mg/kg)	23.3	[833]

LP-08 CONSTITUENT	UNITS	NY-SCOL	MM-LP08-0905030-0.3 09/05/2003	MM-LP18-0905030-0.3 09/05/2003 Duplicate	MM-LP08-0905030.3-0. 09/05/2003
Aluminum	(mg/kg)	5040	[5110]	4080	3760
Arsenic	(mg/kg)	7.5	[8.6]	[7.6]	3.8
Copper	(mg/kg)	25	[210]	[214]	[35.3]
Lead	(mg/kg)	3.7	[15.3]	[19.1]	2.9
Magnesium	(mg/kg)	2100	[2110]	1650	1680
Nickel	(mg/kg)	15	[468]	[399]	[99.3]
Selenium	(mg/kg)	2	[2.1]	1.5	0.98
Sodium	(mg/kg)	86.8	[118]J	111U	108U
Zinc	(mg/kg)	23.3	[440]	[402]	[220]

LP-06 CONSTITUENT	UNITS	NY-SCOL	MM-LP06-0905030.3-0. 09/05/2003	MM-LP06-0905030-0.3 09/05/2003
Aluminum	(mg/kg)	5040	[7110]J	[10600]
Arsenic	(mg/kg)	7.5	[376]J	[10.3]
Beryllium	(mg/kg)	0.32	0.31UJ	[0.68]
Cadmium	(mg/kg)	1	[1.3]J	0.23U
Calcium	(mg/kg)	1690	[2840]J	[16800]
Copper	(mg/kg)	25	[34700]JD	[483]
Iron	(mg/kg)	10000	[22200]J	[18600]
Lead	(mg/kg)	3.7	[858]J	[268]
Magnesium	(mg/kg)	2100	[3560]J	[3450]
Manganese	(mg/kg)	250	[262]J	[715]
Mercury	(mg/kg)	0.1	0.02UJ	[0.17]
Nickel	(mg/kg)	15	[63700]JD	[781]
Potassium	(mg/kg)	864	[1050]J	[1640]J
Selenium	(mg/kg)	2	[178]J	[3.1]
Sodium	(mg/kg)	86.8	[1520]J	[2750]
Thallium	(mg/kg)	ND	[23.6]J	0.60U
Zinc	(mg/kg)	23.3	[15900]J	[386]

LP-05 CONSTITUENT	UNITS	NY-SCOL	MM-LP05-073003 07/30/2003	MM-LP05-0905031.0-1. 09/05/2003
Benzo(a)anthracene	(ug/kg)	224	510UJ	35U
Benzo(a)pyrene	(ug/kg)	61	500UJ	52U
Chrysene	(ug/kg)	400	540UJ	55U
Aluminum	(mg/kg)	5040	[9670]	4560
Arsenic	(mg/kg)	7.5	[37.8]	[19.4]
Beryllium	(mg/kg)	0.32	[0.35]J	0.20U
Cadmium	(mg/kg)	1	[1.2]	0.13U
Calcium	(mg/kg)	1690	[3620]	[3190]
Chromium	(mg/kg)	10	535	R
Copper	(mg/kg)	25	[246]	[152]
Iron	(mg/kg)	10000	[12400]	[20000]
Lead	(mg/kg)	3.7	[66]	[10.5]
Magnesium	(mg/kg)	2100	[3150]	1770
Manganese	(mg/kg)	250	[274]	206
Mercury	(mg/kg)	0.1	[0.13]J	0.02
Nickel	(mg/kg)	15	[2070]	[340]
Selenium	(mg/kg)	2	[16.9]	[29.8]
Sodium	(mg/kg)	86.8	699J	[111]J
Zinc	(mg/kg)	23.3	[2240]J	[693]

SS-11 CONSTITUENT	UNITS	NY-SCOL	MM-SS11-072903 07/29/2003
Copper	(mg/kg)	25	[30.2]
Potassium	(mg/kg)	496	[655]J
Zinc	(mg/kg)	50.7	[250]J

SS-12 CONSTITUENT	UNITS	NY-SCOL	MM-SS12-072903 07/29/2003
Copper	(mg/kg)	25	[136]
Potassium	(mg/kg)	496	[651]J
Sodium	(mg/kg)	96.4	[122]J
Zinc	(mg/kg)	50.7	[160]J

LP-06A CONSTITUENT	UNITS	NY-SCOL	MM-LP06A-101003 10/10/2003	MM-LP06A-1010032-2.5 10/10/2003
Aluminum	(mg/kg)	5040	[10500]	[8730]
Arsenic	(mg/kg)	7.5	[29.3]	[609]
Beryllium	(mg/kg)	0.32	[0.37]J	0.26U
Cadmium	(mg/kg)	1	0.15U	[7.2]
Calcium	(mg/kg)	1690	[3950]	[3550]
Chromium	(mg/kg)	10	[440]	[5050]
Cobalt	(mg/kg)	30	16.3	[34.0]
Copper	(mg/kg)	25	[3580]	[15000]D
Iron	(mg/kg)	10000	[14100]	[18700]
Lead	(mg/kg)	3.7	[39.5]	[279]
Magnesium	(mg/kg)	2100	[3370]	[2870]
Manganese	(mg/kg)	250	[330]	[344]
Mercury	(mg/kg)	0.1	[0.15]	[0.50]
Nickel	(mg/kg)	15	[2940]	[23200]D
Selenium	(mg/kg)	2	[80.1]	[733]
Sodium	(mg/kg)	86.8	[303]J	[964]J
Thallium	(mg/kg)	ND	0.39U	[8.1]
Zinc	(mg/kg)	23.3	[2100]J	[8570]J

SS-08 CONSTITUENT	UNITS	NY-SCOL	MM-SS08-072903 07/29/2003
Copper	(mg/kg)	25	[62.7]
Mercury	(mg/kg)	0.15	0.52J
Zinc	(mg/kg)	50.7	[76.9]J

SS-10 CONSTITUENT	UNITS	NY-SCOL	MM-SS10-073003 07/30/2003
Arsenic	(mg/kg)	7.5	[54.7]J
Calcium	(mg/kg)	5060	[7210]J
Chromium	(mg/kg)	70.5	[210]
Cobalt	(mg/kg)	30	[40.3]J
Copper	(mg/kg)	25	[1120]J
Iron	(mg/kg)	21100	[34800]J
Lead	(mg/kg)	91.7	[122]J
Magnesium	(mg/kg)	7830	[8410]J
Manganese	(mg/kg)	408	[699]J
Mercury	(mg/kg)	0.15	[0.21]J
Nickel	(mg/kg)	87.5	[1360]J
Potassium	(mg/kg)	496	[1090]J
Selenium	(mg/kg)	2	[49.5]J
Sodium	(mg/kg)	96.4	[517]J
Zinc	(mg/kg)	50.7	[1050]J

LP-03 CONSTITUENT	UNITS	NY-SCOL	MM-LP03-073003 07/30/2003	MM-LP13-073003 07/30/2003 Duplicate	MM-LP03-0905031.3-2. 09/05/2003
Aluminum	(mg/kg)	5040	[5340]J	4500J	[14700]
Arsenic	(mg/kg)	7.5	[947]J	[1190]J	[103]
Beryllium	(mg/kg)	0.32	[0.6]J	[0.43]J	0.43U
Cadmium	(mg/kg)	1	[16.2]J	[19.2]J	0.70
Calcium	(mg/kg)	1690	[11000]J	[3600]J	[3000]
Chromium	(mg/kg)	10	[3980]J	[4070]J	R
Cobalt	(mg/kg)	30	[74.5]J	[86.6]J	R
Copper	(mg/kg)	25	[27200]J	[31300]J	[987]
Iron	(mg/kg)	10000	[32000]J	[35000]J	[18500]
Lead	(mg/kg)	3.7	[849]J	[1030]J	[67.2]
Magnesium	(mg/kg)	2100	[4210]J	[4950]J	[5380]
Manganese	(mg/kg)	250	[71.3]J	[864]J	229
Mercury	(mg/kg)	0.1	[0.75]J	[1.1]J	0.10
Nickel	(mg/kg)	15	[53800]J	[62900]J	[2380]
Potassium	(mg/kg)	864	463J	405J	[1430]J
Selenium	(mg/kg)	2	[1120]J	[1410]J	[184]
Sodium	(mg/kg)	86.8	[6980]J	[8690]J	[574]J
Zinc	(mg/kg)	23.3	[28900]J	[35600]J	[4940]

LP-02 CONSTITUENT	UNITS	NY-SCOL	MM-LP02-073003 07/30/2003	MM-LP02-08260310.010 08/26/2003
Benzo(a)pyrene	(ug/kg)	61	[250]J	53UJ
Aluminum	(mg/kg)	5040	[5700]J	4450
Arsenic	(mg/kg)	7.5	[627]J	[9.7]
Cadmium	(mg/kg)	1	[13.7]J	0.05U
Calcium	(mg/kg)	1690	[9920]J	1380
Chromium	(mg/kg)	10	[2690]J	[34.1]J
Cobalt	(mg/kg)	30	[62.3]J	3.4J
Copper	(mg/kg)	25	[33500]J	[203]
Iron	(mg/kg)	10000	[22500]J	5880
Lead	(mg/kg)	3.7	[649]J	[6.2]
Magnesium	(mg/kg)	2100	[2910]J	1570
Manganese	(mg/kg)	250	[610]J	83J
Mercury	(mg/kg)	0.1	[0.92]J	0.01U
Nickel	(mg/kg)	15	[38200]J	[226]
Selenium	(mg/kg)	2	[473]J	[13]J
Sodium	(mg/kg)	86.8	[9060]J	[124]J
Zinc	(mg/kg)	23.3	[37300]J	[235]

ST-02 CONSTITUENT	UNITS	NY-SCOL	MM-ST02-0826030-1 08/26/2003	MM-ST02-0826031-1.25 08/26/2003
Benzo(a)pyrene	(ug/kg)	61	130UJ	[110]J
Aluminum	(mg/kg)	5040	[6660]J	[12000]
Arsenic	(mg/kg)	7.5	[767]J	[82.7]
Beryllium	(mg/kg)	0.32	0.24J	[0.34]J
Cadmium	(mg/kg)	1	[10.7]J	0.39J
Calcium	(mg/kg)	1690	[9810]J	[9160]
Chromium	(mg/kg)	10	[1690]J	[240]J
Cobalt	(mg/kg)	30	[84.2]J	20.8
Copper	(mg/kg)	25	[8180]J	[593]
Iron	(mg/kg)	10000	[19500]J	[18400]
Lead	(mg/kg)	3.7	[325]J	[26.8]
Magnesium	(mg/kg)	2100	[3290]J	[9770]
Manganese	(mg/kg)	250	[579]J	[394]J
Mercury	(mg/kg)	0.1	[0.37]J	0.01J
Nickel	(mg/kg)	15	[49400]DJ	[1830]
Potassium	(mg/kg)	864	596J	[2050]J
Selenium	(mg/kg)	2	[565]J	[27.8]J
Sodium	(mg/kg)	86.8	[11900]J	[906]J
Thallium	(mg/kg)	ND	[2]J	0.69U
Zinc	(mg/kg)	23.3	[29800]DJ	[1830]

ST-01 CONSTITUENT	UNITS	NY-SCOL	MM-ST01-082603 08/26/2003
m/p-xylene	(ug/kg)	1200	[1600]JD
Aluminum	(mg/kg)	5040	[7100]J
Arsenic	(mg/kg)	7.5	[330]J
Cadmium	(mg/kg)	1	[4.2]J
Calcium	(mg/kg)	1690	[8360]J
Chromium	(mg/kg)	10	[354]J
Copper	(mg/kg)	25	[368]J
Iron	(mg/kg)	10000	[13300]J
Lead	(mg/kg)	3.7	[208]J
Magnesium	(mg/kg)	2100	[2960]J
Manganese	(mg/kg)	250	[271]J
Mercury	(mg/kg)	0.1	[0.27]J
Nickel	(mg/kg)	15	[6470]J
Selenium	(mg/kg)	2	[225]J
Sodium	(mg/kg)	86.8	[5010]J
Zinc	(mg/kg)	23.3	[12500]DJ

0 40 80
FEET

TETRA TECH EC, INC.

TITLE:
Soil Exceedances - 2004 Supplemental RI
Magna Metals
Cortlandt, New York

DWN:	DES.:	PROJECT NO.:
CTS	CTS	106-1172
CHKD:	APPD:	FIGURE NO.:
		4-2
DATE:	REV.:	
08/21/07	0	

N:\GIS\GISKEY\GISPROJ31\MAGNA METALS\DRAFT FINAL RI\FIGURE 4-2 0082107.DWG

LEGEND

SW-15 ⊕ SUPPLEMENTAL RI SURFACE WATER SAMPLE OR ELEVATION LOCATION

SD-15 ◆ SUPPLEMENTAL RI SEDIMENT SAMPLE LOCATION

320 CONTOUR LINE (20 FT INTERVAL)

GEOPHYSICAL SURVEY

APPROXIMATE WETLAND AREA

NOTES:
1. QUALIFIERS ARE DEFINED ON TABLES 4-4 AND 4-5.

2. BRACKETS INDICATE AN EXCEEDANCE OF NYSDEC SEDIMENT CRITERIA (NY-SC) OR NYSDEC WATER QUALITY STANDARDS - CLASS B (NYS-WQS-B).

3. SEDIMENT CRITERIA FOR PAHs WERE ADJUSTED BASED ON TOC SAMPLES TAKEN AT EACH LOCATION.

4. LOCATIONS OF FORMER MAGNA METALS BUILDING, 1 STORY CONCRETE BLOCK BUILDING, SHED, GEOPHYSICAL SURVEY AREA, AND MONITORING WELLS ARE BASED ON SURVEY DATA.

SOURCES:
1. CONTOUR LINES, FURNACE DOCK ROAD, AND FURNACE BROOK BELOW POND BASED ON MOHEGAN LAKE, NY AND PEEKSKILL, NY TOPOGRAPHIC QUADRANGLES, 7.5-MINUTE SERIES, DATED 1956 AND 1957, RESPECTIVELY, AND PHOTOREVISED IN 1981.

2. ADDITIONAL SURFACE FEATURES BASED ON WESTCHESTER COUNTY DEPARTMENT OF PLANNING AERIAL PHOTOGRAPH (SPRING 1990), DECEMBER 18, 1999 AERIAL PHOTOGRAPH, AND SURVEY DATA.

3. APPROXIMATE WETLAND AREA BASED ON FIELD OBSERVATIONS.

N

0 40 80
FEET

SW-13 CONSTITUENT	UNITS	NY-WQS-B	MM-SW13-032904 03/29/2004
Aluminum	(ug/l)	100	[366]
Iron	(ug/l)	300	[327]J

SD-13 CONSTITUENT	UNITS	NY-SC	MM-SD13-033004 03/30/2004
Nickel	(mg/kg)	50	[63.5]J

SW-22 CONSTITUENT	UNITS	NY-WQS-B	MM-SW22-032904 03/29/2004
Aluminum	(ug/l)	100	[381]J
Cobalt	(ug/l)	5	[5.1]J
Copper	(ug/l)	16	[772]J
Iron	(ug/l)	300	[2020]J
Nickel	(ug/l)	94	[161]
Selenium	(ug/l)	4.6	[8.7]J
Zinc	(ug/l)	150	[343]J

SW-15 CONSTITUENT	UNITS	NY-WQS-B	MM-SW15-032904 03/29/2004
Aluminum	(ug/l)	100	[328]

SD-15 CONSTITUENT	UNITS	NY-SC	MM-SD15-033004 03/30/2004
Benzo(a)anthracene	(ug/kg)	52	[470]J
Benzo(a)pyrene	(ug/kg)	52	[660]J
Benzo(b)fluoranthene	(ug/kg)	52	[1200]J
Benzo(k)fluoranthene	(ug/kg)	52	[600]J
Chrysene	(ug/kg)	52	[650]J
Chromium	(mg/kg)	110	[158]J
Copper	(mg/kg)	110	[1040]J
Nickel	(mg/kg)	50	[332]J
Zinc	(mg/kg)	270	[528]J

SW-14 CONSTITUENT	UNITS	NY-WQS-B	MM-SW14-032904 03/29/2004
Aluminum	(ug/l)	100	[690]
Copper	(ug/l)	16	[57.6]J
Iron	(ug/l)	300	[1670]J

SD-14 CONSTITUENT	UNITS	NY-SC	MM-SD14-033004 03/30/2004
Copper	(mg/kg)	110	[672]J
Nickel	(mg/kg)	50	[300]J

SD-20 CONSTITUENT	UNITS	NY-SC	MM-SD20-033104 03/31/2004
Copper	(mg/kg)	110	[241]J
Nickel	(mg/kg)	50	[200]J

SW-20 CONSTITUENT	UNITS	NY-WQS-B	MM-SW20-032904 03/29/2004
Aluminum	(ug/l)	100	[358]J
Iron	(ug/l)	300	[363]J

SD-21 CONSTITUENT	UNITS	NY-SC	MM-SD21-040304 04/03/2004
Copper	(mg/kg)	110	[403]J
Lead	(mg/kg)	110	[112]J
Nickel	(mg/kg)	50	[180]J

SD-24 CONSTITUENT	UNITS	NY-SC	MM-SD24-040304 04/03/2004
Copper	(mg/kg)	110	[216]J
Nickel	(mg/kg)	50	[161]J

SD-23 CONSTITUENT	UNITS	NY-SC	MM-SD23-040304 04/03/2004
Benzo(a)anthracene	(ug/kg)	13	[360]J
Benzo(a)pyrene	(ug/kg)	13	[410]J
Benzo(b)fluoranthene	(ug/kg)	13	[680]J
Chrysene	(ug/kg)	13	[510]J
Copper	(mg/kg)	110	[194]J
Nickel	(mg/kg)	50	[155]J

SD-25 CONSTITUENT	UNITS	NY-SC	MM-SD25-040304 04/03/2004
Copper	(mg/kg)	110	[137]J
Nickel	(mg/kg)	50	[149]

SD-26 CONSTITUENT	UNITS	NY-SC	MM-SD26-040304 04/03/2004
Benzo(b)fluoranthene	(ug/kg)	130	[180]J
Chrysene	(ug/kg)	130	[150]J
Copper	(mg/kg)	110	[130]J
Nickel	(mg/kg)	50	[121]

SW-18 CONSTITUENT	UNITS	NY-WQS-B	MM-SW18-032904 03/29/2004	MM-SW18D-032904 03/29/2004 Duplicate
Aluminum	(ug/l)	100	[342]	[383]J
Iron	(ug/l)	300	[583]J	[903]J

SD-18 CONSTITUENT	UNITS	NY-SC	MM-SD18-033104 03/31/2004	NY-SCOL	MM-SD18D-033104 03/31/2004 Duplicate
Benzo(a)anthracene	(ug/kg)	98.8	[160]J	78	26UJ
Benzo(a)pyrene	(ug/kg)	98.8	[220]J	78	30UJ
Benzo(b)fluoranthene	(ug/kg)	98.8	[260]J	78	92UJ
Benzo(k)fluoranthene	(ug/kg)	98.8	[220]J	78	59UJ
Chrysene	(ug/kg)	98.8	[180]J	78	55UJ
Chromium	(mg/kg)	110	[166]J	110	[159]J
Copper	(mg/kg)	110	[327]J	110	[230]J
Nickel	(mg/kg)	50	[460]J	50	[364]J
Zinc	(mg/kg)	270	[290]J	270	259J

SD-22 CONSTITUENT	UNITS	NY-SC	MM-SD22-040304 04/03/2004
Copper	(mg/kg)	110	[415]J
Nickel	(mg/kg)	50	[170]J

SW-19 CONSTITUENT	UNITS	NY-WQS-B	MM-SW19-032904 03/29/2004
Aluminum	(ug/l)	100	[728]J
Copper	(ug/l)	16	[22.6]J
Iron	(ug/l)	300	[2180]J

SD-19A CONSTITUENT	UNITS	NY-SC	MM-SD19A-033104 03/31/2004
Chromium	(mg/kg)	110	[133]J
Copper	(mg/kg)	110	[281]J
Nickel	(mg/kg)	50	[365]J

SW-16 CONSTITUENT	UNITS	NY-WQS-B	MM-SW16-032904 03/29/2004
Aluminum	(ug/l)	100	[316]

SD-16 CONSTITUENT	UNITS	NY-SC	MM-SD16-033004 03/30/2004
Benzo(a)anthracene	(ug/kg)	23.4	[140]J
Benzo(a)pyrene	(ug/kg)	23.4	[190]J
Benzo(b)fluoranthene	(ug/kg)	23.4	[260]J
Benzo(k)fluoranthene	(ug/kg)	23.4	[190]J
Chrysene	(ug/kg)	23.4	[190]J
Nickel	(mg/kg)	50	[143]J

SW-21 CONSTITUENT	UNITS	NY-WQS-B	MM-SW21-032904 03/29/2004
Aluminum	(ug/l)	100	[725]J
Iron	(ug/l)	300	[4790]J

SW-17 CONSTITUENT	UNITS	NY-WQS-B	MM-SW17-032904 03/29/2004
Aluminum	(ug/l)	100	[282]

SD-17 CONSTITUENT	UNITS	NY-SC	MM-SD17-033104 03/31/2004
Benzo(a)anthracene	(ug/kg)	7.93	[470]
Benzo(a)pyrene	(ug/kg)	7.93	[430]J
Benzo(b)fluoranthene	(ug/kg)	7.93	[670]J
Benzo(k)fluoranthene	(ug/kg)	7.93	[380]J
Chrysene	(ug/kg)	7.93	[490]
Indeno(1,2,3-cd)pyrene	(ug/kg)	7.93	[48]J
Phenanthrene	(ug/kg)	732	[900]

TETRA TECH EC, INC.

TITLE:
Sediment and Surface Water Exceedances - 2004 Supplemental RI
Magna Metals
Cortlandt, New York

DWN:	DES.:	PROJECT NO.:
CTS	CTS	106-1172
CHKD:	APPD:	FIGURE NO.:
DATE: 08/21/07	REV.: 0	4-3

N: \GIS\GISKEY\GISPROJ31\MAGNA METALS\DRAFT FINAL RI\FIGURE 4-3 082107.DWG

LEGEND

MW-01 MONITORING WELL LOCATION

320 CONTOUR LINE (20 FT INTERVAL)

GEOPHYSICAL SURVEY

APPROXIMATE WETLAND AREA

NOTES:
1. ALL GROUNDWATER RESULTS ARE REPORTED IN UG/L.

2. QUALIFIERS ARE DEFINED ON TABLE 4-2.

3. BRACKETS INDICATE AN EXCEEDANCE OF NYSDEC GROUNDWATER QUALITY STANDARDS (NY-GWQS).

4. LOCATIONS OF FORMER MAGNA METALS BUILDING, 1 STORY CONCRETE BLOCK BUILDING, SHED, GEOPHYSICAL SURVEY AREA, AND MONITORING WELLS ARE BASED ON SURVEY DATA.

SOURCES:
1. CONTOUR LINES, FURNACE DOCK ROAD, AND FURNACE BROOK BELOW POND BASED ON MOHEGAN LAKE, NY AND PEEKSKILL, NY TOPOGRAPHIC QUADRANGLES, 7.5-MINUTE SERIES, DATED 1956 AND 1957, RESPECTIVELY, AND PHOTOREVISED IN 1981.

2. ADDITIONAL SURFACE FEATURES BASED ON WESTCHESTER COUNTY DEPARTMENT OF PLANNING AERIAL PHOTOGRAPH (SPRING 1990), DECEMBER 18, 1999 AERIAL PHOTOGRAPH, AND SURVEY DATA.

3. APPROXIMATE WETLAND AREA BASED ON FIELD OBSERVATIONS.

4. TOPOGRAPHIC LINES ARE APPROXIMATE ESTIMATIONS.

N

0 40 80
FEET

MW-04 CONSTITUENT	NY-GWQS	MM-GWMW04-100803 10/08/2003
cis-1,2-Dichloroethylene	5	[7.7]
Tetrachloroethylene	5	[13]
Trichloroethylene	5	[910]D
Arsenic	25	[133]
Barium	1000	[1140]
Beryllium	3	[5.6]
Chromium	50	[139]
Copper	200	[240]
Iron	300	[37200]
Magnesium	35000	[38600]
Manganese	300	[6400]
Nickel	100	[108]
Selenium	10	[131]
Sodium	20000	[76900]J
Thallium	0.5	[10.5]
Cyanide	200	[555]
Arsenic - Dissolved	25	[46.8]
Iron - Dissolved	300	[14300]
Manganese - Dissolved	300	[5810]
Selenium - Dissolved	10	[71.1]
Sodium - Dissolved	20000	[77800]J

MW-04D CONSTITUENT	NY-GWQS	MM-GWMW04D-100803 10/08/2003	MM-GWMW05D-100803 10/08/2003 Duplicate
cis-1,2-Dichloroethylene	5	4.9J	[5.5]
Tetrachloroethylene	5	[13]	[14]
Trichloroethylene	5	[870]D	[870]D
Iron	300	[3810]	[3510]
Magnesium	35000	[44300]	[39400]
Manganese	300	[9500]	[8510]
Selenium	10	[30.4]	[23.9]
Sodium	20000	[126000]J	[111000]J
Thallium	0.5	[8.6]J	[8.3]J

MW-05 CONSTITUENT	NY-GWQS	MM-GWMW05-100603 10/06/2003
Iron	300	[33800]
Manganese	300	[5660]
Sodium	20000	[62900]J
Thallium	0.5	[14.4]

MW-02 CONSTITUENT	NY-GWQS	MM-GWMW02-100803 10/08/2003
Trichloroethylene	5	[9.4]
Iron	300	[346]
Magnesium	35000	[48900]
Selenium	10	[30.8]
Sodium	20000	[264000]J

MW-08 CONSTITUENT	NY-GWQS	MM-GWMW08-100703 10/07/2003
Iron	300	[3160]
Magnesium	35000	[66200]
Sodium	20000	[36800]J

MW-01 CONSTITUENT	NY-GWQS	MM-GWMW01-100603 10/06/2003
Iron	300	[1540]

MW-07 CONSTITUENT	NY-GWQS	MM-GWMW07-100703 10/07/2003
Magnesium	35000	[74700]
Sodium	20000	[57200]J

TETRA TECH EC, INC.

TITLE:
Groundwater Exceedances - 2004 Supplemental RI
Magna Metals
Cortlandt, New York

DWN:	DES.:	PROJECT NO.:
CTS	CTS	106-1172
CHKD:	APPD:	FIGURE NO.:
DATE: 08/21/07	REV.: 0	4-4

N: \GIS\GISKEY\GISPROJ31\MAGNA METALS\DRAFT FINAL RI\FIGURE 4-4 082107.DWG

LEGEND

SV-01 ▽ SUPPLEMENTAL SOIL VAPOR LOCATION

LP-02 ▽ LEACH PIT LOCATION

APPROXIMATE REFUSE AREA

APPROXIMATE WETLAND AREA

NOTES:
1. LOCATIONS OF FORMER MAGNA METALS BUILDING, 1 STORY CONCRETE BLOCK BUILDING, SHED, GEOPHYSICAL SURVEY AREA, AND MONITORING WELLS ARE BASED ON SURVEY DATA.

2. ALL CONCENTRATIONS ARE IN ug/m3.

3. NJ – TENTATIVE IN IDENTIFICATION AND ESTIMATED IN VALUE.

SOURCES:
1. CONTOUR LINES, FURNACE DOCK ROAD, AND FURNACE BROOK BELOW POND BASED ON MOHEGAN LAKE, NY AND PEEKSKILL, NY TOPOGRAPHIC QUADRANGLES, 7.5–MINUTE SERIES, DATED 1956 AND 1957, RESPECTIVELY, AND PHOTOREVISED IN 1981.

2. ADDITIONAL SURFACE FEATURES BASED ON WESTCHESTER COUNTY DEPARTMENT OF PLANNING AERIAL PHOTOGRAPH (SPRING 1990), DECEMBER 18, 1999 AERIAL PHOTOGRAPH, AND SURVEY DATA.

3. APPROXIMATE REFUSE AREA BASED ON NYSDEC DRAWING.

4. APPROXIMATE WETLAND AREA BASED ON FIELD OBSERVATIONS.

5. TOPOGRAPHIC LINES ARE APPROXIMATE ESTIMATIONS.

N

0 50 100
FEET

SV–05 Constituent	MM–SV–05–010606 01/06/06
1,2,4–Trimethylbenzene	4.8
1,2–Dichloroethene	2.1
1,3,5–Trimethylbenzene	3.4
1,3–Butadiene	35
2,2,4–Trimethylpentane	1.5
2–Butanone	29
Acetone	97
Benzene	54
Carbon disulfide	28
Chloromethane	7.2
cis–1,2–Dichloroethene	2.1
Cyclohexane	2.8
Ethylbenzene	10
(m+p)xylene	12
n–Heptane	13
n–Hexane	17
o–Xylene	6.5
p–Ethyltoluene	4.7
Styrene	3.2
Tetrachloroethene	10
Toluene	38
Trichloroethene	7
Trichlorofluoromethane	2
Vinyl chloride	0.92

SV–06 Constituent	MM–SV–06–010606 01/06/06
1,1,1–Trichloroethane	0.93
1,2,4–Trimethylbenzene	2.1
1,3–Butadiene	27
2–Butanone	13
Acetone	59
Benzene	31
Carbon disulfide	5.3
Chloroform	1.3
Chloromethane	1.9
Cyclohexane	1.5
Ethylbenzene	4.3
(m+p)xylene	7.4
n–Heptane	4.5
n–Hexane	8.5
o–Xylene	2.5
p–Ethyltoluene	2
Styrene	1
Tetrachloroethene	130
Toluene	25
Trichloroethene	40
Trichlorofluoromethane	1.4

SV–04 Constituent	MM–SV–04–010506 01/05/06
1,2–Dichloroethene	83
1,3,5–Trimethylbenzene	11
1,3–Butadiene	38 NJ
2,2,4–Trimethylpentane	32
2–Butanone	25
2–Hexanone	190
Benzene	130
Carbon disulfide	18
cis–1,2–Dichloroethene	44
Cyclohexane	83
Ethylbenzene	650
(m+p)xylene	1900
n–Heptane	780
n–Hexane	150
o–Xylene	380
p–Ethyltoluene	22
Toluene	210
trans–1,2–Dichloroethene	38
Trichloroethene	64
Vinyl chloride	22

SV–01 Constituent	MM–SV–01–010506 01/05/06
1,1,1–Trichloroethane	1.6
1,2,4–Trimethylbenzene	3.9
1,3,5–Trimethylbenzene	1.1
1,3–Butadiene	18 NJ
1,4–Dioxane	16
2–Butanone	14
Acetone	69
Benzene	8
Carbon disulfide	25
Chloroform	2.4 NJ
Chloromethane	0.89
Cyclohexane	6.5
Ethylbenzene	2.3
(m+p)xylene	6.1
n–Heptane	3.7
n–Hexane	7.4
o–Xylene	2.4
p–Ethyltoluene	3
Tetrachloroethene	1.2
Toluene	9
Trichloroethene	31

SV–02 Constituent	MM–SV–02–010506 01/05/06
1,2,4–Trimethylbenzene	3.3
1,3–Butadiene	35 NJ
2,2,4–Trimethylpentane	17
2–Butanone	29
Acetone	110
Benzene	45
Carbon disulfide	110
Chloromethane	5.6
Cyclohexane	21
Ethylbenzene	6.9
(m+p)xylene	11
n–Heptane	21
n–Hexane	32
o–Xylene	4.3
p–Ethyltoluene	3.3
Styrene	4
Toluene	26
Trichloroethene	11
Vinyl chloride	1.2

SV–03 Constituent	MM–SV–03–010506 01/05/06
1,1,1–Trichloroethane	1.1
1,1,2–Trichloro–1,2,2–trifluoroethane	12
1,2,4–Trimethylbenzene	2
1,2–Dichloroethene	1.5
1,3–Butadiene	8.4
2–Butanone	9.1
Acetone	36
Benzene	19
Carbon disulfide	4.7
cis–1,2–Dichloroethene	1.5
Cyclohexane	0.96
Dichlorodifluoromethane	2.2
Ethylbenzene	4.3
(m+p)xylene	6.1
n–Heptane	4.1
n–Hexane	6.3
o–Xylene	2.5
p–Ethyltoluene	2.3
Styrene	1.7
Tetrachloroethene	8.8
Toluene	14
Trichloroethene	59

SV–07 Constituent	MM–SV–07–010606 01/06/06
1,1,1–Trichloroethane	28
1,2,4–Trimethylbenzene	7.9
1,3,5–Trimethylbenzene	2.7
1,3–Butadiene	3.1 NJ
1,4–Dichlorobenzene	3
2,2,4–Trimethylpentane	3.2
2–Butanone	8
2–Hexanone	4.1
Acetone	29
Benzene	14
Carbon disulfide	3.1
Chloromethane	1.1
Cyclohexane	9.3
Dichlorodifluoromethane	4
Ethylbenzene	7.4
Isopropyl alcohol	47
(m+p)xylene	23
Methyl tert–butyl ether	28
n–Heptane	9.8
n–Hexane	8.8
o–Xylene	7.8
p–Ethyltoluene	6.9
Styrene	2.1
Tetrachloroethene	4
Toluene	22
Trichloroethene	14
Trichlorofluoromethane	1.7

SV–08 Constituent	MM–SV–08–010606 01/06/06
1,2,4–Trimethylbenzene	1.9
1,3–Butadiene	22 NJ
2–Butanone	9.4
Acetone	38
Benzene	17
Carbon disulfide	5.3
Chloromethane	1
Cyclohexane	1
Dichlorodifluoromethane	3.1
Ethylbenzene	2.6
(m+p)xylene	4.8
n–Heptane	3.9
n–Hexane	6.3
o–Xylene	1.6
p–Ethyltoluene	1.7
Styrene	0.85
Tetrachloroethene	8.1
Toluene	12
Trichloroethene	4.2
Trichlorofluoromethane	1.5

SV–09 Constituent	MM–SV–09–010506 01/05/06
1,2,4–Trimethylbenzene	5.9
1,3,5–Trimethylbenzene	1.9
1,3–Butadiene	1.1 NJ
2,2,4–Trimethylpentane	2.2
2–Butanone	41
Acetone	52
Benzene	3.8
Carbon disulfide	3.7
Cyclohexane	1.4
Dichlorodifluoromethane	5.9
Ethylbenzene	3.9
Isopropyl alcohol	17
(m+p)xylene	12
Methyl tert–butyl ether	6.9
n–Heptane	3.8
n–Hexane	5.3
p–Ethyltoluene	4.9
Tetrahydrofuran	35
Toluene	15
Trichloroethene	1.1
Trichlorofluoromethane	2.6

FORMER MAGNA METALS BUILDING

1 STORY CONCRETE BLOCK BUILDING

SHED

APPROXIMATE PROPERTY LINE

FURNACE DOCK ROAD

CROSS ROAD

DRAINAGE CULVERT

DRAINAGE CULVERT

SV–01 SV–02 SV–03 SV–04 SV–05 SV–06 SV–07 SV–08 SV–09

LP–01 LP–02 LP–03 LP–04 LP–05 LP–06 LP–06A LP–07 LP–08 LP–09 LP–0A

ST–01 ST–02

360 340 320 380 400

TETRA TECH EC, INC.

TITLE:
Detected Constituents in Soil Vapor Samples – January 2006
Supplemental RI/FS – Addition Data Collection Summary Letter Report
Magna Metals, Cortlandt, New York

DWN:	DES.:	PROJECT NO.:
LMB	CTS	106–1172
CHKD:	APPD:	FIGURE NO.:
		4–6
DATE:	REV.:	
06/12/2006	0	

N:\GIS\GISKEY\GISPROJ31\MAGNA METALS\DRAFT FINAL RI\FIGURE 4–6 082207.DWG

LEGEND

- SS-01 ▲ PHASE I SURFACE SOIL LOCATION
- SW/SD-01 ● PHASE I SURFACE WATER AND SEDIMENT LOCATION
- SB-01 ● PHASE I SOIL BORING LOCATION
- LP-02 ▽ LEACH PIT LOCATION
- MW-01 ⊕ MONITORING WELL LOCATION
- SW-15 ⊕ SUPPLEMENTAL RI SURFACE WATER SAMPLE OR ELEVATION LOCATION
- SD-15 ◆ SUPPLEMENTAL RI SEDIMENT SAMPLE LOCATION
- SS-08 ■ SUPPLEMENTAL RI SURFACE SOIL SAMPLE LOCATION
- RA ● SUPPLEMENTAL RI SOIL BORING LOCATION
- 320 CONTOUR LINE (20 FT INTERVAL)
- CROSS-SECTION A – A'
- GEOPHYSICAL SURVEY
- APPROXIMATE REFUSE AREA
- APPROXIMATE WETLAND AREA

NOTES:
1. PHASE I SAMPLE LOCATIONS AND SUPPLEMENTAL RI SOIL BORINGS ARE APPROXIMATE.

2. LOCATIONS OF FORMER MAGNA METALS BUILDING, 1 STORY CONCRETE BLOCK BUILDING, SHED, GEOPHYSICAL SURVEY AREA, AND MONITORING WELLS ARE BASED ON SURVEY DATA.

3. LOCATIONS OF LEACH PITS AND SUPPLEMENTAL RI SURFACE WATER SAMPLES, SEDIMENT SAMPLES, AND SURFACE SOIL SAMPLES ARE BASED ON GPS COORDINATES.

SOURCES:
1. CONTOUR LINES, FURNACE DOCK ROAD, AND FURNACE BROOK BELOW POND BASED ON MOHEGAN LAKE, NY AND PEEKSKILL, NY TOPOGRAPHIC QUADRANGLES, 7.5-MINUTE SERIES, DATED 1956 AND 1957, RESPECTIVELY, AND PHOTOREVISED IN 1981.

2. ADDITIONAL SURFACE FEATURES BASED ON WESTCHESTER COUNTY DEPARTMENT OF PLANNING AERIAL PHOTOGRAPH (SPRING 1990), DECEMBER 18, 1999 AERIAL PHOTOGRAPH, AND SURVEY DATA.

3. APPROXIMATE REFUSE AREA BASED ON NYSDEC DRAWING.

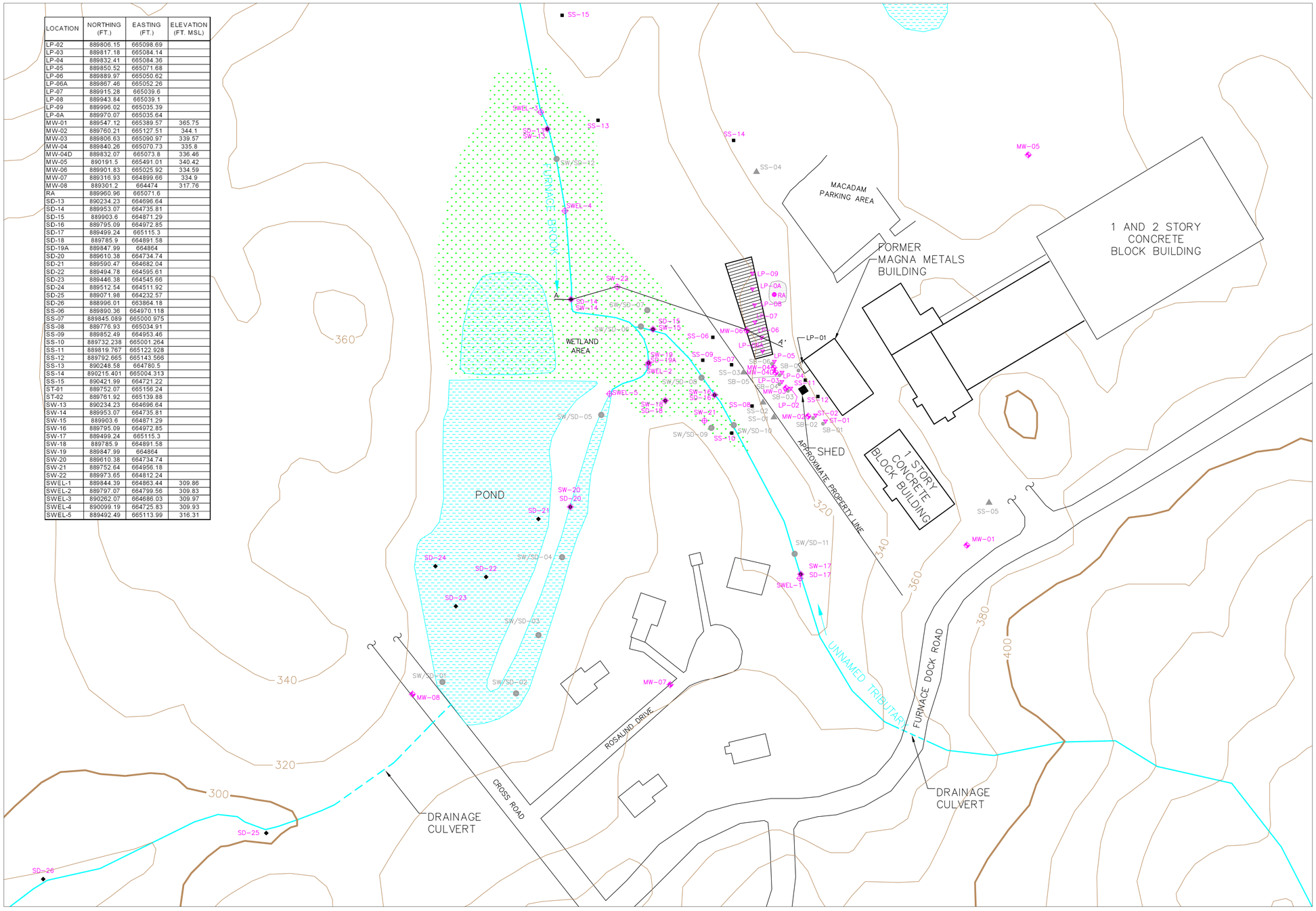
4. APPROXIMATE WETLAND AREA BASED ON FIELD OBSERVATIONS.

5. TOPOGRAPHIC LINES ARE APPROXIMATE ESTIMATIONS.

N

0 40 80
FEET

LOCATION	NORTHING (FT.)	EASTING (FT.)	ELEVATION (FT. MSL)
LP-02	889806.15	665098.69	
LP-03	889817.18	665084.14	
LP-04	889832.41	665084.36	
LP-05	889850.52	665071.68	
LP-06	889889.97	665050.62	
LP-06A	889867.46	665052.26	
LP-07	889915.28	665039.6	
LP-08	889943.84	665039.1	
LP-09	889996.02	665035.39	
LP-0A	889970.07	665035.64	
MW-01	889547.12	665389.57	365.75
MW-02	889760.21	665127.51	344.1
MW-03	889806.63	665090.97	339.57
MW-04	889840.26	665070.73	335.8
MW-04D	889832.07	665073.8	336.46
MW-05	890191.5	665491.01	340.42
MW-06	889901.83	665025.92	334.59
MW-07	889316.93	664899.66	334.9
MW-08	889301.2	664474	317.76
RA	889960.96	665071.6	
SD-13	890234.23	664696.64	
SD-14	889953.07	664735.81	
SD-15	889903.6	664871.29	
SD-16	889795.09	664972.85	
SD-17	889499.24	665115.3	
SD-18	889785.9	664891.58	
SD-19A	889847.99	664864	
SD-20	889610.38	664734.74	
SD-21	889590.47	664682.04	
SD-22	889494.78	664595.61	
SD-23	889446.38	664545.66	
SD-24	889512.54	664511.92	
SD-25	889071.98	664232.57	
SD-26	888996.01	663864.18	
SS-06	889890.36	664970.118	
SS-07	889845.089	665000.975	
SS-08	889776.93	665034.91	
SS-09	889852.49	664953.46	
SS-10	889732.238	665001.264	
SS-11	889819.767	665122.928	
SS-12	889792.665	665143.566	
SS-13	890248.58	664780.5	
SS-14	890215.401	665004.313	
SS-15	890421.99	664721.22	
ST-01	889752.07	665156.24	
ST-02	889761.92	665139.88	
SW-13	890234.23	664696.64	
SW-14	889953.07	664735.81	
SW-15	889903.6	664871.29	
SW-16	889795.09	664972.85	
SW-17	889499.24	665115.3	
SW-18	889785.9	664891.58	
SW-19	889847.99	664864	
SW-20	889610.38	664734.74	
SW-21	889752.64	664956.18	
SW-22	889973.65	664812.24	
SWEL-1	889844.39	664863.44	309.86
SWEL-2	889797.07	664799.56	309.83
SWEL-3	890262.07	664686.03	309.97
SWEL-4	890099.19	664725.83	309.93
SWEL-5	889492.49	665113.99	316.31



TETRA TECH EC, INC.

TITLE:
Sample Station Location Map – 2004 Supplemental RI
Magna Metals
Cortlandt, New York

DWN:	DES.:	PROJECT NO.:
CTS	CTS	106-1172
CHKD:	APPD:	FIGURE NO.:
		5-3
DATE:	REV.:	
08/21/07	0	

N:\GIS\GISKEY\GISPROJ31\MAGNA METALS\DRAFT FINAL RI\FIGURE 5-3 082407.DWG

TETRA TECH EC, INC.

January 30, 2009

Ms. Sally Dewes, PE
New York State Department of Environmental Conservation
Bureau of Remedial Action
625 Broadway
Albany, NY 12233-7016

Subject: **Additional Data Collection**
Data Summary Report for Magna Metals Site

Dear Ms. Dewes:

Enclosed please find the above subject report revised per the January 2009 comment letter. If you have any questions please do not hesitate to call me at 973-630-8544.

Regards,

Mark Sielski, PG
Project Manager

cc: N. Ward-Willis Keane & Beane
File

1000 The American Road, Morris Plains, NJ 07950
Tel 973.630.8000 Fax 973.630.8025
www.tteci.com

ADDITIONAL DATA COLLECTION

FOR THE

FORMER MAGNA METALS SITE
(NYSDEC Site No. 360003)

TOWN OF CORTLANDT
WESTCHESTER COUNTER, NEW YORK

DATA SUMMARY REPORT

JANUARY 2009

PREPARED BY:

Tetra Tech EC, Inc.
1000 The American Road
Morris Plains, New Jersdy 07950

TETRA TECH EC, INC.

ADDITIONAL DATA COLLECTION

FOR THE

FORMER MAGNA METALS SITE
(NYSDEC Site No. 360003)
TOWN OF CORTLANDT
WESTCHESTER COUNTY, NEW YORK

DATA SUMMARY REPORT

JANUARY 2009

PREPARED BY:

Tetra Tech EC, Inc.
1000 The American Road
Morris Plains, New Jersey 07950

TETRA TECH EC, INC.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF ATTACHMENTS

1.0 INTRODUCTION

This report presents the data results from the additional work performed at the request of NYSDEC to collect supplemental data in two locations: 1) an area where drums were previously stored near an on-site building (as reported in historic NYSDEC documentation), and 2) an upgradient wetland area. The additional work was implemented based on NYSDEC comment letters dated November 9, 2007, March 13, 2008, and August 22, 2008, in regards to the Draft Final RI Report submitted August 2007 and the December 2007 Draft Work Plan Addendum for Additional Data Collection. DEC approved the Draft Work Plan Addendum for Additional Data Collection September, 2008.

The field investigation activities discussed below were conducted in October 2008 in accordance with the NYSDEC-approved plans and under NYSDEC field oversight, Mr. Michael Haggerty. All sampling locations were approved by NYSDEC in the field. The sampling locations were surveyed with a global positioning system (GPS) in the field. The accuracy of these points is ±0.6 to 1.0 meters.

2.0 ADDITIONAL DIRECT PUSH SOIL SAMPLING SAMPLING

Additional direct push soil sampling was performed to determine if a former drum storage area (as reported in historic NYSDEC documentation) may have contributed to contamination under the building slab. Soil and groundwater samples were proposed to be collected and analyzed. However, due to the shallow depth to bedrock, hydropunch was not liable to be performed and no groundwater samples could be obtained.

Two (2) soil borings were sampled southeast of the building as presented in Figure 1. Surface soil samples were collected and analyzed for TCL VOCs, TCL SVOCs, TCL Pesticides/PCBs, and TAL metals. Subsurface soil samples were collected and analyzed for TCL VOCs, TCL SVOCs, TCL Pesticides/PCBs, and TAL metals. Boring depths were 2 feet and 6 feet. Boring logs are included in Attachment 1.

3.0 ADDITIONAL SEDIMENT SAMPLING

Four surface sediment samples were collected from the upgradient wetland area (see Figure 2). The samples were collected from 0 to 6 inches below ground surface. One sediment sample was collected within the ponded area approximately 0 to 6 inches below water bottom. The samples were analyzed for TCL VOCs, TCL SVOCs, TCL Pesticides/PCBs, and TAL metals.

4.0 ADDITIONAL SURFACE SOIL SAMPLING

Three surface soil samples were collected from the northern side of the property between the buildings and the wetlands (see Figure 2). One of the samples was collected from the large "open area" north of the macadam parking area. The other two were collected from the vegetated areas east and west of the "open area." The samples were collected from 0

to 6 inches below ground surface. The samples were analyzed for TCL VOCs, TCL SVOCs, TCL Pesticides/PCBs, and TAL metals.

5.0 DATA VALIDATION

Upon receipt of soil gas and groundwater analytical results, the data was validated and Data Usability Summary Reports (DUSRs) were generated for each data package and are included as Attachment 2.

6.0 DATA SUMMARY REPORT

Analytical data tables for soil and sediment samples are included as Attachment 3. Data results for both the former drum storage area and upgradient wetlands were unremarkable. No VOCs or SVOC was detected above the NYSDEC Recommended Soil Criteria – Protection of Ecological Resources in the three surface soil samples. No PCBs were detected in the three surface soil samples. 4,4-DDE and 4,4-DDT were the only pesticides and silver was the only metal detected above the Protection of Ecological Resources criteria in the surface soil samples. No VOCs, SVOCs, pesticides, PCBs or metals were detected above NYSDEC Recommended Soil Criteria – Commercial Use in the samples collected from the two soil borings.

No VOCs, SVOCs, pesticides, or PCBs were detected above NYSDEC Sediment Criteria. Manganese was detected in one sample above its SEL and silver was detected in three samples and the duplicate above its SEL. At least one of eight metals was found in the each sediment sample at a concentration above its LEL.

No further sampling is required as delineation is complete. ISC Properties requests that the RI be accepted as complete.

FIGURE 1

LEGEND

SB-802 SOIL BORING

320 CONTOUR LINE (20 FT INTERVAL)

APPROXIMATE WETLAND AREA

NOTES:
1. LOCATIONS OF FORMER MAGNA METALS BUILDING, 1 STORY CONCRETE BLOCK BUILDING, SHED, GEOPHYSICAL SURVEY AREA, AND MONITORING WELLS ARE BASED ON SURVEY DATA.

2. SB-801 AND SB-802 REFER TO SOIL BORINGS (SB) SAMPLED IN 2008 (8) AND THE CORRESPONDING LOCATION NUMBERS (01 OR 02).

SOURCES:
1. CONTOUR LINES, FURNACE DOCK ROAD, AND FURNACE BROOK BELOW POND BASED ON MOHEGAN LAKE, NY AND PEEKSKILL, NY TOPOGRAPHIC QUADRANGLES, 7.5-MINUTE SERIES, DATED 1956 AND 1957, RESPECTIVELY, AND PHOTOREVISED IN 1981.

2. ADDITIONAL SURFACE FEATURES BASED ON WESTCHESTER COUNTY DEPARTMENT OF PLANNING AERIAL PHOTOGRAPH (SPRING 1990), DECEMBER 18, 1999 AERIAL PHOTOGRAPH, AND SURVEY DATA.

3. APPROXIMATE REFUSE AREA BASED ON NYSDEC DRAWING.

4. APPROXIMATE WETLAND AREA BASED ON FIELD OBSERVATIONS.

0 15 30
FEET

FORMER MAGNA METALS BUILDING

LP-01

SHED

APPROXIMATE PROPERTY LINE

1 STORY CONCRETE BLOCK BUILDING

SB-802

SB-801

320

340

360

380

FURNACE DOCK ROAD

TETRA TECH EC, INC.

TITLE:
Soil Boring/Hydropunch Locations
Supplemental RI
Magna Metals, Cortlandt, New York

DWN:	DES.:	PROJECT NO.:
CTS	CTS	106-1172
CHKD:	APPD:	FIGURE NO.:
MS	MS	1
DATE:	REV.:	
12/23/2008	0	

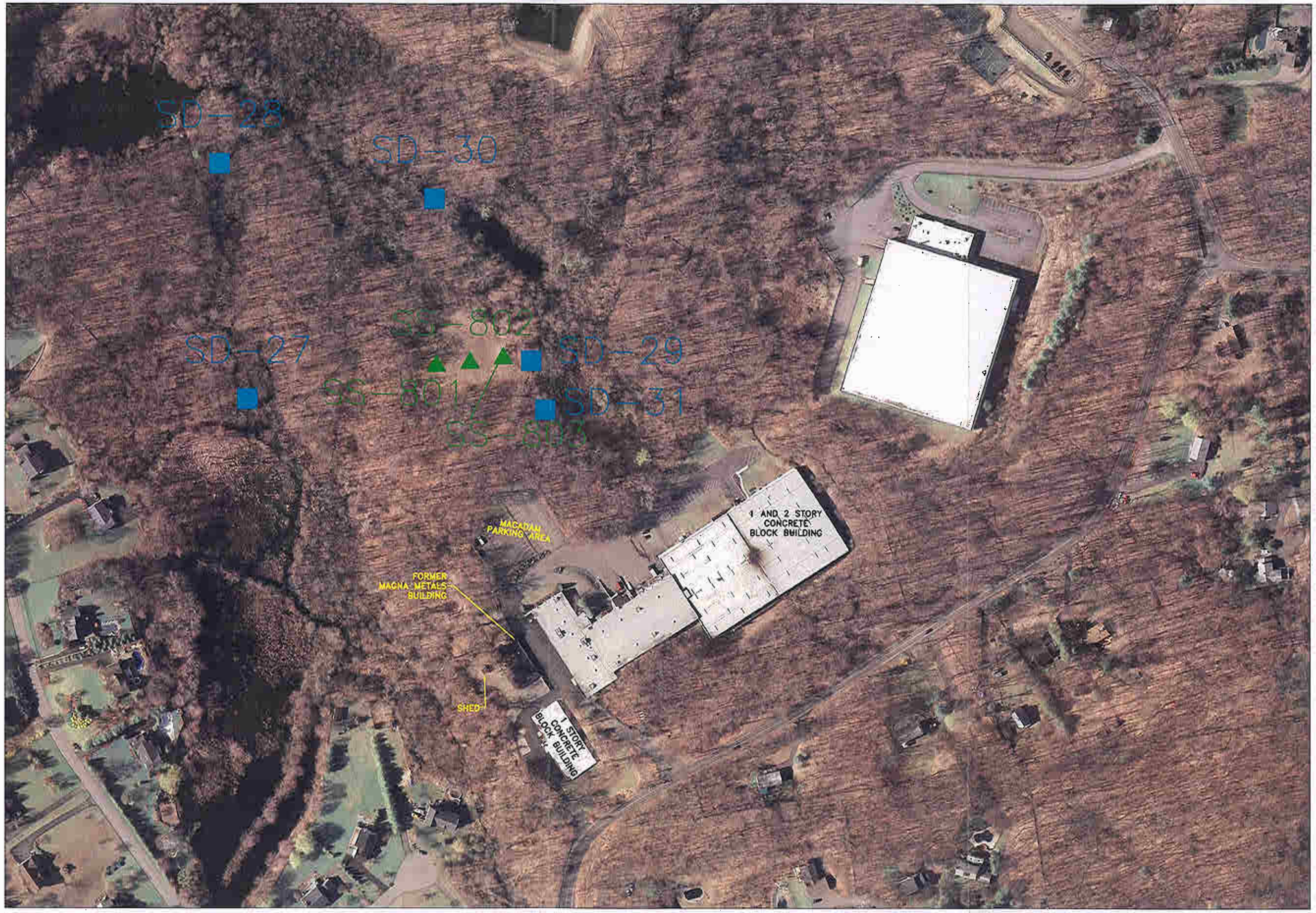
N:\GIS\GISKEY\GISPROJ31\MAGNA METALS\Figure 1 Soil Boring and Hydropunch Locations 122308.dwg

FIGURE 2

LEGEND

SD-27 SEDIMENT LOCATION

SS-801 APPROXIMATE SURFACE SOIL LOCATION



SOURCE:
AERIAL PHOTOGRAPH –
NYS GIS CLEARINGHOUSE, 2007.

0 50 100
FEET

TETRA TECH EC, INC.

TITLE:
Sediment and Surface Soil Locations
Supplemental RI
Magna Metals, Cortlandt, New York

DWN:	DES.:	PROJECT NO.:
CTS	CTS	106-1172
CHKD:	APPD:	FIGURE NO.:
MS	MS	2
DATE:	REV.:	
01/23/2009	1	

N:\GIS\GISKEY\GISPROJ\MAGNA METALS\Figure 2 012308.dwg

ATTACHMENT 1

Log of Borings

FIELD BORING LOG SHEET

BORING LOG SHEET

BORING NUMBER: SB801

PROJECT: Magna Metals
PROJECT NO.: 106-1172.0004.00000
LOCATION (well or boring ID): SB801
TOTAL DEPTH (FT): 6
GEOLOGIST: C. De Carlo
DRILLER: Advanced
DRILLING/SAMPLING METHOD: <Blank> Direct Push

DATE STARTED: 10/7/05
DATE COMPLETED: 10/7/05
GROUNDWATER DEPTH (FT): not encountered
GROUND ELEVATION (FT):
X COORDINATE: —
Y COORDINATE:
DATUM:

TETRATECH EC, INC.

Sample ID	Start Depth (feet)	End Depth (feet)	BLOWS per 6"	Recovery (ft)	Consolidated ? Y or N	USCS Soil Classification or Material	Geologic Unit Code	Color	Description	TIME	DATE	Depth of PID/FID (ft)	FID (ppm)	PID (ppm)	Comments	Contact (A, H, U)
SB801 0-5	0	0.75'		—			—	—	Asphalt and bedding material					0.0	Hand Dug to 5'	
	0.75	1.25		—			SM	Dark Brown	Fine silty SAND w/ fine subangular gravel, moist					0.0	Sample collected from 0.75-1.25 @ 0950	
	0.75	4.5					SM	Lt Brown	silty f SAND, tr. f gravel, sl moist							
	4.5	5					SM	Lt Brown	silty f SAND, tr f gravel, moist							
SB801 5-8	5	5.5		2'			SM		SAA					0.0		

FIELD BORING LOG SHEET

BORING LOG SHEET

BORING NUMBER: SB 801

TETRA TECH EC, INC.

PROJECT:
PROJECT NO.:
LOCATION (well or boring ID):
TOTAL DEPTH (FT):
GEOLOGIST:
DRILLER:
DRILLING/SAMPLING METHOD: <Blank>

DATE STARTED:
DATE COMPLETED:
GROUNDWATER DEPTH (FT):
GROUND ELEVATION (FT):
X COORDINATE:
Y COORDINATE:
DATUM:

Sample ID	Start Depth (feet)	End Depth (feet)	BLOWS per 6"	Recovery (ft)	Consolidated? Y or N	USCS Soil Classification or Material	Geologic Unit Code	Color	Description	TIME	DATE	Depth of PID/FID (ft)	FID (ppm)	PID (ppm)	Comments	Contact (A, H, U)
	5.5	5.75					ML	Lt Brown	fine sandy SILT, w/ some fine angular gravel, v moist					0.0		
	5.75	6					—	—	weathered, shattered rock						refusal @ 6' bgs	
									end of boring @ 6' bgs							

FIELD BORING LOG SHEET

BORING LOG SHEET

BORING NUMBER: SB 802

TETRA TECH EC, INC.

PROJECT: Magna Metals
PROJECT NO.: 106-1172.0004.0000
LOCATION (well or boring ID): SB-802
TOTAL DEPTH (FT): 2'
GEOLOGIST: C De Carlo
DRILLER: Advanced
DRILLING/SAMPLING METHOD: <Blank>

DATE STARTED: 10/7/08
DATE COMPLETED: 10/7/08
GROUNDWATER DEPTH (FT): not encountered
GROUND ELEVATION (FT):
X COORDINATE:
Y COORDINATE:
DATUM:

Sample ID	Start Depth (feet)	End Depth (feet)	BLOWS per 6"	Recovery (ft)	Consolidated ? Y or N	USCS Soil Classification or Material	Geologic Unit Code	Color	Description	TIME	DATE	Depth of PID/FID (ft)	FID (ppm)	PID (ppm)	Comments	Contact (A, H, U)
SB802 0-2'	0	0.75		-			-	-	Asphalt and bedding material						Hand Dug	
	0.75	1.5		-		SM		Dark Brown	silty fine SAND tr. fine grave sl. moist					0.0		
						SM		Lt. Brown	silty fine SAND tr. fine gravel sl. moist					0.0		
									end of boring @ 2' bgs						Rock visible @ bottom of boring	

ATTACHMENT 2

Data Usability Report

MEMORANDUM

TO: **C. Snyder** **DATE: December 18, 2008**

FROM: **C. Minch**

SUBJECT: **Magna Metals**

Laboratory	Project Number	Sample Identification
Chemtech	Z5047	SS-801, SS802, SS803

Three soil samples were collected on October 17, 2008 and shipped to Chemtech where the samples were analyzed for volatiles, semivolatiles, pesticides, PCBs, metals, and TOC. A screening review was performed by an EPA Region II certified validator utilizing applicable criteria specified in EPA Region II Standard Operating Procedures (SOP) HW-24, Rev. 2, October 2006, HW-22, Rev. 3, October 2006, HW-44, Rev. 1.0, October 2006, HW-45, Rev. 1.0, October 2006, HW-2, Rev. 13, September 2006, HWB-1/HWB-2, Rev. 0, March 1994, and best professional judgment. Data qualifier definitions are as follows:

U The analyte was analyzed for, but not detected above the reported sample quantitation limit.

R The sample results are rejected (unusable) due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ The analyte was *not detected* above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Validation consisted of checking and verifying that the criteria listed below were within acceptable QC limits.

- Preservation and Holding Time
- Surrogate Recovery
- Blank Contamination
- Matrix Spike Recovery
- Laboratory Control Samples (LCS)
- Interference Check Sample
- Instrument Tune
- Calibrations
- Laboratory Duplicate
- Internal Standards
- Serial Dilution

Based upon this review, all data are considered acceptable and valid with the following qualifications.

The following observations are noted:

1. The following compounds were qualified as estimated (UJ) due to low recovery in the LCS analyses.
   trichloroethene, 1,2,4-trichlorobenzene, 1,4-dichlorobenzene, 3,3'-dichlorobenzidine:
   SS-801, SS-802, SS-803

2. The following compounds were qualified as estimated (UJ) in the samples below for exceeding %D (20%) criteria in the associated continuing calibration standard.
   dichlorodifluoromethane, chloromethane, acetone, methyl-tert-butyl ether, methyl acetate, 1,1-dichloroethane, cyclohexane, 2-butanone, 1,1,2,2-tetrachloroethane:
   SS-801, SS-802, SS-803

3. The TIC at the retention time of 3.44 in the semivolatile analyses of samples SS-801 and SS-803 was qualified "R" because it is a common laboratory contaminant.

4. With the exception of heptachlor, DDE, and DDT, all compounds exhibited low or 0% recovery in the MS and/or MSD performed on SS-801 Consequently, all compounds except heptachlor, DDE, and DDT were estimated (UJ) in SS-801.

5. DDT was qualified as estimated (J/UJ) in samples SS-801, SS-802, and SS-803 for exceeding %RSD and %D criteria in the calibrations.

6. The positive results for alpha and gamma chlordane were qualified as estimated (J) in SS-802 because the %D between the values obtained on the two dissimilar analytical columns exceeded 25%.

7. Cadmium, lead and silver exceeded the CRQL when they were not present in the ICSA solution. In addition, iron was present in the samples at concentrations that exceeded the concentration in the ICS solutions. Consequently, cadmium, lead and silver were qualified as estimated (J) in SS-801, SS-802, and SS-803 due to positive interference.

8. Calcium, chromium, cobalt, copper, iron, manganese, nickel, and zinc were estimated (J) in SS-801, SS-802, and SS-803 because the serial dilution exceeded 10%.

10. TOC was estimated (J) in SS-801, SS-802, and SS-803 due to low recovery (57%) in the matrix spike performed on sample SS-803.

MEMORANDUM

TO: C. Snyder **DATE: December 18, 2008**

FROM: C. Minch

SUBJECT: Magna Metals

Laboratory	Project Number	Sample Identification
Chemtech	Z4885	SD-27, SD-28, SD-29, SD-30, SD-31, SD-50, SB-801-0.75-1.25, SB-801-5-6, SB-802-0.75-1.25, SB-802-1.5-2

Ten soil samples were collected during this sampling event and shipped to Chemtech where the samples were analyzed for volatiles, semivolatiles, pesticides, PCBs, metals, and TOC. A screening review was performed by an EPA Region II certified validator utilizing applicable criteria specified in EPA Region II Standard Operating Procedures (SOP) HW-24, Rev. 2, October 2006, HW-22, Rev. 3, October 2006, HW-44, Rev. 1.0, October 2006, HW-45, Rev. 1.0, October 2006, HW-2, Rev. 13, September 2006, HWB-1/HWB-2, Rev. 0, March 1994, and best professional judgment. Data qualifier definitions are as follows:

U The analyte was analyzed for, but not detected above the reported sample quantitation limit.

R The sample results are rejected (unusable) due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Validation consisted of checking and verifying that the criteria listed below were within acceptable QC limits.

- Preservation and Holding Time
- Surrogate Recovery
- Blank Contamination
- Matrix Spike Recovery
- Laboratory Control Samples (LCS)
- Interference Check Sample
- Instrument Tune
- Calibrations
- Laboratory Duplicate
- Internal Standards
- Serial Dilution

Based upon this review, all data are considered acceptable and valid with the following qualifications.

The following observations are noted:

1. All analytes were qualified as estimated (J/UJ) in all parameters of samples SD-29 and SD-31 because the % moisture exceeded 50%.

2. The following compounds were qualified as indicated in the samples below due to low response of the associated internal standard:
   Qualified unusable (R); IS#4 < 25%:
   isopropylbenzene → 1,2,4-trichlorobenzene: SB-801-0.75-1.25RE

   Qualified as estimated (UJ); < 50%:
   all analytes: SB-802-0.75-1.25RE
   dichlorodifluoromethane → bromoform: SB-801-0.75-1.25RE
   isopropylbenzene → 1,2,4-trichlorobenzene: SB-801-0.75-1.25, SB-802-0.75-1.25, SB-802-1.5-2, SB-802-1.5-2RE

3. Methyl acetate was estimated (UJ) in samples SB-801-5-6, SB-802-0.75-1.25, SB-802-1.5-2, and SB-802-1.5-2RE for exceeding %D (20%) criteria in the associated continuing calibration standard.

4. The TICs at the retention time of 3.59 in the semivolatile analyses of samples SD-27, SD-28, SD-29, SD-30, SD-31, SD-50, and SB-801-5-6 were qualified "R" because it is a common laboratory contaminant.

5. The TICs at the retention time of 13.83 in the semivolatile analyses of samples SD-27, SD-28, SD-29, SD-30, and SD-31 were qualified "R" due to similar contamination in the method blank.

6. The positive results for aroclor 1260 were qualified as estimated (J) in SB-801-5-6, SB-802-0.75-1.25, and SB-802-1.5-2 because the %D between the values obtained on the two dissimilar analytical columns exceeded 25%.

7. Mercury was qualified as estimated (J/UJ) in samples SD-27, SD-28, SD-30, SD-50, SB-801-5-6, SB-802-0.75-1.25, and SB-802-1.5-2 due to low recovery in the CRQL standard.

8. Lead and silver exceeded the CRQL when they were not present in the ICSA solution. In addition, iron was present in several samples at concentrations that exceeded the concentration in the ICS solutions. Consequently, lead and silver were qualified as estimated (J) in samples SD-30, SD-50, SB-801-0.75-1.25, SB-801-5-6, SB-802-0.75-1.25, and SB-802-1.5-2 due to positive interference.

9. Potassium was estimated (J) in all samples except SD-29 and SD-31 because the serial dilution exceeded 10%.

10. TOC was estimated (J) in all samples except SD-29 and SD-31 due to high recovery in the MS/MSD performed on sample SD-30.

11. The following metals were qualified as indicated in the samples below for exceeding the limits of field precision.
qualified as unusable (R)
Ni: SD-30
qualified as estimated (J)
Mg: SD-30
Al, Ba, Cr, Cu, Fe, Mn, V, Zn: SD-30, SD-50

ATTACHMENT 3

Data Analytical Tables

Table 1
Volatile Organic Compounds in Surface Soil Samples
Magna Metals

Sample ID	NYSDEC		SS801		SS802		SS803	
Lab Sample Number	Recommended		Z5047-01		Z5047-02		Z5047-03	
Sampling Date	Soil Criteria		10/17/2008		10/17/2008		10/17/2008	
Matrix	Ecological Use		SOIL		SOIL		SOIL	
Dilution Factor			1		1		1	
Units	mg/kg		mg/kg		mg/kg		mg/kg	
COMPOUND								
Dichlorodifluoromethane	NC		0.011	U	0.011	U	0.011	U
Chloromethane	NC		0.0077	U	0.0076	U	0.0076	U
Vinyl Chloride	NC		0.008	U	0.0078	U	0.0079	U
Bromomethane	NC		0.012	U	0.012	U	0.012	U
Chloroethane	NC		0.011	U	0.011	U	0.011	U
Trichlorofluoromethane	NC		0.0069	U	0.0068	U	0.0068	U
1,1,2-Trichlorotrifluoroethane	NC		0.0098	U	0.0095	U	0.0097	U
1,1-Dichloroethene	NC		0.0058	U	0.0057	U	0.0057	U
Acetone	2.2		0.099	U	0.097	U	0.098	U
Carbon Disulfide	NC		0.0063	U	0.0061	U	0.0062	U
Methyl tert-butyl Ether	NC		0.0052	U	0.0051	U	0.0051	U
Methyl Acetate	NC		0.0098	U	0.0096	U	0.0097	U
Methylene Chloride	12		0.014	U	0.014	U	0.014	U
trans-1,2-Dichloroethene	NC		0.0072	U	0.007	U	0.0071	U
1,1-Dichloroethane	NC		0.0065	U	0.0064	U	0.0064	U
Cyclohexane	NC		0.0059	U	0.0058	U	0.0059	U
2-Butanone	NC		0.029	U	0.029	U	0.029	U
Carbon Tetrachloride	NC		0.0034	U	0.0034	U	0.0034	U
cis-1,2-Dichloroethene	NC		0.0075	U	0.0073	U	0.0074	U
Chloroform	12		0.0052	U	0.0051	U	0.0051	U
1,1,1-Trichloroethane	NC		0.0055	U	0.0054	U	0.0055	U
Methylcyclohexane	NC		0.0048	U	0.0047	U	0.0048	U
Benzene	70		0.0042	U	0.0041	U	0.0041	U
1,2-Dichloroethane	10		0.0048	U	0.0047	U	0.0047	U
Trichloroethene	2		0.0042	U	0.0041	U	0.0042	U

Table 1
Volatile Organic Compounds in Surface Soil Samples
Magna Metals

Sample ID	NYSDEC		SS801		SS802		SS803	
Lab Sample Number	Recommended		Z5047-01		Z5047-02		Z5047-03	
Sampling Date	Soil Criteria		10/17/2008		10/17/2008		10/17/2008	
Matrix	Ecological Use		SOIL		SOIL		SOIL	
Dilution Factor			1		1		1	
Units	mg/kg		mg/kg		mg/kg		mg/kg	
COMPOUND								
1,2-Dichloropropane	NC		0.0055	U	0.0053	U	0.0054	U
Bromodichloromethane	NC		0.0041	U	0.004	U	0.004	U
4-Methyl-2-Pentanone	NC		0.022	U	0.022	U	0.022	U
Toluene	36		0.0051	U	0.005	U	0.0051	U
t-1,3-Dichloropropene	NC		0.0049	U	0.0048	U	0.0048	U
cis-1,3-Dichloropropene	NC		0.0039	U	0.0038	U	0.0039	U
1,1,2-Trichloroethane	NC		0.0035	U	0.0035	U	0.0035	U
2-Hexanone	NC		0.025	U	0.025	U	0.025	U
Dibromochloromethane	NC		0.0038	U	0.0038	U	0.0038	U
1,2-Dibromoethane	NC		0.0048	U	0.0047	U	0.0047	U
Tetrachloroethene	2		0.0072	U	0.007	U	0.0071	U
Chlorobenzene	40		0.0044	U	0.0043	U	0.0044	U
Ethyl Benzene	NC		0.0047	U	0.0045	U	0.0046	U
m/p-Xylenes	0.26		0.011	U	0.011	U	0.011	U
o-Xylene	0.26		0.0044	U	0.0043	U	0.0044	U
Styrene	NC		0.0036	U	0.0035	U	0.0036	U
Bromoform	NC		0.0047	U	0.0046	U	0.0047	U
Isopropylbenzene	NC		0.0048	U	0.0047	U	0.0047	U
1,1,2,2-Tetrachloroethane	NC		0.0052	U	0.0051	U	0.0051	U
1,3-Dichlorobenzene	NC		0.0039	U	0.0038	U	0.0039	U
1,4-Dichlorobenzene	NC		0.0045	U	0.0044	U	0.0044	U
1,2-Dichlorobenzene	NC		0.005	U	0.0049	U	0.0049	U
1,2-Dibromo-3-Chloropropane	NC		0.0059	U	0.0058	U	0.0059	U
1,2,4-Trichlorobenzene	NC		0.0038	U	0.0038	U	0.0038	U
Total Confident Conc.			0		0		0	
Total TICs			0		0		0	

Qualifiers
U - Non-detect.
J - Estimated.
NC - No Criteria.

Table 2
Semi-volatile Organic Compounds in Surface Soil Samples
Magna Metals

Sample ID	NYSDEC	SS801		SS802		SS803	
Lab Sample Number	Recommended	Z5047-01		Z5047-02		Z5047-03	
Sampling Date	Soil Criteria	10/17/2008		10/17/2008		10/17/2008	
Matrix	Ecological Use	SOIL		SOIL		SOIL	
Dilution Factor		10		20		20	
Units	mg/kg	mg/kg		mg/kg		mg/kg	
COMPOUND							
Benzaldehyde	NC	0.13	U	0.25	U	0.25	U
Phenol	30	0.11	U	0.21	U	0.21	U
bis(2-Chloroethyl)ether	NC	0.05	U	0.098	U	0.099	U
2-Chlorophenol	NC	0.1	U	0.2	U	0.21	U
2-Methylphenol	NC	0.1	U	0.2	U	0.2	U
2,2-oxybis(1-Chloropropane)	NC	0.16	U	0.31	U	0.31	U
Acetophenone	NC	0.11	U	0.22	U	0.23	U
3+4-Methylphenols	NC	0.12	U	0.23	U	0.23	U
N-Nitroso-di-n-propylamine	NC	0.14	U	0.27	U	0.27	U
Hexachloroethane	NC	0.13	U	0.25	U	0.25	U
Nitrobenzene	NC	0.09	U	0.18	U	0.18	U
Isophorone	NC	0.13	U	0.25	U	0.25	U
2-Nitrophenol	NC	0.14	U	0.27	U	0.28	U
2,4-Dimethylphenol	NC	0.11	U	0.22	U	0.23	U
bis(2-Chloroethoxy)methane	NC	0.088	U	0.17	U	0.17	U
2,4-Dichlorophenol	NC	0.091	U	0.18	U	0.18	U
Naphthalene	NC	0.092	U	0.18	U	0.18	U
4-Chloroaniline	NC	0.25	U	0.49	U	0.5	U
Hexachlorobutadiene	NC	0.16	U	0.3	U	0.31	U
Caprolactam	NC	0.46	U	0.9	U	0.91	U
4-Chloro-3-methylphenol	NC	0.11	U	0.22	U	0.22	U
2-Methylnaphthalene	NC	0.11	U	0.21	U	0.21	U
Hexachlorocyclopentadiene	NC	0.2	U	0.38	U	0.39	U
2,4,6-Trichlorophenol	NC	0.089	U	0.17	U	0.18	U
2,4,5-Trichlorophenol	NC	0.11	U	0.22	U	0.22	U
1,1-Biphenyl	NC	0.11	U	3.3	J	0.22	U
2-Chloronaphthalene	NC	0.093	U	0.18	U	0.18	U
2-Nitroaniline	NC	0.18	U	0.35	U	0.36	U
Dimethylphthalate	NC	0.11	U	0.22	U	0.22	U
Acenaphthylene	NC	0.056	U	0.11	U	0.11	U

Table 2
Semi-volatile Organic Compounds in Surface Soil Samples
Magna Metals

Sample ID	NYSDEC	SS801		SS802		SS803	
Lab Sample Number	Recommended	Z5047-01		Z5047-02		Z5047-03	
Sampling Date	Soil Criteria	10/17/2008		10/17/2008		10/17/2008	
Matrix	Ecological Use	SOIL		SOIL		SOIL	
Dilution Factor		10		20		20	
Units	mg/kg	mg/kg		mg/kg		mg/kg	
COMPOUND							
2,6-Dinitrotoluene	NC	0.14	U	0.27	U	0.27	U
3-Nitroaniline	NC	0.25	U	0.5	U	0.5	U
Acenaphthene	20	0.083	U	0.16	U	0.16	U
2,4-Dinitrophenol	NC	0.2	U	0.4	U	0.4	U
4-Nitrophenol	NC	0.23	U	0.44	U	0.45	U
Dibenzofuran	NC	0.12	U	0.23	U	0.23	U
2,4-Dinitrotoluene	NC	0.13	U	0.25	U	0.25	U
Diethylphthalate	NC	0.13	U	0.26	U	0.26	U
4-Chlorophenyl-phenylether	NC	0.15	U	0.29	U	0.29	U
Fluorene	30	0.1	U	0.2	U	0.2	U
4-Nitroaniline	NC	0.3	U	0.59	U	0.6	U
4,6-Dinitro-2-methylphenol	NC	0.52	U	1	U	1	U
N-Nitrosodiphenylamine	NC	0.29	U	0.56	U	0.57	U
4-Bromophenyl-phenylether	NC	0.17	U	0.34	U	0.35	U
Hexachlorobenzene	NC	0.12	U	0.23	U	0.23	U
Atrazine	NC	0.27	U	0.53	U	0.54	U
Pentachlorophenol	0.8	0.43	U	0.85	U	0.86	U
Phenanthrene	NC	0.12	U	0.23	U	1.6	J
Anthracene	NC	0.13	U	0.25	U	0.26	U
Carbazole	NC	0.29	U	0.57	U	0.58	U
Di-n-butylphthalate	NC	0.18	U	0.35	U	0.36	U
Fluoranthene	NC	0.093	U	1.2	J	2.9	J
Pyrene	NC	0.084	U	1.7	J	2.3	J
Butylbenzylphthalate	NC	0.24	U	0.47	U	0.48	U
3,3-Dichlorobenzidine	NC	0.29	U	0.57	U	0.57	U
Benzo(a)anthracene	NC	0.092	U	1.3	J	1.1	J
Chrysene	NC	0.071	U	1.7	J	1.4	J
bis(2-Ethylhexyl)phthalate	NC	0.15	U	0.29	U	0.29	U
Di-n-octyl phthalate	NC	0.13	U	0.26	U	0.27	U

Table 2
Semi-volatile Organic Compounds in Surface Soil Samples
Magna Metals

Sample ID	NYSDEC	SS801		SS802		SS803	
Lab Sample Number	Recommended	Z5047-01		Z5047-02		Z5047-03	
Sampling Date	Soil Criteria	10/17/2008		10/17/2008		10/17/2008	
Matrix	Ecological Use	SOIL		SOIL		SOIL	
Dilution Factor		10		20		20	
Units	mg/kg	mg/kg		mg/kg		mg/kg	
COMPOUND							
Benzo(b)fluoranthene	NC	0.28	U	2.5	J	1.6	J
Benzo(k)fluoranthene	NC	0.18	U	1.3	J	0.35	U
Benzo(a)pyrene	2.6	0.11	U	1.6	J	1.1	J
Indeno(1,2,3-cd)pyrene	NC	0.097	U	1.1	J	0.19	U
Dibenz(a,h)anthracene	NC	0.28	U	0.55	U	0.56	U
Benzo(g,h,i)perylene	NC	0.28	U	1.2	J	0.85	J
Total Confident Conc.		0		16.9		12.85	
Total TICs		0		450		790	

Qualifiers
U - Non-detect.
J - Estimated.
NC - No Criteria.

Table 3
Pesticides In Surface Soil Samples
Magna Metals

Sample ID	NYSDEC	SS801		SS802		SS803	
Lab Sample Number	Recommended	Z5047-01		Z5047-02		Z5047-03	
Sampling Date	Soil Criteria	10/17/2008		10/17/2008		10/17/2008	
Matrix	Ecological Use	SOIL		SOIL		SOIL	
Dilution Factor		1		10		1	
Units	mg/kg	mg/kg		mg/kg		mg/kg	
COMPOUND							
alpha-BHC	0.04	0.00016	U	0.0016	U	0.00016	U
beta-BHC	0.6	0.00021	U	0.002	U	0.00021	U
delta-BHC	0.04	0.00021	U	0.002	U	0.00021	U
gamma-BHC	NC	0.00019	U	0.0018	U	0.00018	U
Heptachlor	0.14	0.00017	U	0.0017	U	0.00017	U
Aldrin	0.14	0.00019	U	0.0018	U	0.00018	U
Heptachlor epoxide	NC	0.00022	U	0.0022	U	0.00022	U
Endosulfan I	NC	0.00022	U	0.0022	U	0.00022	U
Dieldrin	0.006	0.00022	U	0.0022	U	0.00022	U
4,4-DDE	0.0033	0.0076		0.0022	U	0.00022	U
Endrin	0.014	0.00066	U	0.0065	U	0.00065	U
Endosulfan II	NC	0.00023	U	0.0023	U	0.00023	U
4,4-DDD	0.0033	0.00031	U	0.0031	U	0.00031	U
Endosulfan Sulfate	NC	0.00027	U	0.0026	U	0.00026	U
4,4-DDT	0.0033	0.0082		0.0018	U	0.0021	
Methoxychlor	NC	0.00024	U	0.0024	U	0.00024	U
Endrin ketone	NC	0.00055	U	0.0053	U	0.00054	U
Endrin aldehyde	NC	0.00023	U	0.0023	U	0.00023	U
alpha-Chlordane	1.3	0.00022	U	0.021	P	0.00022	U
gamma-Chlordane	NC	0.00021	U	0.015	JP	0.00021	U
Toxaphene	NC	0.0042	U	0.041	U	0.0041	U
Total Confident Conc.		0.0158		0.036		0.0021	
Total TICs		0		0		0	

Qualifiers
U - Non-detect.
J - Estimated.
NC - No Criteria.

Table 4
Polychlorinated Biphenyls (PCBs) in Surface Soil Samples
Magna Metals

Sample ID	NYSDEC		SS801		SS802		SS803	
Lab Sample Number	Recommended		Z5047-01		Z5047-02		Z5047-03	
Sampling Date	Soil Criteria		10/17/2008		10/17/2008		10/17/2008	
Matrix	Ecological Use		SOIL		SOIL		SOIL	
Dilution Factor			1		1		1	
Units	mg/kg		mg/kg		mg/kg		mg/kg	
COMPOUND								
Aroclor-1016	1	*	0.0043	U	0.0042	U	0.0043	U
Aroclor-1221	1	*	0.0053	U	0.0052	U	0.0052	U
Aroclor-1232	1	*	0.0056	U	0.0054	U	0.0055	U
Aroclor-1242	1	*	0.0024	U	0.0024	U	0.0024	U
Aroclor-1248	1	*	0.0053	U	0.0052	U	0.0053	U
Aroclor-1254	1	*	0.0054	U	0.0053	U	0.0054	U
Aroclor-1260	1	*	0.0043	U	0.0042	U	0.0043	U
Total Confident Conc.			0		0		0	
Total TICs			0		0		0	

Qualifiers
* = Sum of all PCBs
U - Non-detect.
J - Estimated.
NC - No Criteria.

Table 5
Metals in Surface Soil Samples
Magna Metals

Sample ID	NYSDEC	SS801		SS802		SS803	
Lab Sample Number	Recommended	Z5047-01		Z5047-02		Z5047-03	
Sampling Date	Soil Criteria	10/17/2008		10/17/2008		10/17/2008	
Matrix	Ecological Use	SOIL		SOIL		SOIL	
Dilution Factor		1		1		1	
Units	mg/kg	mg/kg		mg/kg		mg/kg	
COMPOUND							
Aluminum	NC	13900		11400		12200	
Antimony	NC	0.45	U	0.441	U	0.444	U
Arsenic	13	1.48		1.4		0.693	J
Barium	433	69.1		86.5		84.3	
Beryllium	10	0.355		0.279		0.241	
Cadmium	4	1.81		1.97		2.07	
Calcium	NC	10200		17600		5550	
Chromium	NC	14.3		23.1		35.2	
Cobalt	NC	7.12		7.78		9.88	
Copper	50	16		19.7		21	
Iron	NC	16100		16900		18500	
Lead	63	14.6		31.9		24.5	
Magnesium	NC	7440		12400		5430	
Manganese	1600	249		280		407	
Mercury	0.18	0.033		0.062		0.028	
Nickel	30	10.8		15.4		22.7	
Potassium	NC	1120		1550		1200	
Selenium	3.9	0.636	U	0.623	U	0.628	U
Silver	2	2.87		3.04		3.34	
Sodium	NC	141		225		383	
Thallium	NC	0.767	U	0.753	U	0.758	U
Vanadium	NC	27.5		30.3		36.9	
Zinc	109	43.9		63		58.5	
Total Confident Conc.		NA		NA		NA	
Total TICs		0		0		0	

Qualifiers
U - Non-detect.
J - Estimated.

Table 6
Volatile Organic Compounds in Samples from Soil Borings
Magna Metals

Sample ID	NYSDEC		SB-801-0.75-1.25		SB-801-5-6		SB-802-0.75-1.5		SB-802-1.5-2	
Lab Sample Number	Recommended		Z4885-10		Z4885-11		Z4885-12		Z4885-13	
Sampling Date	Soil Criteria		10/7/2008		10/7/2008		10/7/2008		10/7/2008	
Matrix	Commercial Use		SOIL		SOIL		SOIL		SOIL	
Dilution Factor			1		1		1		1	
Units	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
COMPOUND										
Dichlorodifluoromethane	NC		0.011	U	0.01	U	0.01	U	0.01	U
Chloromethane	NC		0.0073	U	0.007	U	0.007	U	0.0069	U
Vinyl Chloride	13		0.0076	U	0.0073	U	0.0073	U	0.0072	U
Bromomethane	NC		0.011	U	0.011	U	0.011	U	0.011	U
Chloroethane	NC		0.01	U	0.0098	U	0.0097	U	0.0096	U
Trichlorofluoromethane	NC		0.0065	U	0.0063	U	0.0063	U	0.0062	U
1,1,2-Trichlorotrifluoroethane	NC		0.0092	U	0.0089	U	0.0088	U	0.0088	U
1,1-Dichloroethene	500		0.0055	U	0.0053	U	0.0053	U	0.0052	U
Acetone	500		0.093	U	0.09	U	0.09	U	0.089	U
Carbon Disulfide	NC		0.0059	U	0.0057	U	0.0057	U	0.0056	U
Methyl tert-butyl Ether	500		0.0049	U	0.0047	U	0.0047	U	0.0046	U
Methyl Acetate	NC		0.0093	U	0.0089	U	0.0089	U	0.0088	U
Methylene Chloride	500		0.013	U	0.013	U	0.013	U	0.013	U
trans-1,2-Dichloroethene	500		0.0068	U	0.0065	U	0.0065	U	0.0064	U
1,1-Dichloroethane	240		0.0062	U	0.0059	U	0.0059	U	0.0058	U
Cyclohexane	NC		0.0056	U	0.0054	U	0.0054	U	0.0053	U
2-Butanone	NC		0.028	U	0.026	U	0.026	U	0.026	U
Carbon Tetrachloride	22		0.0032	U	0.0031	U	0.0031	U	0.0031	U
cis-1,2-Dichloroethene	500		0.0071	U	0.0068	U	0.0068	U	0.0067	U
Chloroform	350		0.0049	U	0.0047	U	0.0047	U	0.0046	U
1,1,1-Trichloroethane	500		0.0052	U	0.005	U	0.005	U	0.005	U
Methylcyclohexane	NC		0.0046	U	0.0044	U	0.0044	U	0.0043	U
Benzene	44		0.004	U	0.0038	U	0.0038	U	0.0038	U
1,2-Dichloroethane	30		0.0045	U	0.0043	U	0.0043	U	0.0043	U
Trichloroethene	200		0.004	U	0.0038	U	0.0038	U	0.0038	U

Table 6
Volatile Organic Compounds in Samples from Soil Borings
Magna Metals

Sample ID	NYSDEC		SB-801-0.75-1.25		SB-801-5-6		SB-802-0.75-1.5		SB-802-1.5-2	
Lab Sample Number	Recommended		Z4885-10		Z4885-11		Z4885-12		Z4885-13	
Sampling Date	Soil Criteria		10/7/2008		10/7/2008		10/7/2008		10/7/2008	
Matrix	Commercial Use		SOIL		SOIL		SOIL		SOIL	
Dilution Factor			1		1		1		1	
Units	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
COMPOUND										
1,2-Dichloropropane	NC		0.0052	U	0.005	U	0.005	U	0.0049	U
Bromodichloromethane	NC		0.0038	U	0.0037	U	0.0037	U	0.0037	U
4-Methyl-2-Pentanone	NC		0.021	U	0.02	U	0.02	U	0.02	U
Toluene	500		0.0048	U	0.0046	U	0.0046	U	0.0046	U
t-1,3-Dichloropropene	NC		0.0046	U	0.0044	U	0.0044	U	0.0044	U
cis-1,3-Dichloropropene	NC		0.0037	U	0.0035	U	0.0035	U	0.0035	U
1,1,2-Trichloroethane	NC		0.0034	U	0.0032	U	0.0032	U	0.0032	U
2-Hexanone	NC		0.024	U	0.023	U	0.023	U	0.023	U
Dibromochloromethane	NC		0.0036	U	0.0035	U	0.0035	U	0.0034	U
1,2-Dibromoethane	NC		0.0045	U	0.0043	U	0.0043	U	0.0043	U
Tetrachloroethene	150		0.0068	U	0.0065	U	0.0065	U	0.0065	U
Chlorobenzene	500		0.0042	U	0.004	U	0.004	U	0.004	U
Ethyl Benzene	390		0.0044	U	0.0042	U	0.0042	U	0.0042	U
m/p-Xylenes	500		0.01	U	0.0098	U	0.0098	U	0.0097	U
o-Xylene	500		0.0042	U	0.004	U	0.004	U	0.004	U
Styrene	NC		0.0034	U	0.0033	U	0.0033	U	0.0032	U
Bromoform	NC		0.0045	U	0.0043	U	0.0043	U	0.0042	U
Isopropylbenzene	NC		0.0045	U	0.0043	U	0.0043	U	0.0043	U
1,1,2,2-Tetrachloroethane	NC		0.0049	U	0.0047	U	0.0047	U	0.0046	U
1,3-Dichlorobenzene	280		0.0037	U	0.0035	U	0.0035	U	0.0035	U
1,4-Dichlorobenzene	130		0.0042	U	0.0041	U	0.0041	U	0.004	U
1,2-Dichlorobenzene	500		0.0047	U	0.0045	U	0.0045	U	0.0045	U
1,2-Dibromo-3-Chloropropane	NC		0.0056	U	0.0054	U	0.0054	U	0.0053	U
1,2,4-Trichlorobenzene	NC		0.0036	U	0.0035	U	0.0035	U	0.0034	U
Total Confident Conc.			0		0		0		0	
Total TICs			0		0		0		0	

Qualifiers
U - Non-detect.
J - Estimated.
NC - No Criteria.

Table 7
Semi-volatile Organic Compounds in Samples from Soil Borings
Magna Metals

Sample ID	NYSDEC	SB-801-0.75-1.25		SB-801-5-6		SB-802-0.75-1.5		SB-802-1.5-2	
Lab Sample Number	Recommended	Z4885-10		Z4885-11		Z4885-12		Z4885-13	
Sampling Date	Soil Criteria	10/7/2008		10/7/2008		10/7/2008		10/7/2008	
Matrix	Commercial Use	SOIL		SOIL		SOIL		SOIL	
Dilution Factor		40		5		40		20	
Units	mg/kg	mg/kg		mg/kg		mg/kg		mg/kg	
COMPOUND									
Benzaldehyde	NC	0.49	U	0.059	U	0.47	U	0.23	U
Phenol	500	0.4	U	0.049	U	0.39	U	0.2	U
bis(2-Chloroethyl)ether	NC	0.19	U	0.023	U	0.18	U	0.092	U
2-Chlorophenol	NC	0.39	U	0.048	U	0.38	U	0.19	U
2-Methylphenol	NC	0.39	U	0.047	U	0.37	U	0.19	U
2,2-oxybis(1-Chloropropane)	NC	0.6	U	0.073	U	0.58	U	0.29	U
Acetophenone	NC	0.43	U	0.053	U	0.42	U	0.21	U
3+4-Methylphenols	NC	0.44	U	0.054	U	0.43	U	0.21	U
N-Nitroso-di-n-propylamine	NC	0.53	U	0.064	U	0.51	U	0.25	U
Hexachloroethane	NC	0.47	U	0.058	U	0.46	U	0.23	U
Nitrobenzene	NC	0.34	U	0.042	U	0.33	U	0.16	U
Isophorone	NC	0.48	U	0.058	U	0.46	U	0.23	U
2-Nitrophenol	NC	0.53	U	0.065	U	0.51	U	0.26	U
2,4-Dimethylphenol	NC	0.43	U	0.053	U	0.42	U	0.21	U
bis(2-Chloroethoxy)methane	NC	0.33	U	0.041	U	0.32	U	0.16	U
2,4-Dichlorophenol	NC	0.34	U	0.042	U	0.33	U	0.17	U
Naphthalene	500	0.35	U	0.043	U	0.34	U	0.17	U
4-Chloroaniline	NC	0.96	U	0.12	U	0.92	U	0.46	U
Hexachlorobutadiene	NC	0.59	U	0.072	U	0.57	U	0.28	U
Caprolactam	NC	1.7	U	0.21	U	1.7	U	0.84	U
4-Chloro-3-methylphenol	NC	0.43	U	0.052	U	0.41	U	0.21	U
2-Methylnaphthalene	NC	0.41	U	0.05	U	0.4	U	0.2	U
Hexachlorocyclopentadiene	NC	0.74	U	0.091	U	0.72	U	0.36	U
2,4,6-Trichlorophenol	NC	0.34	U	0.041	U	0.33	U	0.16	U
2,4,5-Trichlorophenol	NC	0.43	U	0.053	U	0.42	U	0.21	U
1,1-Biphenyl	NC	0.43	U	0.053	U	0.42	U	0.21	U
2-Chloronaphthalene	NC	0.35	U	0.043	U	0.34	U	0.17	U
2-Nitroaniline	NC	0.68	U	0.083	U	0.66	U	0.33	U
Dimethylphthalate	NC	0.42	U	0.052	U	0.41	U	0.2	U
Acenaphthylene	500	0.21	U	0.026	U	0.21	U	0.1	U
2,6-Dinitrotoluene	NC	0.52	U	0.063	U	0.5	U	0.25	U
3-Nitroaniline	NC	0.96	U	0.12	U	0.93	U	0.47	U
Acenaphthene	500	0.31	U	0.038	U	0.3	U	0.15	U
2,4-Dinitrophenol	NC	0.77	U	0.095	U	0.75	U	0.37	U
4-Nitrophenol	NC	0.86	U	0.11	U	0.83	U	0.42	U
Dibenzofuran	NC	0.45	U	0.055	U	0.43	U	0.22	U
2,4-Dinitrotoluene	NC	0.48	U	0.059	U	0.47	U	0.23	U
Diethylphthalate	NC	0.49	U	0.061	U	0.48	U	0.24	U
4-Chlorophenyl-phenylether	NC	0.55	U	0.068	U	0.54	U	0.27	U
Fluorene	500	0.39	U	0.048	U	0.38	U	0.19	U

Table 7
Semi-volatile Organic Compounds in Samples from Soil Borings
Magna Metals

Sample ID	NYSDEC	SB-801-0.75-1.25		SB-801-5-6		SB-802-0.75-1.5		SB-802-1.5-2	
Lab Sample Number	Recommended	Z4885-10		Z4885-11		Z4885-12		Z4885-13	
Sampling Date	Soil Criteria	10/7/2008		10/7/2008		10/7/2008		10/7/2008	
Matrix	Commercial Use	SOIL		SOIL		SOIL		SOIL	
Dilution Factor		40		5		40		20	
Units	mg/kg	mg/kg		mg/kg		mg/kg		mg/kg	
COMPOUND									
4-Nitroaniline	NC	1.1	U	0.14	U	1.1	U	0.55	U
4,6-Dinitro-2-methylphenol	NC	2	U	0.24	U	1.9	U	0.95	U
N-Nitrosodiphenylamine	NC	1.1	U	0.13	U	1.1	U	0.53	U
4-Bromophenyl-phenylether	NC	0.66	U	0.081	U	0.64	U	0.32	U
Hexachlorobenzene	NC	0.44	U	0.054	U	0.42	U	0.21	U
Atrazine	NC	1	U	0.13	U	0.99	U	0.5	U
Pentachlorophenol	6.7	1.6	U	0.2	U	1.6	U	0.8	U
Phenanthrene	500	0.45	U	0.055	U	0.44	U	0.22	U
Anthracene	500	0.49	U	0.06	U	0.47	U	0.24	U
Carbazole	NC	1.1	U	0.14	U	1.1	U	0.54	U
Di-n-butylphthalate	NC	0.68	U	0.083	U	0.66	U	0.33	U
Fluoranthene	500	0.35	U	0.043	U	0.34	U	0.17	U
Pyrene	500	0.32	U	0.039	U	0.31	U	0.15	U
Butylbenzylphthalate	NC	0.92	U	0.11	U	0.89	U	0.44	U
3,3-Dichlorobenzidine	NC	1.1	U	0.13	U	1.1	U	0.53	U
Benzo(a)anthracene	5.6	0.35	U	0.043	U	0.34	U	0.17	U
Chrysene	56	0.27	U	0.033	U	0.26	U	0.13	U
bis(2-Ethylhexyl)phthalate	NC	0.56	U	0.068	U	0.54	U	0.27	U
Di-n-octyl phthalate	NC	0.51	U	0.062	U	0.49	U	0.25	U
Benzo(b)fluoranthene	5.6	1	U	0.13	U	1	U	0.51	U
Benzo(k)fluoranthene	56	0.67	U	0.081	U	0.64	U	0.32	U
Benzo(a)pyrene	1	0.43	U	0.052	U	0.41	U	0.21	U
Indeno(1,2,3-cd)pyrene	5.6	0.37	U	0.045	U	0.36	U	0.18	U
Dibenz(a,h)anthracene	0.56	1.1	U	0.13	U	1	U	0.52	U
Benzo(g,h,i)perylene	500	1.1	U	0.13	U	1	U	0.51	U
Total Confident Conc.		0		0		0		0	
Total TICs		0		0		0		0	

Qualifiers
U - Non-detect.
J - Estimated.
NC - No Criteria.

Table 8
Pesticides in Samples from Soil Borings
Magna Metals

Sample ID	NYSDEC	SB-801-0.75-1.25		SB-801-5-6		SB-802-0.75-1.5		SB-802-1.5-2	
Lab Sample Number	Recommended	Z4885-10		Z4885-11		Z4885-12		Z4885-13	
Sampling Date	Soil Criteria	10/7/2008		10/7/2008		10/7/2008		10/7/2008	
Matrix	Commercial Use	SOIL		SOIL		SOIL		SOIL	
Dilution Factor		10		10		10		10	
Units	mg/kg	mg/kg		mg/kg		mg/kg		mg/kg	
COMPOUND									
alpha-BHC	3.4	0.0015	U	0.0015	U	0.0019	U	0.0019	U
beta-BHC	3	0.002	U	0.0019	U	0.0019	U	0.0019	U
delta-BHC	500	0.002	U	0.0019	U	0.0017	U	0.0017	U
gamma-BHC	NC	0.0018	U	0.0017	U	0.0016	U	0.0016	U
Heptachlor	15	0.0016	U	0.0016	U	0.0017	U	0.0017	U
Aldrin	0.68	0.0018	U	0.0017	U	0.002	U	0.002	U
Heptachlor epoxide	NC	0.0021	U	0.002	U	0.002	U	0.002	U
Endosulfan I	200	0.0021	U	0.002	U	0.002	U	0.002	U
Dieldrin	1.4	0.0021	U	0.002	U	0.002	U	0.002	U
4,4-DDE	62	0.0021	U	0.002	U	0.006	U	0.0061	U
Endrin	89	0.0063	U	0.0061	U	0.0021	U	0.0021	U
Endosulfan II	200	0.0022	U	0.0021	U	0.0029	U	0.0029	U
4,4-DDD	92	0.003	U	0.0029	U	0.0024	U	0.0024	U
Endosulfan Sulfate	NC	0.0025	U	0.0025	U	0.0017	U	0.0017	U
4,4-DDT	47	0.0018	U	0.0017	U	0.0022	U	0.0022	U
Methoxychlor	NC	0.0023	U	0.0022	U	0.005	U	0.005	U
Endrin ketone	NC	0.0052	U	0.005	U	0.0021	U	0.0021	U
Endrin aldehyde	NC	0.0022	U	0.0021	U	0.002	U	0.002	U
alpha-Chlordane	24	0.0021	U	0.002	U	0.0019	U	0.0019	U
gamma-Chlordane	NC	0.002	U	0.0019	U	0.038	U	0.038	U
Toxaphene	NC	0.039	U	0.038	U	0		0	
Total Confident Conc.		0		0					
Total TICs		0		0		0		0	

Qualifiers
U - Non-detect.
J - Estimated.
NC - No Criteria.

Table 9
Polychlorinated Biphenyls (PCBs) in Samples from Soil Borings
Magna Metals

Sample ID	NYSDEC		SB-801-0.75-1.25		SB-801-5-6		SB-802-0.75-1.5		SB-802-1.5-2	
Lab Sample Number	Recommended		Z4885-10		Z4885-11		Z4885-12		Z4885-13	
Sampling Date	Soil Criteria		10/7/2008		10/7/2008		10/7/2008		10/7/2008	
Matrix	Commercial Use		SOIL		SOIL		SOIL		SOIL	
Dilution Factor			1		1		1		1	
Units	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
COMPOUND										
Aroclor-1016	1	*	0.0041	U	0.004	U	0.004	U	0.004	U
Aroclor-1221	1	*	0.005	U	0.0049	U	0.0049	U	0.0049	U
Aroclor-1232	1	*	0.0053	U	0.0051	U	0.0051	U	0.0051	U
Aroclor-1242	1	*	0.0023	U	0.0022	U	0.0022	U	0.0022	U
Aroclor-1248	1	*	0.0051	U	0.0049	U	0.0049	U	0.0049	U
Aroclor-1254	1	*	0.0051	U	0.005	U	0.005	U	0.005	U
Aroclor-1260	1	*	0.036		0.004	U	0.004	U	0.004	U
Total Confident Conc.			0.036		0		0		0	
Total TICs			0		0		0		0	

Qualifiers
* = Sum of all PCBs
U - Non-detect.
J - Estimated.
NC - No Criteria.

Table 10
Metals in Samples from Soil Borings
Magna Metals

Sample ID	NYSDEC	SB-801-0.75-1.25		SB-801-5-6		SB-802-0.75-1.5		SB-802-1.5-2	
Lab Sample Number	Recommended	Z4885-10		Z4885-11		Z4885-12		Z4885-13	
Sampling Date	Soil Criteria	10/7/2008		10/7/2008		10/7/2008		10/7/2008	
Matrix	Commercial Use	SOIL		SOIL		SOIL		SOIL	
Dilution Factor		1		1		1		1	
Units	mg/kg	mg/kg		mg/kg		mg/kg		mg/kg	
COMPOUND									
Aluminum	NC	12600		5850		8560		9140	
Antimony	NC	0.427	U	0.415	U	0.407	U	0.412	U
Arsenic	16	2.06	J	0.624	J	1.54	J	0.506	J
Barium	400	186		83.4		166		113	
Beryllium	590	0.224	J	0.139	J	0.158	J	0.114	J
Cadmium	9.3	0.952	J	0.335	J	0.673	J	0.594	J
Calcium	NC	11700		944		12600		2040	
Chromium	NC	31.5		16.8		15.7		21.9	
Cobalt	NC	16.3		7.19	J	13.8		14.3	
Copper	270	194		18.1		100		35.3	
Iron	NC	16500		9050		12300		13200	
Lead	1000	30.5		3.33	J	16.2		4.74	
Magnesium	NC	11700		1820		12700		6890	
Manganese	10000	147		88.1		101		128	
Mercury	2.8	0.031	J	0.008	U	0.008	J	0.007	U
Nickel	310	44		18.3		20		25	
Potassium	NC	2320		622	J	1760		1860	
Selenium	1500	0.603	U	0.586	U	0.575	U	0.583	U
Silver	1500	3	J	1.6	J	2.23	J	2.39	J
Sodium	NC	186	J	64.2	J	148	J	147	J
Thallium	NC	0.728	U	0.708	U	0.694	U	0.704	U
Vanadium	NC	62.8		15.4		47.1		43.8	
Zinc	10000	260		16.8		203		37.8	
Total Confident Conc.		NA		NA		NA		NA	
Total TICs		0		0		0		0	

Qualifiers
U - Non-detect.
J - Estimated.

Table 11
TOC in Soil
Magna Metals

Sample ID	SS801	SS802	SS803	SB-801-0.75-1.25	SB-801-5-6	SB-802-0.75-1.5	SB-802-1.5-2
Lab Sample Number	Z5047-01	Z5047-02	Z5047-03	Z4885-10	Z4885-11	Z4885-12	Z4885-13
Sampling Date	10/17/2008	10/17/2008	10/17/2008	10/7/2008	10/7/2008	10/7/2008	10/7/2008
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Dilution Factor	1	1	1	1	1	1	1
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
COMPOUND							
TOC	6700	7800	4900	8600	980	7000	5800

Qualifiers
U - Non-detect.
J - Estimated.

Table 12
Volatile Organic Compounds in Sediment
Magna Metals

Sample ID	NYSDEC	Sample	SD-27		Sample	SD-28		Sample	SD-29	
Lab Sample Number	Sediment	Specific	Z4885-01		Specific	Z4885-02		Specific	Z4885-03	
Sampling Date	Criteria	Criteria	10/6/2008		Criteria	10/6/2008		Criteria	10/6/2008	
Matrix		TOC=1700 mg/kg	SOIL		TOC=2500 mg/kg	SOIL		TOC=6600 mg/kg	SOIL	
Dilution Factor			1			1			1	
Units	mg/kg		mg/kg			mg/kg			mg/kg	
COMPOUND										
Dichlorodifluoromethane	NC	NC	0.012	U	NC	0.013	U	NC	0.021	U
Chloromethane	NC	NC	0.0032	U	NC	0.0088	U	NC	0.014	U
Vinyl Chloride	NC	NC	0.0085	U	NC	0.0092	U	NC	0.015	U
Bromomethane	NC	NC	0.013	U	NC	0.013	U	NC	0.022	U
Chloroethane	NC	NC	0.011	U	NC	0.012	U	NC	0.02	U
Trichlorofluoromethane	NC	NC	0.0073	U	NC	0.0079	U	NC	0.013	U
1,1,2-Trichlorotrifluoroethane	NC	NC	0.01	U	NC	0.011	U	NC	0.018	U
1,1-Dichloroethene	NC	NC	0.0062	U	NC	0.0066	U	NC	0.011	U
Acetone	NC	NC	0.1	U	NC	0.11	U	NC	0.18	U
Carbon Disulfide	NC	NC	0.0067	U	NC	0.0072	U	NC	0.012	U
Methyl tert-butyl Ether	NC	NC	0.0055	U	NC	0.0059	U	NC	0.0097	U
Methyl Acetate	NC	NC	0.01	U	NC	0.011	U	NC	0.018	U
Methylene Chloride	NC	NC	0.015	U	NC	0.016	U	NC	0.026	U
trans-1,2-Dichloroethene	NC	NC	0.0076	U	NC	0.0082	U	NC	0.013	U
1,1-Dichloroethane	NC	NC	0.0069	U	NC	0.0074	U	NC	0.012	U
Cyclohexane	NC	NC	0.0063	U	NC	0.0068	U	NC	0.011	U
2-Butanone	NC	NC	0.031	U	NC	0.033	U	NC	0.055	U
Carbon Tetrachloride	NC	NC	0.0036	U	NC	0.0039	U	NC	0.0064	U
cis-1,2-Dichloroethene	NC	NC	0.008	U	NC	0.0086	U	NC	0.014	U
Chloroform	NC	NC	0.0055	U	NC	0.0059	U	NC	0.0097	U
1,1,1-Trichloroethane	NC	NC	0.0059	U	NC	0.0063	U	NC	0.01	U
Methylcyclohexane	NC	NC	0.0051	U	NC	0.0055	U	NC	0.009	U
Benzene	NC	NC	0.0044	U	NC	0.0048	U	NC	0.0078	U
1,2-Dichloroethane	NC	NC	0.0051	U	NC	0.0054	U	NC	0.0089	U
Trichloroethene	NC	NC	0.0045	U	NC	0.0049	U	NC	0.0079	U
1,2-Dichloropropane	NC	NC	0.0058	U	NC	0.0062	U	NC	0.01	U
Bromodichloromethane	NC	NC	0.0043	U	NC	0.0047	U	NC	0.0076	U
4-Methyl-2-Pentanone	NC	NC	0.024	U	NC	0.025	U	NC	0.042	U

Table 12
Volatile Organic Compounds in Sediment
Magna Metals

Sample ID	NYSDEC	Sample	SD-27		Sample	SD-28		Sample	SD-29	
Lab Sample Number	Sediment	Specific	Z4885-01		Specific	Z4885-02		Specific	Z4885-03	
Sampling Date	Criteria	Criteria	10/6/2008		Criteria	10/6/2008		Criteria	10/6/2008	
Matrix		TOC=1700 mg/kg	SOIL		TOC=2500 mg/kg	SOIL		TOC=6600 mg/kg	SOIL	
Dilution Factor			1			1			1	
Units	mg/kg		mg/kg			mg/kg			mg/kg	
COMPOUND										
Toluene	235	0.3995	0.0054	U	0.5875	0.0058	U	1.551	0.0096	U
t-1,3-Dichloropropene	NC	NC	0.0052	U	NC	0.0056	U	NC	0.0091	U
cis-1,3-Dichloropropene	NC	NC	0.0041	U	NC	0.0045	U	NC	0.0073	U
1,1,2-Trichloroethane	NC	NC	0.0038	U	NC	0.0041	U	NC	0.0066	U
2-Hexanone	NC	NC	0.027	U	NC	0.029	U	NC	0.048	U
Dibromochloromethane	NC	NC	0.0041	U	NC	0.0044	U	NC	0.0072	U
1,2-Dibromoethane	NC	NC	0.0051	U	NC	0.0054	U	NC	0.0089	U
Tetrachloroethene	NC	NC	0.0077	U	NC	0.0082	U	NC	0.013	U
Chlorobenzene	NC	NC	0.0047	U	NC	0.0051	U	NC	0.0083	U
Ethyl Benzene	212	0.3604	0.0049	U	0.53	0.0053	U	1.3992	0.0087	U
m/p-Xylenes	833	1.4161	0.011	U	2.0825	0.012	U	5.4978	0.02	U
o-Xylene	833	1.4161	0.0047	U	2.0825	0.0051	U	5.4978	0.0083	U
Styrene	NC	NC	0.0038	U	NC	0.0041	U	NC	0.0067	U
Bromoform	NC	NC	0.005	U	NC	0.0054	U	NC	0.0088	U
Isopropylbenzene	105	0.1785	0.0051	U	0.2625	0.0054	U	0.693	0.0089	U
1,1,2,2-Tetrachloroethane	NC	NC	0.0055	U	NC	0.0059	U	NC	0.0097	U
1,3-Dichlorobenzene	NC	NC	0.0041	U	NC	0.0045	U	NC	0.0073	U
1,4-Dichlorobenzene	NC	NC	0.0048	U	NC	0.0051	U	NC	0.0084	U
1,2-Dichlorobenzene	NC	NC	0.0053	U	NC	0.0057	U	NC	0.0093	U
1,2-Dibromo-3-Chloropropane	NC	NC	0.0063	U	NC	0.0068	U	NC	0.011	U
1,2,4-Trichlorobenzene	NC	NC	0.0041	U	NC	0.0044	U	NC	0.0072	U
Total Confident Conc.						0			0	
Total TICs			0			0			0	

Qualifiers
U - Non-detect.
J - Estimated.
NC - No Criteria.

Table 12
Volatile Organic Compounds in Sediment
Magna Metals

Sample ID	NYSDEC	Sample	SD-30		Sample	SD-50		Sample	SD-31	
Lab Sample Number	Sediment	Specific	Z4885-04		Specific	Z4885-06		Specific	Z4885-05	
Sampling Date	Criteria	Criteria	10/6/2008		Criteria	10/6/2008		Criteria	10/6/2008	
Matrix		TOC=4600 mg/kg	SOIL		TOC=4600 mg/kg	Duplicate of		TOC=14000 mg/kg	SOIL	
Dilution Factor			1			SD-30			1	
Units	mg/kg		mg/kg			mg/kg			mg/kg	
COMPOUND										
Dichlorodifluoromethane	NC	NC	0.012	U	NC	0.015	U	NC	0.045	U
Chloromethane	NC	NC	0.0086	U	NC	0.01	U	NC	0.031	U
Vinyl Chloride	NC	NC	0.0089	U	NC	0.011	U	NC	0.032	U
Bromomethane	NC	NC	0.013	U	NC	0.016	U	NC	0.047	U
Chloroethane	NC	NC	0.012	U	NC	0.015	U	NC	0.043	U
Trichlorofluoromethane	NC	NC	0.0077	U	NC	0.0094	U	NC	0.028	U
1,1,2-Trichlorotrifluoroethane	NC	NC	0.011	U	NC	0.013	U	NC	0.039	U
1,1-Dichloroethene	NC	NC	0.0065	U	NC	0.0079	U	NC	0.023	U
Acetone	NC	NC	0.11	U	NC	0.13	U	NC	0.53	J
Carbon Disulfide	NC	NC	0.007	U	NC	0.0085	U	NC	0.025	U
Methyl tert-butyl Ether	NC	NC	0.0058	U	NC	0.007	U	NC	0.021	U
Methyl Acetate	NC	NC	0.011	U	NC	0.013	U	NC	0.039	U
Methylene Chloride	NC	NC	0.016	U	NC	0.019	U	NC	0.057	U
trans-1,2-Dichloroethene	NC	NC	0.008	U	NC	0.0097	U	NC	0.029	U
1,1-Dichloroethane	NC	NC	0.0072	U	NC	0.0088	U	NC	0.026	U
Cyclohexane	NC	NC	0.0066	U	NC	0.008	U	NC	0.024	U
2-Butanone	NC	NC	0.032	U	NC	0.039	U	NC	0.12	U
Carbon Tetrachloride	NC	NC	0.0038	U	NC	0.0046	U	NC	0.014	U
cis-1,2-Dichloroethene	NC	NC	0.0083	U	NC	0.01	U	NC	0.03	U
Chloroform	NC	NC	0.0058	U	NC	0.007	U	NC	0.021	U
1,1,1-Trichloroethane	NC	NC	0.0061	U	NC	0.0075	U	NC	0.022	U
Methylcyclohexane	NC	NC	0.0054	U	NC	0.0065	U	NC	0.019	U
Benzene	NC	NC	0.0047	U	NC	0.0057	U	NC	0.017	U
1,2-Dichloroethane	NC	NC	0.0053	U	NC	0.0064	U	NC	0.019	U
Trichloroethene	NC	NC	0.0047	U	NC	0.0057	U	NC	0.017	U
1,2-Dichloropropane	NC	NC	0.0061	U	NC	0.0074	U	NC	0.022	U
Bromodichloromethane	NC	NC	0.0045	U	NC	0.0055	U	NC	0.016	U
4-Methyl-2-Pentanone	NC	NC	0.025	U	NC	0.03	U	NC	0.089	U

Table 12
Volatile Organic Compounds in Sediment
Magna Metals

Sample ID	NYSDEC	Sample	SD-30		Sample	SD-50		Sample	SD-31	
Lab Sample Number	Sediment	Specific	Z4885-04		Specific	Z4885-06		Specific	Z4885-05	
Sampling Date	Criteria	Criteria	10/6/2008		Criteria	10/6/2008		Criteria	10/6/2008	
Matrix		TOC=4600 mg/kg	SOIL		TOC=4600 mg/kg	Duplicate of		TOC=14000 mg/kg	SOIL	
Dilution Factor			1			SD-30			1	
Units	mg/kg		mg/kg			mg/kg			mg/kg	
COMPOUND										
Toluene	235	1.081	0.0057	U	1.081	0.0069	U	3.29	0.021	U
t-1,3-Dichloropropene	NC	NC	0.0054	U	NC	0.0066	U	NC	0.02	U
cis-1,3-Dichloropropene	NC	NC	0.0043	U	NC	0.0053	U	NC	0.016	U
1,1,2-Trichloroethane	NC	NC	0.0039	U	NC	0.0048	U	NC	0.014	U
2-Hexanone	NC	NC	0.028	U	NC	0.034	U	NC	0.1	U
Dibromochloromethane	NC	NC	0.0043	U	NC	0.0052	U	NC	0.015	U
1,2-Dibromoethane	NC	NC	0.0053	U	NC	0.0064	U	NC	0.019	U
Tetrachloroethene	NC	NC	0.008	U	NC	0.0097	U	NC	0.029	U
Chlorobenzene	NC	NC	0.0049	U	NC	0.006	U	NC	0.018	U
Ethyl Benzene	212	0.9752	0.0052	U	0.9752	0.0063	U	2.968	0.019	U
m/p-Xylenes	833	3.8318	0.012	U	3.8318	0.015	U	11.662	0.043	U
o-Xylene	833	3.8318	0.0049	U	3.8318	0.006	U	11.662	0.018	U
Styrene	NC	NC	0.004	U	NC	0.0049	U	NC	0.014	U
Bromoform	NC	NC	0.0052	U	NC	0.0064	U	NC	0.019	U
Isopropylbenzene	105	0.483	0.0053	U	0.483	0.0064	U	1.47	0.019	U
1,1,2,2-Tetrachloroethane	NC	NC	0.0058	U	NC	0.007	U	NC	0.021	U
1,3-Dichlorobenzene	NC	NC	0.0043	U	NC	0.0053	U	NC	0.016	U
1,4-Dichlorobenzene	NC	NC	0.005	U	NC	0.0061	U	NC	0.018	U
1,2-Dichlorobenzene	NC	NC	0.0056	U	NC	0.0068	U	NC	0.02	U
1,2-Dibromo-3-Chloropropane	NC	NC	0.0066	U	NC	0.008	U	NC	0.024	U
1,2,4-Trichlorobenzene	NC	NC	0.0043	U	NC	0.0052	U	NC	0.015	U
Total Confident Conc.			0			0			0.53	
Total TICs			0			0			0	

Qualifiers
U - Non-detect.
J - Estimated.
NC - No Criteria.

Table 13
Semivolatile Organic Compounds in Sediment
Magna Metals

Sample ID	NYSDEC	Sample	SD-27		Sample	SD-28		Sample	SD-29	
Lab Sample Number	Sediment	Specific	Z4885-01		Specific	Z4885-02		Specific	Z4885-03	
Sampling Date	Criteria	Criteria	10/6/2008		Criteria	10/6/2008		Criteria	10/6/2008	
Matrix		TOC=1700 mg/kg	SOIL		TOC=2500 mg/kg	SOIL		TOC=6600 mg/kg	SOIL	
Dilution Factor			1			1			1	
Units	mg/kg		mg/kg			mg/kg			mg/kg	
COMPOUND										
Benzaldehyde	NC	NC	0.014	U	NC	0.015	U	NC	0.024	U
Phenol	NC	NC	0.011	U	NC	0.012	U	NC	0.02	U
bis(2-Chloroethyl)ether	NC	NC	0.0053	U	NC	0.0057	U	NC	0.0094	U
2-Chlorophenol	NC	NC	0.011	U	NC	0.012	U	NC	0.019	U
2-Methylphenol	NC	NC	0.011	U	NC	0.012	U	NC	0.019	U
2,2-oxybis(1-Chloropropane)	NC	NC	0.017	U	NC	0.018	U	NC	0.03	U
Acetophenone	NC	NC	0.012	U	NC	0.013	U	NC	0.021	U
3+4-Methylphenols	NC	NC	0.012	U	NC	0.013	U	NC	0.022	U
N-Nitroso-di-n-propylamine	NC	NC	0.015	U	NC	0.016	U	NC	0.026	U
Hexachloroethane	12.6	0.02142	0.013	U	0.0315	0.014	U	0.08316	0.023	U
Nitrobenzene	NC	NC	0.0096	U	NC	0.01	U	NC	0.017	U
Isophorone	NC	NC	0.013	U	NC	0.014	U	NC	0.023	U
2-Nitrophenol	NC	NC	0.015	U	NC	0.016	U	NC	0.026	U
2,4-Dimethylphenol	NC	NC	0.012	U	NC	0.013	U	NC	0.021	U
bis(2-Chloroethoxy)methane	NC	NC	0.0094	U	NC	0.01	U	NC	0.016	U
2,4-Dichlorophenol	NC	NC	0.0097	U	NC	0.01	U	NC	0.017	U
Naphthalene	258	0.4386	0.0098	U	0.645	0.01	U	1.7028	0.017	U
4-Chloroaniline	NC	NC	0.027	U	NC	0.029	U	NC	0.047	U
Hexachlorobutadiene	55	0.0935	0.017	U	0.1375	0.018	U	0.363	0.029	U
Caprolactam	NC	NC	0.049	U	NC	0.052	U	NC	0.086	U
4-Chloro-3-methylphenol	NC	NC	0.012	U	NC	0.013	U	NC	0.021	U
2-Methylnaphthalene	NC	NC	0.011	U	NC	0.012	U	NC	0.02	U
Hexachlorocyclopentadiene	44	0.0748	0.021	U	0.11	0.022	U	0.2904	0.037	U
2,4,6-Trichlorophenol	NC	NC	0.0095	U	NC	0.01	U	NC	0.017	U
2,4,5-Trichlorophenol	NC	NC	0.012	U	NC	0.013	U	NC	0.021	U
1,1-Biphenyl	NC	NC	0.012	U	NC	0.013	U	NC	0.021	U
2-Chloronaphthalene	NC	NC	0.0099	U	NC	0.011	U	NC	0.017	U
2-Nitroaniline	NC	NC	0.019	U	NC	0.02	U	NC	0.034	U
Dimethylphthalate	NC	NC	0.012	U	NC	0.013	U	NC	0.021	U
Acenaphthylene	NC	NC	0.006	U	NC	0.0064	U	NC	0.01	U
2,6-Dinitrotoluene	NC	NC	0.015	U	NC	0.015	U	NC	0.026	U
3-Nitroaniline	NC	NC	0.027	U	NC	0.029	U	NC	0.048	U

Table 13
Semivolatile Organic Compounds in Sediment
Magna Metals

Sample ID	NYSDEC	Sample	SD-27		Sample	SD-28		Sample	SD-29	
Lab Sample Number	Sediment	Specific	Z4885-01		Specific	Z4885-02		Specific	Z4885-03	
Sampling Date	Criteria	Criteria	10/6/2008		Criteria	10/6/2008		Criteria	10/6/2008	
Matrix		TOC=1700 mg/kg	SOIL		TOC=2500 mg/kg	SOIL		TOC=6600 mg/kg	SOIL	
Dilution Factor			1			1			1	
Units	mg/kg		mg/kg			mg/kg			mg/kg	
COMPOUND										
Acenaphthene	NC	NC	0.0088	U	NC	0.0094	U	NC	0.015	U
2,4-Dinitrophenol	NC	NC	0.022	U	NC	0.023	U	NC	0.038	U
4-Nitrophenol	NC	NC	0.024	U	NC	0.026	U	NC	0.042	U
Dibenzofuran	NC	NC	0.013	U	NC	0.013	U	NC	0.022	U
2,4-Dinitrotoluene	NC	NC	0.013	U	NC	0.014	U	NC	0.024	U
Diethylphthalate	NC	NC	0.014	U	NC	0.015	U	NC	0.024	U
4-Chlorophenyl-phenylether	NC	NC	0.016	U	NC	0.017	U	NC	0.027	U
Fluorene	NC	NC	0.011	U	NC	0.012	U	NC	0.019	U
4-Nitroaniline	NC	NC	0.032	U	NC	0.034	U	NC	0.056	U
4,6-Dinitro-2-methylphenol	NC	NC	0.055	U	NC	0.059	U	NC	0.097	U
N-Nitrosodiphenylamine	NC	NC	0.031	U	NC	0.033	U	NC	0.054	U
4-Bromophenyl-phenylether	NC	NC	0.019	U	NC	0.02	U	NC	0.033	U
Hexachlorobenzene	9081	15.4377	0.012	U	22.7025	0.013	U	59.9346	0.022	U
Atrazine	NC	NC	0.029	U	NC	0.031	U	NC	0.051	U
Pentachlorophenol	100	0.17	0.046	U	0.25	0.049	U	0.66	0.081	U
Phenanthrene	NC	NC	0.013	U	NC	0.014	U	NC	0.022	U
Anthracene	NC	NC	0.014	U	NC	0.015	U	NC	0.024	U
Carbazole	NC	NC	0.031	U	NC	0.033	U	NC	0.055	U
Di-n-butylphthalate	NC	NC	0.019	U	NC	0.02	U	NC	0.034	U
Fluoranthene	NC	NC	0.0039	U	NC	0.011	U	NC	0.017	U
Pyrene	8775	14.9175	0.0039	U	21.9375	0.0095	U	57.915	0.016	U
Butylbenzylphthalate	NC	NC	0.026	U	NC	0.027	U	NC	0.045	U
3,3-Dichlorobenzidine	NC	NC	0.031	U	NC	0.033	U	NC	0.054	U
Benzo(a)anthracene	NC	NC	0.0038	U	NC	0.01	U	NC	0.017	U
Chrysene	NC	NC	0.0076	U	NC	0.0081	U	NC	0.013	U
bis(2-Ethylhexyl)phthalate	NC	NC	0.016	U	NC	0.017	U	NC	0.027	U
Di-n-octyl phthalate	NC	NC	0.014	U	NC	0.015	U	NC	0.025	U
Benzo(b)fluoranthene	NC	NC	0.029	U	NC	0.031	U	NC	0.052	U
Benzo(k)fluoranthene	NC	NC	0.019	U	NC	0.02	U	NC	0.033	U
Benzo(a)pyrene	NC	NC	0.012	U	NC	0.013	U	NC	0.021	U
Indeno(1,2,3-cd)pyrene	NC	NC	0.01	U	NC	0.011	U	NC	0.018	U
Dibenz(a,h)anthracene	NC	NC	0.03	U	NC	0.032	U	NC	0.053	U
Benzo(g,h,i)perylene	NC	NC	0.03	U	NC	0.031	U	NC	0.052	U
Total Confident Conc.			0			0			0	
Total TICs			0			450			790	

Qualifiers
U - Non-detect.
J - Estimated.
NC - No Criteria.

Table 13
Semivolatile Organic Compounds in Sediment
Magna Metals

Sample ID	Sample	SD-30		Sample	SD-50		Sample	SD-31	
Lab Sample Number	Specific	Z4885-04		Specific	Z4885-06		Specific	Z4885-05	
Sampling Date	Criteria	10/6/2008		Criteria	10/6/2008		Criteria	10/6/2008	
Matrix	TOC=4600 mg/kg	SOIL		TOC=4600 mg/kg	Duplicate of		TOC=14000 mg/kg	SOIL	
Dilution Factor		1			SD-30			1	
Units		mg/kg			mg/kg			mg/kg	
COMPOUND									
Benzaldehyde	NC	0.015	U	NC	0.018	U	NC	0.053	U
Phenol	NC	0.012	U	NC	0.015	U	NC	0.044	U
bis(2-Chloroethyl)ether	NC	0.0057	U	NC	0.0068	U	NC	0.021	U
2-Chlorophenol	NC	0.012	U	NC	0.014	U	NC	0.043	U
2-Methylphenol	NC	0.012	U	NC	0.014	U	NC	0.042	U
2,2-oxybis(1-Chloropropane)	NC	0.018	U	NC	0.022	U	NC	0.065	U
Acetophenone	NC	0.013	U	NC	0.016	U	NC	0.047	U
3+4-Methylphenols	NC	0.013	U	NC	0.016	U	NC	0.048	U
N-Nitroso-di-n-propylamine	NC	0.016	U	NC	0.019	U	NC	0.057	U
Hexachloroethane	0.05796	0.014	U	0.05796	0.017	U	0.1764	0.051	U
Nitrobenzene	NC	0.01	U	NC	0.012	U	NC	0.037	U
Isophorone	NC	0.014	U	NC	0.017	U	NC	0.051	U
2-Nitrophenol	NC	0.016	U	NC	0.019	U	NC	0.058	U
2,4-Dimethylphenol	NC	0.013	U	NC	0.016	U	NC	0.047	U
bis(2-Chloroethoxy)methane	NC	0.01	U	NC	0.012	U	NC	0.036	U
2,4-Dichlorophenol	NC	0.01	U	NC	0.012	U	NC	0.037	U
Naphthalene	1.1868	0.011	U	1.1868	0.013	U	3.612	0.038	U
4-Chloroaniline	NC	0.029	U	NC	0.034	U	NC	0.1	U
Hexachlorobutadiene	0.253	0.018	U	0.253	0.021	U	0.77	0.064	U
Caprolactam	NC	0.053	U	NC	0.063	U	NC	0.19	U
4-Chloro-3-methylphenol	NC	0.013	U	NC	0.015	U	NC	0.046	U
2-Methylnaphthalene	NC	0.012	U	NC	0.015	U	NC	0.044	U
Hexachlorocyclopentadiene	0.2024	0.023	U	0.2024	0.027	U	0.616	0.081	U
2,4,6-Trichlorophenol	NC	0.01	U	NC	0.012	U	NC	0.037	U
2,4,5-Trichlorophenol	NC	0.013	U	NC	0.016	U	NC	0.047	U
1,1-Biphenyl	NC	0.013	U	NC	0.016	U	NC	0.046	U
2-Chloronaphthalene	NC	0.011	U	NC	0.013	U	NC	0.038	U
2-Nitroaniline	NC	0.021	U	NC	0.025	U	NC	0.074	U
Dimethylphthalate	NC	0.013	U	NC	0.015	U	NC	0.046	U
Acenaphthylene	NC	0.0064	U	NC	0.0077	U	NC	0.023	U
2,6-Dinitrotoluene	NC	0.016	U	NC	0.019	U	NC	0.056	U
3-Nitroaniline	NC	0.029	U	NC	0.035	U	NC	0.1	U

Table 13
Semivolatile Organic Compounds in Sediment
Magna Metals

Sample ID	Sample	SD-30		Sample	SD-50		Sample	SD-31	
Lab Sample Number	Specific	Z4885-04		Specific	Z4885-06		Specific	Z4885-05	
Sampling Date	Criteria	10/6/2008		Criteria	10/6/2008		Criteria	10/6/2008	
Matrix	TOC=4600 mg/kg	SOIL		TOC=4600 mg/kg	Duplicate of		TOC=14000 mg/kg	SOIL	
Dilution Factor		1			SD-30			1	
Units		mg/kg			mg/kg			mg/kg	
COMPOUND									
Acenaphthene	NC	0.0095	U	NC	0.011	U	NC	0.034	U
2,4-Dinitrophenol	NC	0.023	U	NC	0.028	U	NC	0.084	U
4-Nitrophenol	NC	0.026	U	NC	0.031	U	NC	0.093	U
Dibenzofuran	NC	0.014	U	NC	0.016	U	NC	0.049	U
2,4-Dinitrotoluene	NC	0.015	U	NC	0.017	U	NC	0.052	U
Diethylphthalate	NC	0.015	U	NC	0.018	U	NC	0.054	U
4-Chlorophenyl-phenylether	NC	0.017	U	NC	0.02	U	NC	0.06	U
Fluorene	NC	0.012	U	NC	0.014	U	NC	0.042	U
4-Nitroaniline	NC	0.035	U	NC	0.041	U	NC	0.12	U
4,6-Dinitro-2-methylphenol	NC	0.059	U	NC	0.071	U	NC	0.21	U
N-Nitrosodiphenylamine	NC	0.033	U	NC	0.039	U	NC	0.12	U
4-Bromophenyl-phenylether	NC	0.02	U	NC	0.024	U	NC	0.072	U
Hexachlorobenzene	41.7726	0.013	U	41.7726	0.016	U	127.134	0.047	U
Atrazine	NC	0.031	U	NC	0.037	U	NC	0.11	U
Pentachlorophenol	0.46	0.05	U	0.46	0.059	U	0.46	0.18	U
Phenanthrene	NC	0.014	U	NC	0.016	U	NC	0.049	U
Anthracene	NC	0.015	U	NC	0.018	U	NC	0.053	U
Carbazole	NC	0.034	U	NC	0.04	U	NC	0.12	U
Di-n-butylphthalate	NC	0.021	U	NC	0.025	U	NC	0.074	U
Fluoranthene	NC	0.011	U	NC	0.013	U	NC	0.038	U
Pyrene	40.365	0.0096	U	40.365	0.011	U	122.85	0.034	U
Butylbenzylphthalate	NC	0.028	U	NC	0.033	U	NC	0.099	U
3,3-Dichlorobenzidine	NC	0.033	U	NC	0.04	U	NC	0.12	U
Benzo(a)anthracene	NC	0.011	U	NC	0.013	U	NC	0.038	U
Chrysene	NC	0.0082	U	NC	0.0097	U	NC	0.029	U
bis(2-Ethylhexyl)phthalate	NC	0.017	U	NC	0.02	U	NC	0.06	U
Di-n-octyl phthalate	NC	0.015	U	NC	0.018	U	NC	0.055	U
Benzo(b)fluoranthene	NC	0.032	U	NC	0.038	U	NC	0.11	U
Benzo(k)fluoranthene	NC	0.02	U	NC	0.024	U	NC	0.072	U
Benzo(a)pyrene	NC	0.013	U	NC	0.015	U	NC	0.046	U
Indeno(1,2,3-cd)pyrene	NC	0.011	U	NC	0.013	U	NC	0.04	U
Dibenz(a,h)anthracene	NC	0.032	U	NC	0.039	U	NC	0.12	U
Benzo(g,h,i)perylene	NC	0.032	U	NC	0.038	U	NC	0.11	U
Total Confident Conc.		0			0			0	
Total TICs		180			0			27270	

Qualifiers
U - Non-detect.
J - Estimated.
NC - No Criteria.

Table 14
Pesticides in Sediment
Magna Metals

Sample ID	NYSDEC	Sample	SD-27		Sample	SD-28		Sample	SD-29	
Lab Sample Number	Sediment	Specific	Z4885-01		Specific	Z4885-02		Specific	Z4885-03	
Sampling Date	Criteria	Criteria	10/6/2008		Criteria	10/6/2008		Criteria	10/6/2008	
Matrix		TOC=1700 mg/kg	SOIL		TOC=2500 mg/kg	SOIL		TOC=6600 mg/kg	SOIL	
Dilution Factor			1			1			1	
Units	mg/kg		mg/kg			mg/kg			mg/kg	
COMPOUND										
alpha-BHC	NC	NC	0.00017	U	NC	0.00018	U	NC	0.0003	U
beta-BHC	NC	NC	0.00022	U	NC	0.00024	U	NC	0.00039	U
delta-BHC	NC	NC	0.00022	U	NC	0.00024	U	NC	0.00039	U
gamma-BHC	NC	NC	0.0002	U	NC	0.00021	U	NC	0.00035	U
Heptachlor	13.1	0.02227	0.00018	U	0.03275	0.0002	U	0.08646	0.00032	U
Aldrin	NC	NC	0.0002	U	NC	0.00021	U	NC	0.00035	U
Heptachlor epoxide	13.1	0.02227	0.00023	U	0.03275	0.00025	U	0.08646	0.00041	U
Endosulfan I	0.78	0.001326	0.00023	U	0.00195	0.00025	U	0.005148	0.00041	U
Dieldrin	NC	NC	0.00023	U	NC	0.00025	U	NC	0.00041	U
4,4-DDE	NC	NC	0.00023	U	NC	0.00025	U	NC	0.00041	U
Endrin	NC	NC	0.0007	U	NC	0.00075	U	NC	0.0012	U
Endosulfan II	0.78	0.001326	0.00025	U	0.00195	0.00026	U	0.005148	0.00043	U
4,4-DDD	NC	NC	0.00033	U	NC	0.00035	U	NC	0.00058	U
Endosulfan Sulfate	NC	NC	0.00028	U	NC	0.0003	U	NC	0.0005	U
4,4-DDT	NC	NC	0.0002	U	NC	0.00021	U	NC	0.00035	U
Methoxychlor	NC	NC	0.00026	U	NC	0.00028	U	NC	0.00045	U
Endrin ketone	NC	NC	0.00058	U	NC	0.00062	U	NC	0.001	U
Endrin aldehyde	NC	NC	0.00025	U	NC	0.00026	U	NC	0.00043	U
alpha-Chlordane	NC	NC	0.00023	U	NC	0.00025	U	NC	0.00041	U
gamma-Chlordane	NC	NC	0.00022	U	NC	0.00024	U	NC	0.00039	U
Toxaphene	3.2	0.00544	0.0044	U	0.008	0.0047	U	0.02112	0.0078	U
Total Confident Conc.			0			0			0	

Qualifiers
U - Non-detect.
J - Estimated.
NC - No Criteria.

Table 14
Pesticides in Sediment
Magna Metals

Sample ID	Sample	SD-30		Sample	SD-50		Sample	SD-31	
Lab Sample Number	Specific	Z4885-04		Specific	Z4885-06		Specific	Z4885-05	
Sampling Date	Criteria	10/6/2008		Criteria	10/6/2008		Criteria	10/6/2008	
Matrix	TOC=4600 mg/kg	SOIL		TOC=4600 mg/kg	Duplicate of		TOC=14000 mg/kg	SOIL	
Dilution Factor		1			SD-30			1	
Units		mg/kg			mg/kg			mg/kg	
COMPOUND									
alpha-BHC	NC	0.00019	U	NC	0.00022	U	NC	0.00067	U
beta-BHC	NC	0.00024	U	NC	0.00028	U	NC	0.00086	U
delta-BHC	NC	0.00024	U	NC	0.00028	U	NC	0.00086	U
gamma-BHC	NC	0.00021	U	NC	0.00025	U	NC	0.00076	U
Heptachlor	0.06026	0.0002	U	0.06026	0.00024	U	0.1834	0.00071	U
Aldrin	NC	0.00021	U	NC	0.00025	U	NC	0.00076	U
Heptachlor epoxide	0.06026	0.00025	U	0.06026	0.0003	U	0.1834	0.0009	U
Endosulfan I	0.003588	0.00025	U	0.003588	0.0003	U	0.01092	0.0009	U
Dieldrin	NC	0.00025	U	NC	0.0003	U	NC	0.0009	U
4,4-DDE	NC	0.00025	U	NC	0.0003	U	NC	0.0009	U
Endrin	NC	0.00076	U	NC	0.0009	U	NC	0.0027	U
Endosulfan II	0.003588	0.00027	U	0.003588	0.00032	U	0.01092	0.00095	U
4,4-DDD	NC	0.00036	U	NC	0.00043	U	NC	0.0013	U
Endosulfan Sulfate	NC	0.00031	U	NC	0.00036	U	NC	0.0011	U
4,4-DDT	NC	0.00021	U	NC	0.00025	U	NC	0.00076	U
Methoxychlor	NC	0.00028	U	NC	0.00033	U	NC	0.001	U
Endrin ketone	NC	0.00063	U	NC	0.00074	U	NC	0.0022	U
Endrin aldehyde	NC	0.00027	U	NC	0.00032	U	NC	0.00095	U
alpha-Chlordane	NC	0.00025	U	NC	0.0003	U	NC	0.0009	U
gamma-Chlordane	NC	0.00024	U	NC	0.00028	U	NC	0.00086	U
Toxaphene	0.01472	0.0048	U	0.01472	0.0057	U	0.0448	0.017	U
Total Confident Conc.		0			0			0	

Qualifiers
U - Non-detect.
J - Estimated.
NC - No Criteria.

Table 15
Polychlorinated Biphenyls (PCBs) in Sediment
Magna Metals

Sample ID	NYSDEC		Sample	SD-27		Sample	SD-28		Sample	SD-29	
Lab Sample Number	Sediment		Specific	Z4885-01		Specific	Z4885-02		Specific	Z4885-03	
Sampling Date	Criteria		Criteria	10/6/2008		Criteria	10/6/2008		Criteria	10/6/2008	
Matrix			TOC=1700 mg/kg	SOIL		TOC=2500 mg/kg	SOIL		TOC=6600 mg/kg	SOIL	
Dilution Factor				1			1			1	
Units	mg/kg			mg/kg			mg/kg			mg/kg	
COMPOUND											
Aroclor-1016	2760.8	*	4.69336	0.0046	U	6.902	0.0049	U	18.22128	0.0081	U
Aroclor-1221	2760.8	*	4.69336	0.0056	U	6.902	0.006	U	18.22128	0.0099	U
Aroclor-1232	2760.8	*	4.69336	0.0059	U	6.902	0.0063	U	18.22128	0.01	U
Aroclor-1242	2760.8	*	4.69336	0.0026	U	6.902	0.0028	U	18.22128	0.0045	U
Aroclor-1248	2760.8	*	4.69336	0.0057	U	6.902	0.0061	U	18.22128	0.01	U
Aroclor-1254	2760.8	*	4.69336	0.0058	U	6.902	0.0061	U	18.22128	0.01	U
Aroclor-1260	2760.8	*	4.69336	0.0046	U	6.902	0.0049	U	18.22128	0.0081	U
Total Confident Conc.				0			0			0	

Qualifiers
* = Sum of all PCBs
U - None detected.

Table 15
Polychlorinated Biphenyls (PCBs) in Sediment
Magna Metals

Sample ID	Sample	SD-30		Sample	SD-50		Sample	SD-31	
Lab Sample Number	Specific	Z4885-04		Specific	Z4885-06		Specific	Z4885-05	
Sampling Date	Criteria	10/6/2008		Criteria	10/6/2008		Criteria	10/6/2008	
Matrix	TOC=4600 mg/kg	SOIL		TOC=4600 mg/kg	Duplicate of		TOC=14000 mg/kg	SOIL	
Dilution Factor		1			SD-30			1	
Units		mg/kg			mg/kg			mg/kg	
COMPOUND									
Aroclor-1016	12.69968	0.005	U	12.69968	0.0059	U	38.6512	0.018	U
Aroclor-1221	12.69968	0.0061	U	12.69968	0.0072	U	38.6512	0.022	U
Aroclor-1232	12.69968	0.0064	U	12.69968	0.0076	U	38.6512	0.023	U
Aroclor-1242	12.69968	0.0028	U	12.69968	0.0033	U	38.6512	0.01	U
Aroclor-1248	12.69968	0.0061	U	12.69968	0.0073	U	38.6512	0.022	U
Aroclor-1254	12.69968	0.0062	U	12.69968	0.0074	U	38.6512	0.022	U
Aroclor-1260	12.69968	0.005	U	12.69968	0.0059	U	38.6512	0.018	U
Total Confident Conc.		0			0			0	

Qualifiers
* = Sum of all PCBs
U - None detected.

Table 16
Metals in Sediment
Magna Metals

Sample ID	NYSDEC		SD-27		SD-28		SD-29		SD-30		SD-50		SD-31	
Lab Sample Number	Sediment		Z4885-01		Z4885-02		Z4885-03		Z4885-04		Z4885-06		Z4885-05	
Sampling Date	Criteria		10/6/2008		10/6/2008		10/6/2008		10/6/2008		10/6/2008		10/6/2008	
Matrix			SOIL		SOIL		SOIL		SOIL		Duplicate of		SOIL	
Dilution Factor			1		1		1		1		SD-30		1	
Units	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
COMPOUND	SEL	LEL												
Aluminum	NC	NC	1390		4020		14900	J	5760	J	10500	J	10500	J
Antimony	25	2	0.48	U	0.511	U	0.831	U	0.51	U	0.617	U	1.85	U
Arsenic	33	6	0.149	U	0.159	U	2.88	J	1.52	J	2.7	J	3.17	J
Barium	NC	NC	21.4	J	47.9		295	J	98	J	191	J	166	J
Beryllium	NC	NC	0.039	J	0.14	J	0.446	J	0.201	J	0.363	J	0.275	J
Cadmium	9	0.6	0.164	J	0.198	J	1.09	J	0.551	J	1.12	J	0.537	J
Calcium	NC	NC	503	J	1060		3610	J	1370		1870		7300	J
Chromium	110	26	12.2		14.7		16.4	J	8.08	J	13.6	J	12.2	J
Cobalt	NC	NC	5.27	J	5.8	J	12.8	J	5.68	J	10.2	J	5.06	J
Copper	110	16	3.62	J	4.46	J	25.1	J	11.1	J	19.9	J	24.1	J
Iron	40000	20000	5890		5540		22800	J	11500	J	20000	J	10800	J
Lead	110	31	1.56	J	4.59	J	23	J	14.2	J	23	J	81.4	J
Magnesium	NC	NC	4140		2600		4150	J	1800	J	3120		2620	J
Manganese	1,100	460	101		61.5		**4770**	J	432	J	895	J	122	J
Mercury	1.3	0.15	0.009	UJ	0.011	J	0.057	J	0.024	J	0.028	J	0.141	J
Nickel	50	16	21.9		32		23.2	J		R	33.1		10.5	J
Potassium	NC	NC	158	J	251	J	1200	J	532	J	855	J	379	J
Selenium	NC	NC	0.679	U	0.722	U	1.18	U	0.721	U	0.872	U	2.62	U
Silver	2	1	1.02	J	0.955	J	**4.13**	J	**2.07**	J	**3.57**	J	**2.09**	J
Sodium	NC	NC	64.8	U	68.9	U	330	J	90.5	J	151	J	1190	J
Thallium	NC	NC	0.82	U	0.872	U	1.42	U	0.871	U	1.05	U	3.16	U
Vanadium	NC	NC	3.86	J	8.58	J	37.8	J	14.1	J	24.8	J	39.2	J
Zinc	270	120	12.8	J	20.2		116	J	75.5	J	148	J	44.2	J

Qualifiers
U - Non-detect.
J - Estimated.
R - Rejected.
NC - No Criteria.
BOLD indicates exceedance of SEL criteria.
Shading indicates exceedance of LEL criteria.

Table 17
TOC in Sediment
Magna Metals

Sample ID	SD-27		SD-28		SD-29		SD-30		SD-50		SD-31	
Lab Sample Number	Z4885-01		Z4885-02		Z4885-03		Z4885-04		Z4885-06		Z4885-05	
Sampling Date	10/6/2008		10/6/2008		10/6/2008		10/6/2008		10/6/2008		10/6/2008	
Matrix	SOIL		SOIL		SOIL		SOIL		Duplicate of		SOIL	
Dilution Factor	1		1		1		1		SD-30		1	
Units	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
COMPOUND												
TOC	1700	J	2500	J	6600	J	4600	J	4600	J	14000	J

Qualifiers
J - Estimated.