Georgia Environmental Protection Division
Land Protection Branch
Response and Remediation Program
Response Development Units 1 – 3

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Document Submittal Form

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Name of Document:	Voluntary Investigation and Remediation Plan
Date of Document:	March 31, 2017
Site Name:	Murata Electronics, N.A.
Site ID Number:	HSI Site No. 10771

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Name (printed): Nicolas Vrey

Date: 3/31/2017

Organization: ERM

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Receipt Date
(for EPD use only)

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March 31, 2017

Hazardous Site Response Program
Environmental Protection Division
Georgia Department of Natural Resources
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Subject: **Transmittal of Electronic Version of the Voluntary Investigation and Remediation Plan Murata Electronics, N.A., HSI #10771**

I have enclosed two electronic versions of the Voluntary Investigation and Remediation Plan for Murata Electronics, N.A., HSI #10771 as pdf files on Compact Disc to accompany the hard copy report. This certification states that the electronic copy is complete, identical to the paper copy, and virus free.

I, Holly McDonald, on March 31, 2017 made a complete electronic copy of the following document:

Voluntary Investigation and Remediation Plan
Murata Electronics, N.A., HSI #10771

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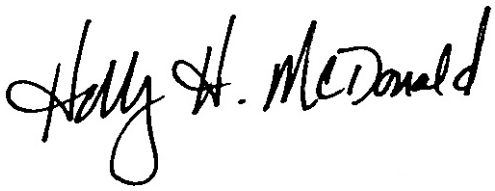
You can contact me at 678-486-2700 with any questions or comments.

Best regards,



Holly McDonald

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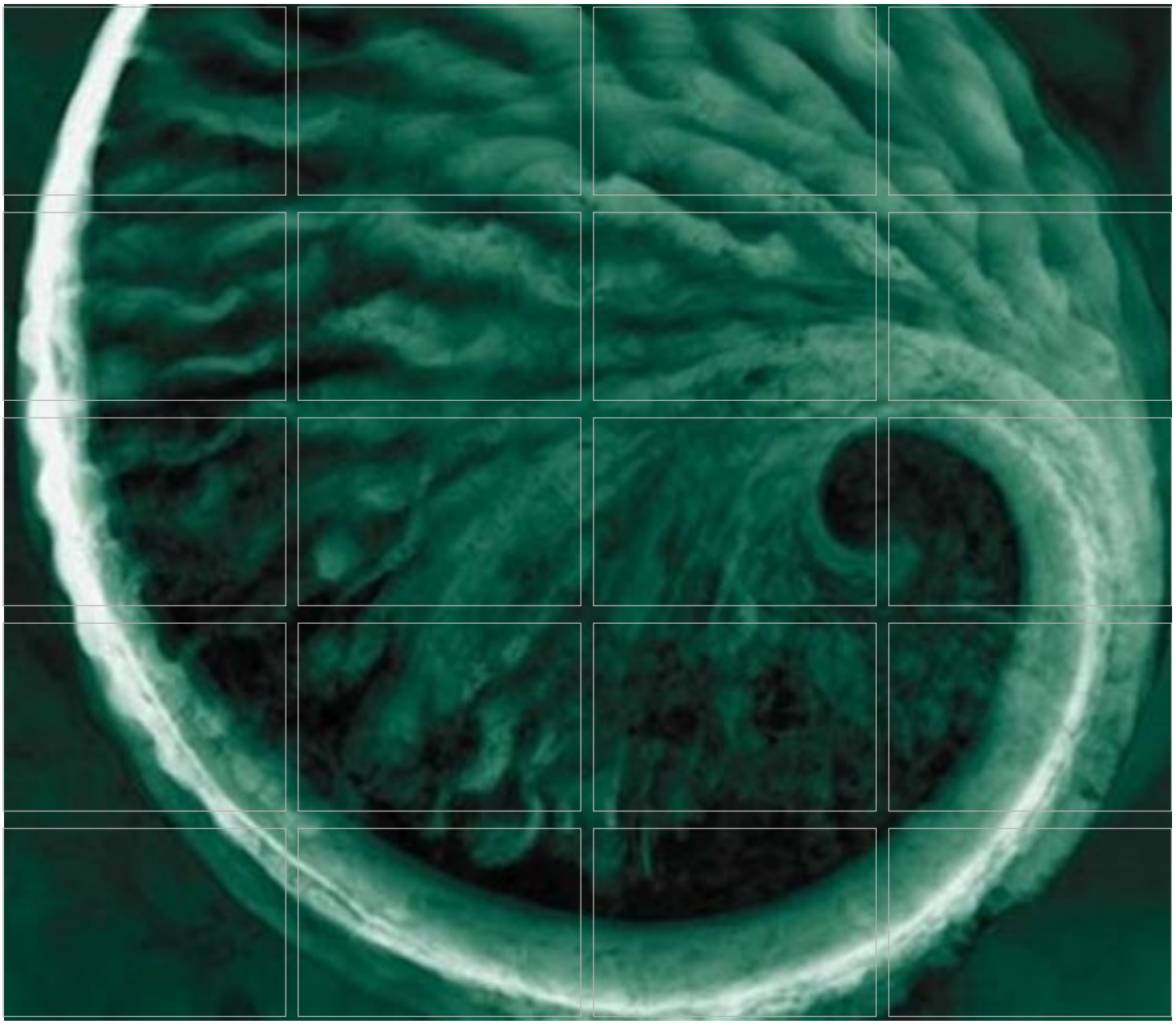

Voluntary Investigation and Remediation Plan

Murata Electronics, N.A.
308 Prospect Road
Rockmart, Polk County, Georgia
HSI Site No. 10771

March 31, 2017

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ERM

The business of sustainability

REPORT

Murata Electronics, N.A.

Voluntary Investigation and Remediation Plan

Murata, Rockmart, Georgia

HSI No. 10771

March 31, 2017

Project No. 0190949

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1.0 INTRODUCTION

This Voluntary Investigation and Remediation Plan (VIRP) has been prepared for the Murata Electronics, N.A., Inc. (Murata) facility (the Site) located in Rockmart, Polk County, Georgia. The Site was listed on the Georgia Hazardous Site Inventory (HSI), Site No. 10771, on October 16, 2003. The purpose of this VIRP is to:

- provide information on the current Site status in regard to compliance with applicable delineation requirements and risk reduction standards (RRS) standards;
- present the Conceptual Site Model and identify potentially complete or incomplete exposure pathways that could present an unacceptable risk to human health or ecological receptors;
- detail investigations and possible corrective actions to bring the Site and any additionally affected properties into compliance with RRS; and
- provide a projected milestone schedule for investigation and remediation of the Site after enrollment in the VRP.

1.1 SITE DESCRIPTION AND HISTORY

The Murata Site (Polk County Tax ID 054-053) is located at 308 Prospect Road in Rockmart, Polk County, Georgia (Figure 1-1). The Site is a former electronics manufacturing facility that was closed in June 1998 and has been used as a warehouse and distribution facility since that time.

The Site includes a 9.8-acre area located near the intersection of Prospect Road and Nathan Dean By-Pass and a 56,000 sq. ft. one-story brick building (Figure 1-2). Access to the Site is gained from both Prospect Road and Industrial Drive. The Site is enclosed by a 6-foot chain link fence and access gained from Prospect Road and Industrial Drive is gated. The majority of the property is paved with asphalt.

Site ground surface elevations range from approximately 480-to-498 feet above mean sea level. The lowest elevations are in the east-southeast portion of the property. Surface drainage appears to flow in this direction towards the Euharlee Creek, located approximately 2,000 feet to the east of the Site.

The highest elevations are associated with the northwest corner of the Site. The properties surrounding the Site to the north, east, and south are operating industrial facilities. Properties located to the west of the facility are mainly residential. Figure 1-3 identifies adjacent property owners along with the relevant tax IDs, as obtained from the qPublic.net online GIS system.

1.2 SOURCE DESCRIPTION AND COCS

The subject Site was formerly used primarily as an electronics manufacturing facility. Murata is a manufacturer of passive electronic components including capacitors. Manufacturing activities related to the production of electronic components at the Site while the facility operated as a production facility included the use of industrial degreasing solvents.

A review of the Polk County title records conducted in September 1998 indicates that the Site was purchased by Murata from Patillo Construction Company in 1972. It appears that at the time of purchase the property was undeveloped. Prior Site owners dating back to 1914 include Rockmart Industrial Development Corporation, C.W. Chandler, and G.F. Morgan. No hazardous waste activities, executed environmental liens, or deed restrictions were associated with any of the records reviewed.

Under historical production operation, the Murata facility stored raw and waste degreasing solvents in two 1,000 gallon above ground storage tanks (ASTs) located along the south wall of the main facility building. Employee interviews conducted at the time of the Phase I ESA estimate the consumption of industrial solvent at approximately 1,000 gallons of degreasing solvent per month while in peak production from 1974 to 1993. The degreasing solvents reportedly used at the Murata facility were PCE and TCE**.**

During a Phase I and subsequent Phase II at the property (2001) identification of contamination at the site led to a Release Notifications (and subsequent modifications) to the Georgia EPD. Subsequently EPD listed the site on the HSI on October 16, 2003, due to release to soil and groundwater for the following compounds;

Tetrachloroethene (PCE)
Trichloroethene (TCE)
cis 1,2-Dichloroethene (cis-dCE)
1,1 Dichloroethene
1,1,1 Trichloroethane (TCA)
1,1 Dichloroethane (DCA)
Vinyl Chloride (VC)
Barium (Ba)

Barium was evaluated, was identified below MCLs across the site, and ultimately attributed to background. As a result, the primary contaminants of concern for investigation and remediation were identified as chlorinated solvents.

1.3 QUALIFYING PROPERTY AND PARTICIPANT ELIGIBILITY

Georgia's Voluntary Remediation Program (VRP) Act became effective on June 1, 2009. For properties to qualify for entry into the VRP certain requirements must be met, as indicated below:

VRP Qualifying Requirement	**Murata Site Status**
Release of regulated substances into the environment	Release of PCE in excess of reportable quantity led to its identification and placement on GA HSI.
Not Listed on the federal National Priorities List (NPL) pursuant to the federal Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. Section 9601.	The Site is not listed on the NPL.
Not currently undergoing response activities required by an order of the regional administrator of the federal Environmental Protection Agency	Murata has conducted remedial actions under the authority of the GA EPD since 2005 and is not subject to an EPA Order. The Corrective Action Plan (CAP) was approved by EPD on February 9, 2007.
Not required to have a permit under Georgia Code Title 12. Conservation and Natural Resources § 12-8-66	Facility is not required to have a RCRA Hazardous Waste permit.
Qualifying the property under this part would not violate the terms and conditions under which the division operates and administers remedial programs by delegation or similar authorization from the United States Environmental Protection Agency	Murata has conducted remedial actions under the authority of the GA EPD since 2005 and is not subject to remediation under EPA authority.
Any lien filed under subsection (e) of Code Section 12-8-96 or subsection (b) of Code Section 12-13-12 against the property shall be satisfied or settled and released by the director pursuant to Code Section 12-8-94 or Code Section 12-13-6.	The Murata property does not contain liens against the property.
The participant must be the property owner of the voluntary remediation property or have express permission to enter another's property to perform corrective action.	Murata owns the qualifying property and will execute UECAs for the adjacent property owners, where deed restrictions are warranted.

As indicated above, the Site (and Murata as the participant) meets the entry qualifications for the VRP. The VIRP Application is provided as Appendix A. This VIRP presents the following information for entry into the VRP:

Section 2: Historical investigation and remediation activities
Section 3: Conceptual Site Model, Residual Contamination, and Potential Receptors
Section 4: Planned Activities for Regulatory Compliance

The goal for the site is to enter the VRP, conduct activities to ascertain compliance with the program requirements, and resultantly have the site removed from the Georgia EPD HSI.

2.0 SITE INVESTIGATION AND REMEDIATION HISTORY

The following sections describe the history of investigation of the site along with the remedial actions that addressed the contaminants identified during the investigations.

2.1 RISK REDUCTION STANDARDS

Risk reduction standards, based on guidelines provided in Georgia HSRA Rules Chapter 391-3-19-.07, were previously provided in document discussed on the Site Investigation History noted below. EPD has provided comments to the RRS calculations in numerous previous correspondences regarding the site. In addition, we understand that some toxicity factors have been modified since the time of the original RRS submittals. As a result, the RRS have been re-calculated for the site specific COIs. RRS computations are provided in Appendix B.

2.2 SITE INVESTIGATION HISTORY

Site investigations have occurred at the Site since 2000, as follows:

Date	Site Investigation Description	Report
2000	ASTM Phase I	ASTM Phase I Report
2001	Phase II Investigation	Phase II Report and Release Notification
2002-2005	Detailed delineation and characterization	Compliance Status Report – September 2006 (Appended to CAP below)
2005-2006	Detailed design investigations	Corrective Action Plan (CAP) – October 27, 2006
2009	Supplemental Site Investigation – Hazardous Chemical Storage Area	Third Annual Corrective Action Effectiveness Report - March 2010

Site investigations led to the delineation of chlorinated solvents in soil and groundwater, laterally and vertically. Investigations identified a former source area at or near the original PCE tank location and one source area identified near the former hazardous chemical storage area on the north side of the property. Figure 2-1 presents the source areas and the extent contamination for soil and groundwater that reflect the extent of known historical contamination.

2.3 *REMEDIATION HISTORY*

As presented in the Compliance Status report (September 2006) contamination in excess of the RRS was identified at the site. Murata submitted a Corrective Action Plan (CAP) on October 27, 2006 to remedy the contamination at the site. CAP approval was obtained from GA EPD on February 9, 2007. Both soil and groundwater remediation have occurred at the site since 2007.

2.3.1 *Soil Remediation*

A Soil Vapor extraction and ex-situ treatment system was installed late 2006 and became operational in February 2007. Modifications to the SVE system were made in late 2009 after the identification and investigation of soil contamination near the former hazardous chemical storage area. A diagram of the SVE system (including 2009 modifications) is presented as Figure 2-2. The mass of contaminants removed by the SVE system is presented in Table 2-1 and Figure 2-3.

2.3.2 *Groundwater Remediation*

Groundwater has been remediated at the site through the use chemical oxidation technology by in-situ injection of permanganate (sodium or potassium). The first in-situ chemical oxidation (ISCO) injections (were performed in March and August 2007. These injections were performed as a pilot program. After the first UIC permit was issued on August 10, 2007, additional injections have been performed at full scale.

To date, approximately 256,100 gallons of permanganate solution has been injected at the Site. A total of 28 injection locations have been utilized over the course of the injections. Monitor well MW-20 has served as the well with the highest volume of injections. Approximately 40,900 gallons of permanganate solution (16% of total) has been injected via MW-20 since October 2007. The volume of injections for the Site is summarized in Table 2-2 and presented graphically in Figure 2-4.

3.0 CONCEPTUAL SITE MODEL

3.1 GEOLOGY

3.1.1 Regional Geology

The Site in Rockmart, Polk County, Georgia is located in the Great Valley District of the Southern Valley and Ridge Section of Ridge and Valley Physiographic Province. The district is characterized by broad and open valley with few scattered ridges and hills (Clark and Zisa, 1976). Elevations in the district range from 700 to 800 feet above sea level with a relief varying from 50 to 100 feet. The valleys are typically underlain by shales, limestones and dolostones of Cambrian to Ordovician in age.

3.1.2 Site Geology

Ground-surface elevation at the Site ranges from 470 to 500 feet above mean sea-level (MSL) (Table 3-1). The Site is underlain primarily by carbonate rocks of the Ordovician Newala Limestone, considered as one of the important aquifers in the area (Cressler, 1970).

Outcrops of the Newala Limestone in the Rockmart area show folded, contorted and overturned bedding overlain by clastic rocks consisting of metashale, named the Rockmart Slate. The regolith developed on top of the Newala Limestone bedrock consists of reddish yellow clayey silt and sand with fragments of chert. Rock core obtained from the deep well, MW-12, at a depth interval from 160 to 200 feet below ground surface, shows that the Site is underlain by the carbonate rocks consisting primarily of interbedded, bioturbated, micritic, sparry limestone and dolostone. The Newala Limestone 3-inch rock core drilled in monitoring well MW-12, from a depth interval of 160 to 200 feet below ground surface, shows fracture-filling sparry calcite veins and a large portion of the core that has been filled with crystalline calcite suggesting a solution cavities and vuggy openings that have been calcitized.

A stratigraphic cross-section through selected monitoring wells at the Site is shown in Figure 3-1. There are three main lithologic units observed at the Site that include the soil mantle or regolith, the transition zone between the carbonate bedrock and the overlying regolith and the underlying fractured bedrocks.

The transition zone consisting of partially altered, weathered lithology possibly showing a relatively higher permeability than that of the residual soil cover and the bedrock. The transition zone may also act as a preferential conduit for the constituents of concern. However, as shown later, the groundwater flow at the site is predominantly fractured-rock flow occurring in the bedrocks.

3.2 HYDROGEOLOGY

3.2.1 Regional Hydrogeology

The Site is located in the High Groundwater Pollution-Susceptibility area, just north of the town of Rockmart (Trent, 1992). The town is also located in the most significant ground-water recharge area of the unconfined aquifers indicated in a map by Davis et al. (1989).

Groundwater in the Valley and Ridge Physiographic Province occurs in the regolith and in the deeper bedrocks underlying the regolith. The bedrocks in the vicinity of the Site consist primarily of limestone interbedded with dolostone, belonging to the Newala Limestone of Ordovician age (Cressler, 1970).

Groundwater in the regolith is contained in the intergranular spaces and also in fractures, and the deeper ground-water is contained in the fractures, joints, and lithologic breaks in the bedrock. Depending on the presence of confining layers, the deeper aquifer may occur at a few stratigraphic levels.

Groundwater movement in the shallow water-bearing zone typically approximates ground surface topography, with the direction of ground water movement being from upland areas to lower nearby drainage features. Groundwater in the bedrock is located within fractures and other structural features of the rocks tend to be more complex and may be affected by the structural setting of the Site.

3.2.2 Site Hydrogeology

The groundwater table surface map based on the gauging data obtained during the monitoring activities on October 31, 2016 is shown on Figure 3-2. The flow direction shows a radial pattern from a groundwater high point in the vicinity of MW-28 towards the northwest, northeast, southwest and southeast. However, the main groundwater flow direction is predominantly towards the southeast. Depth to groundwater at the site is mostly greater than 40 feet. The water level elevations calculated for the 2016 event are provided in Table 3-1.

Published literature on the effective porosity and coefficients of hydraulic conductivity show a range of values (Cherry and Freeze, 1970; Fetter, 1994). The subsurface regolith at the Site consists primarily of indurated clay silt should be reasonably assumed to have an effective porosity (approximately equal to its specific yield) of 20%. However, note that the ground water at the Site occurs in the deeper fractured, carbonate bedrocks, and at a few places show the presence of solution cavities such as shown in monitoring wells MW-9 and MW-10.

Drill-core obtained from monitoring well MW-12 shows the well indurated and compact limestone showing no visible pore spaces. The average effective porosity of the bedrock aquifer depends on the presence of fractures and other secondary openings which is not easily predictable.

The coefficient of hydraulic conductivity of the bedrock the Site, which consists primarily of interbedded dolostone-limestone was calculated from three slug tests conducted at the Site included in the 2005 *Compliance Status Report*. The calculated coefficients of hydraulic conductivity in monitoring wells MW-7, MW-9 and MW-12 are 1.1641 x 10^{-7} cm/sec, 8.217 x 10^{-5} cm/sec and 1.199 x 10^{-7} cm/sec, respectively.

3.3 RESIDUAL CONTAMINANTS OF CONCERN

3.3.1 Distribution in Soil

No current soil data is available. Soil samples were last collected 2005 and Murata has performed extensive SVE in the previously impacted areas since those data were collected. Soil confirmation sampling is planned to collect data for current soil conditions. The soil confirmation sampling is discussed in Section 4.2.

3.3.2 Distribution in Groundwater

During this reporting period, ERM deployed PDB samplers on October 8, 2016. PDBs were retrieved and sampled on October 31 and November 1, 2016. No wells were sampled on Beary Properties LLC, Hematite Holdings LLC, Snapfinger Properties or Rockmart LLC during the 2016 annual sampling event. Construction activities were ongoing on the Beary Properties LLC and Hematite Holdings LLC properties as a new tenant Allstar Enterprises LLC was regrading both properties. Most of the interior monitoring and injection wells on these properties may have been destroyed or covered with gravel.

The PDB samplers are made of a low-density polyethylene bag pre-filled with deionized (DI) water. The membrane of the bags is semi-permeable and allows free movement of groundwater and VOCs into the bags until reaching equilibrium with the surrounding groundwater. Designated suspension tethers were purchased for each well sampled and were pre-measured to mid-screen based on well construction or to mid-water column based on groundwater levels, whichever was more representative (i.e., consistent with previous low flow/low volume sample collection depths, as appropriate).

A special designated expansion plug cap with connection rings on the inside was used to connect the tether lines to the inside of each well so as to prevent runoff or surface water from entering the wells while the PDB samplers hung in place. The bags were left for a minimum of two weeks before they were retrieved and sampled. The bags were removed from each well by the ERM sampler using nitrile-gloved hands, and the groundwater was poured from the bags into VOA vials and submitted for laboratory analysis.

Groundwater samples were collected for analysis of VOCs during the 2016 annual groundwater sampling event. The analytical report for the 2016 annual groundwater sampling event is included in Appendix C. The groundwater sampling log sheets are included as Appendix D.

Trip blank samples prepared by the analytical laboratory – Analytical Environmental Services, Inc. (AES) of Atlanta, Georgia – accompanied each batch of water samples collected for VOC analysis. One trip blank sample was collected for each cooler containing VOC samples for the lab.

Groundwater samples were collected for the analysis of VOCs to determine current Site conditions. The results of the VOC analyses are detailed in Table 3-2. Overall concentrations of the contaminants of concern appear to have decreased since the 2011 semiannual sampling events and there was only one detection of a VOC (PCE) above laboratory reporting limits in the 2016 sampling event. PCE was detected at a concentration of 5.6 µg/L in MW-8 (duplicate sample) below the calculated Type 4 RRS of 98.1µg/L. The October/November 2016 concentrations of PCE detected in groundwater are illustrated in Figure 3-3. MW-A-2, which historically has had detections of PCE in collected groundwater samples (all below the calculated Type 4 RRS), was not sampled in 2016 as the property was not accessible and the well may have been destroyed or covered in gravel.

3.4 RECEPTORS AND POTENTIAL EXPOSURE PATHWAYS

Based on the nature and extent of contaminants at the Site the following describes the receptors and potential exposure pathways. This evaluation is presented in graphical form in Figure 3-4.

3.4.1 Soil Direct Contact and Ingestion - Human Health Risk

The location of historical contaminated soil is beneath concrete or paved areas of the site. Soil sampling to evaluate residual impacts of contaminants, post remediation, is being planned for late 2017. As a result of the lack of current data, this potential ingestion pathway cannot be determined at this time. This pathway will be re-evaluated once the results of the soil sampling efforts have been completed and submitted in the VIRP status reports.

3.4.2 Ground Water Exposure – Human Health Risk

The Site and surrounding area are served by a municipal water supply system operated by the city of Rockmart, Georgia. As such, ground water in this area is not used a drinking water source. A potable-water well survey for the area in the vicinity the Site was completed as part of the 2001 United Consulting Limited Groundwater and Soil Assessment. The survey included a search of the U.S. Geological Survey, Georgia District Groundwater Site Inventory for wells within three miles of the Site. Forty-five wells and one surface water intake were identified during the well survey.

According to the 2001 report, a domestic well at the Ms. Peggy Tate residence approximately 3,300 feet north of the Site, is the nearest well to the Murata Site. The report indicates that this well is cross-gradient to the Site. A groundwater use restriction is not currently present on the properties. Therefore, human exposure to Site contaminants via ground water ingestion or direct contact is not

currently a complete exposure pathway, but could be complete if a well were constructed.

3.4.3 Surface Water Exposure - Human Health Risk and Ecological Risk

As presented in the SCM, groundwater from the site flows generally from to the east/southeast. Euharlee Creek is located approximately 1,900 feet east of the Site is a gaining stream that receives input from the groundwater formation from the west. The most recent ground water quality data for the Site shows that no VOCs were detected at wells at the perimeter of the site, which remains>1000 feet up-gradient of Euharlee Creek. Based on the age of the release, the known extent of contamination to date, and the limited residual contaminants the Groundwater to surface water exposure pathway not complete, nor is likely to be considered complete in the future. Ongoing monitoring of Point of Demonstration (POD) well will serve to provide validation.

3.4.4 Vapor Intrusion - Human Health Risk

There are three properties that are included in this VIRP. The two additionally qualifying properties (adjacent landowners) contain occupied buildings, but are not located directly above the impacted groundwater area of the site. As a result, the vapor instruction (VI) pathway for these properties is not considered complete.

Impacted groundwater from the primary source area on the Murata site, is directly beneath primary warehouse, where workers are typically present. As a result, this VI pathway for human health is considered complete and warranting further evaluation to identify if exposure to the contaminants poses unacceptable risks.

4.0 PLANNED ACTIVITIES

The following activities are planned to assist in compliance with the VRP, and to achieve closure of the HSI site #10771.

4.1 DEED RESTRICTIONS

In the VRP, the Uniform Environmental Covenants (UECs) and various controls (e.g., engineering, institutional) can play a role in controlling future use of the properties and use of the soil and water resources. For example, groundwater use controls will affect the potential for future exposure to groundwater beneath the properties.

Murata will attempt execute new Uniform Environmental Covenants (UECs) with a groundwater use deed restriction for all parcels overlying the groundwater plume (above risk reduction standards) for an institutional control. In addition the Site parcel, the parcels that Murata will attempt to obtain a groundwater use dead restrictions for include Beary Properties Inc. and Hematite Holdings LLC (Figure 1-2).

The UEC on the Murata property may include a soil excavation restriction depending on the results of future soil sampling (see Section 4.2). The UEC may include the use of an appropriate Health and Safety Plan (HASP) to effectively manage subsurface soil worker exposures for intrusive activities.

The UECs proposed for the properties are provided in Appendix E.
As a result, it is planned that a Uniform Environmental Covenant (UEC) that prohibits the use of groundwater at the Site will be placed on the subject properties.

4.2 SOIL INVESTIGATION

Murata will perform soil confirmation sampling within the exposure domains for receptors of the former areas of contamination. The *Soil Confirmation Sampling Work Plan* is included in this report as Appendix F. Soil samples will be analyzed for COI VOCs.

4.3 GROUNDWATER MONITORING

As part of the VRP, Murata will continue routine annual groundwater monitoring to monitor plume stability and will perform point of demonstration (POD) groundwater monitoring to continue to demonstrate no groundwater impacts to parcels not included in the VRP that have no groundwater use dead restrictions. The groundwater monitoring network and sampling frequency are displayed in Table 4-1.

4.3.1 *Routine Groundwater Monitoring*

The routine groundwater monitoring will be conducted every 18 months until final CSR is submitted for the express purpose of evaluating continued effectiveness of completed corrective actions (ISCO and SVE) to the dissolved phase groundwater plume and monitor rebound concentrations. The 2017 through 2019 sampling events will follow EPD's September 30, 2014 allowance of passive diffusion bags (PDBs) for sampling monitoring and will be conducted with laboratory evaluation for VOCs. Low-flow purge and sample methods will be conducted for the final three (3) years of planned annual groundwater sampling 2020 – 2022 for VOCs by 6010B.

4.3.2 *POD Groundwater Monitoring*

POD wells will be utilized to validate the effectiveness of the implemented remedies at the Site and compliance with the VRPA. Proposed Point of Demonstration wells are provided in Table 4-1 and shown in Figure 4-1. In the event the presence of COIs are identified in the POD Wells, and confirmed with a second sampling event, additional actions will be considered. POD wells will be sampled every nine (9) months.

4.4 *VAPOR INTRUSION ASSESSMENT*

The purpose of the planned vapor intrusion (VI) assessment is to evaluate the potential for VI of PCE or TCE into the building located on the Site, and to evaluate whether there is an unacceptable VI risk to workers in the building that warrants additional action to assess and/or mitigate the risk. Six Sub-slab soil gas samples will be collected from beneath the foundation slab as the building is a slab on grade structure. Sub-slab gas samples will be analyzed by USEPA Method TO-15. The analytical results will be compared to target screening levels calculated for commercial sub-slab soil gas using the United States Environmental Protection Agency (USEPA) vapor intrusion screening level (VISL) calculator as an initial assessment of the data. The *Vapor Intrusion Assessment Work Plan* is included as Appendix G.

4.5 *ASSET REMOVAL*

Murata initially plans to abandon the following wells which are usually dry (MW-1, MW-2, MW-13, and MW-16), were used as injection wells (MW-3, MW-5, MW-9, MW-10, MW-11, MW-12, MW- or are no longer necessary to be included in the monitoring well network (MW-14, MW-25, MW-A-4, and MW-B-2). Once the final CSR has been approved all the remaining wells will be abandoned in accordance well decommissioning procedures detailed in U.S. Environmental Protection Agency Region 4 Science and Ecosystem Support Division (SESD) January 29, 2013 *Design and Installation of Monitoring Wells*.

In addition, Murata plans to decommission the SVE system including abandonment of all vapor extraction points, associated piping, and above ground equipment, tanks, etc. from within the SVE operations building. The building

may be demolished and removed or left in place for outside facility storage purposes.

4.6 PROJECTED MILESTONE SCHEDULE

The VIRP Projected Milestone Schedule is presented in Figure 4-2 and outlines all of the proposed activities. The project schedule will be refined after acceptance into the VRP and after receiving input from the selected remedial contractor on the implementation schedule. Upon acceptance into the VRP, Murata will implement the planned activities detailed above. It is expected that the CSR for the Site will be submitted within 60 months of VRP acceptance.

Tables

March 31, 2017
Project No. 0190949
Murata

Environmental Resources Management
3200 Windy Hill Rd. Suite 1500W
Atlanta, GA 30339
(678) 486-2700

Table 2-1
Murata SVE Mass Removal
VIRP
Murata Electronics, N.A. (HSI No. 10771)
Rockmart, Georgia

Start Date	Start Time	End Date	End Time	Start PID (ppm)	End PID (ppm)	PID Conversion Factor	Adjusted VOC Concentration (ppm)	Standardized Flow Rate (scfm)	Assumed Molecular Weight	Mass Removal Rate (lbs/hr)	Operation Hours	Mass VOC Removed (lbs)	Cumulative VOC Removed (lbs)	Comments
													2,788.93	System shut down manually
		2/7/2007											0	
2/3/2007	1500	2/8/2007	1100	550.0	295.0	0.65	274.6	279.1	160.5	2.06	11	22.65	22.65	
2/8/2007	1100	2/9/2007	1800	295.0	247.0	0.65	176.2	299.0	160.5	1.41	24.5	34.66	57.31	
2/9/2007	1800	2/10/2007	1430	355.0	343.0	0.65	226.9	299.0	160.5	1.82	2.5	4.55	61.86	
2/10/2007	1430	2/11/2007	1300	200.0	200.0	0.65	130.0	317.0	160.5	1.11	11.5	12.73	74.59	
2/11/2007	1300	2/13/2007	1430	131.0	131.0	0.65	85.2	373.0	160.5	0.85	7	5.97	80.56	
2/13/2007	1430	2/22/2007	900	182.0	100.0	0.65	91.7	225.7	160.5	0.56	157	87.24	167.80	
2/22/2007	900	2/28/2007	1300	100.0	77.0	0.65	57.5	266.1	160.5	0.41	91	37.42	205.22	
2/28/2007	1300	3/14/2007	1700	77.0	77.0	0.65	50.1	266.0	160.5	0.36	54	19.31	224.53	
3/14/2007	1600	3/21/2007	1400	172.0	136.0	0.65	100.1	266.1	160.5	0.72	32	22.89	247.42	Estimated PID value (from 3/3/07 and 3/29/07 measurements, respectively).
3/21/2007	1400	3/29/2007	1000	110.0	72.0	0.65	59.2	266.1	160.5	0.42	47	19.87	267.30	
3/29/2007	1000	4/5/2007	845	129.0	178.0	0.65	99.8	328.3	160.5	0.88	52	45.76	313.05	
4/5/2007	845	4/10/2007	1415	178.0	151.0	0.65	106.9	208.6	160.5	0.60	21	12.58	325.64	
4/10/2007	1415	4/13/2007	1520	151.0	116.0	0.65	86.8	296.1	160.5	0.69	57	39.34	364.98	
4/13/2007	1520	4/16/2007	1530	116.0	106.0	0.65	72.2	353.1	160.5	0.68	44	30.11	395.09	
4/16/2007	1530	4/17/2007	1220	106.0	126.0	0.65	75.4	295.8	160.5	0.60	4	2.40	397.49	
4/17/2007	1220	4/27/2007	1545	126.0	110.0	0.65	76.7	277.2	160.5	0.57	10	5.71	403.20	
4/27/2007	1545	5/2/2007	1830	110.0	94.0	0.65	66.3	269.6	160.5	0.48	69	33.13	436.32	
5/2/2007	1830	5/5/2007	1515	94.0	100.0	0.65	63.1	253.7	160.5	0.43	31	13.32	449.65	
5/5/2007	1515	5/22/2007	745	78.0	73.0	0.65	49.1	244.2	160.5	0.32	264	84.98	534.63	
5/22/2007	745	6/1/2007	1725	73.0	62.0	0.65	43.9	258.9	160.5	0.31	188	57.36	591.99	
6/1/2007	1725	6/5/2007	1140	62.0	62.0	0.65	40.3	196.9	160.5	0.21	24	5.11	597.10	
6/5/2007	1140	6/8/2007	830	139.0	139.0	0.65	90.4	245.5	160.5	0.60	6	3.57	600.67	
6/8/2007	830	6/11/2007	1520	125.0	70.0	0.65	63.4	224.6	160.5	0.38	77	29.44	630.11	
6/11/2007	1520	6/21/2007	1415	70.0	91.0	0.65	52.3	246.2	160.5	0.35	34	11.77	641.88	
6/21/2007	1415	6/22/2007	1045	91.0	91.0	0.65	59.2	247.8	160.5	0.39	21	8.27	650.15	
6/22/2007	1045	6/25/2007	1515	91.0	67.0	0.65	51.4	224.6	160.5	0.31	44	13.63	663.78	
6/25/2007	1515	6/28/2007	1715	67.0	62.0	0.65	41.9	258.3	160.5	0.29	68.7	19.98	683.76	
6/28/2007	1715	7/11/2007	1030	62.0	61.0	0.65	40.0	257.2	160.5	0.28	102.2	28.22	711.98	
7/11/2007	1030	7/17/2007	945	61.0	35.0	0.65	31.2	223.0	160.5	0.19	46.4	8.67	720.65	
7/17/2007	945	7/23/2007	1810	35.0	36.0	0.65	23.1	223.0	160.5	0.14	150.4	20.79	741.43	
7/23/2007	1810	7/24/2007	900	35.0	35.0	0.65	22.8	233.1	160.5	0.14	16.7	2.38	743.81	
7/24/2007	900	7/27/2007	900	48.0	42.0	0.65	29.3	207.3	160.5	0.16	68.3	11.13	754.94	
7/27/2007	900	8/13/2007	800	42.0	42.0	0.65	27.3	230.8	160.5	0.17	309	52.30	807.24	
		9/25/2007					**Change from catalytic oxidizer to granular activated carbon**						807.24	
9/25/2007	1630	10/9/2007	1530	106.0	54.0	0.65	52.0	176.3	160.5	0.25	335	82.51	889.75	
10/9/2007	1530	10/31/2007	1645	57.0	51.0	0.65	35.1	250.0	160.5	0.24	525	123.74	1,013.49	
10/31/2007	1645	11/28/2007	1245	51.0	46.0	0.65	31.5	248.1	160.5	0.21	491	103.17	1,116.66	
11/28/2007	1245	12/31/2007	1330	46.0	46.0	0.65	29.9	166.0	160.5	0.13	548.7	73.17	1,189.83	
12/31/2007	1330	1/8/2008	1320	51.0	51.0	0.65	33.2	102.1	160.5	0.09	63.3	5.75	1,195.58	1/8 - 4/10 PID readings incorrect. 12/31/07 value of 51 ppm assumed.
1/8/2008	1320	2/1/2008	900	51.0	51.0	0.65	33.2	65.3	160.5	0.06	549	31.92	1,227.51	
2/1/2008	900	2/7/2008	1300	51.0	51.0	0.65	33.2	76.8	160.5	0.068	150	10.26	1,237.76	
2/7/2008	1300	2/26/2008	900										1,237.76	System off for rebound.
2/26/2008	900	3/12/2008	1100	51.0	51.0	0.65	33.2	70.1	160.5	0.062	150	9.37	1,247.13	
3/12/2008	1100	4/10/2008	1315	51.0	59.0	0.65	35.8	76.1	160.5	0.073	3	0.22	1,247.35	
4/10/2008	1315	4/29/2008	1020	59.0	72.0	0.65	42.6	69.9	160.5	0.080	453	36.21	1,283.56	
4/29/2008	1020	5/5/2008	1030	72.0	64.0	0.65	44.2	73.9	160.5	0.088	144	12.63	1,296.19	
5/5/2008	1030	5/28/2008	939	64.0	24.0	0.65	28.6	68.6	160.5	0.053	552	29.11	1,325.30	
5/28/2008	939	6/2/2008	1030	24.0	37.0	0.65	19.8	67.4	160.5	0.036	21	0.75	1,326.05	Estimate: 6/10/08 PID data not included.
6/2/2008	1030	6/12/2008	845	37.0	28.0	0.65	21.1	60.8	160.5	0.035	290	10.01	1,336.06	
6/12/2008	845	6/17/2008	1026	28.0	38.0	0.65	21.5	60.7	160.5	0.035	121	4.23	1,340.29	
6/17/2008	1026	6/27/2008	1115	38.0	32.0	0.65	22.8	81.1	160.5	0.050	240	11.90	1,352.19	Hours are an estimate: hours counter malfunctioning.
6/27/2008	1235	7/28/2008	1313	6.0	6.0	0.65	3.9	526.0	160.5	0.055	496	27.33	1,379.52	Hours are an estimate: hours counter malfunctioning.
7/28/2008	1313	8/4/2008	1115	12.0	13.0	0.65	8.1	314.6	160.5	0.069	170	11.67	1,391.20	System reconfigured on July 24: hours counted from that date. Hours are an estimate: hours counter malfunctioning.
8/4/2008	1115	8/25/2008	1100	13.0	14.0	0.65	8.8	226.7	160.5	0.053	500	26.72	1,417.92	Hours counter replaced.
8/25/2008	1100	9/4/2008	1030	14.0	12.0	0.65	8.5	177.3	160.5	0.040	195	7.85	1,425.76	
9/4/2008	1030	9/15/2008	1045	12.0	13.0	0.65	8.1	191.4	160.5	0.042	288	12.03	1,437.79	
9/15/2008	1045	10/2/2008	1030	13.0	15.0	0.65	9.1	142.0	160.5	0.035	385	13.37	1,451.16	
10/2/2008	1115	10/10/2008	1050	25.0	31.0	0.65	18.2	97.4	160.5	0.048	190	9.04	1,460.20	Wells reconfigured.
10/10/2008	1050	10/29/2008	1100	31.0	28.0	0.65	19.2	76.7	160.5	0.040	456	18.01	1,478.22	
10/29/2008	1100	11/17/2008	1030	28.0	18.0	0.65	15.0	87.2	160.5	0.035	457	15.99	1,494.21	
11/17/2008	1030	12/5/2008	1750	18.0	17.0	0.65	11.4	131.1	160.5	0.040	275	11.01	1,505.22	
12/5/2008	1750	12/15/2008	840	17.0	28.0	0.65	14.6	72.8	160.5	0.029	230	6.57	1,511.79	
12/15/2008	840	1/9/2009	1020	28.0	30.0	0.65	18.9	76.4	160.5	0.039	161	6.23	1,518.02	
1/9/2009	1020	1/16/2009	1030	30.0	34.0	0.65	20.8	70.7	160.5	0.040	129	5.10	1,523.12	
1/16/2009	1030	2/3/2009	1210	34.0	37.0	0.65	23.1	77.1	160.5	0.048	348	16.64	1,539.76	
2/3/2009	1210	2/19/2009	1530	37.0	54.0	0.65	29.6	66.4	160.5	0.053	372	19.62	1,559.37	
2/19/2009	1530	2/26/2009	1430	54.0	77.0	0.65	42.6	62.3	160.5	0.071	168	11.97	1,571.34	
2/26/2009	1430	3/9/2009	1402	77.0	80.0	0.65	51.0	67.0	160.5	0.092	258	23.68	1,595.02	
3/9/2009	1402	3/13/2009	1115	80.0	71.0	0.65	49.1	72.7	160.5	0.096	98	9.39	1,604.41	
3/13/2009	1115	4/24/2009	1030	71.0	45.0	0.65	37.7	80.0	160.5	0.081	648	52.50	1,656.91	
4/24/2009	1030	5/28/2009	832	45.0	70.0	0.65	37.4	83.0	160.5	0.083	431	35.91	1,692.82	
5/28/2009	832	6/9/2009	1215	70.0	79.0	0.65	48.4	83.0	160.5	0.108	291	31.42	1,724.24	
6/9/2009	1215	6/16/2009	1328	79.0	82.0	0.65	52.3	129.0	160.5	0.181	107	19.40	1,743.64	
6/16/2009	1328	7/9/2009	927	82.0	36.0	0.65	38.4	75.0	160.5	0.077	619	47.82	1,791.46	
7/9/2009	927	7/22/2009	1512	36.0	70.0	0.65	34.5	82.0	160.5	0.076	300	22.76	1,814.22	
7/22/2009	1512	7/29/2009	845	70.0	30.0	0.65	32.5	90.0	160.5	0.079	153	12.02	1,826.24	
7/29/2009	845	8/12/2009	1420	30.0	33.4	0.65	20.6	78.0	160.5	0.043	356	15.37	1,841.61	System down due to waste water disposal schedule.
8/12/2009	1420	9/11/2009	1610	33.0	42.0	0.65	24.4	76.0	160.5	0.050	210	10.45	1,852.06	
9/11/2009	1610	9/30/2009	1612	42.0	39.0	0.65	26.3	74.0	160.5	0.052	225	11.77	1,863.84	System down for injection and issues due to flooding.
9/30/2009	1612	10/9/2009	1325	39.0	38.0	0.65	25.0	77.0	160.5	0.052	32	1.66	1,865.49	System down due to heavy rain.
10/9/2009	1325	10/23/2009	1058	38.0	40.0	0.65	25.4	136.0	160.5	0.093	12	1.11	1,866.60	System down due to heavy rain.
10/23/2009	1058	10/27/2009	1235	40.0	41.0	0.65	26.3	104.0	160.5	0.074	28	2.06	1,868.66	System running/phone line restored 10/28/09.
10/27/2009	1235	11/13/2009	956	34.0	37.0	0.65	23.1	91.0	160.5	0.056	56	3.16	1,871.82	Reduced vacuum pressure to reduce system shut down due to heavy rain.
11/13/2009	956	11/16/2009	1312	37.0	32.0	0.65	22.4	92.0	160.5	0.055	78	4.32	1,876.14	Increased vacuum pressure to 8 still pulling water.
11/16/2009	1312	12/31/2009												System down due to constrcution, heavy rain ans system maintenance.
12/31/2009		1/6/2010												System repaired and running first reading scheduled for the week of Jan 11,10
1/6/2010		1/8/2010	942	80.2	0.0	0.65	26.1	81.0	160.5	0.057	2	0.11	1,876.26	
1/8/2010	942	1/13/2010	925	87.7	26.0	0.65	37.0	92.0	160.5	0.091	116	10.59	1,886.85	Kept Vac at 6.
1/13/2010	925	1/29/2010	900	74.0	15.7	0.65	29.2	71.0	160.5	0.056	91	5.06	1,891.91	Adjusted vac to 8
1/29/2010	900	2/2/2010	1100	42.0	13.2	0.65	17.9	53.0	160.5	0.026	38	0.97	1,892.88	Vac dropped back to 5 due to rain
2/2/2010	1100	2/12/2010	1310	28.7	13.6	0.65	13.7	79.0	160.5	0.029	226	6.59	1,899.47	System running continuous - not pulling any water
2/12/2010	1310	2/23/2010	930	29.6	14.3	0.65	14.3	104.0	160.5	0.040	262	10.44	1,909.91	System running continuous - not pulling any water
2/23/2010	930	3/1/2010	1205	31.4	12.2	0.65	14.2	64.0	160.5	0.024	145	3.53	1,913.45	
3/1/2010	1205	3/5/2010	945	31.1	13.4	0.65	14.5	58.0	160.5	0.023	94	2.12	1,915.56	
3/5/2010	945	3/10/2010	830	88.8	49.8	0.65	45.0	43.0	160.5	0.052	119	6.19	1,921.75	
3/10/2010	830	3/19/2010	915	62.4	21.4	0.65	27.2	53.0	160.5	0.039	139	5.39	1,927.14	
3/19/2010	915	3/24/2010	1300	42.0	31.6	0.65	23.9	58.0	160.5	0.037	201	7.49	1,934.63	
3/24/2010	1300	4/16/2010	900	36.6	9.7	0.65	15.0	74.0	160.5	0.030	528	15.79	1,950.43	
4/16/2010	900	4/22/2010	1120	9.2	34.0	0.65	14.0	56.0	160.5	0.021	608	12.84	1,963.27	
4/22/2010	1120	4/30/2010	932	10.8	27.2	0.65	12.4	59.0	160.5	0.020	121	2.37	1,965.63	Increased vacuum pressure to 9
4/30/2010	932	5/6/2010	1022	22.6	13.3	0.65	11.7	60.0	160.5	0.019	131	2.46	1,968.10	
5/6/2010	1022	5/17/2010	1540	9.0	13.0	0.65	7.2	85.0	160.5	0.016	125	2.04	1,970.14	
5/17/2010	1540	6/3/2010	1035	34.0	12.7	0.65	15.2	66.0	160.5	0.027	388	10.44	1,980.58	
6/3/2010	1035	6/9/2010	1302	29.0	10.0	0.65	12.7	66.0	160.5	0.022	434	9.75	1,990.33	
6/9/2010	1302	6/17/2010	845	15.0	11.4	0.65	8.6	49.0	160.5	0.011	188	2.12	1,992.45	
6/17/2010	845	7/1/2010	1232	12.7	10.0	0.65	7.4	58.0	160.5	0.011	312	3.59	1,996.04	
7/1/2010	1232	7/5/2010	1718	17.0	13.0	0.65	9.8	89.0	160.5	0.023	135	3.15	1,999.19	
7/5/2010	1718	8/27/2010	900	16.6	1.4	0.65	5.9	85.0	160.5	0.013	136	1.82	2,001.00	
8/27/2010	900	9/2/2010	1530	1.0	25.0	0.65	8.5	85.0	160.5	0.019	137	2.64	2,003.65	
9/2/2010	1530	9/14/2010	1330	25.0	5.0	0.65	9.8	67.0	160.5	0.018	138	2.42	2,006.07	
9/14/2010	1330	11/14/2010	1450	5.0	52.0	0.65	18.5	108.0	160.5	0.054	139	7.47	2,013.54	
11/14/2010	1450	12/21/2010	1110	52.0	82.0	0.65	43.6	115.0	160.5	0.135	140	18.83	2,032.37	
12/21/2010	1110	1/5/2011	1312	49.0	23.0	0.65	23.4	87.0	160.5	0.055	231	12.63	2,045.00	
1/5/2011	1312	1/19/2011	1123	43.0	32.0	0.65	24.4	75.0	160.5	0.049	134	6.58	2,051.58	

Table 2-1
Murata SVE Mass Removal
VIRP
Murata Electronics, N.A. (HSI No. 10771)
Rockmart, Georgia

Start Date	Start Time	End Date	End Time	Start PID (ppm)	End PID (ppm)	PID Conversion Factor	Adjusted VOC Concentration (ppm)	Standardized Flow Rate (scfm)	Assumed Molecular Weight	Mass Removal Rate (lbs/hr)	Operation Hours	Mass VOC Removed (lbs)	Cumulative VOC Removed (lbs)	Comments
1/19/2011	1123	1/31/2011	1320	22.0	16.0	0.65	12.4	64.0	160.5	0.021	67	1.42	2,053.00	
1/31/2011	1320	2/3/2011	1300	43.0	13.0	0.65	18.2	90.0	160.5	0.044	50	2.20	2,055.20	
2/3/2011	1300	2/11/2011	1220	29.0	13.0	0.65	13.7	81.0	160.5	0.030	49	1.46	2,056.66	
2/11/2011	1220	2/16/2011	1310	57.0	10.0	0.65	21.8	73.0	160.5	0.043	120	5.12	2,061.78	
2/16/2011	1310	3/3/2011	1328	53.0	8.0	0.65	19.8	61.0	160.5	0.032	360	11.69	2,073.48	
3/3/2011	1328	3/8/2011	930	41.0	0.8	0.65	13.6	82.0	160.5	0.030	233	6.97	2,080.45	
3/8/2011	930	3/21/2011	1500	33.0	1.0	0.65	11.1	58.0	160.5	0.017	80	1.38	2,081.83	
3/21/2011	1500	5/9/2011	1300	28.0	12.0	0.65	13.0	55.0	160.5	0.019	49	0.94	2,082.77	
5/9/2011	1300	5/13/2011	1120	43.0	8.0	0.65	16.6	57.0	160.5	0.025	95	2.41	2,085.18	
5/13/2011	1120	5/19/2011	1222	32.0	5.0	0.65	12.0	57.0	160.5	0.018	144	2.65	2,087.83	
5/19/2011	1222	6/3/2011	1010	31.0	8.0	0.65	12.7	86.0	160.5	0.029	265	7.76	2,095.59	
6/3/2011	1010	6/16/2011	1100	6.8	74.7	0.65	26.5	88.0	160.5	0.063	265	16.59	2,112.18	
6/16/2011	1100	6/24/2011	1030	1.6	12.7	0.65	4.6	215.0	160.5	0.027	191.1	5.13	2,117.31	
6/24/2011	1030	6/29/2011	1000	2.7	21.7	0.65	7.9	108.0	160.5	0.023	120	2.76	2,120.07	
6/29/2011	1000	7/8/2011	900	2.7	0.0	0.65	0.9	73.0	160.5	0.002	222	0.38	2,120.45	
7/8/2011	900	7/14/2011	1330	0.3	9.3	0.65	3.1	183.0	160.5	0.015	222	3.40	2,123.85	
7/14/2011	1331	7/29/2011	1300	0.2	8.8	0.65	2.9	174.0	160.5	0.014	307	4.20	2,128.05	
7/29/2011	1300	8/4/2011	1000	0.3	9.7	0.65	3.3	226.0	160.5	0.020	213	4.20	2,132.25	
8/4/2011	1000	8/24/2011	830	0.8	12.7	0.65	4.4	75.0	160.5	0.009	454.5	4.02	2,136.27	
8/24/2011	830	8/30/2011	830	13.5	6.3	0.65	6.4	75.0	160.5	0.013	143.2	1.86	2,138.13	
8/30/2011	830	9/8/2011	800	22.9	7.7	0.65	9.9	218.0	160.5	0.058	167.9	9.78	2,147.90	
9/8/2011	800	9/14/2011	830	9.9	12.8	0.65	7.4	257.6	160.5	0.051	144.5	7.37	2,155.28	
9/14/2011	830	9/19/2011	1030	12.2	6.6	0.65	6.1	185.0	160.5	0.030	123.3	3.74	2,159.02	
9/19/2011	1030	9/26/2011	930	13.2	14.1	0.65	8.9	256.4	160.5	0.061	152	9.29	2,168.31	
10/27/2011	900	10/28/2011	1208	56.7	55.7	0.65	36.5	266.4	160.5	0.261	48	12.55	2,180.86	
10/28/2011	1208	11/3/2011	900	34.8	33.9	0.65	22.3	237.2	160.5	0.142	143.8	20.45	2,201.31	
11/3/2011	900	11/10/2011	900	38.6	33.2	0.65	23.3	198.5	160.5	0.124	166	20.66	2,221.97	
11/10/2011	900	11/10/2011	1200	27.7	11.6	0.65	12.8	52.8	160.5	0.018	3	0.05	2,222.03	
11/10/2011	1200	11/16/2011	930	329.0	15.2	0.65	111.9	67.4	160.5	0.202	49.4	10.00	2,232.02	
11/16/2011	930	11/22/2011	1310	268.0	12.2	0.65	91.1	69.0	160.5	0.169	76	12.83	2,244.85	
11/22/2011	1310	12/8/2011	1259	128.0	12.0	0.65	45.5	59.0	160.5	0.072	338	24.37	2,269.22	sytem shut down at ~ 01:30 on 12/9/11
12/8/2011	1259	12/9/2011	1102	277.0	19.7	0.65	96.4	59.0	160.5	0.153	12	1.83	2,271.06	Sytem shut down at ~12.01 12/9/11 due to an issue with the float switch - repaired - restart sytem. Next reading 12/15/11
12/9/2011	1102	12/15/2011	820	212.0	22.6	0.65	76.2	86.6	160.5	0.177	151	26.79	2,297.84	
12/15/2011	820	1/5/2012	1015	192.0	23.8	0.65	70.1	188.9	160.5	0.356	387.2	137.76	2,435.60	No data collected on 12/28/2011, and 1/3/2011
1/5/2012	1015	1/10/2012	700	157.0	12.8	0.65	55.2	59.0	160.5	0.087	19	1.66	2,437.26	Problem with pump shutting down - adjusting flow in wells
1/10/2012	700	1/13/2012	1230	66.4	6.3	0.65	23.6	60.9	160.5	0.039	68	2.63	2,439.89	Problem with pump shutting down - adjusting flow in wells
1/13/2012	1230	1/26/2012	1330	301.0	4.2	0.65	99.2	68.5	160.5	0.183	50	9.13	2,449.02	Electrical issues resolved changed piping - adjusted flow in wells
1/26/2012	1330	2/3/2012	1300	281.0	11.9	0.65	95.2	46.0	160.5	0.118	193	22.70	2,471.72	System running continuous - not pulling any water
2/3/2012	1300	2/10/2012	1420	381.0	9.2	0.65	126.8	78.8	160.5	0.268	169	45.36	2,517.08	System running continuous - not pulling any water
2/10/2012	1420	2/17/2012	1410	98.2	10.4	0.65	35.3	86.9	160.5	0.082	170	14.01	2,531.09	System running continuous - water in A port - diluted reading/used B Port for start PID
2/17/2012	1410	2/24/2012	1130	210.0	9.0	0.65	71.2	71.3	160.5	0.136	162	22.08	2,553.17	System running continuous
2/24/2012	1130	3/1/2012	1000	42.0	15.0	0.65	18.5	34.0	160.5	0.017	143	2.42	2,555.59	System running continuous - water in A port - diluted reading/used B Port for start PID
3/1/2012	1000	3/9/2012	1350	47.1	4.4	0.65	16.7	34.4	160.5	0.015	195	3.02	2,558.60	System running continuous - water in A port - diluted reading/used B Port for start PID
3/9/2012	1350	3/26/2012	1530	197.0	8.6	0.65	66.8	47.2	160.5	0.085	409	34.65	2,593.25	System running continuous
3/26/2012	1530	4/13/2012	1330	102.0	7.6	0.65	35.6	18.8	160.5	0.018	191	3.44	2,596.69	System down due to injections
4/13/2012	1330	4/24/2012	1000	209.0	7.7	0.65	70.4	17.0	160.5	0.032	261	8.39	2,605.08	System running continuous - injections continue
4/24/2012	1000	4/27/2012	1300	348.0	13.4	0.65	117.5	40.2	160.5	0.127	74	9.39	2,614.47	System running continuous - Vaults for V-1, V-6, V-7 need repairs. V-10 pulled water while taking the sample. V-2 to V-5 on - remainder of wells off except H-1 and H-2 - venting. Next reading May 11, 2012.
4/27/2012	1300	5/10/2012	1230	170.0	9.2	0.65	58.2	50.0	160.5	0.078	312	24.40	2,638.87	Optimization after reconfiguration
5/10/2012	1230	5/14/2012	1115	77.8	18.7	0.65	31.4	51.0	160.5	0.043	66	2.84	2,641.70	System shut down on 5/13 due to heavy rain - KOP full - drained KOP and restarted system - readings taken approximately 2 hours after restart
5/14/2012	1115	5/30/2012	1200	142.0	4.2	0.65	47.5	69.0	160.5	0.088	377	33.20	2,674.90	System optimized
5/30/2012	1200	6/5/2012	1029	52.0	18.0	0.65	22.8	51.3	160.5	0.031	116	3.64	2,678.54	System down due to heavy rain - readings taken after restart
6/5/2012	1029	6/8/2012	1510	68.0	12.0	0.65	26.0	70.0	160.5	0.049	6	0.29	2,678.83	System down due to water in system - readings taken after restart
6/8/2012	1510	6/13/2012	900	57.0	13.4	0.65	22.9	51.5	160.5	0.032	43	1.36	2,680.19	System down - drain KOP - restart sytem and initial readings
6/13/2012	900	6/15/2012	1510	52.3	4.2	0.65	18.4	67.5	160.5	0.033	54	1.80	2,681.99	Adjustments made per site visit outcome
6/15/2012	1510	6/18/2012	830	92.7	3.8	0.65	31.4	73.6	160.5	0.062	64	3.97	2,685.96	System reading prior to shut down for maintenance
6/18/2012	830	6/21/2012	1230	82.0	4.0	0.65	28.0	72.4	160.5	0.054	0	0.00	2,685.96	Restart after maintenance
6/21/2012	1230	6/29/2012	1000	31.8	6.4	0.65	12.4	60.0	160.5	0.020	193	3.86	2,689.82	System optimized
6/29/2012	1000	7/6/2012	930	41.1	1.6	0.65	13.9	146.8	160.5	0.055	97	5.31	2,695.13	System optimized
7/6/2012	930	7/27/2012	1100	87.7	9.7	0.65	31.7	120.3	160.5	0.102	240	24.55	2,719.68	System optimized - readings taken after 1 full week of constant running - system up and down due to groundwater sampling event.
7/27/2012	1100	8/10/2012	1300	57.0	3.0	0.65	19.5	73.6	160.5	0.039	338	13.03	2,732.71	System optimized
8/10/2012	1300	8/15/2012	1310	76.2	13.6	0.65	29.2	87.4	160.5	0.069	121	8.29	2,741.00	System restart after shutdown due to heavy rain
8/15/2012	1310	8/23/2012	1030	76.8	13.8	0.65	29.4	105.5	160.5	0.083	130	10.85	2,751.85	System restart after power outage
8/23/2012	1030	8/24/2012	1410	82.7	8.0	0.65	29.5	198.5	160.5	0.157	28	4.40	2,756.25	Sytem optimized
8/24/2012	0:00	9/5/2012	1500	69.2	4.6	0.65	24.0	132.1	160.5	0.085	290	24.68	2,780.93	System optimized - well adjustments
9/5/2012	0:00	10/5/2012	1145	9.4	7.0	0.65	5.3	52.7	160.5	0.008	51	0.38	2,781.31	System optimized - well adjustments
10/5/2012	0:00	10/12/2012	930	32.0	6.4	0.65	12.5	13.5	160.5	0.005	69	0.31	2,781.62	System down for ISCO
10/12/2012	0:00	10/26/2012	1200	104.0	9.1	0.65	36.8	33.6	160.5	0.033	0	0.00	2,781.62	System restart after ISCO
10/26/2012	0:00	11/2/2012	1429	96.8	25.3	0.65	39.7	40.8	160.5	0.043	149	6.48	2,788.10	Opened H1 and H2, turned off H3 and H4. Readings prior to and after optimization indicate high concentrations at the D port.
11/2/2012	0:00	11/16/2012	900	56.7	36.2	0.65	30.2	26.0	160.5	0.021	39	0.82	2,788.93	Water in A Port - Power out upon arrival (numerous power outages in Rockmart recently). System did not call - checked phone system and reset. Increased ppm at the C and D Ports (after carbon). V-3, V-4, V-5 V-7 and V-7D on. All wells off except H-1 and H-2.
11/16/2012	9:00	11/16/2012	1430										2,788.93	System shut down manually
12/14/2012	10:00	12/14/2012	13:00	50.0	28.9	0.65	25.6	29.9	160.5	0.021	3.00	0.06	2,788.99	System restarted
12/14/2012	13:00	12/21/2012	11:00	28.9	2.7	0.65	10.3	40.0	160.5	0.011	166.00	1.83	2,790.82	
12/21/2012	11:00	12/21/2012	--	2.7	0.0	0.65	0.9	0.0	160.5	0.000	0.00	0.00	2,790.82	
12/21/2012	--	2/15/2013	8:45	0.0	0.6	0.65	0.2	0.0	160.5	0.000	1,341.75	0.00	2,790.82	
2/15/2013	8:45	2/15/2013	11:45	0.6	0.0	0.65	0.2	18.4	160.5	0.000	3.00	0.00	2,790.82	System shut down on 2/8/13 due to failed switch
2/15/2013	11:45	2/22/2013	8:57	0.0	0.0	0.65	0.0	45.7	160.5	0.000	165.20	0.00	2,790.82	
2/22/2013	8:57	2/22/2013	--	0.0	0.0	0.65	0.0	28.5	160.5	0.000	0.00	0.00	2,790.82	
2/22/2013	--	3/1/2013	10:00	0.0	0.0	0.65	0.0	0.0	160.5	0.000	169.05	0.00	2,790.82	
3/1/2013	10:00	3/1/2013	14:30	0.0	0.0	0.65	0.0	65.4	160.5	0.000	4.50	0.00	2,790.82	System restarted
3/1/2013	14:30	3/8/2013	8:51	0.0	0.0	0.65	0.0	51.5	160.5	0.000	162.35	0.00	2,790.82	
3/8/2013	8:51	3/8/2013	14:16	0.0	0.0	0.65	0.0	20.2	160.5	0.000	5.42	0.00	2,790.82	
3/8/2013	14:16	4/2/2013	9:00	0.0	0.0	0.65	0.0	89.9	160.5	0.000	594.73	0.00	2,790.82	
4/2/2013	9:00	4/2/2013	13:50	0.0	0.0	0.65	0.0	116.9	160.5	0.000	4.83	0.00	2,790.82	
4/2/2013	13:50	4/9/2013	10:40	0.0	0.0	0.65	0.0	98.0	160.5	0.000	164.83	0.00	2,790.82	
4/9/2013	10:40	4/9/2013	14:50	0.0	0.0	0.65	0.0	165.1	160.5	0.000	4.17	0.00	2,790.82	
4/9/2013	14:50	4/12/2013	12:30	0.0	0.0	0.65	0.0	309.4	160.5	0.000	69.67	0.00	2,790.82	
4/12/2013	12:30	4/12/2013	14:30	0.0	74.5	0.65	24.2	77.6	160.5	0.050	2.00	0.10	2,790.92	
4/12/2013	14:30	4/16/2013	9:00	74.5	55.0	0.65	42.1	62.6	160.5	0.071	90.50	6.40	2,797.32	
4/16/2013	9:00	4/16/2013	14:15	55.0	25.5	0.65	26.2	87.1	160.5	0.061	5.25	0.32	2,797.64	
4/16/2013	14:15	4/23/2013	8:45	25.5	26.6	0.65	16.9	67.7	160.5	0.031	162.50	5.01	2,802.65	
4/23/2013	8:45	4/23/2013	14:20	26.6	29.7	0.65	18.3	81.7	160.5	0.040	5.58	0.22	2,802.87	
4/23/2013	14:20	4/30/2013	8:57	29.7	29.8	0.65	19.3	356.7	160.5	0.185	162.62	30.13	2,833.00	
4/30/2013	8:57	4/30/2013	13:45	29.8	11.5	0.65	13.4	27.3	160.5	0.010	4.80	0.05	2,833.05	
4/30/2013	13:45	5/7/2013	8:55	11.5	0.0	0.65	3.7	297.3	160.5	0.030	163.17	4.87	2,837.92	System shut down - SVE blower malfunction
5/7/2013	8:55	7/17/2013	10:00	0.0	63.8	0.65	20.7	0.0	160.5	0.000	0.00	0.00	2,837.92	
7/17/2013	10:00	7/17/2013	13:45	63.8	68.4	0.65	43.0	48.4	160.5	0.056	3.75	0.21	2,838.13	New blower installed, system restarted
7/17/2013	13:45	7/20/2013	17:10	68.4	0.0	0.65	22.2	49.1	160.5	0.029	75.42	2.21	2,840.34	System shut down - power outage
7/20/2013	17:10	8/2/2013	13:30	0.0	757.0	0.65	246.0	53.8	160.5	0.356	0.00	0.00	2,840.34	System shut down - semiannual sampling event
8/2/2013	13:30	8/2/2013	21:45	757.0	757.0	0.65	492.1	53.8	160.5	0.711	8.25	5.87	2,846.21	System restarted and then shut down - power outage
8/2/2013	21:45	8/20/2013	11:15	757.0	383.0	0.65	370.5	859.0	160.5	8.548	0.00	0.00	2,846.21	
8/20/2013	11:15	8/20/2013	14:30	383.0	19.7	0.65	130.9	396.7	160.5	1.394	3.25	4.53	2,850.74	
8/20/2013	14:30	9/24/2013	10:00	19.7	73.7	0.65	30.4	59.1	160.5	0.048	835.50	40.28	2,891.02	
9/24/2013	10:00	9/24/2013	15:30	73.7	94.8	0.65	54.8	59.1	160.5	0.087	5.50	0.48	2,891.50	

Table 2-1
Murata SVE Mass Removal
VIRP
Murata Electronics, N.A. (HSI No. 10771)
Rockmart, Georgia

Start Date	Start Time	End Date	End Time	Start PID (ppm)	End PID (ppm)	PID Conversion Factor	Adjusted VOC Concentration (ppm)	Standardized Flow Rate (scfm)	Assumed Molecular Weight	Mass Removal Rate (lbs/hr)	Operation Hours	Mass VOC Removed (lbs)	Cumulative VOC Removed (lbs)	Comments
9/24/2013	15:30	12/5/2013	9:00	94.8	78.0	0.65	56.2	72.9	160.5	0.110	1,721.50	189.36	3,080.86	
12/5/2013	9:00	12/5/2013	14:46	78.0	24.5	0.65	33.3	72.9	160.5	0.065	5.77	0.38	3,081.24	
12/5/2013	14:46	12/9/2013	15:08	24.5	0.0	0.65	8.0	77.6	160.5	0.017	96.37	1.60	3,082.84	System shut down - stuck KOP float switch
12/9/2013	15:08	12/10/2013	7:30	0.0	24.5	0.65	8.0	81.1	160.5	0.017	16.37	0.28	3,083.12	System restarted
12/10/2013	7:30	12/12/2013	7:30	24.5	55.7	0.65	26.1	51.9	160.5	0.036	0.00	0.00	3,083.12	
12/12/2013	7:30	12/12/2013	14:13	55.7	89.0	0.65	47.0	44.4	160.5	0.056	6.72	0.38	3,083.50	
12/12/2013	14:13	12/19/2013	7:14	89.0	42.5	0.65	42.7	237.3	160.5	0.272	161.02	43.87	3,127.36	
12/19/2013	7:14	12/19/2013	11:00	42.5	21.0	0.65	20.6	55.6	160.5	0.031	3.77	0.12	3,127.48	
12/19/2013	11:00	12/26/2013	7:30	21.0	36.5	0.65	18.7	261.6	160.5	0.131	164.50	21.60	3,149.08	
12/26/2013	7:30	12/26/2013	13:41	36.5	55.5	0.65	29.9	53.8	160.5	0.043	6.18	0.27	3,149.35	
12/26/2013	13:41	1/3/2014	7:14	55.5	26.0	0.65	26.5	306.0	160.5	0.218	185.55	40.40	3,189.75	
1/3/2014	7:14	1/3/2014	13:15	26.0	95.5	0.65	39.5	30.6	160.5	0.032	6.02	0.20	3,189.94	
1/3/2014	13:15	1/9/2014	7:00	95.5	54.9	0.65	48.9	57.5	160.5	0.075	137.75	10.40	3,200.34	
1/9/2014	7:00	1/9/2014	13:25	54.9	81.9	0.65	44.5	64.8	160.5	0.077	6.42	0.50	3,200.83	
1/9/2014	13:25	1/16/2014	7:00	81.9	77.0	0.65	51.6	54.4	160.5	0.075	161.58	12.19	3,213.02	
1/16/2014	7:00	1/16/2014	13:25	77.0	93.0	0.65	55.3	54.8	160.5	0.081	6.42	0.52	3,213.55	Velocity at knockout tank unstable
1/16/2014	13:25	1/23/2014	7:00	93.0	59.6	0.65	49.6	57.4	160.5	0.077	161.58	12.37	3,225.91	
1/23/2014	7:00	1/23/2014	13:11	59.6	86.9	0.65	47.6	54.4	160.5	0.070	6.18	0.43	3,226.34	
1/23/2014	13:11	1/31/2014	7:25	86.9	24.0	0.65	36.0	54.7	160.5	0.053	186.23	9.86	3,236.21	
1/31/2014	7:25	1/31/2014	13:10	24.0	90.5	0.65	37.2	54.2	160.5	0.054	5.75	0.31	3,236.52	
1/31/2014	13:10	2/6/2014	7:15	90.5	83.0	0.65	56.4	54.1	160.5	0.082	138.08	11.31	3,247.83	
2/6/2014	7:15	2/6/2014	13:15	83.0	67.1	0.65	48.8	54.5	160.5	0.071	6.00	0.43	3,248.26	
2/6/2014	13:15	2/20/2014	8:45	67.1	34.5	0.65	33.0	79.3	160.5	0.070	331.50	23.32	3,271.59	
2/20/2014	8:45	2/20/2014	13:07	34.5	86.0	0.65	39.2	93.2	160.5	0.098	4.37	0.43	3,272.01	
2/20/2014	13:07	2/27/2014	7:15	86.0	45.9	0.65	42.9	196.8	160.5	0.227	162.13	36.75	3,308.76	
2/27/2014	7:15	2/27/2014	13:10	45.9	79.9	0.65	40.9	215.7	160.5	0.237	5.92	1.40	3,310.16	
2/27/2014	13:10	3/6/2014	21:30	79.9	0.0	0.65	26.0	0.0	160.5	0.000	176.33	0.00	3,310.16	
3/6/2014	21:30	3/6/2014	--	0.0	0.0	0.65	0.0	0.0	160.5	0.000	0.00	0.00	3,310.16	System shut down - power surge during storm
3/6/2014	--	3/7/2014	7:14	0.0	27.7	0.65	9.0	261.8	160.5	0.063	0.00	0.00	3,310.16	
3/7/2014	7:14	3/7/2014	13:26	27.7	51.4	0.65	25.7	309.0	160.5	0.213	6.20	1.32	3,311.49	System restarted
3/7/2014	13:26	3/13/2014	7:36	51.4	62.1	0.65	36.9	50.3	160.5	0.050	138.17	6.89	3,318.38	
3/13/2014	7:36	3/13/2014	13:10	62.1	84.3	0.65	47.6	61.3	160.5	0.078	5.57	0.44	3,318.81	
3/13/2014	13:10	3/17/2014	12:00	84.3	140.0	0.65	72.9	76.4	160.5	0.150	94.83	14.19	3,333.00	
3/17/2014	12:00	3/17/2014	15:00	140.0	11.7	0.65	49.3	154.1	160.5	0.204	3.00	0.61	3,333.61	System shut down 3/16 (power surge); 3/17 restart
3/17/2014	15:00	3/27/2014	7:25	11.7	124.0	0.65	44.1	48.6	160.5	0.058	232.42	13.39	3,347.00	
3/27/2014	7:25	3/27/2014	13:05	124.0	196.0	0.65	104.0	48.7	160.5	0.136	5.67	0.77	3,347.77	Hour meter stopped functioning at 30870 hours
3/27/2014	13:05	4/3/2014	7:21	196.0	159.0	0.65	115.4	53.5	160.5	0.166	162.27	26.89	3,374.66	
4/3/2014	7:21	4/3/2014	13:07	159.0	132.0	0.65	94.6	54.5	160.5	0.138	5.77	0.80	3,375.46	Hour meter stopped functioning at 30870 hours
4/3/2014	13:07	4/10/2014	7:12	132.0	74.0	0.65	67.0	253.5	160.5	0.456	162.08	73.88	3,449.34	
4/10/2014	7:12	4/10/2014	13:05	74.0	90.1	0.65	53.3	16.2	160.5	0.023	5.88	0.14	3,449.48	Hour meter stopped functioning at 30870 hours
4/10/2014	13:05	4/17/2014	7:10	90.1	81.8	0.65	55.9	50.2	160.5	0.075	162.08	12.20	3,461.68	
4/17/2014	7:10	4/17/2014	13:00	81.8	108.0	0.65	61.7	68.3	160.5	0.113	5.83	0.66	3,462.34	Hour meter stopped functioning at 30870 hours; meter reset to 0.00 on 4/15/14
4/17/2014	13:00	4/24/2014	7:17	108.0	79.7	0.65	61.0	51.6	160.5	0.085	162.28	13.73	3,476.07	
4/24/2014	7:17	4/24/2014	13:05	79.7	82.3	0.65	52.7	53.6	160.5	0.076	5.80	0.44	3,476.51	
4/24/2014	13:05	5/2/2014	13:00	82.3	89.5	0.65	55.8	15.7	160.5	0.024	191.92	4.52	3,481.03	
5/2/2014	13:00	5/27/2014	9:00	89.5	25.2	0.65	37.3	69.1	160.5	0.069	596.00	41.25	3,522.28	
5/27/2014	9:00	5/27/2014	12:00	25.2	164.0	0.65	61.5	35.2	160.5	0.058	3.00	0.17	3,522.45	
5/27/2014	12:00	6/13/2014	9:30	164.0	86.5	0.65	81.4	31.7	160.5	0.069	405.50	28.15	3,550.60	
6/13/2014	9:30	6/13/2014	10:45	86.5	82.1	0.65	54.8	67.2	160.5	0.099	1.25	0.12	3,550.73	
6/13/2014	10:45	6/20/2014	8:35	82.1	460.0	0.65	176.2	53.0	160.5	0.251	165.83	41.62	3,592.34	
6/20/2014	8:35	6/20/2014	9:35	460.0	25.4	0.65	157.8	40.0	160.5	0.170	1.00	0.17	3,592.51	
6/20/2014	9:35	6/26/2014	11:00	25.4	400.0	0.65	138.3	92.6	160.5	0.344	145.42	49.99	3,642.51	
6/26/2014	11:00	6/26/2014	13:30	400.0	87.6	0.65	158.5	99.0	160.5	0.421	2.50	1.05	3,643.56	
6/26/2014	13:30	7/3/2014	8:30	87.6	305.0	0.65	127.6	67.1	160.5	0.230	163.00	37.50	3,681.06	
7/3/2014	8:30	7/3/2014	11:20	305.0	210.0	0.65	167.4	40.4	160.5	0.182	2.83	0.51	3,681.58	
7/3/2014	11:20	7/10/2014	8:00	210.0	298.0	0.65	165.1	47.9	160.5	0.213	164.67	34.99	3,716.57	
7/10/2014	8:00	7/10/2014	11:45	298.0	100.0	0.65	129.4	38.0	160.5	0.132	3.75	0.50	3,717.07	
7/10/2014	11:45	7/17/2014	11:00	100.0	290.0	0.65	126.8	11.2	160.5	0.038	167.25	6.38	3,723.45	
7/17/2014	11:00	7/17/2014	13:30	290.0	105.0	0.65	128.4	38.4	160.5	0.132	2.50	0.33	3,723.78	
7/17/2014	13:30	8/22/2014	10:00	105.0	64.7	0.65	55.2	41.7	160.5	0.062	860.50	53.14	3,776.92	
8/22/2014	10:00	8/22/2014	13:00	64.7	60.1	0.65	40.6	38.9	160.5	0.042	3.00	0.13	3,777.05	
8/22/2014	13:00	9/4/2014	11:00	60.1	53.8	0.65	37.0	110.2	160.5	0.110	310.00	33.97	3,811.02	
9/4/2014	11:00	9/4/2014	12:40	53.8	31.1	0.65	27.6	116.9	160.5	0.087	1.67	0.14	3,811.17	
9/4/2014	12:40	9/11/2014	8:00	31.1	43.5	0.65	24.2	153.9	160.5	0.100	163.33	16.38	3,827.54	
9/11/2014	8:00	9/19/2014	12:40	43.5	39.7	0.65	27.0	159.9	160.5	0.116	196.67	22.83	3,850.38	
9/19/2014	12:40	10/2/2014	9:30	39.7	37.7	0.65	25.2	101.0	160.5	0.068	308.83	21.08	3,871.45	
10/2/2014	9:30	10/2/2014	11:52	37.7	33.8	0.65	23.2	91.1	160.5	0.057	2.37	0.13	3,871.59	
10/2/2014	11:52	10/9/2014	10:25	33.8	28.4	0.65	20.2	96.1	160.5	0.052	166.55	8.69	3,880.28	
10/9/2014	10:25	10/14/2014	12:00	28.4	0.0	0.65	9.2	0.0	160.5	0.000	121.58	0.00	3,880.28	System down on 10/14/14 due to power outage and blower malfunction.
10/14/2014	12:00	12/17/2014	12:00	0.0	0.0	0.65	0.0	0.0	160.5	0.000	1,536.00	0.00	3,880.28	System restarted on 12/17/14
12/17/2014	12:00	12/31/2014	10:05	0.0	31.6	0.65	10.3	69.7	160.5	0.019	334.08	6.43	3,886.71	
12/31/2014	10:05	1/8/2015	15:15	31.6	49.8	0.65	26.5	110.7	160.5	0.079	197.17	15.52	3,902.23	
1/8/2015	15:15	1/22/2015	14:50	49.8	63.1	0.65	36.7	110.0	160.5	0.108	335.58	36.38	3,938.61	
1/22/2015	14:50	1/30/2015	8:50	63.1	81.4	0.65	47.0	93.3	160.5	0.118	186.00	21.90	3,960.50	
1/30/2015	8:50	2/18/2015	10:00	81.4	8.1	0.65	29.1	106.7	160.5	0.083	457.17	38.10	3,998.60	
2/18/2015	10:00	3/16/2015	12:15	8.1	98.0	0.65	34.5	78.8	160.5	0.073	626.25	45.68	4,044.29	
3/16/2015	12:15	4/27/2015	9:45	98.0	92.8	0.65	62.0	62.9	160.5	0.105	1,005.50	105.36	4,149.64	
4/27/2015	9:45	5/20/2015	10:00	92.8	135.0	0.65	74.0	57.0	160.5	0.113	552.25	62.61	4,212.25	
5/20/2015	10:00	6/26/2015	9:45	135.0	75.8	0.65	68.5	68.4	160.5	0.126	887.75	111.75	4,324.00	
6/26/2015	9:45	7/10/2015	9:00	75.8	0.0	0.65	24.6	86.7	160.5	0.057	335.25	19.23	4,343.24	
7/10/2015	9:00	7/14/2015	10:00	0.0	0.0	0.65	0.0	73.8	160.5	0.000	97.00	0.00	4,343.24	System shut down due to injection and 0 ppm readings
7/14/2015	10:00	8/24/2015	10:00	0.0	0.0	0.65	0.0	37.3	160.5	0.000	984.00	0.00	4,343.24	
8/24/2015	10:00	9/9/2015	9:55	0.0	52.1	0.65	16.9	77.3	160.5	0.035	383.92	13.50	4,356.74	
9/9/2015	9:55	10/6/2015	10:40	52.1	101.0	0.65	49.8	76.2	160.5	0.102	648.75	66.09	4,422.83	
10/6/2015	10:40	11/5/2015	9:25	101.0	116.0	0.65	70.5	101.3	160.5	0.192	718.75	137.93	4,560.76	
11/5/2015	9:25	12/15/2015	9:07	116.0	139.0	0.65	82.9	79.3	160.5	0.177	959.70	169.50	4,730.26	
12/15/2015	9:07	1/8/2016	9:50	139.0	21.8	0.65	52.3	98.3	160.5	0.138	576.72	79.59	4,809.85	
1/8/2016	9:50	1/8/2016	13:45	21.8	64.6	0.65	28.1	89.9	160.5	0.068	3.92	0.27	4,810.12	
1/8/2016	13:45	2/16/2016	10:20	64.6	36.8	0.65	33.0	140.6	160.5	0.124	932.58	116.06	4,926.18	
2/16/2016	10:20	2/16/2016	13:05	36.8	44.0	0.65	26.3	61.7	160.5	0.044	2.75	0.12	4,926.30	System shut down 2/8/16 due to being filled with mud; resumed 2/12/16
2/16/2016	13:05	3/4/2016	9:15	44.0	25.4	0.65	22.6	94.0	160.5	0.057	404.17	23.02	4,949.32	
3/4/2016	9:15	6/23/2016	11:15	25.4	7.0	0.65	10.5	106.1	160.5	0.030	2,666.00	79.98	5,029.30	
6/23/2016	11:15	7/11/2016	13:50	7.0	0.0	0.65	2.3	116.4	160.5	0.007	434.58	3.09	5,032.39	
7/11/2016	13:50	8/19/2016	10:55	0.0	60.9	0.65	19.8	93.4	160.5	0.050	933.08	46.32	5,078.72	
8/19/2016	10:55	10/7/2016	14:25	60.9	0.0	0.65	19.8	10.9	160.5	0.006	1,179.50	6.87	5,085.58	
10/7/2016	14:25	11/2/2016	12:00	0.0	7.0	0.65	2.3	7.9	160.5	0.000	621.58	0.30	5,085.88	
11/2/2016	12:00	12/23/2016	10:30	7.0	0.0	0.65	2.3	125.0	160.5	0.008	1,222.50	9.34	5,095.22	
12/23/2016	10:30	1/12/2017	10:05	0.0	2.3	0.65	0.7	133.8	160.5	0.003	479.58	1.29	5,096.51	
1/12/2017	10:05	2/20/2017	12:55	2.3	0.0	0.65	0.7	181.5	160.5	0.004	938.83	3.42	5,099.93	

Notes: **Prepared By:** **Checked By:**

2/3/07 through present. PID Conversion Factors and Assumed Molecular Weights are based on the 2/13/07 Microseeps sample results.

The following factors are included in the mass removal rate calculation:

0.00268 is a conversion constant derived from : $(1/10^6$ ppmv) x (60 min/hr) x (1g-mole/0.0224 m^3)

0.02832 is a conversion constant to convert scfm to m^3/min

2.205 is a conversion factor from kg to lbs

0.001 is a conversion factor from kg to g

Table 2-2
Summary of Chemical Injections (gallons)
VIRP
Murata Electronics N.A., Inc. (HSI No. 10771)
Rockmart, GA

Date	MW-3	MW-5	MW-9	MW-10	MW-11	MW-12	MW-13	MW-16	MW-17	MW-19	MW-20	MW-22	MW-23*	MW-27	MW-28	MW-29	TIP-01	TIP-02	TIP-03	TIP-04	TIP-05	TIP-06	TIP-07	TIP-08	TIP-09	TIP-10	TIP-11	TIP-12	Total by date
03/06/07	--	1,385	--	--	--	--	--	--	--	--	1,420	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	2,805
08/13/07	--	1,500	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,500
08/14/07	--	--	--	--	--	--	--	--	--	--	1,500	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,500
10/16/07	--	--	--	--	--	--	--	987	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	987
10/17/07	964	--	547	--	--	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,511
10/18/07	539	--	270	--	--	--	--	513	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,322
10/19/07	--	--	230	--	--	--	--	--	--	500	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	730
10/22/07	--	--	--	--	--	--	--	--	483	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	483
10/23/07	--	--	--	--	509	--	460	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	969
Total in 2007	**1,503**	**2,885**	**1,047**	**0**	**509**	**0**	**460**	**1,500**	**483**	**500**	**2,920**	**0**	**0**	**0**	**0**	**0**													**11,807**
01/11/08	--	359	216	--	--	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	575
01/14/08	--	567	556	--	--	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,123
01/15/08	--	74	868	--	--	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	942
01/16/08	--	--	949	--	--	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	949
01/17/08	--	--	467	--	--	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	467
01/21/08	--	--	--	--	--	--	--	--	--	--	1,014	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,014
01/22/08	--	--	--	--	1,000	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,000
01/23/08	1,050	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,050
01/24/08	990	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	990
01/25/08	632	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	632
01/28/08	349	--	--	--	--	--	--	--	213	--	--	--	18	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	580
01/29/08	--	--	--	--	--	--	--	1,229	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,229
01/30/08	--	--	--	--	--	--	--	1,498	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,498
01/31/08	--	--	--	--	--	--	1,000	273	--	245	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,518
02/01/08	--	--	--	--	--	--	--	--	--	959	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	959
02/04/08	--	--	--	--	--	--	--	--	--	744	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	744
02/05/08	--	--	--	--	--	--	--	--	--	511	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	511
02/06/08	--	--	--	--	--	--	--	--	--	--	--	1,095	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,095
02/07/08	--	--	--	245	--	--	--	--	--	--	--	911	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,156
02/08/08	--	--	--	1,004	--	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,004
02/11/08	--	--	--	751	--	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	751
07/09/08	--	830	916	500	--	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	2,246
07/10/08	500	170	87	--	--	--	--	--	148	500	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,405
07/11/08	--	--	--	--	500	--	--	--	250	--	719	500	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,969
07/14/08	--	--	--	--	--	--	895	1,000	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,895
07/15/08	--	--	--	--	--	--	105	--	--	--	1,340	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,445
07/16/08	--	--	--	--	--	--		448	--	--	1,441	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,889
07/18/08	--	500	500	--	--	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,000
Total in 2008	**3,521**	**2,500**	**4,559**	**2,500**	**1,500**	**0**	**2,000**	**4,448**	**611**	**2,959**	**4,514**	**2,506**	**18**	**0**	**0**	**0**													**31,636**
03/10/09	500	480	500	420	--	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,900
03/11/09	--	--	--	--	1,735	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,735
03/12/09	--	--	--	--	400	--	--	--	19	150	497	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,066
03/13/09	--	--	--	--	--	--	--	--	--	--	--	930	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	930
03/16/09	--	--	--	--	874	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	874
03/17/09	--	--	--	--	526	--	649	129	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,304
03/18/09	--	--	--	--	--	--	473	469	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	942
03/19/09	--	--	--	--	--	--	349	810	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,159
03/20/09	--	--	--	--	--	--	--	810	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	810
09/23/09	--	1,070	--	500	--	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,570
09/24/09	418	--	500	--	--	--	--	--	168	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,086
09/25/09	84	--	--	--	--	--	--	--	389	469	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	942
09/28/09	--	--	--	--	--	--	--	--	437	531	190	268	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,426
09/29/09	--	--	--	--	--	--	--	--	--	--	810	1,232	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	2,042
09/30/09	--	--	--	--	500	--	--	1,000	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,500
Total in 2009	**1,002**	**1,550**	**1,000**	**920**	**4,035**	**0**	**1,471**	**3,218**	**1,013**	**1,150**	**1,497**	**2,430**	**0**	**0**	**0**	**0**													**19,286**

Table 2-2
Summary of Chemical Injections (gallons)
VIRP
Murata Electronics N.A., Inc. (HSI No. 10771)
Rockmart, GA

Date	MW-3	MW-5	MW-9	MW-10	MW-11	MW-12	MW-13	MW-16	MW-17	MW-19	MW-20	MW-22	MW-23*	MW-27	MW-28	MW-29	TIP-01	TIP-02	TIP-03	TIP-04	TIP-05	TIP-06	TIP-07	TIP-08	TIP-09	TIP-10	TIP-11	TIP-12	Total by date
07/12/10	--	--	--	--	340	--	--	--	--	--	--	--	9	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	349
07/13/10	500	--	--	--	733	--	--	--	--	--	--	--	28	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,261
07/14/10	--	--	--	--	1,555	--	--	--	--	--	--	--	29	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,584
07/15/10	--	189	214	389	1,633	--	--	--	90	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	2,515
07/16/10	--	818	784	500	--	--	--	--	233	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	2,335
07/19/10	--	1,000	1,000	--	--	--	--	--	853	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	2,853
07/20/10	--	--	--	--	--	43	--	318	1,000	375	391	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	2,127
07/22/10	--	--	--	--	--	--	--	888	--	1,000	1,125	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	3,013
07/23/10	--	--	--	--	--	--	--	1,000	--	--	2,000	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	3,000
07/26/10	--	--	--	--	2,000	--	--	--	--	--	--	500	38	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	2,538
07/27/10	--	--	--	--	2,049	--	--	1,591	--	1,463	2,316	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	7,419
07/28/10	--	--	--	--	--	--	--	2,492	--	2,002	2,957	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	7,451
10/12/10	261	--	--	500	331	--	--	--	373	--	--	--	30	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,495
10/13/10	718	409		--	864	--	--	--	942	--	--	--	53	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	2,986
10/14/10	1,028	1,000	488	--	1,648	--	--	--	1,000	--	--	--	66	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	5,230
10/15/10	1,718	--	817	--	2,219	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	4,754
10/18/10	--	--	--	--	--	--	--	763	--	646	977	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	2,386
10/19/10	--	--	--	--	--	--	--	1,080	--	921	1,426	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	3,427
10/22/10	--	--	--	--	--	--	--	1,809	--	1,409	2,224	475	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	5,917
10/27/10	--	--	--	--	--	--	--	2,056	--	1,522	2,567	735	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	6,880
Total in 2010	**4,225**	**3,416**	**3,303**	**1,389**	**13,372**	**43**	**0**	**11,997**	**4,491**	**9,338**	**15,983**	**1,710**	**253**	**0**	**0**	**0**													**69,520**
04/05/11	96	141	92	111	--	--	--	--	72	--	--	--	--	8	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	520
04/06/11	404	491	359	389	--	--	--	--	881	--	--	--	--	53	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	2,577
04/07/11	--	368	--	--	--	--	--	246	142	255	278	257	--	6	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,552
04/08/11	--	--	--	--	--	--	--	296	--	340	361	253	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,250
04/11/11	--	--	--	--	--	9	--	661	--	555	774	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,999
04/12/11	--	--	--	--	--	--	--	824	--	114	918	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,856
04/13/11	--	--	--	--	--	--	--	--	--	--	1,011	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,011
04/14/11	--	--	--	--	1,492	--	--	--	--	--	--	--	--	9	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,501
04/15/11	--	--	--	--	736	--	--	--	--	--	--	--	--	30	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	766
04/20/11	--	--	--	--	660	--	--	--	--	--	--	--	--	78	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	738
04/21/11	--	--	--	--	141	--	--	--	--	--	--	--	--	434	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	575
04/22/11	--	--	--	--	219	--	--	--	--	--	--	--	--	274	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	493
10/03/11	92	96	127	91	--	--	--	--	98	--	--	--	30	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	534
10/04/11	310	455	373	409	--	--	--	--	392	--	--	--	23	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,962
10/05/11	535		--	--	--	--	--	--	535	--	--	--	13	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,083
10/06/11		--	--	--	--	--	--	383	--	426	674	266	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,749
10/07/11	--	--	--	--	--	--	--	460	--	407	561	234	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,662
10/10/11	--	--	--	--	--	--	--	541	--	480	659	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,680
10/11/11	--	--	--	--	--	--	--	306	--	--	969	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,275
10/12/11	--	--	--	--	1,156	--	--	--	--	--	--	--	--	861	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	2,017
10/13/11	--	--	--	--	844	--	--	--	--	--	--	--	--	1,100	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,944
Total in 2011	**1,437**	**1,551**	**951**	**1,000**	**5,248**	**9**	**0**	**3,717**	**2,120**	**2,577**	**6,205**	**1,010**	**66**	**2,853**	**0**	**0**													**28,744**

Table 2-2
Summary of Chemical Injections (gallons)
VIRP
Murata Electronics N.A., Inc. (HSI No. 10771)
Rockmart, GA

Date	MW-3	MW-5	MW-9	MW-10	MW-11	MW-12	MW-13	MW-16	MW-17	MW-19	MW-20	MW-22	MW-23*	MW-27	MW-28	MW-29	TIP-01	TIP-02	TIP-03	TIP-04	TIP-05	TIP-06	TIP-07	TIP-08	TIP-09	TIP-10	TIP-11	TIP-12	Total by date
04/02/12	243	165	227	286	--	--	--	--	43	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	964
04/03/12	257	662	273	214	--	--	--	--	188	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,594
04/04/12	--	173	--	--	--	--	--	--	472	365	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,010
04/09/12	--	--	--	--	--	--	--	--	297	213	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	510
04/10/12	--	--	--	--	--	23	--	321	--	542	762	258	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,906
04/11/12	--	--	--	--	--	--	--	501	--	130	927	340	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,898
04/12/12	142	--	--	--	178	--	--	428	--	--	561	152	7	156	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,624
04/13/12	495	--	--	--	705	--	--	--	--	--	--	--	143	609	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,952
04/23/12	626	--	--	--	849	--	--	--	--	--	--	--	218	768	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	2,461
04/24/12	237	--	--	--	268	--	--	--	--	--	--	--	228	1,304	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	2,037
04/25/12	--	--	--	--	--	--	--	--	--	--	--	--	295	1,831	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	2,126
04/26/12	--	--	--	--	--	--	--	--	--	--	--	--	173	1,329	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,502
10/08/12	--	137	188	145	--	--	--	--	20	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	490
10/09/12	99	496	312	355	--	--	--	--	226	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,488
10/10/12	401	367	--	--	--	--	--	--	754	--	--	--	112	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,634
10/11/12	--	--	--	--	--	--	--	--	--	957	--	--	170	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,127
10/12/12	--	--	--	--	--	53	--	226	--	43	--	160	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	482
10/15/12	--	--	--	--	--	--	--	421	--	--	754	97	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,272
10/16/12	--	--	--	--	--	--	--	363	--	133	1,001	138	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,635
10/17/12	--	--	--	--	--	--	--	121	--	187	275	380	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	963
10/18/12	--	--	--	--	382	--	--	--	--	--	--	--	--	161	--	407	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	950
10/19/12	--	--	--	--	754	--	--	--	--	--	--	--	--	318	--	953	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	2,025
10/22/12	--	--	--	--	554	--	--	--	--	--	--	--	--	230	--	700	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,484
10/23/12	--	--	--	--	743	--	--	--	--	--	--	--	102	376	--	292	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,513
10/24/12	163	--	--	--	572	--	--	--	--	--	--	--	117	388	--	221	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,461
10/25/12	365	--	--	--	--	--	--	--	--	--	--	--	245	469	--	428	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	1,507
Total in 2012	**3,028**	**2,000**	**1,000**	**1,000**	**5,005**	**76**	**0**	**2,381**	**2,000**	**2,570**	**4,280**	**1,525**	**1,810**	**7,939**	**0**	**3,001**													**37,615**
05/29/13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	339	1,170	--	--	--	--	--	--	--	--	--	1,509
05/30/13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	330	170	--	--	--	--	--	--	--	--	--	500
05/31/13	--	--	--	--	--	--	--	--	--	--	--	--	50	218	8	222	997	493	--	--	--	--	--	--	--	--	--	--	1,988
06/03/13	--	--	--	--	--	--	--	--	--	--	--	--	440	1,282	--	1,278	--	--	--	--	--	--	--	--	--	--	--	--	3,000
06/04/13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,000	1,000	1,000	--	--	--	--	--	--	3,000
06/05/13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	790	1,000	710	2,500
06/06/13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,021	263	--	210	--	290	1,784
06/07/13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	649	224	127	--	--	--	1,000
11/19/13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	130	945	930	--	2,005
11/20/13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	487	--	859	70	589	2,005
11/21/13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	423	267	946	--	411	2,047
11/22/13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,000	--	1,026	2,026
11/25/13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2,750	2,750
Total in 2013	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**490**	**1,500**	**8**	**1,500**	**997**	**1,162**	**1,340**	**1,000**	**1,000**	**1,000**	**1,670**	**1,397**	**524**	**4,750**	**2,000**	**5,776**	**26,114**
06/16/14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	332	--	275	187	794
06/17/14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	982	--	--	--	--	--	--	--	--	88	--	172	218	1,460
06/18/14	--	--	--	--	--	--	195	--	--	--	203	--	--	--	--	--	--	--	659	--	--	--	--	--	--	--	--	--	1,057
06/19/14	--	--	--	--	--	--	1,025	--	--	--	1,429	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2,454
11/10/14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	500	--	--	500	--	--	--	--	--	--	--	--	--	1,000
11/11/14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	525	38	285	500	--	--	1,348
11/12/14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	487	240	--	525	525	1,777
11/13/14	--	--	--	--	--	--	500	--	--	--	500	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,000
Total in 2014	**0**	**0**	**0**	**0**	**0**	**0**	**1,720**	**0**	**0**	**0**	**2,132**	**0**	**0**	**0**	**0**	**1,482**	**0**	**0**	**1,159**	**0**	**0**	**0**	**525**	**525**	**945**	**500**	**972**	**930**	**10,890**
02/23/15	--	--	--	--	--	--	560	--	--	--	526	--	--	--	--	--	--	--	400	--	--	--	--	--	--	--	--	--	1,486
02/24/15	--	--	--	--	--	--	494	--	--	--	531	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,025
02/26/15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	831	--	--	--	--	--	--	--	--	--	--	--	--	831
02/27/15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	437	--	--	--	--	--	437
03/02/15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	500	--	492	488	1,480
07/20/15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	408	--	--	--	--	--	--	--	--	--	408
07/21/15	--	--	--	--	--	--	1,010	--	--	--	1,024	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2,034
07/22/15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	504	--	513	514	1,531
07/23/15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	836	--	--	--	--	--	--	400	--	--	--	--	--	1,236

Table 2-2
Summary of Chemical Injections (gallons)
VIRP
Murata Electronics N.A., Inc. (HSI No. 10771)
Rockmart, GA

Date	MW-3	MW-5	MW-9	MW-10	MW-11	MW-12	MW-13	MW-16	MW-17	MW-19	MW-20	MW-22	MW-23*	MW-27	MW-28	MW-29	TIP-01	TIP-02	TIP-03	TIP-04	TIP-05	TIP-06	TIP-07	TIP-08	TIP-09	TIP-10	TIP-11	TIP-12	Total by date
Total in 2015	**0**	**0**	**0**	**0**	**0**	**0**	**2,064**	**0**	**0**	**0**	**2,081**	**0**	**0**	**0**	**0**	**1,667**	**0**	**0**	**808**	**0**	**0**	**0**	**837**	**0**	**1,004**	**0**	**1,005**	**1,002**	**10,468**
04/19/16	-	-	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	400	-	-	-	-	-	-	-	-	-	1,065
04/20/16	-	-	335	-	-	-	-	223	-	401	761	-	-	-	-	-	-	-	301	-	-	-	-	-	-	-	-	-	2,021
04/21/16	-	-	-	-	752	-	724	177	-	-	-	-	-	-	-	1,001	-	-		-	-	-	-	-	-	-	-	-	2,654
07/26/16	-	-	534	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	496	-	-	-	-	-	-	-	-	-	1,030
07/27/16	-	-	249	-	-	-	450	407	-	449	501	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,056
07/28/16	-	-	-	-	450	-	-	-	-	-	-	-	-	-	-	751	-	-	-	-	-	-	-	-	-	-	-	-	1,201
Total in 2016	**0**	**0**	**1,783**	**0**	**1,202**	**0**	**1,174**	**807**	**0**	**850**	**1,262**	**0**	**0**	**0**	**0**	**1,752**	**0**	**0**	**1,197**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10,027**
Total by well	**14,716**	**13,902**	**13,643**	**6,809**	**30,871**	**128**	**8,889**	**28,068**	**10,718**	**19,944**	**40,874**	**9,181**	**2,637**	**12,292**	**8**	**9,402**	**997**	**1,162**	**4,504**	**1,000**	**1,000**	**1,000**	**3,032**	**1,922**	**2,473**	**5,250**	**3,977**	**7,708**	**256,107**

Notes:
* An injection was attempted at MW-23, but the well would not readily accept the fluid.
NI- Not yet installed at the time of injection.

0.16

Table 3-1
Monitoring Well Groundwater Elevations
October 31, 2016
VIRP
Murata Electronics, N.A. (HSI No. 10771)
Rockmart, GA

Monitor Well	Top of Casing (ft MSL)	Screen Interval (ft)	October 31, 2016	
			Depth to Groundwater (ft)	Groundwater Elevation (ft MSL)
MW-1	497.96	36.50-56.50	DRY	NA
MW-2	493.44	26.50-36.50	DRY	NA
MW-3	491.85	32.50-47.50	41.89	449.96
MW-4	481.74	49.50-69.50	52.88	428.86
MW-5	490.00	48.50-73.50	51.83	438.17
MW-6	499.83	50.50-80.50	67.19	432.64
MW-7	489.98	63.45-73.45	58.62	431.36
MW-8	491.64	62.00-72.00	59.77	431.87
MW-9	491.20	49.00-59.00	54.36	436.84
MW-10	488.76	63.50-73.50	DRY	NA
MW-11	492.77	54.00-64.00	52.61	440.16
MW-12	497.66	Open Hole	56.95	440.71
MW-13	497.66	15.50-55.50	54.50	443.16
MW-14	469.86	29.00-39.00	NM	NA
MW-15	476.85	34.50-44.50	NM	NA
MW-16	497.63	61.94-75.66	DRY	NA
MW-17	492.75	65.11-75.11	47.88	444.87
MW-18	490.46	50.10-60.10	58.31	432.15
MW-19	497.72	53.20-63.20	65.72	432.00
MW-20	493.85	52.30-62.30	59.31	434.54
MW-22	496.60	60.00-80.00	63.37	433.23
MW-23	491.84	53.00-73.00	29.59	462.25
MW-24	485.86	58.00-68.00	NM	NA
MW-25	481.08	69.30-79.30	NM	NA
MW-26	499.94	74.00-89.00	44.92	455.02
MW-27	492.68	59.20-69.20	19.73	472.95
MW-28	491.36	Open Hole	6.62	484.74
MW-29	494.70	56.20-66.20	63.23	431.47
MW-A-1	477.72	63.20-73.20	NM	NA
MW-A-2	478.41	69.10-79.10	NM	NA
MW-A-3	479.02	63.50-73.50	NM	NA
MW-A-4	478.14	38.43-48.43	NM	NA
MW-A-5	477.32	50.80-60.80	NM	NA
MW-B-1	484.30	64.30-74.30	NM	NA
MW-B-2	491.40	79.10-91.10	NM	NA
MW-B-3	480.11	79.00-99.00	NM	NA
MW-B-4	483.25	79.30-99.30	NM	NA

Notes:
Elevation data represents survey completed on October 5, 2011 completed by Williams, Sweitzer and Barnum, Inc.
NA= Not Applicable
NM= Not Measured
DRY= Monitoring well is dry, no water in well
Monitoring Well MW-16 is a slanted well with screening under the building.

TABLE 3-2
Groundwater VOC Concentrations (ug/L)
VIRP
Murata Electronics N. A., Inc. (HSI No. 10771)
Rockmart, Georgia

Well No.	Installation Date	Sampling Date	Collected By	1,1,1 Trichloroethane	Qualifier	1,1-Dichloroethene	Qualifier	Tetrachloroethene	Qualifier	Trichloroethene	Qualifier	cis-1,2-Dichloroethene	Qualifier	trans-1,2-Dichloroethene	Qualifier	Vinyl Chloride	Qualifier	1,1-Dichloroethane	Notes	Benzene	Notes
RRS Type 4				**13,600**		**524**		**98.1**		**5.24**		**204**		**2,040**		**3.27**		**46.4**		**8.72**	
MW-1	04/18/01	05/18/01	United Consulting		BRL	< 3.2			BRL		BRL		BRL		NR		NR				
		06/15/01	United Consulting		BRL	< 3.3			BRL	**6.4**			BRL		NR		NR				
		07/12/01	United Consulting		dry		dry		dry		dry		dry		dry		dry				
		11/25/03	United Consulting		dry		dry		dry		dry		dry		dry		dry				
		06/09/05	ERM		dry		dry		dry		dry		dry		dry		dry				
		12/12/06	ERM		dry		dry		dry		dry		dry		dry		dry				
		06/25/07	ERM		dry		dry		dry		dry		dry		dry		dry				
		12/03/07	ERM		dry		dry		dry		dry		dry		dry		dry				
		06/04/08	ERM		dry		dry		dry		dry		dry		dry		dry				
		12/15/08	ERM		dry		dry		dry		dry		dry		dry		dry				
		12/16/09	ERM		dry		dry		dry		dry		dry		dry		dry				
		12/09/10	ERM		dry		dry		dry		dry		dry		dry		dry				
		07/19/11	ERM		dry		dry		dry		dry		dry		dry		dry				
		12/16/11	ERM		dry		dry		dry		dry		dry		dry		dry				
		07/06/12	ERM		dry		dry		dry		dry		dry		dry		dry				
		12/06/12	ERM		dry		dry		dry		dry		dry		dry		dry				
		08/02/13	ERM	< 5.0		< 5.0		12		< 5.0		41		< 5.0		< 2.0		< 5.0			
		03/06/14	ERM		dry		dry		dry		dry		dry		dry		dry		dry		dry
MW-2	04/18/01	07/18/11	ERM		dry				dry		dry		dry		dry		dry				
		12/15/11	ERM		dry				dry		dry		dry		dry		dry				
		07/06/12	ERM		dry				dry		dry		dry		dry		dry				
		12/06/12	ERM		dry				dry		dry		dry		dry		dry				
		07/22/13	ERM		dry				dry		dry		dry		dry		dry		dry		
		03/06/14	ERM		dry		dry		dry		dry		dry		dry		dry		dry		dry
MW-3	04/18/01	04/24/01	United Consulting	8.6		10		**1,100**		**80**		**370**			NR		NR				
		06/15/01	United Consulting	7.4		10		**3,100**		**54**		**210**			NR		NR				
		07/12/01	United Consulting		dry				dry		dry		dry		dry		dry				
		11/25/03	United Consulting		dry				dry		dry		dry		dry		dry				
		06/09/05	ERM	< 2.0		6		**3,000**		**120**		**630**		7		< 2.0					
		12/12/06	ERM		dry				dry		dry		dry		dry		dry				
		06/25/07	ERM		dry				dry		dry		dry		dry		dry				
		12/03/07	ERM		dry				dry		dry		dry		dry		dry				
		06/11/08	ERM	< 5.0		< 50		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/15/08	ERM		dry				dry		dry		dry		dry		dry				
		06/29/09	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/22/09	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		08/23/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/13/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/19/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/16/11	ERM	< 5.0		1.8		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/17/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/12/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/26/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/07/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	

TABLE 3-2
Groundwater VOC Concentrations (ug/L)
VIRP
Murata Electronics N. A., Inc. (HSI No. 10771)
Rockmart, Georgia

Well No.	Installation Date	Sampling Date	Collected By	1,1,1 Trichloroethane	Qualifier	1,1-Dichloroethene	Qualifier	Tetrachloroethene	Qualifier	Trichloroethene	Qualifier	cis-1,2-Dichloroethene	Qualifier	trans-1,2-Dichloroethene	Qualifier	Vinyl Chloride	Qualifier	1,1-Dichloroethane	Notes	Benzene	Notes
RRS Type 4				**13,600**		**524**		**98.1**		**5.24**		**204**		**2,040**		**3.27**		**46.4**		**8.72**	
MW-4	06/12/01	06/15/01	United Consulting		BRL			**130**		**5.4**			BRL		NR		NR				
		07/12/01	United Consulting		NA				NA		NA		NA		NR		NR				
		11/25/03	United Consulting	< 5.0		< 5.0		< 5.0		< 5.0		18		< 5.0			NR				
		06/09/05	ERM	< 2.0		< 2.0		4		< 2.0		7		< 2.0		< 2.0					
		12/19/06	ERM	< 5.0		< 5.0		7		< 5.0		5		< 5.0		< 2.0					
		06/26/07	ERM	< 5.0		< 5.0		7		< 5.0		< 5.0		< 5.0		< 2.0					
		12/04/07	ERM	< 5.0		< 5.0		12		< 5.0		< 5.0		< 5.0		< 2.0					
		06/09/08	ERM	< 5.0		< 5.0		7.1		< 5.0		< 5.0		< 5.0		< 2.0					
		12/17/08	ERM	< 5.0		< 5.0		10		< 5.0		< 5.0		< 5.0		< 2.0					
		06/18/09	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/16/09	ERM		dry				dry		dry		dry		dry		dry				
		08/20/10	ERM	< 5.0		< 5.0		11		< 5.0		< 5.0		< 5.0		< 2.0					
		12/08/10	ERM	< 5.0		< 5.0		9.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/27/11	ERM	< 5.0		< 5.0		8.5		< 5.0		< 5.0		< 5.0		< 2.0					
		07/27/11 DUP	ERM	< 5.0		< 5.0		7.6		< 5.0		< 5.0		< 5.0		< 2.0					
		12/15/11	ERM	< 5.0		< 5.0		6.8		< 5.0		< 5.0		< 5.0		< 2.0					
		12/15/11 DUP	ERM	< 5.0		< 5.0		5.5		< 5.0		< 5.0		< 5.0		< 2.0					
		07/10/12	ERM	< 5.0				4.3	**J**	< 5.0		0.57	J	< 5.0		< 2.0					
		07/10/12 DUP	ERM	< 5.0				4.2	J	< 5.0		0.68	J	< 5.0		< 2.0					
		12/04/12	ERM	< 5.0				5.8		< 5.0		< 5.0		< 5.0		< 2.0					
		12/04/12 DUP	ERM	< 5.0				5.8		< 5.0		< 5.0		< 5.0		< 2.0					
		07/24/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		07/24/13 DUP	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/07/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		09/25/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		11/24/15	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		10/31/16	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
MW-5	06/12/01	04/24/01	United Consulting		BRL			**1,700**		**22**		33			NR		NR				
		06/15/01	United Consulting	< 5.0		< 5.0		**1,800**		**110**		74			NR		NR				
		11/25/03	ERM	< 2.0		< 2.0		**1,200**		**71**		56		< 2.0		< 2.0					
		06/10/05	ERM	< 5.0		< 5.0		**1,100**		**24**		21		< 5.0		< 5.0					
		12/12/06	ERM		NS		NS		NS		NS		NS		NS		NS				
		06/26/07	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/05/07	ERM	< 500		< 500		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/05/08	ERM	< 50		< 50		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/05/08 DUP	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/18/08	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/25/09	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/22/09	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		08/19/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/10/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/19/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/19/11	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/17/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/04/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		08/01/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/07/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		11/24/15	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		10/31/16	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			

TABLE 3-2
Groundwater VOC Concentrations (ug/L)
VIRP
Murata Electronics N. A., Inc. (HSI No. 10771)
Rockmart, Georgia

Well No.	Installation Date	Sampling Date	Collected By	1,1,1 Trichloroethane	Qualifier	1,1-Dichloroethene	Qualifier	Tetrachloroethene	Qualifier	Trichloroethene	Qualifier	cis-1,2-Dichloroethene	Qualifier	trans-1,2-Dichloroethene	Qualifier	Vinyl Chloride	Qualifier	1,1-Dichloroethane	Notes	Benzene	Notes
RRS Type 4				**13,600**		**524**		**98.1**		**5.24**		**204**		**2,040**		**3.27**		**46.4**		**8.72**	
MW-6	6/12/2001	04/24/01	United Consulting		NA		NA		NA		NA		NA		NR		NR				
		06/12/01	United Consulting		BRL		BRL		BRL		BRL		BRL		NR		NR				
		07/12/01	United Consulting	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0			NR				
		11/25/03	ERM	< 2.0		< 2.0		< 2.0		< 2.0		< 2.0		< 2.0		< 2.0					
		06/10/05	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/14/06	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/26/07	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/26/07 DUP	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/05/07	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/05/07 DUP	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/10/08	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/15/08	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/17/09	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/17/09	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		08/18/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		08/18/10 DUP	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/08/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/20/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/15/11	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/10/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/04/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/23/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/07/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		11/24/15	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		10/31/16	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
MW-7	04/14/05	04/24/12	ERM	< 2.0		< 2.0		< 2.0		< 2.0		< 2.0		< 2.0		< 2.0					
		06/09/05	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 2.0					
		12/15/06	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/27/07	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/04/07	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/10/08	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/18/08	ERM	< 5.0		< 5.0		6.3		< 5.0		< 5.0		< 5.0		< 2.0					
		06/11/09	ERM	< 5.0		< 5.0		5.8		< 5.0		< 5.0		< 5.0		< 2.0					
		12/21/09	ERM	< 5.0		< 5.0		5.6		< 5.0		< 5.0		< 5.0		< 2.0					
		03/26/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		09/15/10	ERM	< 5.0		< 5.0		7.6		< 5.0		< 5.0		< 5.0		< 2.0					
		12/07/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/26/11	ERM	< 5.0		< 5.0		8.5		< 5.0		< 5.0		< 5.0		< 2.0					
		12/15/11	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/10/12	ERM	< 5.0				12		< 5.0		< 5.0		< 5.0		< 2.0					
		12/05/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/23/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/07/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		11/23/15	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		11/01/16	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			

TABLE 3-2
Groundwater VOC Concentrations (ug/L)
VIRP
Murata Electronics N. A., Inc. (HSI No. 10771)
Rockmart, Georgia

Well No.	Installation Date	Sampling Date	Collected By	1,1,1 Trichloroethane	Qualifier	1,1-Dichloroethene	Qualifier	Tetrachloroethene	Qualifier	Trichloroethene	Qualifier	cis-1,2-Dichloroethene	Qualifier	trans-1,2-Dichloroethene	Qualifier	Vinyl Chloride	Qualifier	1,1-Dichloroethane	Notes	Benzene	Notes
RRS Type 4				**13,600**		**524**		**98.1**		**5.24**		**204**		**2,040**		**3.27**		**46.4**		**8.72**	
MW-8	04/27/05	06/09/05	ERM	< 2.0		< 2.0		55		< 2.0		< 2.0		< 2.0		< 2.0					
		12/18/06	ERM	< 5.0		< 5.0		**1200**		< 5.0		< 5.0		< 5.0		< 2.0					
		12/18/06DUP	ERM	< 5.0		< 5.0		**1300**		< 5.0		< 5.0		< 5.0		< 2.0					
		06/26/07	ERM	< 5.0		< 5.0		42		< 5.0		< 5.0		< 5.0		< 2.0					
		12/03/07	ERM	< 5.0		< 5.0		9.6		< 5.0		< 5.0		< 5.0		< 2.0					
		06/09/08	ERM	< 5.0		< 5.0		**510**		< 5.0		< 5.0		< 5.0		< 2.0					
		12/23/08	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/18/09	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/17/09	ERM	< 5.0		< 5.0		19		< 5.0		< 5.0		< 5.0		< 2.0					
		08/18/10	ERM	< 5.0		< 5.0		**190**		< 5.0		< 5.0		< 5.0		< 2.0					
		12/07/10	ERM	< 5.0		< 5.0		87		< 5.0		< 5.0		< 5.0		< 2.0					
		07/27/11	ERM	< 5.0		< 5.0		120		< 5.0		< 5.0		< 5.0		< 2.0					
		12/21/11	ERM	< 5.0		< 5.0		53		< 5.0		< 5.0		< 5.0		< 2.0					
		07/18/12	ERM	< 5.0				15		< 5.0		< 5.0		< 5.0		< 2.0					
		12/12/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/26/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/07/14	ERM	< 5.0		< 5.0		9.3		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		09/25/14	ERM	< 5.0		< 5.0		8.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		11/24/15	ERM	< 5.0		< 5.0		40		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		11/24/2015 DUP	ERM	< 5.0		< 5.0		42		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		10/31/16	ERM	< 5.0		< 5.0		5.6		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		10/31/2016 DUP	ERM	< 5.0		< 5.0		<5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
MW-9	04/19/05	06/09/05	ERM	< 2.0		< 2.0		**900**		**17**		< 2.0		< 2.0		< 2.0					
		12/13/06	ERM	< 5.0		< 5.0		**230**		**27**		66		< 5.0		< 2.0					
		06/26/07	ERM	< 5.0		< 2.0		**460**		**12**		18		< 5.0		< 2.0					
		12/03/07	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/05/08	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/18/08	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/24/09	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/16/09	ERM		dry				dry		dry		dry		dry		dry				
		08/19/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/10/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/22/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/16/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/17/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/12/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/29/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		03/07/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		11/24/15	ERM	< 5.0		< 5.0		**100**		**5.3**		18		< 5.0		< 2.0		< 5.0			NA
		11/24/2015 DUP	ERM	< 5.0		< 5.0		**110**		**5.4**		18		< 5.0		< 2.0		< 5.0			NA
		01/23/16	ERM	< 5.0		< 5.0		92		< 5.0		< 5.0		< 5.0		< 2.0					NA
		1/23/2016 DUP	ERM	< 5.0		< 5.0		82		< 5.0		< 5.0		< 5.0		< 2.0					NA
		11/01/16	ERM	< 5.0		< 5.0		<5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		11/1/2016 DUP	ERM	< 5.0		< 5.0		<5.0		< 5.0		< 5.0		< 5.0		< 2.0					

TABLE 3-2
Groundwater VOC Concentrations (ug/L)
VIRP
Murata Electronics N. A., Inc. (HSI No. 10771)
Rockmart, Georgia

Well No.	Installation Date	Sampling Date	Collected By	1,1,1 Trichloroethane	Qualifier	1,1-Dichloroethene	Qualifier	Tetrachloroethene	Qualifier	Trichloroethene	Qualifier	cis-1,2-Dichloroethene	Qualifier	trans-1,2-Dichloroethene	Qualifier	Vinyl Chloride	Qualifier	1,1-Dichloroethane	Notes	Benzene	Notes
RRS Type 4				**13,600**		**524**		**98.1**		**5.24**		**204**		**2,040**		**3.27**		**46.4**		**8.72**	
MW-10	04/21/05	06/10/05	ERM	< 2.0		< 2.0		51		**17**		7		< 2.0		< 2.0					
		12/18/06	ERM	< 2.0		< 2.0		8		< 2.0		91		< 2.0		< 2.0					
		06/25/07	ERM		dry				dry		dry		dry		dry		dry				
		12/03/07	ERM		dry				dry		dry		dry		dry		dry				
		06/04/08	ERM		NS				NS		NS		NS		NS		NS				
		12/15/08	ERM		dry				dry		dry		dry		dry		dry				
		12/16/09	ERM		dry				dry		dry		dry		dry		dry				
		12/09/10	ERM		dry				dry		dry		dry		dry		dry				
		07/19/11	ERM		dry				dry		dry		dry		dry		dry				
		12/16/11	ERM		dry				dry		dry		dry		dry		dry				
		07/06/12	ERM		dry				dry		dry		dry		dry		dry				
		12/06/12	ERM		dry				dry		dry		dry		dry		dry				
		07/22/13	ERM		dry				dry		dry		dry		dry		dry				
		03/06/14	ERM		dry				dry		dry		dry		dry		dry		dry		dry
		11/23/15	ERM		dry				dry		dry		dry		dry		dry		dry		dry
MW-11	04/18/05	06/12/05	ERM	< 2.0		< 2.0		25		**8**		3		< 2.0		< 2.0					
		12/12/06	ERM		dry				dry		dry		dry		dry		dry				
		06/25/07	ERM		dry				dry		dry		dry		dry		dry				
		12/03/07	ERM		dry				dry		dry		dry		dry		dry				
		06/04/08	ERM		dry				dry		dry		dry		dry		dry				
		01/22/09	ERM	< 5.0		< 5.0		**500**		**350**		**220**		< 5.0		**6.9**					
		03/09/09	ERM	< 5.0		< 5.0		**580**		**400**		**250**		< 5.0		< 2.0					
		12/16/09	ERM		dry				dry		dry		dry		dry		dry				
		12/09/10	ERM		dry				dry		dry		dry		dry		dry				
		07/19/11	ERM		dry				dry		dry		dry		dry		dry				
		12/16/11	ERM		dry				dry		dry		dry		dry		dry				
		07/06/12	ERM		dry				dry		dry		dry		dry		dry				
		12/06/12	ERM		dry				dry		dry		dry		dry		dry				
		08/02/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/07/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
MW-12	05/02/05	06/13/05	ERM	< 2.0		< 2.0		46		**28**		< 2.0		4		< 2.0					
		12/20/06	ERM	< 5.0		< 5.0		30		**1200**		28		160		< 2.0					
		06/26/07	ERM	< 5.0		< 5.0		6		**81**		< 5.0		10		< 2.0					
		12/05/07	ERM	< 5.0		< 5.0		< 5.0		**60**		11		17		< 2.0					
		06/10/08	ERM	< 5.0		< 5.0		< 5.0		**76**		< 5.0		14		< 2.0					
		12/23/08	ERM	< 5.0		< 5.0		< 5.0		**65**		< 5.0		8.7		< 2.0					
		06/30/09	ERM	< 5.0		< 5.0		< 5.0		**88**		6		15		< 2.0					
		12/22/09	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		08/24/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		08/24/10 DUP	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/09/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/26/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/22/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/13/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/12/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/30/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/06/14	ERM		NS		NS		NS		NS		NS		NS		NS		NS		NS
		09/25/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		11/24/15	ERM		NS		NS		NS		NS		NS		NS		NS		NS		NS

TABLE 3-2
Groundwater VOC Concentrations (ug/L)
VIRP
Murata Electronics N. A., Inc. (HSI No. 10771)
Rockmart, Georgia

Well No.	Installation Date	Sampling Date	Collected By	1,1,1 Trichloroethane	Qualifier	1,1-Dichloroethene	Qualifier	Tetrachloroethene	Qualifier	Trichloroethene	Qualifier	cis-1,2-Dichloroethene	Qualifier	trans-1,2-Dichloroethene	Qualifier	Vinyl Chloride	Qualifier	1,1-Dichloroethane	Notes	Benzene	Notes
RRS Type 4				**13,600**		**524**		**98.1**		**5.24**		**204**		**2,040**		**3.27**		**46.4**		**8.72**	
MW-13	05/02/05	07/18/11	ERM		dry				dry		dry		dry		dry		dry				
		12/15/11	ERM		dry				dry		dry		dry		dry		dry				
		07/06/12	ERM		dry				dry		dry		dry		dry		dry				
		12/06/12	ERM		dry				dry		dry		dry		dry		dry				
		08/02/13	ERM	< 5.0		< 5.0		**470**		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/07/14	ERM	< 5.0		< 5.0		21		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		09/25/14	ERM	< 5.0		< 5.0		37		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		11/24/15	ERM		dry				dry		dry		dry		dry		dry				NA
MW-14	05/02/05	07/28/05	ERM	< 2.0		< 2.0		< 5.0		< 2.0		< 2.0		< 2.0		< 2.0					
		12/12/06	ERM		dry		dry		dry		dry		dry		dry		dry				
		06/25/07	ERM		dry		dry		dry		dry		dry		dry		dry				
		12/03/07	ERM		dry		dry		dry		dry		dry		dry		dry				
		06/04/08	ERM		dry		dry		dry		dry		dry		dry		dry				
		12/15/08	ERM		dry		dry		dry		dry		dry		dry		dry				
		12/16/09	ERM		dry		dry		dry		dry		dry		dry		dry				
		07/19/11	ERM		dry		dry		dry		dry		dry		dry		dry				
		12/16/11	ERM		dry		dry		dry		dry		dry		dry		dry				
		07/06/12	ERM		dry		dry		dry		dry		dry		dry		dry				
		12/06/12	ERM		dry		dry		dry		dry		dry		dry		dry				
		07/22/13	ERM		dry		dry		dry		dry		dry		dry		dry		dry		dry
		03/06/14	ERM		dry		dry		dry		dry		dry		dry		dry		dry		dry
MW-15	11/15/05	11/15/05	ERM	< 2.0		< 2.0		< 2.0		< 2.0		< 2.0		< 2.0		< 2.0					
		12/22/06	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/25/07	ERM		dry		dry		dry		dry		dry		dry		dry				
		12/03/07	ERM		dry		dry		dry		dry		dry		dry		dry				
		06/12/08	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/17/08	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/16/09	ERM		dry		dry		dry		dry		dry		dry		dry				
		08/24/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/14/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/19/11	ERM		dry		dry		dry		dry		dry		dry	< 2.0	dry				
		12/16/11	ERM		dry		dry		dry		dry		dry		dry	< 2.0	dry				
		07/11/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/06/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/23/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/06/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		11/24/15	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
MW-16	12/02/06	12/18/06	ERM	< 5.0		7		**1800**		**42**		54		< 5.0		< 2.0					
		06/25/07	ERM	< 5.0		3		**810**		**21**		51		< 5.0		< 2.0					
		12/03/07	ERM		dry		dry		dry		dry		dry		dry		dry				
		07/07/08	ERM	< 5.0		< 5.0		**190**		< 5.0		< 5.0		< 5.0		< 2.0					
		12/23/08	ERM	< 5.0		< 5.0		**130**		< 5.0		< 5.0		< 5.0		< 2.0					
		06/26/09	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/21/09	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/28/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/22/11	ERM	< 5.0		0.56	J*	< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/18/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/13/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/29/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		03/06/14	ERM		NS		NS		NS		NS		NS		NS		NS		NS		NS
		11/23/15	ERM		dry		dry		dry		dry		dry		dry		dry		dry		

TABLE 3-2
Groundwater VOC Concentrations (ug/L)
VIRP
Murata Electronics N. A., Inc. (HSI No. 10771)
Rockmart, Georgia

Well No.	Installation Date	Sampling Date	Collected By	1,1,1 Trichloroethane	Qualifier	1,1-Dichloroethene	Qualifier	Tetrachloroethene	Qualifier	Trichloroethene	Qualifier	cis-1,2-Dichloroethene	Qualifier	trans-1,2-Dichloroethene	Qualifier	Vinyl Chloride	Qualifier	1,1-Dichloroethane	Notes	Benzene	Notes
RRS Type 4				**13,600**		**524**		**98.1**		**5.24**		**204**		**2,040**		**3.27**		**46.4**		**8.72**	
MW-17**	12/20/06	12/12/06	ERM		dry				dry		dry		dry		dry		dry				
		06/25/07	ERM		dry				dry		dry		dry		dry		dry				
		12/04/07	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/06/08	ERM	< 500.0		< 500.0		< 500.0		< 500.0		< 500.0		< 500.0		< 200.0					
		12/30/08	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/29/09	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/29/09DUP	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/16/09	ERM		dry		dry		dry		dry		dry		dry		dry				
		08/25/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/14/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/20/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/22/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/18/12	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/13/12	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/30/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/07/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		3/7/2014 DUP	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		01/21/16	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					NA
		10/31/16	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
MW-18	12/05/06	12/13/06	ERM	< 5.0		< 5.0		**100**		**8**		25		< 5.0		< 2.0					
		06/26/07	ERM	< 5.0		< 2.0		**360**		**9**		21		< 5.0		< 2.0					
		12/03/07	ERM	< 5.0		< 5.0		8.4		< 5.0		22		< 5.0		< 2.0					
		06/06/08	ERM	< 5.0		< 5.0		61		< 5.0		< 5.0		< 5.0		< 2.0					
		12/16/08	ERM	< 5.0		< 5.0		50		< 5.0		5.8		< 5.0		< 2.0					
		06/24/09	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/21/09	ERM	< 5.0		< 5.0		12		< 5.0		< 5.0		< 5.0		< 2.0					
		08/18/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/20/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/16/11	ERM	< 5.0		< 5.0		34		3.6	J*	2.0	J*	< 5.0		< 2.0					
		07/11/12	ERM	< 5.0		< 5.0		16		1.1	J	0.74	J	< 5.0		< 2.0					
		12/05/12	ERM	< 5.0				19		< 5.0		< 5.0		< 5.0		< 2.0					
		07/25/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/07/14 DUP	ERM	< 5.0		< 5.0		< 5.0		**6.5**		< 5.0		< 5.0		< 2.0		< 5.0			
		03/07/14	ERM	< 5.0		< 5.0		< 5.0		5.2		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		09/25/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.1		< 5.1			NA
		9/25/2014 DUP	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		11/24/15	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		10/31/16	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			

TABLE 3-2
Groundwater VOC Concentrations (ug/L)
VIRP
Murata Electronics N. A., Inc. (HSI No. 10771)
Rockmart, Georgia

Well No.	Installation Date	Sampling Date	Collected By	1,1,1 Trichloroethane	Qualifier	1,1-Dichloroethene	Qualifier	Tetrachloroethene	Qualifier	Trichloroethene	Qualifier	cis-1,2-Dichloroethene	Qualifier	trans-1,2-Dichloroethene	Qualifier	Vinyl Chloride	Qualifier	1,1-Dichloroethane	Notes	Benzene	Notes
RRS Type 4				**13,600**		**524**		**98.1**		**5.24**		**204**		**2,040**		**3.27**		**46.4**		**8.72**	
MW-19	11/30/06	12/21/06	ERM	< 5.0		< 5.0		< 5.0		< 5.0		7.0		< 5.0		< 2.0					
		06/26/07	ERM	< 5.0		< 5.0		25		< 5.0		17.0		< 5.0		< 2.0					
		12/05/07	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/11/08	ERM	< 50.0		< 50.0		< 50.0		< 50.0		< 50.0		< 50.0		< 20.0					
		12/30/08	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/25/09	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/16/09	ERM		dry		dry		dry		dry		dry		dry		dry				
		08/25/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/14/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/21/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/16/11	ERM		dry		dry		dry		dry		dry		dry		dry				
		07/19/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/12/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/30/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		9.1			
		03/07/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		16		< 5.0	
		09/25/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		5.6			NA
		11/24/15	ERM	< 5.0		< 5.0		11		< 5.0		10		< 5.0		< 2.0		7.4			NA
MW-20	11/30/06	12/16/06	ERM	< 5.0		< 5.0		**220**		< 5.0		< 5.0		< 5.0		< 2.0					
		06/26/07	ERM		NS		NS		NS		NS		NS		NS		NS				
		12/04/07	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/11/08	ERM	< 50.0		< 50.0		< 50.0		< 50.0		< 50.0		< 50.0		< 20.0					
		12/30/08	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/30/09	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/22/09	ERM					11													
		08/26/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/09/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/21/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/16/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/19/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/12/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/31/13	ERM	< 5.0		< 5.0		56		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/07/14	ERM	< 5.0		< 5.0		31		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		09/25/14	ERM	< 5.0		< 5.0		26		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		11/24/15	ERM	< 5.0		< 5.0		36		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		10/31/16	ERM	< 5.0		< 5.0		<5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		10/31/16 DUP	ERM	< 5.0		< 5.0		<5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
MW-22	08/23/07	12/05/07	ERM	< 5.0		< 5.0		20		< 5.0		< 5.0		< 5.0		< 2.0					
		06/09/08	ERM	< 5.0		< 5.0		< 5.0		< 2.0		< 2.0		< 2.0		< 2.0					
		12/30/08	ERM	< 5.0		< 5.0		9.1		< 5.0		< 5.0		< 5.0		< 2.0					
		12/30/08 DUP	ERM	< 5.0		< 5.0		8.1		< 5.0		< 5.0		< 5.0		< 2.0					
		06/25/09	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/16/09	ERM		dry		dry		dry		dry		dry		dry		dry				
		08/25/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/14/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/22/10 DUP	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/22/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/21/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/20/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/13/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		08/01/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/07/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		09/25/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		11/24/15	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		10/31/16	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			

TABLE 3-2
Groundwater VOC Concentrations (ug/L)
VIRP
Murata Electronics N. A., Inc. (HSI No. 10771)
Rockmart, Georgia

Well No.	Installation Date	Sampling Date	Collected By	1,1,1 Trichloroethane	Qualifier	1,1-Dichloroethene	Qualifier	Tetrachloroethene	Qualifier	Trichloroethene	Qualifier	cis-1,2-Dichloroethene	Qualifier	trans-1,2-Dichloroethene	Qualifier	Vinyl Chloride	Qualifier	1,1-Dichloroethane	Notes	Benzene	Notes
RRS Type 4				**13,600**		**524**		**98.1**		**5.24**		**204**		**2,040**		**3.27**		**46.4**		**8.72**	
MW-23	09/14/07	12/05/07	ERM	< 5.0		43		**3400**		**560**		**2000**		18		**1700**					
		06/11/08	ERM	< 50.0		< 50.0		< 50.0		< 50.0		< 50.0		< 50.0		< 20.0					
		12/18/08	ERM	< 100.0		< 100.0		< 100.0		< 100.0		< 100.0		< 100.0		< 40.0					
		06/30/09	ERM	< 5.0		< 5.0		8.3		< 5.0		< 5.0		< 5.0		< 2.0					
		12/23/09	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		08/20/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/13/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/25/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/19/11	ERM	< 5.0		2.4 J*		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/20/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/13/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/31/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/07/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		11/24/15	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		10/31/16	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
MW-24	05/07/10	06/18/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		08/19/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/15/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/25/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/16/11	ERM	< 5.0		< 5.0		2.1	J*	< 5.0		< 5.0		< 5.0		< 2.0					
		07/06/12	ERM		NA				NA		NA		NA		NA		NA				
		12/05/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/23/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/06/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		3/6/2014 DUP	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		12/15/15	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
MW-25	05/08/10	06/18/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		08/19/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/15/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/25/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/16/11	ERM	< 5.0		< 5.0		2.1 J*		< 5.0		< 5.0		< 5.0		< 2.0					
		07/06/12	ERM		NA		NA		NA		NA		NA		NA		NA				
		12/05/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/24/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/06/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		<5.0	
		12/15/15	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA

TABLE 3-2
Groundwater VOC Concentrations (ug/L)
VIRP
Murata Electronics N. A., Inc. (HSI No. 10771)
Rockmart, Georgia

Well No.	Installation Date	Sampling Date	Collected By	1,1,1 Trichloroethane	Qualifier	1,1-Dichloroethene	Qualifier	Tetrachloroethene	Qualifier	Trichloroethene	Qualifier	cis-1,2-Dichloroethene	Qualifier	trans-1,2-Dichloroethene	Qualifier	Vinyl Chloride	Qualifier	1,1-Dichloroethane	Notes	Benzene	Notes
RRS Type 4				**13,600**		**524**		**98.1**		**5.24**		**204**		**2,040**		**3.27**		**46.4**		**8.72**	
MW-26	05/06/09	06/10/09	ERM	< 5.0		< 5.0		8.9		< 5.0		< 5.0		< 5.0		< 2.0					
		07/13/09	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/13/09 DUP	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/16/09	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/16/09 DUP	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		08/18/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/07/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/26/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/15/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/11/12	ERM	< 5.0				3.0	J	< 5.0		< 5.0		< 5.0		< 2.0					
		12/05/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/25/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/07/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		11/23/15	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		10/31/16	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
MW-27	05/05/09	06/19/09	ERM	< 5.0		13		**3000**		**2800**		**4500**		26		**110**					
		12/16/09	ERM	< 5.0		5.6		**1400**		**1900**		**4100**		16		**31**					
		08/24/10	ERM	< 5.0		7.0		**1800**		**2000**		**3300**		15		**31**					
		12/08/10	ERM	< 5.0		< 5.0		**1100**		**1000**		**2300**		8.9		**16**					
		07/28/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/21/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/19/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/13/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/31/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/07/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		11/23/15	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
MW-28	03/24/11	07/29/11	ERM	< 5.0		< 5.0		**210**		**130**		35		< 5.0		**21**					
		12/20/11	ERM	< 5.0		< 5.0		**110**		**96**		120		< 5.0		**20**					
		07/11/12	ERM	< 5.0				**240**		**500**		**1100**		7.8		**28**					
		12/07/12	ERM	< 5.0				37		**150**		**300**		< 5.0		**12**					
		08/02/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/07/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		09/25/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		9/25/14 DUP	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		11/24/15	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		10/31/16	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
MW-29	03/25/11	07/28/11	ERM	< 5.0		< 5.0		**4900**		**14**		< 5.0		< 5.0		< 2.0					
		12/16/11	ERM	< 250		< 250		**7800**		**1000**		**1500**		< 250		< 2.0					
		07/11/12	ERM	< 5.0				**2000**		**390**		**880**		9.8		**34**					
		12/06/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/30/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/07/14	ERM	< 5.0		< 5.0		18		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		09/25/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		11/24/15	ERM		dry		dry		dry		dry		dry		dry		dry		dry		
		01/22/16	ERM	< 5.0		< 5.0		**97**		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		10/31/16	ERM	< 5.0		<5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		<5.0			

TABLE 3-2
Groundwater VOC Concentrations (ug/L)
VIRP
Murata Electronics N. A., Inc. (HSI No. 10771)
Rockmart, Georgia

Well No.	Installation Date	Sampling Date	Collected By	1,1,1 Trichloroethane	Qualifier	1,1-Dichloroethene	Qualifier	Tetrachloroethene	Qualifier	Trichloroethene	Qualifier	cis-1,2-Dichloroethene	Qualifier	trans-1,2-Dichloroethene	Qualifier	Vinyl Chloride	Qualifier	1,1-Dichloroethane	Notes	Benzene	Notes
RRS Type 4				**13,600**		**524**		**98.1**		**5.24**		**204**		**2,040**		**3.27**		**46.4**		**8.72**	
MW-A-1	09/06/11	09/08/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/20/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/17/12	ERM	< 5.0		< 5.0		2.8	J	< 5.0		< 5.0		< 5.0		< 2.0					
		07/24/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/06/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
MW-A-2	09/12/11	09/30/11	ERM	< 5.0		< 5.0		**220**		**15**		26		< 5.0		< 2.0					
		12/20/11	ERM	< 5.0		< 5.0		**560**		**31**		43		< 5.0		< 2.0					
		07/16/12	ERM	< 5.0				**580**		**55**		**76**		< 5.0		< 2.0					
		12/06/12	ERM	< 5.0				**400**		**27**		42		< 5.0		< 2.0					
		07/24/13	ERM	< 5.0		< 5.0		81		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/06/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		09/25/14	ERM	< 5.0		< 5.0		17		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		01/21/16	ERM	< 5.0		< 5.0		28		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
MW-A-3	09/12/11	09/30/11	ERM	< 5.0		< 5.0		**140**		< 5.0		9.4		< 5.0		< 2.0					
		12/20/11	ERM	< 5.0		< 5.0		66		3.0	J*	5.2		< 5.0		< 2.0					
		07/16/12	ERM	< 5.0				79		< 5.0		5.8		< 5.0		< 2.0					
		12/07/12	ERM	< 5.0				40		< 5.0		< 5.0		< 5.0		< 2.0					
		07/24/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/06/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		3/6/2014 DUP	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		09/25/14	ERM	< 5.0		< 5.0		5.8		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		11/23/15	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
MW-A-4	03/27/12	03/27/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/28/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/16/12	ERM	< 5.0				3.5	J	< 5.0		< 5.0		< 5.0		< 2.0					
		12/07/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/25/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/06/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		<5.0	
		11/24/15	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		11/24/2015 DUP	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
MW-A-5	03/27/12	03/28/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/28/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/17/12	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/11/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/25/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		**950**	
		03/06/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		**210**	
		11/24/15	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			

TABLE 3-2
Groundwater VOC Concentrations (ug/L)
VIRP
Murata Electronics N. A., Inc. (HSI No. 10771)
Rockmart, Georgia

Well No.	Installation Date	Sampling Date	Collected By	1,1,1 Trichloroethane	Qualifier	1,1-Dichloroethene	Qualifier	Tetrachloroethene	Qualifier	Trichloroethene	Qualifier	cis-1,2-Dichloroethene	Qualifier	trans-1,2-Dichloroethene	Qualifier	Vinyl Chloride	Qualifier	1,1-Dichloroethane	Notes	Benzene	Notes
RRS Type 4				**13,600**		**524**		**98.1**		**5.24**		**204**		**2,040**		**3.27**		**46.4**		**8.72**	
MW-B-1	09/07/11	09/09/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/19/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/12/12	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/12/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/25/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/07/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		11/23/15	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
MW-B-2	09/14/11	09/28/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/19/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/13/12	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/12/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/26/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/07/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		11/23/15	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
MW-B-3	09/15/11	09/29/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/20/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/13/12	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/11/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/26/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/07/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		<5.0	
		09/25/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		11/23/15	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
MW-B-4	09/20/11	09/29/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/19/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/13/12	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/11/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/26/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		01/22/16	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA

TABLE 3-2
Groundwater VOC Concentrations (ug/L)
VIRP
Murata Electronics N. A., Inc. (HSI No. 10771)
Rockmart, Georgia

Well No.	Installation Date	Sampling Date	Collected By	1,1,1 Trichloroethane	Qualifier	1,1-Dichloroethene	Qualifier	Tetrachloroethene	Qualifier	Trichloroethene	Qualifier	cis-1,2-Dichloroethene	Qualifier	trans-1,2-Dichloroethene	Qualifier	Vinyl Chloride	Qualifier	1,1-Dichloroethane	Notes	Benzene	Notes
RRS Type 4				**13,600**		**524**		**98.1**		**5.24**		**204**		**2,040**		**3.27**		**46.4**		**8.72**	
Trip Blank	-	07/20/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/22/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/27/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/29/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		09/30/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/16/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/22/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/28/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		03/28/12	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/11/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/13/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/18/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/20/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/04/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/05/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/06/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/07/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/13/12	ERM	< 5.0				< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/23/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		07/24/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		07/25/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		07/29/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		07/30/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		07/31/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		08/02/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		03/06/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	
		09/25/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			NA
		11/24/15	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		12/15/15	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		01/22/16	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
Equipment Blank	-	06/10/09	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/27/07	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/06/07	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		06/05/08	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/17/08	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/13/09	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/16/09	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		08/18/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		08/19/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		08/20/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		08/23/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		08/24/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		08/25/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		08/26/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/14/10	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/28/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/16/11	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		12/04/12	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0					
		07/23/13	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
		01/22/16	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0			
Water Blank	-	03/07/14	ERM	< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 5.0		< 2.0		< 5.0		< 5.0	

Notes:

MW-2 and MW-13 are dry wells.
Bolded values indicate concentrations above the applicable RRS
BRL - Below Reporting Limit
NA - Not Analyzed
NR - Not Reported
NS - Not Sampled
J - Estimated level of VOC detected below Reporting Limit

Prepared By: BM, 1/5/16 Checked By:

Table 4-1
Proposed Groundwater Monitoring
VIRP
Murata Electronics N.A., Inc. (HSI No. 10771)
Rockmart, GA

Well ID	Total Depth (ft bgs)	Ground Surface Elevation (ft MSL)	Top of Casing Elevation (ft MSL)	Screened Interval (ft bgs)	Top of Rock (ft bgs)	Proposed Schedule
MW-1	57.00	498.19	497.96	36.5-56.5	56.50	Gauge and Abandon
MW-2	37.00	493.8	493.44	26.5-36.5	NA	18 mos.
MW-3	48.00	492.2	491.85	32.5-47.5	NA	Gauge and Abandon
MW-4	70.00	482.05	481.74	49.5-69.5	24.50	18 mos.
MW-5	74.00	490.16	490.00	48.5-73.5	31.50	Gauge and Abandon
MW-6	81.00	500.22	499.83	50.5-80.5	11.50	POD - 9 mos.
MW-7	74.05	490.16	489.98	63.45-73.45	50.00	POD - 9 mos.
MW-8	72.50	491.80	491.64	62-72	31.00	18 mos.
MW-9	59.50	491.33	491.20	49-59	24.00	Gauge and Abandon
MW-10	73.80	488.47	488.76	63.5-73.5	34.00	Gauge and Abandon
MW-11	56.50	492.94	492.77	54-64	41.50	Gauge and Abandon
MW-12	200.50	497.84	497.66	160-200.5*	55.00	Gauge and Abandon
MW-13	57.00	497.89	497.66	15.5-55.5	52.50	Gauge and Abandon
MW-14	39.50	470.33	469.86	29-39	39.50	Gauge and Abandon
MW-15	45.00	477.15	476.85	34.5-44.5	41.00	POD - 9 mos.
MW-16	77.80	497.70	497.63	61.94-75.66	42.00	Gauge and Abandon
MW-17	87.50	493.11	492.75	65.11-75.11	51.00	Gauge and Abandon
MW-18	60.15	490.86	490.46	50.1-60.1	NA	18 mos.
MW-19	68.78	497.81	497.72	53.2-63.2	38.00	Gauge and Abandon
MW-20	63.55	494.07	493.85	52.3-62.3	34.00	Gauge and Abandon
MW-22	81.00	496.84	496.60	60-80	54.00	18 mos.
MW-23	109.00	492.08	491.84	53-73	16.00	Gauge and Abandon
MW-24	68.00	483.18	485.86	58-68	51.00	POD - 9 mos.
MW-25	80.00	477.90	481.08	69.3-79.3	37.00	Gauge and Abandon
MW-26	90.50	500.28	499.94	74-89	45.00	POD - 9 mos.
MW-27	70.00	492.79	492.68	59.2-69.2	56.40	Gauge and Abandon
MW-28	140.00	492.41	491.36	51-68**	28.00	18 mos.
MW-29	67.00	491.40	494.70	56.2-66.2	53.00	Gauge and Abandon
MW-A-1	74.00	478.09	477.72	63.2-73.2	37.50	Destroyed
MW-A-2	80.00	478.91	478.41	69.1-79.1	57.00	Destroyed
MW-A-3	75.00	479.55	479.02	63.5-73.5	60.00	Destroyed
MW-A-4	49.00	478.63	478.14	48.43-38.43	38.00	Gauge and Abandon
MW-A-5	61.00	477.82	477.32	50.8-60.8	16.00	POD - 9 mos.
MW-B-1	75.00	484.65	484.30	64.3-74.3	60.00	POD - 9 mos.
MW-B-2	100.00	491.40	491.40	79.1-91.1	45.00	Gauge and Abandon
MW-B-3	100.00	480.39	480.11	79-99	40.00	18 mos.
MW-B-4	100.00	483.52	483.25	79.3-99.3	33.00	18 mos.

NOTES:

*Monitor well MW-12 installed as a double-cased, 4-inch, open hole well completed in rock at a depth interval from 160 feet to 200.5 feet.

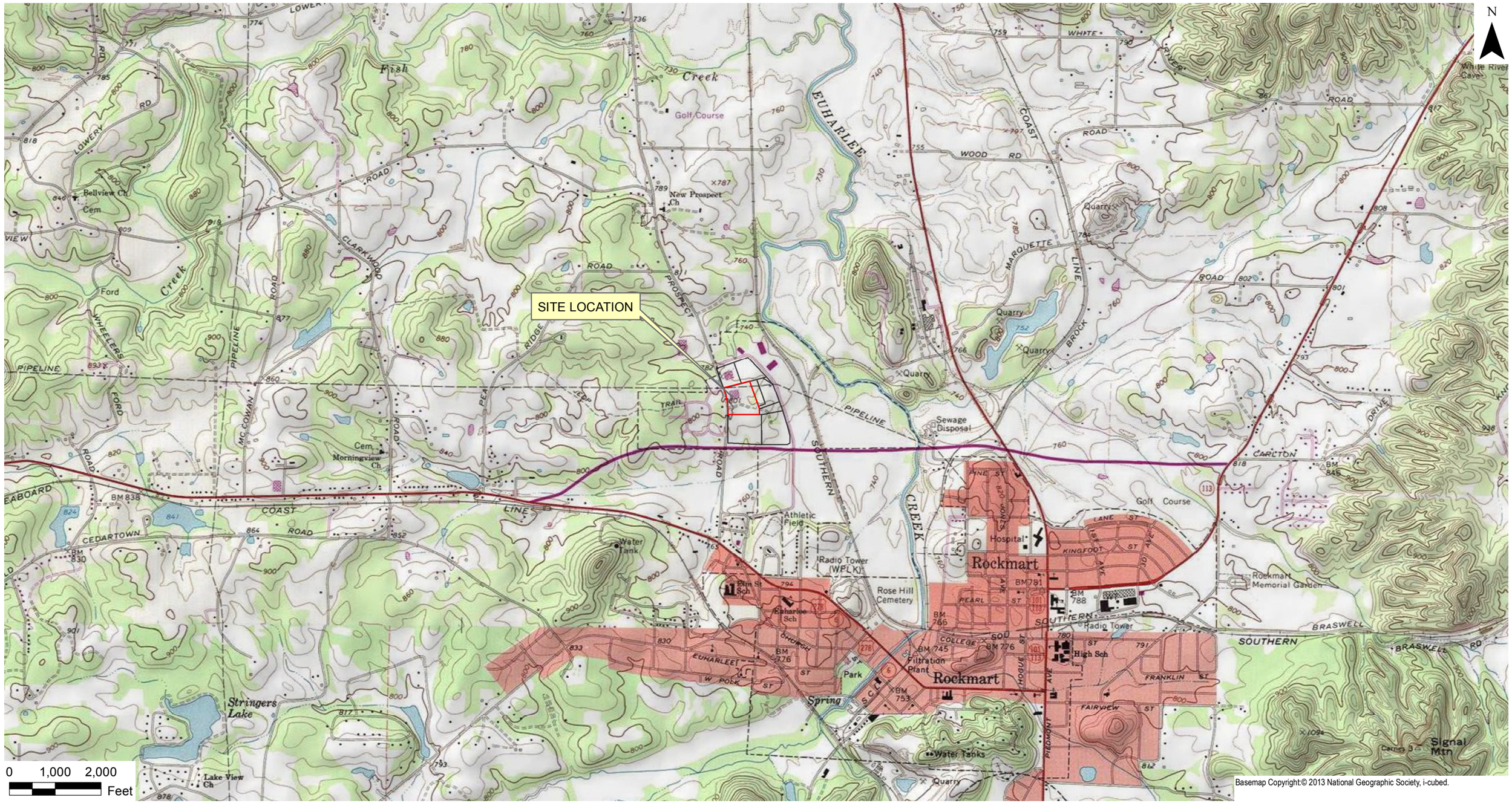
**Monitor well MW-28 installed as a double-cased, 2-inch, open hole well completed in rock at a depth interval from 51 feet to 68 feet.

NA - Not Applicable

Figures

March 31, 2017
Project No. 0190949
Murata

Environmental Resources Management
3200 Windy Hill Rd. Suite 1500W
Atlanta, GA 30339
(678) 486-2700



Environmental Resources Management

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DATE:	3/21/2017	SCALE:	AS SHOWN	REVISION:	0
FILE:	E:\MurataGIS\MXD\2017\2017 03-Mar VIRP Rpt\F1-1_SiteLocMap.mxd				

FIGURE 1-1
SITE LOCATION MAP

VIRP Report

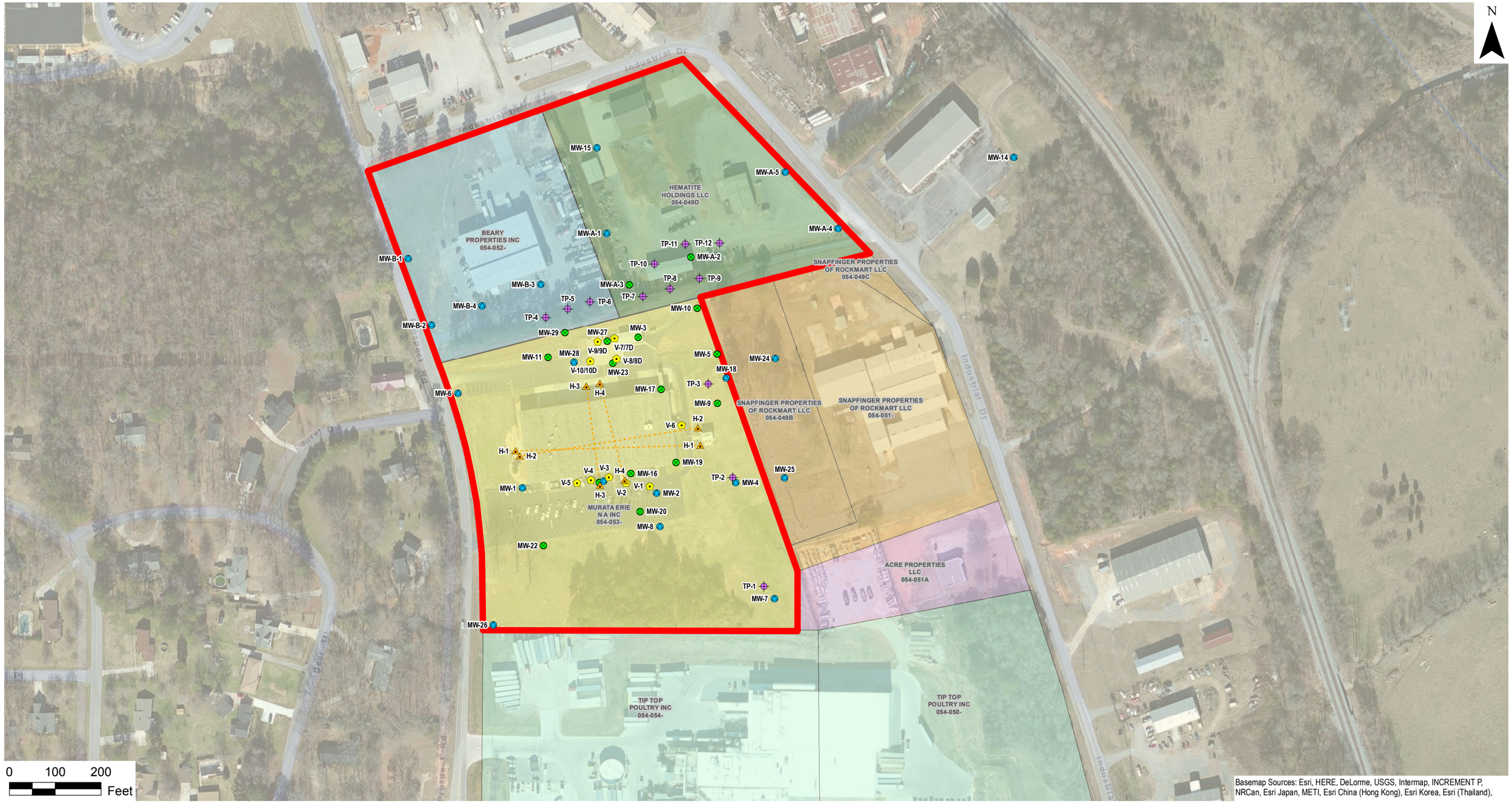
Murata Erie N.A., Inc.

Rockmart, Georgia

CONTOUR INTERVAL 10 FEET
DOTTED LINES REPRESENT 5-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

QUADRANGLE LOCATION

ERM



Basemap Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand),

Environmental Resources Management

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FILE:	E:\MurataGIS\MXD\2017\2017 03-Mar VIRP Rpt\F1-2_SiteLay&PropOwn.mxd				

FIGURE 1-2 - SITE LAYOUT & PROPERTY OWNERSHIP MAP

VIRP Report

Murata Electronics N.A., Inc.

Rockmart, Georgia

- Monitoring Well Location
- Injection Well Location
- Temporary Injection Well Location
- SVE Horizontal Well Location
- SVE Vertical Well Location
- Horizontal SVE Well Line Location
- APPLICANT & QUALIFYING PROPERTIES

APPLICANT & QUALIFYING PROPERTIES

- BEARY PROPERTIES INC 054-052-
- HEMATITE HOLDINGS LLC 054-049D
- MURATA ERIE N A INC 054-053-

ADJOINING PROPERTIES

- ACRE PROPERTIES LLC 054-051A
- SNAPFINGER PROPERTIES OF ROCKMART LLC 054-049C, 054-051-, & 054-049B
- TIP TOP POULTRY INC 054-050- & 054-054-

ERM

N

HEMATITE HOLDINGS LLC 054-049D

BEARY PROPERTIES INC 054-052-

SNAPFINGER PROPERTIES OF ROCKMART LLC 054-049C

SNAPFINGER PROPERTIES OF ROCKMART LLC 054-049B

SNAPFINGER PROPERTIES OF ROCKMART LLC 054-051-

MURATA ERIE N A INC 054-053-

ACRE PROPERTIES LLC 054-051A

TIP TOP POULTRY INC 054-054-

TIP TOP POULTRY INC 054-050-

Industrial Dr

Deer Trail Rd

MW-15 MW-14 MW-A-5 MW-A-4 MW-A-1 MW-A-2 MW-A-3 MW-B-1 MW-B-2 MW-B-3 MW-B-4 MW-1 MW-2 MW-3 MW-5 MW-6 MW-7 MW-8 MW-9 MW-10 MW-11 MW-17 MW-18 MW-19 MW-20 MW-22 MW-23 MW-24 MW-25 MW-26 MW-27 MW-28 MW-29 MW-4 MW-16

TP-1 TP-2 TP-3 TP-4 TP-5 TP-6 TP-7 TP-8 TP-9 TP-10 TP-11 TP-12

V-1 V-2 V-3 V-4 V-5 V-6 V-7/7D V-8/8D V-9/9D V-10/10D

H-1 H-2 H-3 H-4

0 100 200 Feet

Basemap Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand),

Environmental Resources Management

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FILE: E:\MurataGIS\MXD\2017\2017 03-Mar VIRP Rpt\F2-1_SourceArea&Historical.mxd

FIGURE 2-1 - SOURCE AREAS & HISTORICAL CONTAMINATION

VIRP Report

Murata Electronics N.A., Inc.

Rockmart, Georgia

- Monitoring Well Location
- Injection Well Location
- Temporary Injection Well Location
- SVE Horizontal Well Location
- SVE Vertical Well Location
- Soil Vapor Extraction Piping
- Horizontal SVE Well Line Location
- Soil Exceeding RRS (2008 Corrective Action Report)
- Historical Extent of Groundwater with Type 1 RRS Exceedances

ERM

Environmental Resources Management

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FIGURE 2-2 - SOIL VAPOR EXTRACTION SYSTEM

VIRP Report

Murata Erie N.A., Inc.

Rockmart, Georgia

SVE Horizontal Well Location

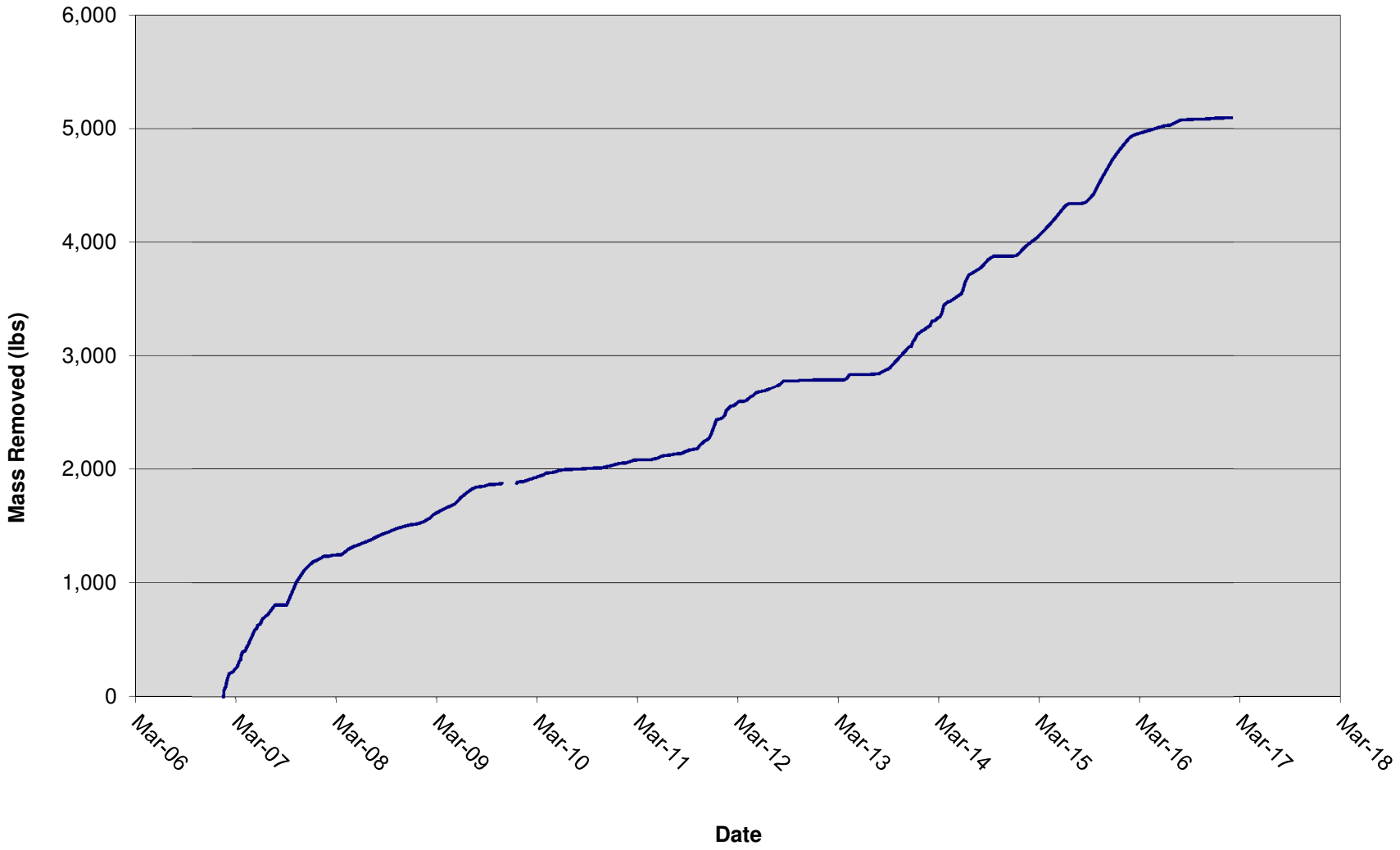
Horizontal SVE Well Line Location

SVE Vertical Well Location

Soil Vapor Extraction Piping

ERM

Figure 2-3: Cumulative VOC Mass Removal
Murata Electronics North America, Rockmart, Georgia



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DATE:	3/22/2017	SCALE:	AS SHOWN	REVISION:	0

FILE: E:\MurataGIS\MXD\2017\2017 03-Mar VIRP Rpt\F2-4_ChemInj-QtyLoc.mxd

FIGURE 2-4
CHEMICAL INJECTION QUANITY & LOCATION

VIRP Report

Murata Electronics N.A., Inc.

Rockmart, Georgia

- Monitoring Well Location
- Injection Well Location
- Temporary Injection Well Location
- 13,643 Total ISCO injected in Gallons

NOTE: ISCO = In Situ Chemical Oxidant

ERM

LEGEND

WELL CASING

432.62 — GROUND WATER ELEVATION ON 8/8/05

SCEEN INTERVAL

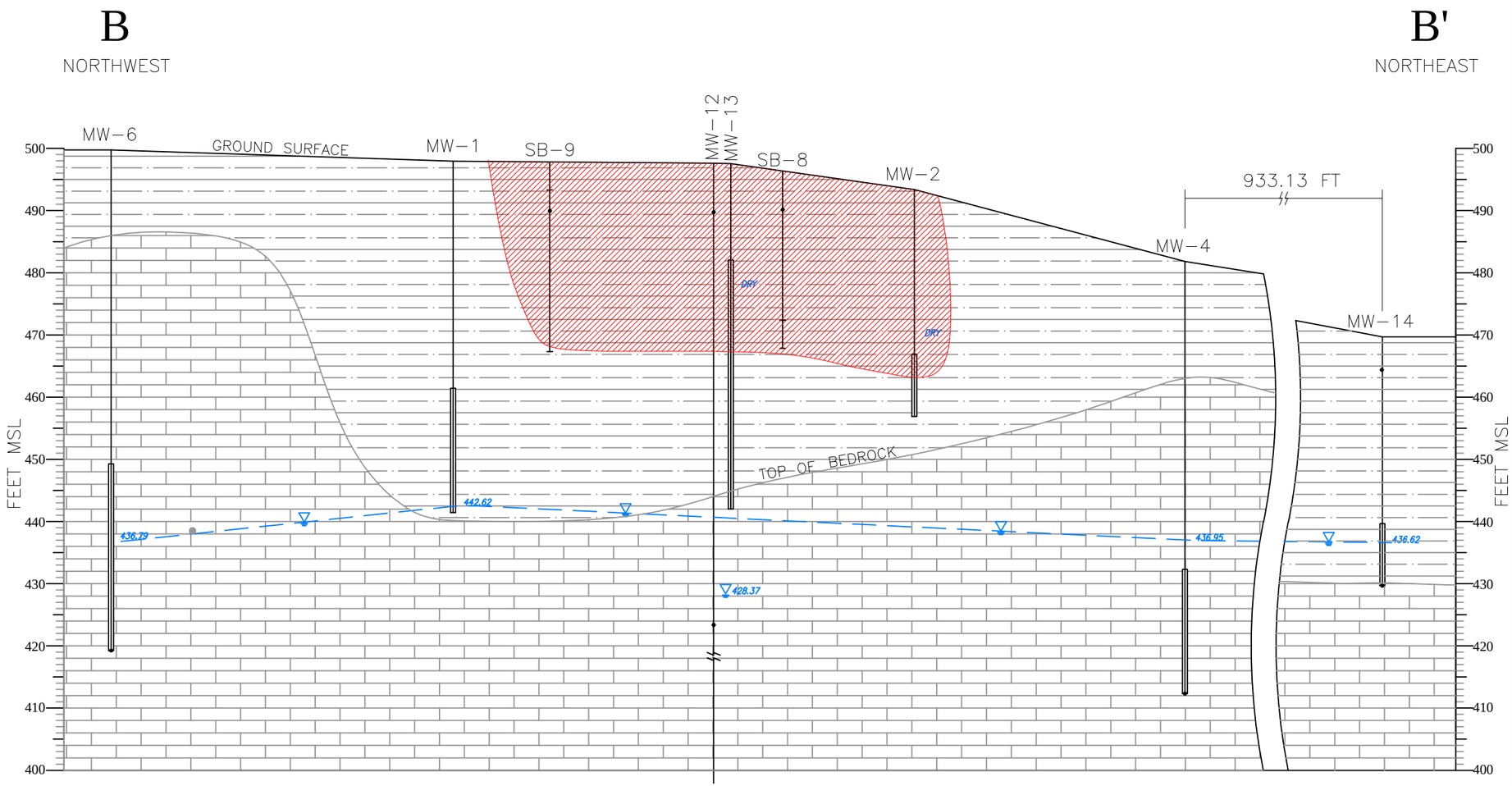
GROUND WATER TABLE

APPROXIMATE EXTENT OF SOIL ABOVE RRS (2008 CAR)

NOTES

1. LITHOLOGIC DESCRIPTION FOR MONITORING WELLS MW–1 THROUGH MW–6 WAS OBTAINED FROM UNITED CONSULTING

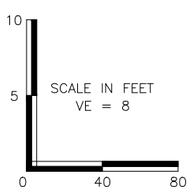
2. TOTAL DEPTH OF DOUBLE–CASED OPEN–HOLE WELL MW–12 IS 200.5 FT. (SEE WELL CONSTRUCTION DIAGRAM)



REGOLITH
Yellowish red, clayey silt with some sand, fragments of chert and slate, possible residuum of Newala Limestone and the overlying Rockmart Slate.

BEDROCK
Interbedded, bioturbated limestone and dolostone with brecciated clasts in the upper portion, shown in a borehole core: Newala Limestone (Cressler, 1970)

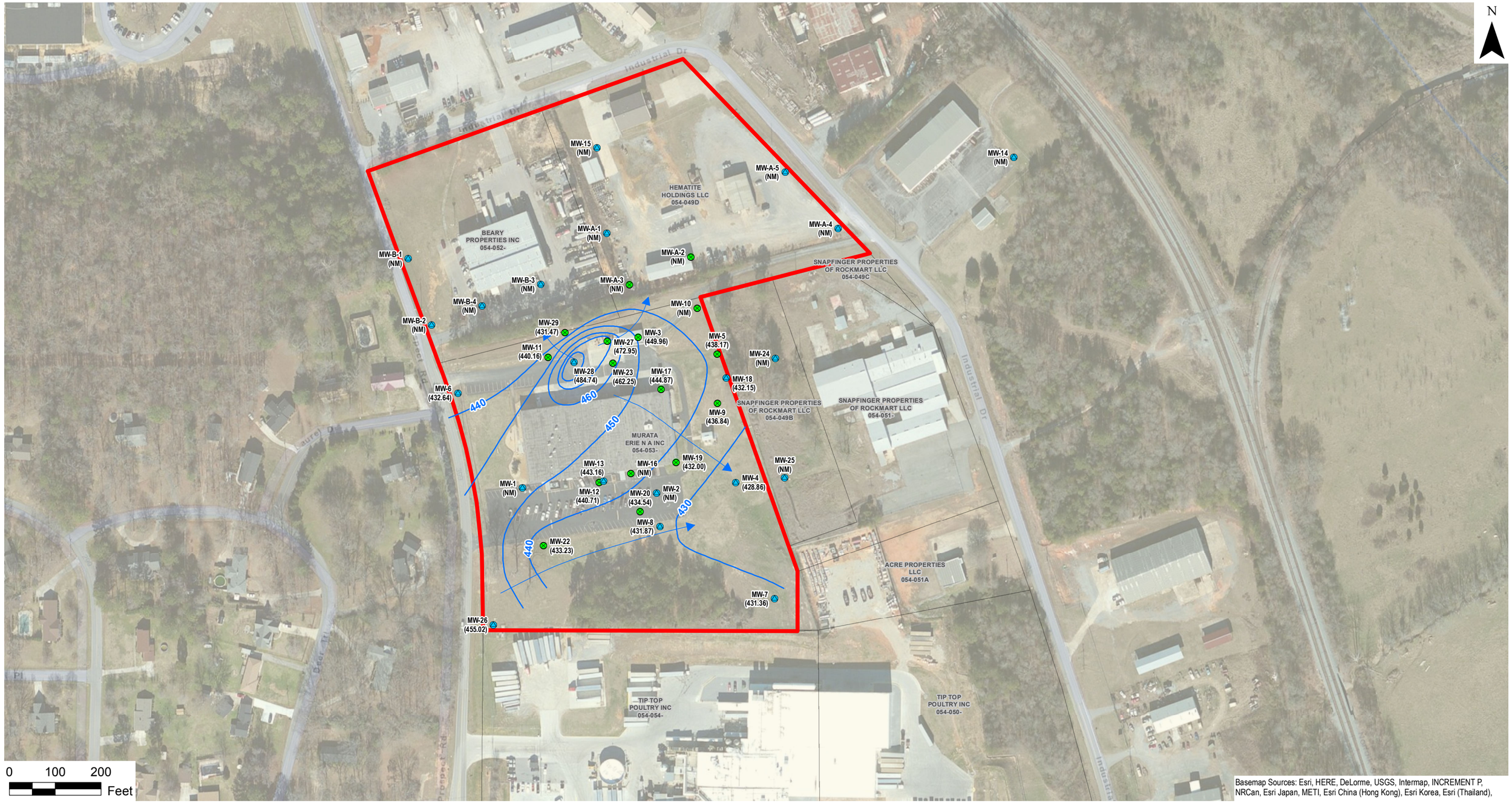
SOURCE: TOP OF CASING ELEVATION AND WELL LOCATIONS WERE SURVEYED BY DLM CIVIL ENGINEERING LAND SUIRVEYING, KENNESAW, GEORGIA.



ERM Environmental Resources Management

SITE CONCEPTUAL MODEL CROSS-SECTION B-B'
MURATA ELECTRONICS N.A., INC.
ROCKMART, GEORGIA

FIGURE
3-1



Environmental Resources Management

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FILE:	E:\MurataGIS\MXD\2017\2017 03-Mar VIRP Rpt\F3-2_PotMap103116.mxd				

FIGURE 3-2 - POTENTIOMETRIC SURFACE MAP - October 31, 2016

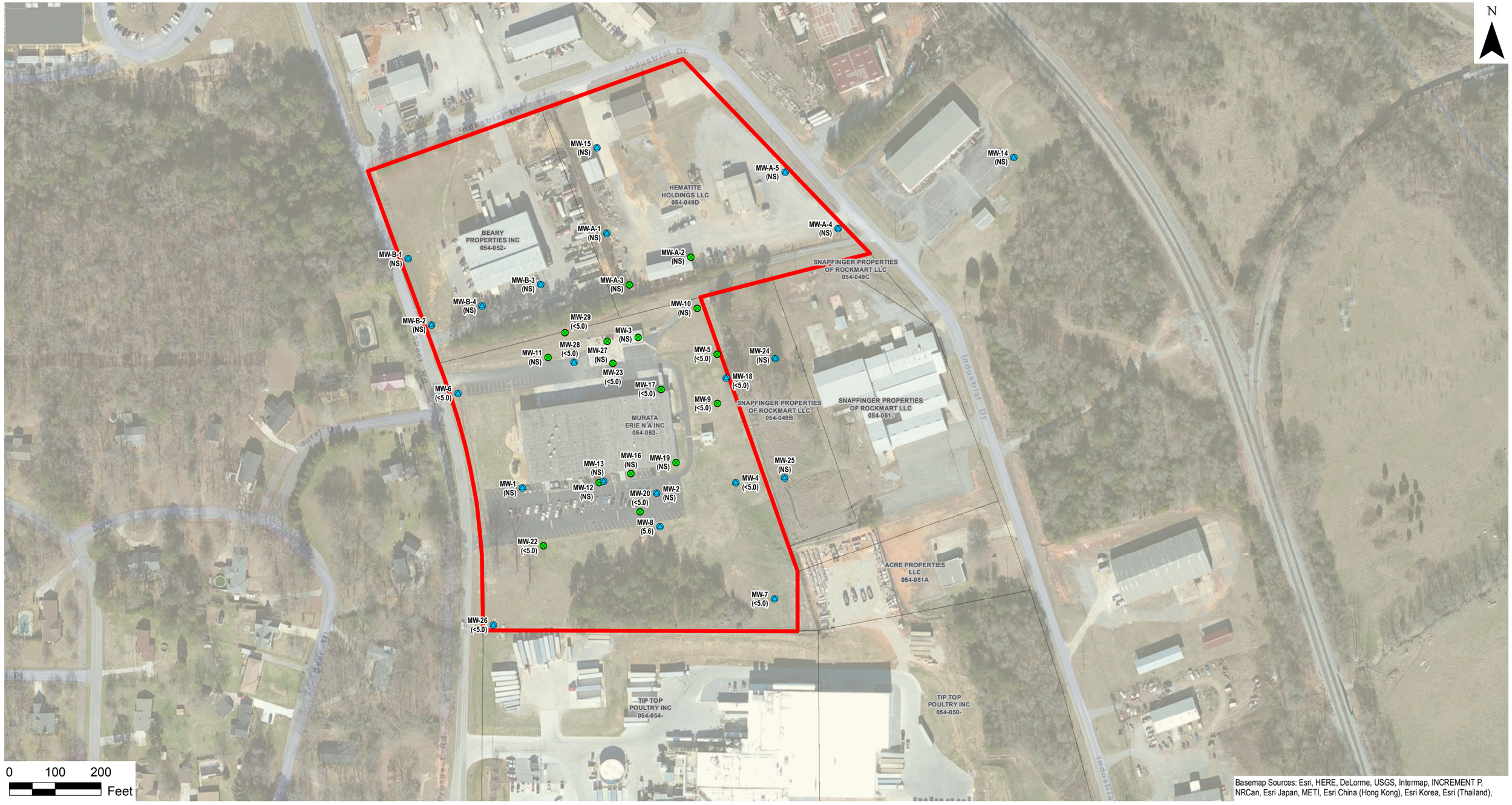
VIRP Report

Murata Electronics N.A., Inc.

Rockmart, Georgia

- Monitoring Well Location
- Injection Well Location
- Potentiometric Surface Contour
- Apparent Groundwater Flow Direction

ERM



Environmental Resources Management

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DATE:	3/22/2017	SCALE:	AS SHOWN	REVISION:	0

FILE: E:\MurataGIS\MXD\2017\2017 03-Mar VIRP Rpt\F3-3_PCEOctNov2016.mxd

FIGURE 3-3
PCE IN GROUNDWATER
October/November 2016

VIRP Report

Murata Electronics N.A., Inc.

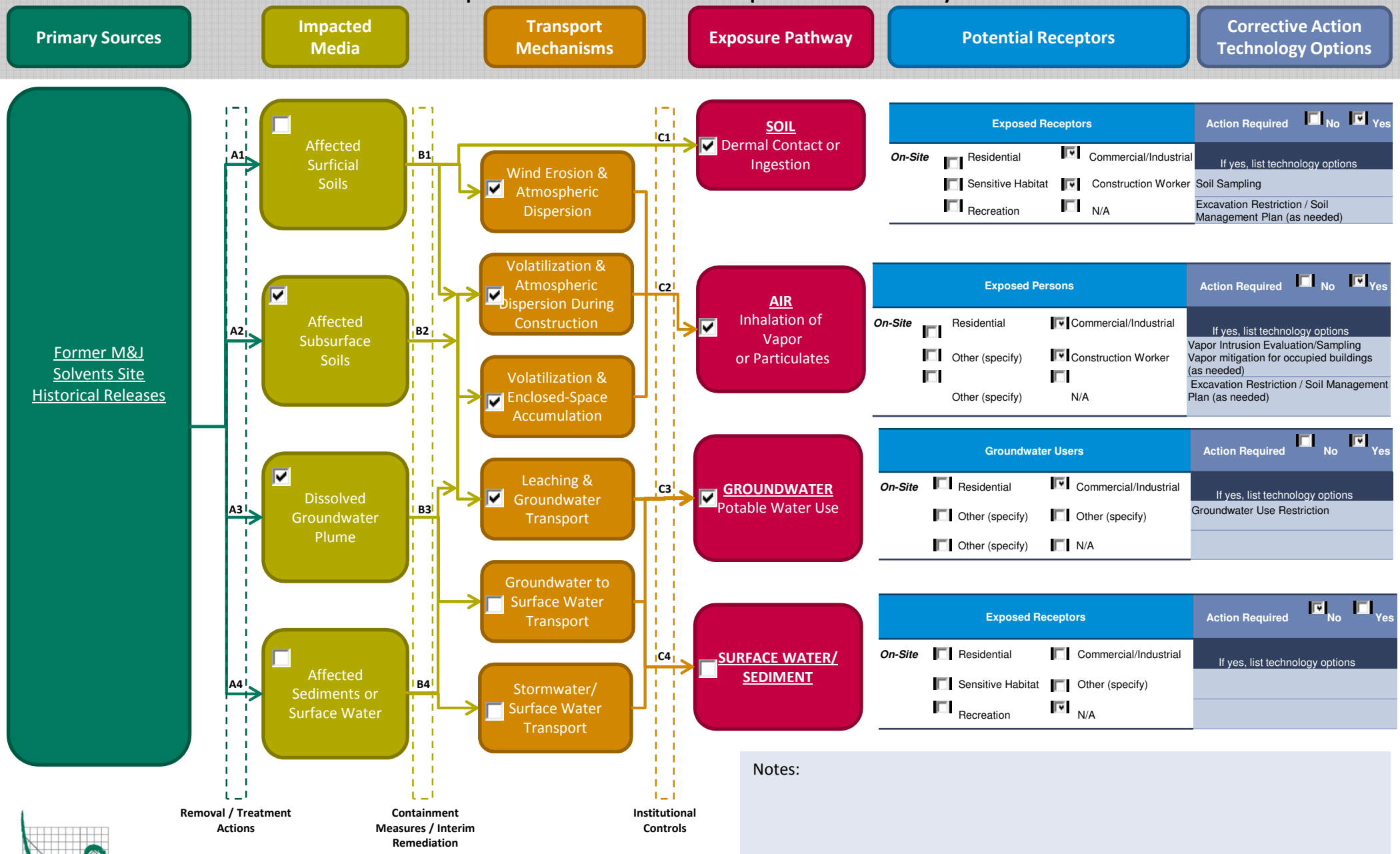
Rockmart, Georgia

- Monitoring Well Location
- Injection Well Location

NOTE: NS = Not Sampled
PCE = Tetrachloroethene

ERM

Figure 3-4
Murata Electronics- Site Conceptual Model
Receptors and Potential Exposure Pathways



Notes:

Environmental Resources Management

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FILE:	E:\MurataGIS\MXD\2017\2017 03-Mar VIRP Rpt\F4-1_PropGWMonit.mxd				

FIGURE 4-1 - PROPOSED GROUNDWATER MONITORING

VIRP Report

Murata Electronics N.A., Inc.

Rockmart, Georgia

- Point-of-Determination Well Location
- Routine Monitoring Well Location
- Gauge & Abandon Monitoring Well Location
- Destroyed Monitoring Well Location

ERM

VIRP Application

Appendix A

March 31, 2017
Project No. 0190949
Murata

Environmental Resources Management
3200 Windy Hill Rd. Suite 1500W
Atlanta, GA 30339
(678) 486-2700

Voluntary Investigation and Remediation Plan Application Form and Checklist

VRP APPLICANT INFORMATION

COMPANY NAME	Murata Erie NA, Inc.				
CONTACT PERSON/TITLE	Donnie Boatright / Corporate QA Manager, Murata Erie NA, Inc.				
ADDRESS	2200 Lake Park Drive , Smyrna, Ga 30080				
PHONE	770-436-1300	**FAX**	770-436-3030	**E-MAIL**	dboatright@murata.com

GEORGIA CERTIFIED PROFESSIONAL GEOLOGIST OR PROFESSIONAL ENGINEER OVERSEEING CLEANUP

NAME	Hunter S. Sartain	**GA PE/PG NUMBER**	PE 032318
COMPANY	Environmental Resources Management (ERM)		
ADDRESS	3200 Windy Hill Road, SE, Suite 1500W, Atlanta, Georgia 30339		

PHONE	678/486-2700	**FAX**	404/745-0103	**E-MAIL**	hunter.sartain@erm.com

APPLICANT'S CERTIFICATION

In order to be considered a qualifying property for the VRP:

(1) The property must have a release of regulated substances into the environment;
(2) The property shall not be:
- (A) Listed on the federal National Priorities List pursuant to the federal Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. Section 9601.
- (B) Currently undergoing response activities required by an order of the regional administrator of the federal Environmental Protection Agency; or
- (C) A facility required to have a permit under Code Section 12-8-66.

(3) Qualifying the property under this part would not violate the terms and conditions under which the division operates and administers remedial programs by delegation or similar authorization from the United States Environmental Protection Agency.
(4) Any lien filed under subsection (e) of Code Section 12-8-96 or subsection (b) of Code Section 12-13-12 against the property shall be satisfied or settled and released by the director pursuant to Code Section 12-8-94 or Code Section 12-13-6.

In order to be considered a participant under the VRP:
- (1) The participant must be the property owner of the voluntary remediation property or have express permission to enter another's property to perform corrective action.
- (2) The participant must not be in violation of any order, judgment, statute, rule, or regulation subject to the enforcement authority of the director.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I also certify that this property is eligible for the Voluntary Remediation Program (VRP) as defined in Code Section 12-8-105 and I am eligible as a participant as defined in Code Section 12-8-106.

APPLICANT'S SIGNATURE	Donnie Boatright		
APPLICANT'S NAME/TITLE (PRINT)	Donnie Boatright/QA Manager	**DATE**	March 29, 2017

QUALIFYING PROPERTY INFORMATION (For additional qualifying properties, please refer to the last page of application form)			
HAZARDOUS SITE INVENTORY INFORMATION (if applicable)			
HSI Number	10771	Date HSI Site listed	10/16/2003
HSI Facility Name	MENA Rockmart Facility	NAICS CODE	423690
PROPERTY INFORMATION			
TAX PARCEL ID	054-053	PROPERTY SIZE (ACRES)	9.8
PROPERTY ADDRESS	308 Prospect Road		
CITY	Rockmart	COUNTY	Polk
STATE	Georgia	ZIPCODE	30153
LATITUDE (decimal format)	34.014 North	LONGITUDE (decimal format)	85.063 West
PROPERTY OWNER INFORMATION			
PROPERTY OWNER(S)	Murata Erie NA, Inc.	PHONE #	770-436-1300
MAILING ADDRESS	2200 Lake Park Drive		
CITY	Smyrna	STATE/ZIPCODE	GA 30080

ITEM #	DESCRIPTION OF REQUIREMENT	Location in VRP (i.e. pg., Table #, Figure #, etc.)	For EPD Comment Only (Leave Blank)
1.	**$5,000 APPLICATION FEE** IN THE FORM OF A CHECK PAYABLE TO THE GEORGIA DEPARTMENT OF NATURAL RESOURCES. (PLEASE LIST CHECK DATE AND CHECK NUMBER IN COLUMN TITLED "LOCATION IN VRP." PLEASE DO NOT INCLUDE A SCANNED COPY OF CHECK IN ELECTRONIC COPY OF APPLICATION.)	March 31, 2017 Ck # - 205184	
2.	**WARRANTY DEED(S)** FOR QUALIFYING PROPERTY.	See Appendix E	
3.	**TAX PLAT** OR OTHER FIGURE INCLUDING QUALIFYING PROPERTY BOUNDARIES, ABUTTING PROPERTIES, AND TAX PARCEL IDENTIFICATION NUMBER(S).	See Appendix E	
4.	**ONE (1) PAPER COPY AND TWO (2) COMPACT DISC (CD) COPIES** OF THE VOLUNTARY REMEDIATION PLAN IN A SEARCHABLE PORTABLE DOCUMENT FORMAT (PDF).	Paper copy and CDs included with this Application and Checklist.	

5.	The VRP participant's initial plan and application must include, using all reasonably available current information to the extent known at the time of application, a graphic three-dimensional preliminary conceptual site model (CSM) including a preliminary remediation plan with a table of delineation standards, brief supporting text, charts, and figures (no more than 10 pages, total) that illustrates the site's surface and subsurface setting, the known or suspected source(s) of contamination, how contamination might move within the environment, the potential human health and ecological receptors, and the complete or incomplete exposure pathways that may exist at the site; the preliminary CSM must be updated as the investigation and remediation progresses and an up-to-date CSM must be included in each semi-annual status report submitted to the director by the participant; a **PROJECTED MILESTONE SCHEDULE** for investigation and remediation of the site, and after enrollment as a participant, must update the schedule in each semi-annual status report to the director describing implementation of the plan during the preceding period. A Gantt chart format is preferred for the milestone schedule. The following four (4) generic milestones are required in all initial plans with the results reported in the participant's next applicable semi-annual reports to the director. The director may extend the time for or waive these or other milestones in the participant's plan where the director determines, based on a showing by the participant, that a longer time period is reasonably necessary:	See Section 2/3 of VIRP, including Figures 2-1 through 3-4 and Table 3-2. Milestone schedule provided as Figure 4-2 in the VIRP.	
5.a.	Within the first 12 months after enrollment, the participant must complete horizontal delineation of the release and associated constituents of concern on property where access is available at the time of enrollment;	Completed – See Section 2 and 3 of the VIRP	
5.b.	Within the first 24 months after enrollment, the participant must complete horizontal delineation of the release and associated constituents of concern extending onto property for which access was not available at the time of enrollment;	Completed – See Section 2 and 3 of the VIRP	
5.c.	Within 30 months after enrollment, the participant must update the site CSM to include vertical delineation, finalize the remediation plan and provide a preliminary cost estimate for implementation of remediation and associated continuing actions; and	CSM provided as 3-1, and as needed in future submittals	
5.d.	Within 60 months after enrollment, the participant must submit the compliance status report required under the VRP, including the requisite certifications.	TBD	

6.	**SIGNED AND SEALED PE/PG CERTIFICATION** AND SUPPORTING DOCUMENTATION: "I certify under penalty of law that this report and all attachments were prepared by me or under my direct supervision in accordance with the Voluntary Remediation Program Act (O.C.G.A. Section 12-8-101, et seq.). I am a professional engineer/professional geologist who is registered with the Georgia State Board of Registration for Professional Engineers and Land Surveyors/Georgia State Board of Registration for Professional Geologists and I have the necessary experience and am in charge of the investigation and remediation of this release of regulated substances. Furthermore, to document my direct oversight of the Voluntary Remediation Plan development, implementation of corrective action, and long term monitoring, I have attached a monthly summary of hours invoiced and description of services provided by me to the Voluntary Remediation Program participant since the previous submittal to the Georgia Environmental Protection Division. The information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." __Hunter S. Sartain, PE 032318_____ Printed Name and GA PE Number _March 31, 2017_____ Date _____ Signature and Stamp 		

ADDITIONAL QUALIFYING PROPERTIES

PROPERTY INFORMATION			
TAX PARCEL ID	054-052	PROPERTY SIZE (ACRES)	4.3
PROPERTY ADDRESS	515 Industrial Drive		
CITY	Rockmart	COUNTY	Polk
STATE	GA	ZIPCODE	30153
LATITUDE (decimal format)	34.0153 North	LONGITUDE (decimal format)	85.0643 West
PROPERTY OWNER INFORMATION			
PROPERTY OWNER(S)	Beary Properties, Inc.	PHONE #	To Be Determined
MAILING ADDRESS	2500 W Arthingon		
CITY	Chicago	STATE/ZIPCODE	IL 60612

PROPERTY INFORMATION			
TAX PARCEL ID	054-049D	PROPERTY SIZE (ACRES)	
PROPERTY ADDRESS	457 Industrial Drive		
CITY	Rockmart	COUNTY	Polk
STATE	GA	ZIPCODE	30153
LATITUDE (decimal format)	34.0157 North	LONGITUDE (decimal format)	85.0629 West
PROPERTY OWNER INFORMATION			
PROPERTY OWNER(S)	Hematite Holdings LLC	PHONE #	770-856-1965
MAILING ADDRESS	481 Iron Hill Road		
CITY	Taylorsville	STATE/ZIPCODE	GA 30178

Risk Reduction Standards

Appendix B

March 31, 2017
Project No. 0190949
Murata

Environmental Resources Management
3200 Windy Hill Rd. Suite 1500W
Atlanta, GA 30339
(678) 486-2700

Table 1
Murata Electronics, N.A. (HSI No. 10771)
VIRP
Site-Specific Data for Risk Assessment

Parameter	Unit	Symbol	Non-Specific	Residential Adult (RA) (a)	Residential Child (RC) (b)	Non-Residential / Industrial Worker (IW) (a)
Exposure frequency	days/year	EF		350	350	250
Exposure duration	years	ED		30	6	25
Exposure Interval	s	T		9.5E+08	1.9E+08	7.9E+08
Ingestion rate, soil	mg/day	IR (soil)		114	200	50
Inhalation rate	m3/day	IR (air)		15	15	20
Ingestion rate, water	liter/day	IR (water)		2	1	1
Body weight	kg	BW		70	15	70
Averaging time, nc	years	ATnc		30	6	25
Averaging time, carc	years	ATc	70			
Particulate emission factor	m3/kg	PEF	4.63E+09			
Volatilization factor (water)	L/m3	K	0.5			
Target risk (groundwater)	none	TR_GW	1.00E-05			
Target hazard index	none	THI	1			
Length of Contamination	m	LS	45			
Wind speed (mixing zone)	m/s	V	2.25			
Diffusion Height	m	DH	2			
Contaminated Area	cm2	A	2.03E+07			
Soil Porosity	none	E	0.35			
Particulate Density	g/cm3	ps	2.65			
Organic Carbon (for VF)	none	OC_vf	0.02			

Notes:
(a) Default exposure assumptions from Table 3 Appendix III.
(b) Default values from "Comparison of Existing Contamination to RRS 391-3-19-07", Common Mistakes

Table 2
Murata Electronics, N.A. (HSI No. 10771)
VIRP
Chemical-Specific Data for Risk Assessment

		Toxicity Information (a)														Chemical / Physical Properties and Transport Parameters (a)													
Chemical	**CAS No**	**SFo (mg/kg-d)$^{-1}$**	**IUR (ug/m3)-1**	**SFi (GW) (mg/kg-d)$^{-1}$**	**SFi (Soil) (mg/kg-d)$^{-1}$**	**RfDo (mg/kg-d)**	**1/RfDo**	**RfC (mg/m3)**	**RfDi (GW) (mg/kg-d)**	**1/RfDi_GW**	**RfDi (Soil) (mg/kg-d)**	**1/RfDi_Soil**	**Carc Class**	**1986 Equiv Carc Class**	**TR T1/T3 Soil**	**C**	**NC**	**VF_RA (soil-air) (m3/kg)**	**1/VF_RA (kg/m3)**	**VF_RC (soil-air) (m3/kg)**	**1/VF_RC (kg/m3)**	**VF_IW (soil-air) (m3/kg)**	**1/VF_IW (kg/m3)**	**Koc (L/kg)**	**H' (unitless)**	**V/NV**	**Kd (for VF) (L/kg)**	**HLC (atm-m3/mole)**	**Kas (H'/Kd)**	**α (cm2/s)**	**Di (cm2/s)**	**Dei (cm2/s)**
1,1,1-Trichloroethane	71-55-6			-	-	2.00E+00	5.00E-01	5.00E+00	1.43E+00	7.00E-01	1.43E+00	7.00E-01	-	-	-	No	Yes	1.69E+03	5.90E-04	7.58E+02	1.32E-03	1.55E+03	6.47E-04	4.39E+01	7.03E-01	V	8.78E-01	1.72E-02	8.01E-01	6.42E-03	6.48E-02	4.58E-02
1,1-Dichloroethane	75-34-3	5.70E-03	1.60E-06	5.60E-03	5.60E-03	2.00E-01	5.00E+00		-	-	-	-	C	C	1.0E-04	Yes	Yes	2.31E+03	4.32E-04	1.03E+03	9.67E-04	2.11E+03	4.74E-04	3.18E+01	2.30E-01	V	6.36E-01	5.62E-03	3.61E-01	4.04E-03	8.36E-02	5.92E-02
1,1-Dichloroethene	75-35-4			-	-	5.00E-02	2.00E+01	2.00E-01	5.71E-02	1.75E+01	5.71E-02	1.75E+01	-	-	-	No	Yes	9.45E+02	1.06E-03	4.23E+02	2.37E-03	8.63E+02	1.16E-03	3.18E+01	1.07E+00	V	6.36E-01	2.61E-02	1.68E+00	1.55E-02	8.63E-02	6.10E-02
1,2-Dichloroethene, cis-	156-59-2			-	-	2.00E-03	5.00E+02		-	-	-	-	-	-	-	No	Yes	-	0	-	0	-	0	3.96E+01	1.67E-01	V	7.92E-01	4.08E-03	2.11E-01	2.57E-03	8.84E-02	6.25E-02
1,2-Dichloroethene, trans-	156-60-5			-	-	2.00E-02	5.00E+01		-	-	-	-	-	-	-	No	Yes	-	0	-	0	-	0	3.96E+01	3.83E-01	V	7.92E-01	9.38E-03	4.84E-01	5.55E-03	8.76E-02	6.20E-02
Benzene	71-43-2	5.50E-02	7.80E-06	2.73E-02	2.73E-02	4.00E-03	2.50E+02	3.00E-02	8.57E-03	1.17E+02	8.57E-03	1.17E+02	A	A	1.0E-05	Yes	Yes	4.95E+03	2.02E-04	2.21E+03	4.52E-04	4.52E+03	2.21E-04	1.46E+02	2.27E-01	V	2.92E+00	5.55E-03	7.78E-02	9.86E-04	8.95E-02	6.33E-02
Tetrachloroethene	127-18-4	2.10E-03	2.60E-07	9.10E-04	9.10E-04	6.00E-03	1.67E+02	4.00E-02	1.14E-02	8.75E+01	1.14E-02	8.75E+01	LH	B	1.0E-05	Yes	Yes	2.89E+03	3.46E-04	1.29E+03	7.73E-04	2.64E+03	3.79E-04	9.49E+01	7.24E-01	V	1.90E+00	1.77E-02	3.81E-01	2.57E-03	5.05E-02	3.57E-02
Trichloroethene	79-01-6	4.60E-02	4.10E-06	1.44E-02	1.44E-02	5.00E-04	2.00E+03	2.00E-03	5.71E-04	1.75E+03	5.71E-04	1.75E+03	CH	A	1.0E-05	Yes	Yes	2.67E+03	3.75E-04	1.19E+03	8.37E-04	2.44E+03	4.10E-04	6.07E+01	4.03E-01	V	1.21E+00	9.85E-03	3.32E-01	3.07E-03	6.87E-02	4.86E-02
Vinyl Chloride	75-01-4	7.20E-01	4.40E-06	1.54E-02	1.54E-02	3.00E-03	3.33E+02	1.00E-01	2.86E-02	3.50E+01	2.86E-02	3.50E+01	A	A	1.0E-05	Yes	Yes	6.36E+02	1.57E-03	2.84E+02	3.52E-03	5.80E+02	1.72E-03	2.17E+01	1.14E+00	V	4.35E-01	2.78E-02	2.62E+00	2.63E-02	1.07E-01	7.58E-02

Notes:
Toxicity and chemical/physical properties from May 2016 version of EPA RSL tables, except for chemicals listed with "NL". For the purpose of the leaching calculation, chemical/physical properties for these chemicals were obtained from RAIS in 3/21/2017 (they were not in the SSG).
SFo - carcinogenic oral slope factor
IUR - carcinogenic inhalation unit risk
SFi - carcinogenic inhalation slope factor (IUR * 70 * 1000/20)
RfDo – Oral reference dose
RfC – Inhalation reference concentration
RfDi – Inhalation reference dose (RfC * 20/70)
NL - not listed in the EPA RSL tables
VF - volatilization factor, calculated in accordance with the equation in Table 3 of Appendix III
Koc - organic carbon partition coefficient
H' - unitless Henry's Law Constant, calculated as H (atm-m3/mol) * 41
V/NV - chemical's volatility status, per EPA, volatile if H ≥ 1 x 10-5 atm-m3/mole or vapor pressure ≥ to 1 mm Hg.
Kd - soil-water partition coefficient, calculated as Koc * OC (value shown in this table is for the volatilization factor calculation)
Kas - soil-air partition coefficient, calculated as H'/Kd
α - intermediate parameter in the VF calculation, calculated as (Dei x E)/[E + (ps)(1-E)/Kas]
Di - molecular diffusivity (air)
Dei - effective diffusivity, calculated as Di x E^0.33

Table 2
Murata Electronics, N.A. (HSI N
VIRP
Chemical-Specific Data for Risk

	GROUNDWATER																		Ground Water (mg/L) Types 2 & 4			
	CARCINOGENIC									NONCARCINOGENIC									Type 2 Residential		Type 4 Non-Residentia	
	RAGS1- Residential Adult			RAGS1- Residential Child			RAGS1- Industrial Worker			RAGS2- Residential Adult			RAGS2- Residential Child			RAGS2- Industrial Worker			Residential		Industrial	
Chemical	Ingestion-INV	Inhalation-INV	**RAGS1-RA**	Ingestion-INV	Inhalation-INV	**RAGS1-RC**	Ingestion-INV	Inhalation-INV	**RAGS1-IW**	Ingestion-INV	Inhalation-INV	**RAGS2-RA**	Ingestion-INV	Inhalation-INV	**RAGS2-RC**	Ingestion-INV	Inhalation-INV	**RAGS2-IW**	**Type 2 RAGS Carc**	**Type 2 RAGS Non-Carc**	**Type 4 RAGS Carc**	**Type 4 RAGS Non-Carc**
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-	1.37E-02	7.19E-02	1.17E+01	3.20E-02	3.36E-01	2.72E+00	4.89E-03	6.85E-02	1.36E+01	**-**	**2.72E+00**	**-**	**1.36E+01**
1,1-Dichloroethane	6.69E+00	2.47E+01	3.19E-02	3.12E+00	2.30E+01	3.83E-02	1.99E+00	1.96E+01	4.64E-02	1.37E-01	-	7.30E+00	3.20E-01	-	3.13E+00	4.89E-02	-	2.04E+01	**3.19E-02**	**3.13E+00**	**4.64E-02**	**2.04E+01**
1,1-Dichloroethene	-	-	-	-	-	-	-	-	-	5.48E-01	1.80E+00	4.26E-01	1.28E+00	8.39E+00	1.03E-01	1.96E-01	1.71E+00	5.24E-01	**-**	**1.03E-01**	**-**	**5.24E-01**
1,2-Dichloroethene, cis-	-	-	-	-	-	-	-	-	-	1.37E+01	-	7.30E-02	3.20E+01	-	3.13E-02	4.89E+00	-	2.04E-01	**-**	**3.13E-02**	**-**	**2.04E-01**
1,2-Dichloroethene, trans-	-	-	-	-	-	-	-	-	-	1.37E+00	-	7.30E-01	3.20E+00	-	3.13E-01	4.89E-01	-	2.04E+00	**-**	**3.13E-01**	**-**	**2.04E+00**
Benzene	6.46E+01	1.20E+02	5.41E-03	3.01E+01	1.12E+02	7.03E-03	1.92E+01	9.54E+01	8.72E-03	6.85E+00	1.20E+01	5.31E-02	1.60E+01	5.59E+01	1.39E-02	2.45E+00	1.14E+01	7.21E-02	**5.41E-03**	**1.39E-02**	**8.72E-03**	**7.21E-02**
Tetrachloroethene	2.47E+00	4.01E+00	1.54E-01	1.15E+00	3.74E+00	2.04E-01	7.34E-01	3.18E+00	2.56E-01	4.57E+00	8.99E+00	7.38E-02	1.07E+01	4.20E+01	1.90E-02	1.63E+00	8.56E+00	9.81E-02	**1.54E-01**	**1.90E-02**	**2.56E-01**	**9.81E-02**
Trichloroethene	5.40E+01	6.32E+01	8.53E-03	2.52E+01	5.90E+01	1.19E-02	1.61E+01	5.01E+01	1.51E-02	5.48E+01	1.80E+02	4.26E-03	1.28E+02	8.39E+02	1.03E-03	1.96E+01	1.71E+02	5.24E-03	**8.53E-03**	**1.03E-03**	**1.51E-02**	**5.24E-03**
Vinyl Chloride	8.45E+02	6.78E+01	1.10E-03	3.95E+02	6.33E+01	2.18E-03	2.52E+02	5.38E+01	3.27E-03	9.13E+00	3.60E+00	7.86E-02	2.13E+01	1.68E+01	2.63E-02	3.26E+00	3.42E+00	1.50E-01	**1.10E-03**	**2.63E-02**	**3.27E-03**	**1.50E-01**

Notes:
Toxicity and chemical/physical properties from May 2016 version of EPA RSL tables, except for chemicals listed with "NL". For the purpose of the leaching calculation, chemical/physical properties for these chemicals were obtained from RAIS in 3/21/2
SFo - carcinogenic oral slope factor
IUR - carcinogenic inhalation unit risk
SFi - carcinogenic inhalation slope factor (IUR * 70 * 1000/20)
RfDo – Oral reference dose
RfC – Inhalation reference concentration
RfDi – Inhalation reference dose (RfC * 20/70)
NL - not listed in the EPA RSL tables
VF - volatilization factor, calculated in accordance with the equation in Table 3 of Appendix III
Koc - organic carbon partition coefficient
H' - unitless Henry's Law Constant, calculated as H (atm-m3/mol) * 41
V/NV - chemical's volatility status, per EPA, volatile if H ≥ 1 x 10-5 atm-m3/mole or vapor pressure ≥ to 1 mm Hg.
Kd - soil-water partition coefficient, calculated as Koc * OC (value shown in this table is for the volatilization factor calculation)
Kas - soil-air partition coefficient, calculated as H'/Kd
α - intermediate parameter in the VF calculation, calculated as (Dei x E)/[E + (ps)(1-E)/Kas]
Di - molecular diffusivity (air)
Dei - effective diffusivity, calculated as Di x E^0.33

Table 3
Murata Electronics, N.A. (HSI No. 10771)
VIRP
Risk Reduction Standards for Ground Water (mg/L)

		RAGS B Calculations				Appendix III		Detection		GA	Ground Water RRS (mg/L)										General GW RRS			
		Residential (mg/L)		Non-Residential (mg/L)		Table 1		Limit		MCL	Type 1		Type 2		Type 3		Type 4				Residential		Non-Residential	
Chemical	CAS No.	Carc.	Non-Carc.	Carc.	Non-Carc.	(mg/L)		(mg/L)		(mg/L)	RRS		RRS		RRS		RRS				(mg/L)		(mg/L)	
1,1,1-Trichloroethane	71-55-6	-	2.72E+00	-	1.36E+01	2.00E-01				2.00E-01	2.00E-01	A3T1	2.72E+00	R	2.00E-01	A3T1	1.36E+01	R			2.72E+00	R	1.36E+01	R
1,1-Dichloroethane	75-34-3	3.19E-02	3.13E+00	4.64E-02	2.04E+01	4.00E+00				-	4.00E+00	A3T1	3.19E-02	R	4.00E+00	A3T1	4.64E-02	R			4.00E+00	A3T1	4.00E+00	A3T1
1,1-Dichloroethene	75-35-4	-	1.03E-01	-	5.24E-01	7.00E-03				7.00E-03	7.00E-03	A3T1	1.03E-01	R	7.00E-03	A3T1	5.24E-01	R			1.03E-01	R	5.24E-01	R
1,2-Dichloroethene, cis-	156-59-2	-	3.13E-02	-	2.04E-01	7.00E-02				7.00E-02	7.00E-02	A3T1	3.13E-02	R	7.00E-02	A3T1	2.04E-01	R			7.00E-02	A3T1	2.04E-01	R
1,2-Dichloroethene, trans-	156-60-5	-	3.13E-01	-	2.04E+00	1.00E-01				1.00E-01	1.00E-01	A3T1	3.13E-01	R	1.00E-01	A3T1	2.04E+00	R			3.13E-01	R	2.04E+00	R
Benzene	71-43-2	5.41E-03	1.39E-02	8.72E-03	7.21E-02	5.00E-03				5.00E-03	5.00E-03	A3T1	5.41E-03	R	5.00E-03	A3T1	8.72E-03	R			5.41E-03	R	8.72E-03	R
Tetrachloroethene	127-18-4	1.54E-01	1.90E-02	2.56E-01	9.81E-02	5.00E-03				5.00E-03	5.00E-03	A3T1	1.90E-02	R	5.00E-03	A3T1	9.81E-02	R			1.90E-02	R	9.81E-02	R
Trichloroethene	79-01-6	8.53E-03	1.03E-03	1.51E-02	5.24E-03	5.00E-03				5.00E-03	5.00E-03	A3T1	1.03E-03	R	5.00E-03	A3T1	5.24E-03	R			5.00E-03	A3T1	5.24E-03	R
Vinyl Chloride	75-01-4	1.10E-03	2.63E-02	3.27E-03	1.50E-01	2.00E-03				2.00E-03	2.00E-03	A3T1	1.10E-03	R	2.00E-03	A3T1	3.27E-03	R			2.00E-03	A3T1	3.27E-03	R

Notes:
- Not Available
DL - Ground Water RRS is based on the detection limit.
RRS - Risk Reduction Standards
RAGS Part B Calculations are provided in Table 2. Carc. = Carcinogenic; Non-Carc. = Noncarcinogenic. All carcinogenic calculations for ground water were performed using a target risk of 1.0E-05.
Appendix III Table 1 Ground Water Criteria notes:
(a) The health-based drinking water criterion for this constituent is lower than the lowest currently achievable and available detection limit. According to Rule 391-3-19-.07(4)(e) , the detection limit or background concentration will be the ground water criterion for this constituent.
(b) Per Appendix III Table 1, use the ground water criterion for trihalomethanes.
(c) Constituent not listed in Appendix III Table 1, per EPD implementation policy, use GA MCL for total chromium.
Detection Limit - the lowest achievable laboratory detection limit for undiluted project samples. Notes:
(d) Lowest achievable laboratory detection limit for this project is the same as the Appendix III Table 1 value. Value not changed.
(e) Constituent not listed in Appendix III Table 1, value represents the lowest typically achievable detection limit by the laboratory for project-specific samples.
GA MCL - Georgia Maximum Contaminant Level, per Rule 391-3-5-.18. Primary Maximum Contaminant Levels for Drinking Water (obtained online June 13, 2016, current through Rules filed through May 18, 2016). Per the EPD guidance "Comparison of Existing Contamination to RRS 391-3-19-.07", for Type 1 and 3 RRS, in cases where the GA MCL is lower than the groundwater criterion, the MCL takes precedence.
Type 1 RRS - concentrations that pose no significant risk on the basis of standardized exposure assumptions and defined risk levels for residential properties. Per Rule 391-3-19-.07(6)(b), the groundwater criteria for Type 1 are identified as the concentrations given in Table 1 of Appendix III or, for those substances not listed, the background or detection limit concentration. In cases where the GA MCL is lower than the groundwater criterion, the MCL takes precedence.
Type 2 RRS - concentrations that pose no significant risk on the basis of a site-specific risk assessment for residential properties. Per Rule 391-3-19-.07(7)(b), the ground water criteria for Type 2 are identified as the lower of the carcinogenic and noncarcinogenic RAGS-B calculated values or, for those substances for which neither calculation can be made, the higher of the concentrations in Appendx III Table 1, background concentrations, or detection limits.
Type 3 RRS - concentrations that pose no significant risk on the basis of standardized exposure assumptions and defined risk levels for the non-residential use scenario. Per Rule 391-3-19-.07(8)(c), the groundwater criteria for Type 3 are the same as for Type 1.
Type 4 RRS - concentrations that pose no significant risk on the basis of a site-specific risk assessment for the non-residential use scenario. Per Rule 391-3-19-.07(9)(b), the ground water criteria for Type 4 are identified as the lower of the carcinogenic and noncarcinogenic RAGS-B calculated values or, for those substances for which neither calculation can be made, the higher of the concentrations in Appendx III Table 1, background concentrations, or detection limits.

Table 4
Murata Electronics, N.A. (HSI No. 10771)
VIRP
Type 1 Risk Reduction Standards for Soil

Chemical	CAS No.	Appendix III Table 2 (mg/kg)	Appendix I NC (mg/kg) (i)		Detection Limit (mg/kg)	T1 GWX100 (mg/kg) (ii)		Leachate (mg/kg) (iii)	(6)(c)(1) = MAX (i-iii) (mg/kg)	RAGS B Residential Calculations		Type 1 Soil RRS (mg/kg)
										Non-Carcinogen (mg/kg)	Carcinogen (mg/kg)	
1,1,1-Trichloroethane	71-55-6	-	5.44E+00			2.00E+01		-	2.00E+01	1.17E+04	-	2.00E+01
1,1-Dichloroethane	75-34-3	-	3.00E-02			4.00E+02		-	4.00E+02	1.28E+05	4.61E+02	4.00E+02
1,1-Dichloroethene	75-35-4	-	3.60E-01			7.00E-01		-	7.00E-01	2.61E+02	-	7.00E-01
1,2-Dichloroethene, cis-	156-59-2	-	5.30E-01			7.00E+00		-	7.00E+00	1.28E+03	-	7.00E+00
1,2-Dichloroethene, trans-	156-60-5	-	5.30E-01			1.00E+01		-	1.00E+01	1.28E+04	-	1.00E+01
Benzene	71-43-2	-	2.00E-02			5.00E-01		-	5.00E-01	1.91E+02	1.91E+01	5.00E-01
Tetrachloroethene	127-18-4	-	1.80E-01			5.00E-01		-	5.00E-01	1.54E+02	3.43E+02	5.00E-01
Trichloroethene	79-01-6	-	1.30E-01			5.00E-01		-	5.00E-01	7.26E+00	1.98E+01	5.00E-01
Vinyl Chloride	75-01-4	-	4.00E-02			2.00E-01		-	2.00E-01	8.45E+01	3.82E+00	2.00E-01

Notes:
- Not Available
RRS - Risk Reduction Standards
RAGS Part B Calculations are provided in Table 2.
Appendix I NC (Notification Concentration), notes:
(1) Values which supplanted the detection limit as the notification concentration.
(2) The detection limit (listed in a separate column) is the notification concentration because it is greater than the number following the slash in Appendix I of the Georgia HSRA Rules.
(3) The detection limit is the notification concentration because the substance is elsewhere in the Georgia HSRA Rules classified as an acute hazardous waste.
(4) Chemical concentrations listed in Appendix I of the Georgia HSRA Rules as # /BG. Since background concentrations are not available the numerical value preceeding the slash was used in the ca
(5) Value in NC column for one listing for this CAS No. was inconsistent with all other listings for this CAS No. Value used for the majority was applied.
Detection Limit - the lowest achievable laboratory detection limit for undiluted project samples.
Type 1 RRS - concentrations that pose no significant risk on the basis of standardized exposure assumptions and defined risk levels for residential properties. Type 1 RRS for soil are identified as
(a) For metals, concentrations in Table 2 of Appendix III, or
(b) For regulated substances not listed in Table 2 of Appendix III, the minimum of the following:
(1) Per Rule 391-3-19-07(06)(c)1, the highest of the following concentrations that will not result in contamination of groundwater above Type 1 groundwater criteria:
(i) Notification Concentration (NC) , in Appendix I, excluding values in square brackets per Rule 391-3-19-.07(6)(c)1(i)
(ii) Type 1 groundwater value multiplied by 100, per Rule 391-3-19-.07(6)(c)1(ii) (Type 1 groundwater RRS are provided in Table 3)
(iii) Toxicity Characteristic Leaching Procedure (TCLP), or other approved leachate method that will not generate leachate concentrations that exceed Type 1 groundwater RRS per , per Rule 391-3-19-.07(6)(c)1(iii).
Note: for substances excluded under Item (i) above AND not listed on Table 1 of Appendix III (ground water criteria), the concentration under Rule 391-3-19-.07(6)(c)1. shall be considered non-
(2) Per Rule 391-3-19-.07(6)(c)2, concentration unlikely to cause non-cancer toxic effects from soil ingestion and inhalation of volatiles and particulates using Equation 7 of RAGS Part B and residential exposure assumptions in Table 3 of Appendix III. Calculations are provided in Table 2.
(3) Per Rule 391-3-19-.07(6)(c)3, concentration for which the target excess cancer risk is less than or equal to 1E-05 (1E-04 for class C carcinogens) from soil ingestion and inhalation of volatiles and particulates using Equation 6 of RAGS Part B and residential exposure assumptions in Table 3 of Appendix III. Calculations are provided in Table 2.
Note: where concentrations are noncalculable under Items 1-3 above, the soil criterion shall be the higher of the background or detection limit concentration.

Table 5
Murata Electronics, N.A. (HSI No. 10771)
VIRP
Type 2 Risk Reduction Standards for Soil

Chemical	CAS No.	Appendix III Table 2 (mg/kg)	Leachate Parameters: Organic Carbon Partition Coef. Koc (L/kg)	Soil-Water Partition Coef. Kd (cm3/g)	Henry's Law Constant (H') (unitless)	Leachate Partition Factor (LPF) (mg/L)/(mg/kg)	Target GW RRS Max Type 1/2 (mg/L)	Target Leachate Conc. (Cw) DAF=2 (mg/L)	Leachability Criteria (SSL) DAF = 20 (mg/kg)	RAGS B Residential Calculations: Type 2 Non-Carcinogen (mg/kg)	Type 2 Carcinogen (mg/kg)	Type 2 Soil RRS (mg/kg)
1,1,1-Trichloroethane	71-55-6	-	4.39E+01	8.78E-02	7.03E-01	3.51E-01	2.72E+00	5.44E+01	1.91E+01	1.12E+03	-	1.91E+01
1,1-Dichloroethane	75-34-3	-	3.18E+01	6.36E-02	2.30E-01	2.84E-01	4.00E+00	8.00E+01	2.27E+01	1.56E+04	2.22E+01	2.22E+01
1,1-Dichloroethene	75-35-4	-	3.18E+01	6.36E-02	1.07E+00	3.59E-01	1.03E-01	2.07E+00	7.42E-01	2.50E+01	-	7.42E-01
1,2-Dichloroethene, cis-	156-59-2	-	3.96E+01	7.92E-02	1.67E-01	2.94E-01	7.00E-02	1.40E+00	4.12E-01	1.56E+02	-	4.12E-01
1,2-Dichloroethene, trans-	156-60-5	-	3.96E+01	7.92E-02	3.83E-01	3.13E-01	3.13E-01	6.26E+00	1.96E+00	1.56E+03	-	1.96E+00
Benzene	71-43-2	-	1.46E+02	2.92E-01	2.27E-01	5.12E-01	5.41E-03	1.08E-01	5.54E-02	1.86E+01	9.31E+00	5.54E-02
Tetrachloroethene	127-18-4	-	9.49E+01	1.90E-01	7.24E-01	4.55E-01	1.90E-02	3.80E-01	1.73E-01	1.49E+01	1.66E+02	1.73E-01
Trichloroethene	79-01-6	-	6.07E+01	1.21E-01	4.03E-01	3.57E-01	5.00E-03	1.00E-01	3.57E-02	6.99E-01	9.63E+00	3.57E-02
Vinyl Chloride	75-01-4	-	2.17E+01	4.35E-02	1.14E+00	3.45E-01	2.00E-03	4.00E-02	1.38E-02	8.17E+00	1.91E+00	1.38E-02

Notes:
- Not Available
RRS - Risk Reduction Standards
DL - The maximum of the Type 1 or Type 2 RRS for ground water used to calculate the leachability criteria is based on the ground water detection limit.
SSL - Soil Screening Level for protection of ground water, see further details below.
RAGS Part B Calculations are provided in Table 2.
Type 2 RRS - concentrations that pose no significant risk on the basis of a site-specific risk assessment for residential properties. Per Rule 391-3-19-.07(7)(b), the soil criteria for Type 2 are identified as the minimum of the following:

(1) Per Rule 391-3-19-07(07)(c)1, concentrations that will not result in contamination of groundwater at levels which exceed the higher of the Type 1 or Type 2 groundwater criteria. Leachability Criteria Soil Screening Levels (SSLs) were calculated using the partitioning equation for migration to ground water provided in the USEPA 2002 Supplemental Soil Screening Guidance and parameters defined below.

(2) Per Rule 391-3-19-.07(7)(c)2, concentration unlikely to cause non-cancer toxic effects from soil ingestion and inhalation of volatiles and particulates using Equation 7 of RAGS Part B and site-specific exposure factors for the residential use scenario. Calculations are provided in Table 2.

(3) Per Rule 391-3-19-.07(7)(c)3, concentration for which the target excess cancer risk is less than or equal to 1E-05 from soil ingestion and inhalation of volatiles and particulates using Equation 6 of RAGS Part B and site-specific exposure factors for the residential use scenario. Calculations are provided in Table 2.

(4) Per Rule 391-3-19-.07(7)(c)4, for lead, the minimum of the concentration determined by the IEUBK model for a 6 year old child (418 mg/kg, default), as defined in this Rule, and the soil criterion at Item 1 above (i.e., the SSL). Note: where concentrations are noncalculable under Items 1-3 above, the soil criterion shall be the higher of the Appendix III Table 2 (metals only), background concentration, or detection limit concentration.

Leachate Parameters	Symbols	Values	Units	Source
Soil bulk density	ρ_b	1.5	kg/L	USEPA, 2002. Default value.
Water-filled soil porosity	θ_w	0.3	Lwater/Lsoil	USEPA, 2002. Default value.
Air-filled soil porosity	θ_a	0.13	Lair/Lsoil	USEPA, 2002. n-q_w
Fraction of organic carbon in soil	f_{oc}	0.002	g/g	USEPA, 2002. Default value.
Soil particle density	ρ_s	2.65	kg/L	USEPA, 2002. Default value.
Soil porosity	n	0.43	Lpore/Lsoil	USEPA, 2002. (1 - ρ_b/ρ_s)
Dilution Factor (a)	DAF	#REF!	unitless	USEPA, 2002. Default value.
Organic carbon partition coefficient (t	Koc	chem-spec	L/kg	USEPA, Regional Screening Level Tables, May 2016, unless otherwise noted "R" (b)
Soil-water partition coefficient	Kd	chem-spec	cm3/g	Inorganics - USEPA, Regional Screening Level Tables, May 2016
Henry's Law Constant	H'	chem-spec	unitless	Inorganics (except mercury) - per USEPA, 2002, assume H'=0 Organics - USEPA, Regional Screening Level Tables, May 2016
Leachate Partition Factor	LPF	chem-spec	(mg/L)/(mg/kg)	=(K_d + ((θ_w +θ_aH')/ρ_b))
Target soil leachate concentration (c)	Cw	chem-spec	mg/L	The higher of the Type 1 and Type 2 GW RRS multiplied by the DF (c)
Leachability Criteria	SSL	chem-spec	mg/kg	= LPF * Cw

(a) See site-specific DAF calculation on Table 10

(b) "R" indicates value not available in EPA RSL Tables or Soil Screening Guidance. Value obtained from the Risk Assessment Information System (RAIS) online database, search performed on 3/21/2017.

(c) When the higher of the Type 1/2 GW RRS used in the leachability calculation was equal to the ground water detection limit, "DL" is noted.

Table 6
Murata Electronics, N.A. (HSI No. 10771)
VIRP
Type 3 Risk Reduction Standards for Soil

		NC		DL	100X		AppIIIT2		RAGS7		RAGS6		
Chemical	CAS No.	Appendix I NC (mg/kg) (i)		Detection Limit (mg/kg)	T3 GWX100 (mg/kg) (ii)		Leachate (mg/kg) (iii)	Appendix III Table 2 (mg/kg) (iv)	(8)(d)(1) MAX (i-iv) (mg/kg)	(8)(d)(2)(i) Type 3 Non-Carcinogen (mg/kg)	(8)(d)(2)(ii) Type 3 Carcinogen (mg/kg)	Type 3 RRS Surface Soil (0-2') (mg/kg)	Type 3 RRS Subsurface Soil (>2') (mg/kg)
1,1,1-Trichloroethane	71-55-6	5.44E+00			2.00E+01		-	-	2.00E+01	1.13E+04	-	2.00E+01	2.00E+01
1,1-Dichloroethane	75-34-3	3.00E-02			4.00E+02		-	-	4.00E+02	4.09E+05	5.36E+02	4.00E+02	4.00E+02
1,1-Dichloroethene	75-35-4	3.60E-01			7.00E-01		-	-	7.00E-01	2.51E+02	-	7.00E-01	7.00E-01
1,2-Dichloroethene, cis-	156-59-2	5.30E-01			7.00E+00		-	-	7.00E+00	4.09E+03	-	7.00E+00	7.00E+00
1,2-Dichloroethene, trans-	156-60-5	5.30E-01			1.00E+01		-	-	1.00E+01	4.09E+04	-	1.00E+01	1.00E+01
Benzene	71-43-2	2.00E-02			5.00E-01		-	-	5.00E-01	1.93E+02	2.32E+01	5.00E-01	5.00E-01
Tetrachloroethene	127-18-4	1.80E-01			5.00E-01		-	-	5.00E-01	1.52E+02	4.09E+02	5.00E-01	5.00E-01
Trichloroethene	79-01-6	1.30E-01			5.00E-01		-	-	5.00E-01	7.07E+00	2.38E+01	5.00E-01	5.00E-01
Vinyl Chloride	75-01-4	4.00E-02			2.00E-01		-	-	2.00E-01	8.36E+01	5.05E+00	2.00E-01	2.00E-01

Notes:
- Not Available
RRS - Risk Reduction Standards
Gray shaded cells indicate the detection limit is used as the RRS.
N/C - Concentrations protective of ground water (including 100X) are considered Not Calculable if App I NC is in brackets AND the constituent is not listed in Appendix III Table 1 (GW).
DL - 100X for this constituent is the product of the ground water detection limit and 100 (i.e., the Type 1 GW RRS is based on the detection limit).
RAGS Part B Calculations are provided in Table 2.
Appendix III Table 2 - provides soil criteria for certain inorganics.
Appendix I NC (Notification Concentration), notes:
[NA] Appendix I values given in square brackets are excluded per Rule 391-3-19-.07(6)(c) 1.(i).
(1) Values which supplanted the detection limit as the notification concentration.
(2) The detection limit (listed in a separate column) is the notification concentration because it is greater than the number following the slash in Appendix I of the Georgia HSRA R
(3) The detection limit is the notification concentration because the substance is elsewhere in the Georgia HSRA Rules classified as an acute hazardous waste.
(4) Chemical concentrations listed in Appendix I of the Georgia HSRA Rules as #/BG. Since background concentrations are not available the numerical value preceeding the slash was used in the calculation.
(5) This specific form of the metal is not listed in the table. Used NC of elemental form per Appendix I notes.
Detection Limit - the lowest achievable laboratory detection limit for undiluted project samples.
Type 3 RRS - concentrations that pose no significant risk on the basis of standardized exposure assumptions and defined risk levels for non-residential properties. Type 3 RRS for soil are identified as
(a) Per Rule 391-3-19-.07(8)(d)1, soil concentrations at any point above the uppermost groundwater zone shall not exceed the maximum of (1), (2), and (3) below:
(1) Concentrations described in Rule 391-3-19-.07(6)(c)1, i.e., the maximum of the following concentrations that will not result in contamination of groundwater above Type 1 groundwater criteria
(i) Notification Concentration (NC) , in Appendix I, excluding values in square brackets per Rule 391-3-19-.07(6)(c)1(i)
(ii) Type 1 groundwater value multiplied by 100, per Rule 391-3-19-.07(6)(c)1(ii) (Type 1 groundwater RRS are provided in Table 3)
(iii) Toxicity Characteristic Leaching Procedure (TCLP), or other approved leachate method that will not generate leachate concentrations that exceed Type 1 groundwater RRS per , per Rule 391-3-19-.07(6)(c)1(iii).
Note: for substances excluded under Item (i) above AND not listed on Table 1 of Appendix III (ground water criteria), the concentration under Rule 391-3-19-.07(6)(c)1. shall be considered non-calculable, and the soil criterion for protection of ground water shall be the higher of the background or detection limit concentrations.
(2) For metals, concentrations in Table 2 of Appendix III
(3) For lead, 400 mg/kg
(b) Concentrations in surface soil (0-2 feet below ground surface) shall meet criteria of (a) above, and additionally shall not exceed the minimum of (1) through (3) below:
(1) Per Rule 391-3-19-.07(8)(d)2(i), concentration unlikely to result in any non-cancer toxic effects on human health due to ingestion of soil and inhalation of volatiles and particulates, determined using Equation 7 of RAGS Part B and standard non-residential exposure assumptions in Table 3 of Appendix III. Calculations are provided in Table 2.
(2) Per Rule 391-3-19-.07(8)(d)2(ii), concentration for which the target excess cancer risk is less than or equal to 10-5 (10-4 for Class C carcinogens) from ingestion of soil and inhalation of volatiles and particulates using Equation 6 of RAGS Part B and standard non-residential exposure assumptions in Table 3 of Appendix III. Calculations are provided in Table 2.
(3) For lead, 400 mg/kg

Table 7
Murata Electronics, N.A. (HSI No. 10771)
VIRP
Type 4 Risk Reduction Standards for Soil

										SSL_P	SSL_M	RAGS7	RAGS6		
		Appendix III	Leachate Parameters							Leachability Criteria (SSL)		RAGS B Nonresidential Calculations		Type 4 RRS	
Chemical	CAS No.	Table 2 (mg/kg)	Organic Carbon Partition Coef. Koc (L/kg)	Soil-Water Partition Coef Kd (cm3/g)	Henry's Law Constant (H') (unitless)	Leachate Partition Factor (LPF) (mg/L)/(mg/kg)	Target GW RRS Max Type 3/4 (mg/L)	Target Leachate Conc. (Cw) DF=2 (mg/L)		SSG Eqn 10 Partitioning (mg/kg)	SSG Eqn 14 Mass Limit (mg/kg)	Type 4 Non-Carcinogen (mg/kg)	Type 4 Carcinogen (mg/kg)	Surface Soil (0-2') (mg/kg)	Subsurface Soil (>2') (mg/kg)
1,1,1-Trichloroethane	71-55-6	-	4.39E+01	8.78E-02	7.03E-01	3.51E-01	1.36E+01	2.73E+02		9.55E+01	3.82E+02	1.13E+04	-	3.82E+02	3.82E+02
1,1-Dichloroethane	75-34-3	-	3.18E+01	6.36E-02	2.30E-01	2.84E-01	4.00E+00	8.00E+01		2.27E+01	1.12E+02	4.09E+05	5.36E+01	5.36E+01	1.12E+02
1,1-Dichloroethene	75-35-4	-	3.18E+01	6.36E-02	1.07E+00	3.59E-01	5.24E-01	1.05E+01		3.76E+00	1.47E+01	2.51E+02	-	1.47E+01	1.47E+01
1,2-Dichloroethene, cis-	156-59-2	-	3.96E+01	7.92E-02	1.67E-01	2.94E-01	2.04E-01	4.09E+00		1.20E+00	5.72E+00	4.09E+03	-	5.72E+00	5.72E+00
1,2-Dichloroethene, trans-	156-60-5	-	3.96E+01	7.92E-02	3.83E-01	3.13E-01	2.04E+00	4.09E+01		1.28E+01	5.72E+01	4.09E+04	-	5.72E+01	5.72E+01
Benzene	71-43-2	-	1.46E+02	2.92E-01	2.27E-01	5.12E-01	8.72E-03	1.74E-01		8.93E-02	2.44E-01	1.93E+02	2.32E+01	2.44E-01	2.44E-01
Tetrachloroethene	127-18-4	-	9.49E+01	1.90E-01	7.24E-01	4.55E-01	9.81E-02	1.96E+00		8.92E-01	2.75E+00	1.52E+02	4.09E+02	2.75E+00	2.75E+00
Trichloroethene	79-01-6	-	6.07E+01	1.21E-01	4.03E-01	3.57E-01	5.24E-03	1.05E-01		3.75E-02	1.47E-01	7.07E+00	2.38E+01	1.47E-01	1.47E-01
Vinyl Chloride	75-01-4	-	2.17E+01	4.35E-02	1.14E+00	3.45E-01	3.27E-03	6.55E-02		2.26E-02	9.17E-02	8.36E+01	5.05E+00	9.17E-02	9.17E-02

Notes:
- Not Available
RRS - Risk Reduction Standards
Appendix III Table 2 - provides soil criteria for certain inorganics.
DL - The maximum of the Type 3 or Type 4 RRS for ground water used to calculate the leachability criteria is based on the ground water detection limit.
SSL - Soil Screening Level for protection of ground water, see further details below.
RAGS Part B Calculations are provided in Table 2.
Type 4 RRS - concentrations that pose no significant risk on the basis of a site-specific risk assessment for non-residential properties. Per Rule 391-3-19-.07(9)(d), the soil criteria for Type 4 are identified as the minimum of the following:
(1) Per Rule 391-3-19-07(09)(d)1, concentrations at any point above the uppermost ground water zone that will not result in contamination of groundwater at levels which exceed the higher of the Type 3 or Type 4 groundwater criteria. Leachability Criteria Soil Screening Levels (SSLs) were calculated using either the partitioning equation (Eqn. 4-10) or the Mass-Limit equation (Eqn. 4-14) for migration to ground water provided in the USEPA 2002 Supplemental Soil Screening Guidance and parameters defined below.
(2) Concentrations in surface soil (0-2 feet below ground surface) shall meet criteria of (1) above, and additionally shall not exceed the minimum of (i) through (iii) below:
(i) Per Rule 391-3-19-.07(9)(d)2(i), concentration unlikely to result in any non-cancer toxic effects on human health due to ingestion of soil and inhalation of volatiles and particulates, determined using Equation 7 of RAGS Part B and site-specific exposure assumptions for the non-residential use scenario. Calculations are provided in Table 2.
(ii) Per Rule 391-3-19-.07(9)(d)2(ii), concentration for which the target excess cancer risk is less than or equal to 1E-05 from ingestion of soil and inhalation of volatiles and particulates using Equation 6 of RAGS Part B and site-specific exposure assumptions for the non-residential use scenario. Calculations are provided in Table 2.
(iii) Per Rule 391-3-19-.07(9)(d)2(iii), for lead, the minimum of the concentration determined using the GALM (930 mg/kg, see Table 9), as defined in this Rule, and the soil criterion at Item 1 above (i.e., the SSL).

Leachate Parameters (Partitioning)	Symbols	Values	Units	Source
Soil bulk density	ρ_b	1.5	kg/L	USEPA, 2002. Default value.
Water-filled soil porosity	θ_w	0.3	Lwater/Lsoil	USEPA, 2002. Default value.
Air-filled soil porosity	θ_a	0.13	Lair/Lsoil	USEPA, 2002. n-q_w
Fraction of organic carbon in soil	f_{oc}	0.002	g/g	USEPA, 2002. Default value.
Soil particle density	ρ_s	2.65	kg/L	USEPA, 2002. Default value.
Soil porosity	n	0.43	Lpore/Lsoil	USEPA, 2002. (1 - ρ_b/ρ_s)
Dilution Factor (a)	DAF	#REF!	unitless	USEPA, 2002. Default value.
Organic carbon partition coefficient (b)	Koc	chem-spec	L/kg	USEPA, Regional Screening Level Tables, May 2016, unless otherwise noted "R" (b)
Soil-water partition coefficient	Kd	chem-spec	cm3/g	Inorganics - USEPA, Regional Screening Level Tables, May 2016
Henry's Law Constant	H'	chem-spec	unitless	Inorganics (except mercury) - per USEPA, 2002, assume H'=0
Leachate Partition Factor	LPF	chem-spec	(mg/L)/(mg/kg)	Organics - USEPA, Regional Screening Level Tables, May 2016 =(K_d + ((θ_w +θ_aH')/ρ_b))
Target soil leachate concentration (c)	Cw	chem-spec	mg/L	Max of Type 3 and Type 4 GW RRS multiplied by the DF (c)
Leachability Criteria, Partitioning	SSL_P	chem-spec	mg/kg	= LPF * Cw

(a) See site-specific DAF calculation on Table 10
(b) "R" indicates value not available in EPA RSL Tables or Soil Screening Guidance. Value obtained from the Risk Assessment Information System (RAIS) online database, search performed on 3/21/2017.
(c) When the higher of the Type 3/4 GW RRS used in the leachability calculation was equal to the ground water detection limit, "DL" is noted.

Table 8
Murata Electronics, N.A. (HSI No. 10771)
VIRP
Risk Reduction Standards for Soil (mg/kg)

Chemical	CAS No.	Type 1 RRS Soil (mg/kg)	Type 2 RRS Soil (mg/kg)	General Residential RRS Soil (mg/kg)	Type 3 RRS		Type 4 RRS		General Non-Residential RRS	
					Surface Soil (0-2') (mg/kg)	Subsurface Soil (>2') (mg/kg)	Surface Soil (0-2') (mg/kg)	Subsurface Soil (>2') (mg/kg)	Surface Soil (0-2') (mg/kg)	Subsurface Soil (>2') (mg/kg)
1,1,1-Trichloroethane	71-55-6	2.00E+01	1.91E+01	2.00E+01	2.00E+01	2.00E+01	3.82E+02	3.82E+02	3.82E+02	3.82E+02
1,1-Dichloroethane	75-34-3	4.00E+02	2.22E+01	4.00E+02	4.00E+02	4.00E+02	5.36E+01	1.12E+02	4.00E+02	4.00E+02
1,1-Dichloroethene	75-35-4	7.00E-01	7.42E-01	7.42E-01	7.00E-01	7.00E-01	1.47E+01	1.47E+01	1.47E+01	1.47E+01
1,2-Dichloroethene, cis-	156-59-2	7.00E+00	4.12E-01	7.00E+00	7.00E+00	7.00E+00	5.72E+00	5.72E+00	7.00E+00	7.00E+00
1,2-Dichloroethene, trans-	156-60-5	1.00E+01	1.96E+00	1.00E+01	1.00E+01	1.00E+01	5.72E+01	5.72E+01	5.72E+01	5.72E+01
Benzene	71-43-2	5.00E-01	5.54E-02	5.00E-01	5.00E-01	5.00E-01	2.44E-01	2.44E-01	5.00E-01	5.00E-01
Tetrachloroethene	127-18-4	5.00E-01	1.73E-01	5.00E-01	5.00E-01	5.00E-01	2.75E+00	2.75E+00	2.75E+00	2.75E+00
Trichloroethene	79-01-6	5.00E-01	3.57E-02	5.00E-01	5.00E-01	5.00E-01	1.47E-01	1.47E-01	5.00E-01	5.00E-01
Vinyl Chloride	75-01-4	2.00E-01	1.38E-02	2.00E-01	2.00E-01	2.00E-01	9.17E-02	9.17E-02	2.00E-01	2.00E-01

Notes:
RRS - Risk Reduction Standards
Type 1 RRS - concentrations that pose no significant risk on the basis of standardized exposure assumptions and defined risk levels for residential properties. See Table 4 for the basis of the Type 1 RRS.
Type 2 RRS - concentrations that pose no significant risk on the basis of a site-specific risk assessment for residential properties. See Table 5 for the basis of the Type 2 RRS.
Type 3 RRS - concentrations that pose no significant risk on the basis of standardized exposure assumptions and defined risk levels for the non-residential use scenario. See Table 6 for the basis of the Type 3 RRS.
Type 4 RRS - concentrations that pose no significant risk on the basis of a site-specific risk assessment for the non-residential use scenario. See Table 7 for the basis of the Type 4 RRS.

Laboratory Groundwater Analytical Report

Appendix C

March 31, 2017
Project No. 0190949
Murata

Environmental Resources Management
3200 Windy Hill Rd. Suite 1500W
Atlanta, GA 30339
(678) 486-2700

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

November 09, 2016

Nic Very
ERM-Southeast
3200 Windy Hill Rd
Atlanta GA 30341

TEL: (678) 486-2700
FAX: (404) 745-0103

RE: Murata

Dear Nic Very: Order No: 1611187

Analytical Environmental Services, Inc. received 18 samples on 11/2/2016 3:40:00 PM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES's accreditations are as follows:
-NELAC/Florida State Laboratory ID E87582 for analysis of Non-Potable Water, Solid & Chemical Materials, and Drinking Water Microbiology, effective 07/01/16-06/30/17.
-NELAC/Louisiana Agency Interest No. 100818 for or analysis of Non-Potable Water and Solid & Chemical Materials, effective 07/01/16-06/30/17.
-NELAC/Texas Certificate No. T104704509-16-6 for or analysis of Non-Potable Water and Solid & Chemical Materials, effective 03/01/16-02/28/17.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Metals, PCM Asbestos, Gravimetric), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) Direct Examination, effective until 09/01/17.

Mirzeta Kararic

Mirzeta Kararic
Project Manager

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC

3080 Presidential Drive, Atlanta GA 30340-3704

TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1611167

Date: 11/2/16 Page 1 of 2

COMPANY: ERM	ADDRESS: 3200 Windy Hill Rd ATL GA 30339
PHONE: 678-486-2700	FAX:
SAMPLED BY: KS/MR	SIGNATURE:

ANALYSIS REQUESTED: 8260

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	PRESERVATION (See codes)	REMARKS	No # of Containers
1	MW-18-20161031-01	10/31/16	1340	X		GW	H+I		2
2	MW-5-20161031-01		1350	X					
3	MW-17-20161031-01		1354	X					
4	MW-23-20161031-01		1405	X					
5	MW-28-20161031-01		1412	X					
6	MW-6-20161031-01		1416	X					
7	MW-29-20161031-01		1423	X					
8	MW-22-20161031-01		1430	X					
9	MW-26-20161031-01		1436	X					
10	MW-20-20161031-01		1442	X					
11	MW-8-20161031-01		1452	X					
12	MW-4-20161031-01		1500	X					
13	MW-9-20161101-01	11/1/16	1345	X					
14	MW-7-20161101-01	11/1/16	1625	X					✓

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
1:	11/2/16 1540	1: Jessica Mulligan	11/2/16 3:40 pm
2:		2:	
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS: Unused vials returned in cooler

SHIPMENT METHOD:

OUT / / VIA:

IN / / VIA:

(CLIENT) FedEx UPS MAIL COURIER

GREYHOUND OTHER_____

PROJECT INFORMATION

PROJECT NAME: Murata

PROJECT #: 07909449

SITE ADDRESS: Prospect Rd, Rockmart GA

SEND REPORT TO: Nic.Vrey@erm.com

INVOICE TO:

(IF DIFFERENT FROM ABOVE)

QUOTE #:_____ PO#:_____

RECEIPT

Total # of Containers: 28

Turnaround Time Request

- [X] Standard 5 Business Days
- [ ] 2 Business Day Rush
- [ ] Next Business Day Rush
- [ ] Same Day Rush (auth req.)
- [ ] Other _____

STATE PROGRAM (if any): _____

E-mail? Fax?

DATA PACKAGE: I ○ II ○ III ○ IV ○

SAMPLES RECEIVED AFTER 3PM OR SATURDAY ARE CONSIDERED AS RECEIVED ON THE NEXT BUSINESS DAY. IF NO TAT IS MARKED ON COC AES WILL PROCEED AS STANDARD TAT.

SAMPLES ARE DISPOSED OF 30 DAYS AFTER COMPLETION OF REPORT UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water WW = Waste Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify)

PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

ANALYTICAL ENVIRONMENTAL SERVICES, INC

3080 Presidential Drive, Atlanta GA 30340-3704

TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

AES

CHAIN OF CUSTODY

Work Order: 1611187

Date: 11/2/16 Page 2 of 2

COMPANY: ERM

ADDRESS: 3200 Windy Hill ATL, GA 30339

PHONE:

FAX:

SAMPLED BY: ES/MR

SIGNATURE:

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	8260B	PRESERVATION (See codes)	REMARKS	No # of Containers
1	Dup-01-20161031-01	10/31/16	—	X		GW		HCL		3
2	Dup-02-20161031-01	10/31/16	—	X		GW		HCL		3
3	Dup-03-20161101-01	11/01/16	—	X		GW		HCL		3
4	TB-01-20161102-01	11/2/16	—			W		HCL		3
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

ANALYSIS REQUESTED

Visit our website **www.aesatlanta.com** to check on the status of your results, place bottle orders, etc.

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
1:	11/2/16 1540	1: Jessica Mills	11/2/16 3:40 pm
2:		2:	
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD:

OUT / / VIA:

IN / / VIA:

(CLIENT) FedEx UPS MAIL COURIER GREYHOUND OTHER_____

PROJECT INFORMATION

PROJECT NAME: Murata

PROJECT #: 01909.49

SITE ADDRESS: Rockmart GA

SEND REPORT TO: Nick.Frey@erm.com

INVOICE TO: (IF DIFFERENT FROM ABOVE)

QUOTE #:_____ PO#:_____

RECEIPT

Total # of Containers: 8

Turnaround Time Request

- [X] Standard 5 Business Days
- [ ] 2 Business Day Rush
- [ ] Next Business Day Rush
- [ ] Same Day Rush (auth req.)
- [ ] Other _____

STATE PROGRAM (if any): _____

E-mail? Fax?

DATA PACKAGE: I ○ II ○ III ○ IV ○

SAMPLES RECEIVED AFTER 3PM OR SATURDAY ARE CONSIDERED AS RECEIVED ON THE NEXT BUSINESS DAY. IF NO TAT IS MARKED ON COC AES WILL PROCEED AS STANDARD TAT.

SAMPLES ARE DISPOSED OF 30 DAYS AFTER COMPLETION OF REPORT UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water WW = Waste Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify)

PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Analytical Environmental Services, Inc **Date:** 9-Nov-16

Client:	ERM-Southeast	**Client Sample ID:**	MW-18-20161031-01
Project Name:	Murata	**Collection Date:**	10/31/2016 1:40:00 PM
Lab ID:	1611187-001	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5030B)**				
1,1,1-Trichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 20:25	NP
1,1-Dichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 20:25	NP
1,1-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 20:25	NP
1,2-Dichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 20:25	NP
cis-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 20:25	NP
Tetrachloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 20:25	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 20:25	NP
Trichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 20:25	NP
Vinyl chloride	BRL	2.0		ug/L	232485	1	11/07/2016 20:25	NP
Surr: 4-Bromofluorobenzene	101	70.7-125		%REC	232485	1	11/07/2016 20:25	NP
Surr: Dibromofluoromethane	108	82.2-120		%REC	232485	1	11/07/2016 20:25	NP
Surr: Toluene-d8	102	81.8-120		%REC	232485	1	11/07/2016 20:25	NP

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 9-Nov-16

Client:	ERM-Southeast	**Client Sample ID:**	MW-5-20161031-01
Project Name:	Murata	**Collection Date:**	10/31/2016 1:50:00 PM
Lab ID:	1611187-002	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5030B)**				
1,1,1-Trichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 21:35	NP
1,1-Dichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 21:35	NP
1,1-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 21:35	NP
1,2-Dichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 21:35	NP
cis-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 21:35	NP
Tetrachloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 21:35	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 21:35	NP
Trichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 21:35	NP
Vinyl chloride	BRL	2.0		ug/L	232485	1	11/07/2016 21:35	NP
Surr: 4-Bromofluorobenzene	99	70.7-125		%REC	232485	1	11/07/2016 21:35	NP
Surr: Dibromofluoromethane	109	82.2-120		%REC	232485	1	11/07/2016 21:35	NP
Surr: Toluene-d8	102	81.8-120		%REC	232485	1	11/07/2016 21:35	NP

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 9-Nov-16

Client:	ERM-Southeast	**Client Sample ID:**	MW-17-20161031-01
Project Name:	Murata	**Collection Date:**	10/31/2016 1:54:00 PM
Lab ID:	1611187-003	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5030B)**				
1,1,1-Trichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 21:58	NP
1,1-Dichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 21:58	NP
1,1-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 21:58	NP
1,2-Dichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 21:58	NP
cis-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 21:58	NP
Tetrachloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 21:58	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 21:58	NP
Trichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 21:58	NP
Vinyl chloride	BRL	2.0		ug/L	232485	1	11/07/2016 21:58	NP
Surr: 4-Bromofluorobenzene	100	70.7-125		%REC	232485	1	11/07/2016 21:58	NP
Surr: Dibromofluoromethane	108	82.2-120		%REC	232485	1	11/07/2016 21:58	NP
Surr: Toluene-d8	104	81.8-120		%REC	232485	1	11/07/2016 21:58	NP

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 9-Nov-16

Client:	ERM-Southeast	**Client Sample ID:**	MW-23-20161031-01
Project Name:	Murata	**Collection Date:**	10/31/2016 2:05:00 PM
Lab ID:	1611187-004	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5030B)**				
1,1,1-Trichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 22:22	NP
1,1-Dichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 22:22	NP
1,1-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 22:22	NP
1,2-Dichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 22:22	NP
cis-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 22:22	NP
Tetrachloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 22:22	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 22:22	NP
Trichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 22:22	NP
Vinyl chloride	BRL	2.0		ug/L	232485	1	11/07/2016 22:22	NP
Surr: 4-Bromofluorobenzene	98.7	70.7-125		%REC	232485	1	11/07/2016 22:22	NP
Surr: Dibromofluoromethane	112	82.2-120		%REC	232485	1	11/07/2016 22:22	NP
Surr: Toluene-d8	105	81.8-120		%REC	232485	1	11/07/2016 22:22	NP

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 9-Nov-16

Client:	ERM-Southeast	**Client Sample ID:**	MW-28-20161031-01
Project Name:	Murata	**Collection Date:**	10/31/2016 2:12:00 PM
Lab ID:	1611187-005	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5030B)**				
1,1,1-Trichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 22:46	NP
1,1-Dichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 22:46	NP
1,1-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 22:46	NP
1,2-Dichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 22:46	NP
cis-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 22:46	NP
Tetrachloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 22:46	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 22:46	NP
Trichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 22:46	NP
Vinyl chloride	BRL	2.0		ug/L	232485	1	11/07/2016 22:46	NP
Surr: 4-Bromofluorobenzene	101	70.7-125		%REC	232485	1	11/07/2016 22:46	NP
Surr: Dibromofluoromethane	109	82.2-120		%REC	232485	1	11/07/2016 22:46	NP
Surr: Toluene-d8	102	81.8-120		%REC	232485	1	11/07/2016 22:46	NP

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 9-Nov-16

Client:	ERM-Southeast	**Client Sample ID:**	MW-6-20161031-01
Project Name:	Murata	**Collection Date:**	10/31/2016 2:16:00 PM
Lab ID:	1611187-006	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5030B)**				
1,1,1-Trichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 23:09	NP
1,1-Dichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 23:09	NP
1,1-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 23:09	NP
1,2-Dichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 23:09	NP
cis-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 23:09	NP
Tetrachloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 23:09	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 23:09	NP
Trichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 23:09	NP
Vinyl chloride	BRL	2.0		ug/L	232485	1	11/07/2016 23:09	NP
Surr: 4-Bromofluorobenzene	100	70.7-125		%REC	232485	1	11/07/2016 23:09	NP
Surr: Dibromofluoromethane	108	82.2-120		%REC	232485	1	11/07/2016 23:09	NP
Surr: Toluene-d8	102	81.8-120		%REC	232485	1	11/07/2016 23:09	NP

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 9-Nov-16

Client:	ERM-Southeast	**Client Sample ID:**	MW-29-20161031-01
Project Name:	Murata	**Collection Date:**	10/31/2016 2:23:00 PM
Lab ID:	1611187-007	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5030B)**				
1,1,1-Trichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 23:33	NP
1,1-Dichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 23:33	NP
1,1-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 23:33	NP
1,2-Dichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 23:33	NP
cis-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 23:33	NP
Tetrachloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 23:33	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 23:33	NP
Trichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 23:33	NP
Vinyl chloride	BRL	2.0		ug/L	232485	1	11/07/2016 23:33	NP
Surr: 4-Bromofluorobenzene	98.8	70.7-125		%REC	232485	1	11/07/2016 23:33	NP
Surr: Dibromofluoromethane	109	82.2-120		%REC	232485	1	11/07/2016 23:33	NP
Surr: Toluene-d8	105	81.8-120		%REC	232485	1	11/07/2016 23:33	NP

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 9-Nov-16

Client:	ERM-Southeast	**Client Sample ID:**	MW-22-20161031-01
Project Name:	Murata	**Collection Date:**	10/31/2016 2:30:00 PM
Lab ID:	1611187-008	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5030B)**				
1,1,1-Trichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 23:56	NP
1,1-Dichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 23:56	NP
1,1-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 23:56	NP
1,2-Dichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 23:56	NP
cis-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 23:56	NP
Tetrachloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 23:56	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 23:56	NP
Trichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 23:56	NP
Vinyl chloride	BRL	2.0		ug/L	232485	1	11/07/2016 23:56	NP
Surr: 4-Bromofluorobenzene	101	70.7-125		%REC	232485	1	11/07/2016 23:56	NP
Surr: Dibromofluoromethane	110	82.2-120		%REC	232485	1	11/07/2016 23:56	NP
Surr: Toluene-d8	103	81.8-120		%REC	232485	1	11/07/2016 23:56	NP

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 9-Nov-16

Client:	ERM-Southeast	**Client Sample ID:**	MW-26-20161031-01
Project Name:	Murata	**Collection Date:**	10/31/2016 2:36:00 PM
Lab ID:	1611187-009	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5030B)**				
1,1,1-Trichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 00:20	NP
1,1-Dichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 00:20	NP
1,1-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 00:20	NP
1,2-Dichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 00:20	NP
cis-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 00:20	NP
Tetrachloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 00:20	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 00:20	NP
Trichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 00:20	NP
Vinyl chloride	BRL	2.0		ug/L	232485	1	11/08/2016 00:20	NP
Surr: 4-Bromofluorobenzene	100	70.7-125		%REC	232485	1	11/08/2016 00:20	NP
Surr: Dibromofluoromethane	109	82.2-120		%REC	232485	1	11/08/2016 00:20	NP
Surr: Toluene-d8	103	81.8-120		%REC	232485	1	11/08/2016 00:20	NP

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 9-Nov-16

Client:	ERM-Southeast	**Client Sample ID:**	MW-20-20161031-01
Project Name:	Murata	**Collection Date:**	10/31/2016 2:42:00 PM
Lab ID:	1611187-010	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5030B)**				
1,1,1-Trichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 00:43	NP
1,1-Dichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 00:43	NP
1,1-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 00:43	NP
1,2-Dichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 00:43	NP
cis-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 00:43	NP
Tetrachloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 00:43	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 00:43	NP
Trichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 00:43	NP
Vinyl chloride	BRL	2.0		ug/L	232485	1	11/08/2016 00:43	NP
Surr: 4-Bromofluorobenzene	104	70.7-125		%REC	232485	1	11/08/2016 00:43	NP
Surr: Dibromofluoromethane	109	82.2-120		%REC	232485	1	11/08/2016 00:43	NP
Surr: Toluene-d8	102	81.8-120		%REC	232485	1	11/08/2016 00:43	NP

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 9-Nov-16

Client:	ERM-Southeast	**Client Sample ID:**	MW-8-20161031-01
Project Name:	Murata	**Collection Date:**	10/31/2016 2:52:00 PM
Lab ID:	1611187-011	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5030B)**				
1,1,1-Trichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 01:06	NP
1,1-Dichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 01:06	NP
1,1-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 01:06	NP
1,2-Dichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 01:06	NP
cis-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 01:06	NP
Tetrachloroethene	5.6	5.0		ug/L	232485	1	11/08/2016 01:06	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 01:06	NP
Trichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 01:06	NP
Vinyl chloride	BRL	2.0		ug/L	232485	1	11/08/2016 01:06	NP
Surr: 4-Bromofluorobenzene	101	70.7-125		%REC	232485	1	11/08/2016 01:06	NP
Surr: Dibromofluoromethane	110	82.2-120		%REC	232485	1	11/08/2016 01:06	NP
Surr: Toluene-d8	104	81.8-120		%REC	232485	1	11/08/2016 01:06	NP

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 9-Nov-16

Client:	ERM-Southeast	**Client Sample ID:**	MW-4-20161031-01
Project Name:	Murata	**Collection Date:**	10/31/2016 3:00:00 PM
Lab ID:	1611187-012	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5030B)**				
1,1,1-Trichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 01:29	NP
1,1-Dichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 01:29	NP
1,1-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 01:29	NP
1,2-Dichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 01:29	NP
cis-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 01:29	NP
Tetrachloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 01:29	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 01:29	NP
Trichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 01:29	NP
Vinyl chloride	BRL	2.0		ug/L	232485	1	11/08/2016 01:29	NP
Surr: 4-Bromofluorobenzene	101	70.7-125		%REC	232485	1	11/08/2016 01:29	NP
Surr: Dibromofluoromethane	109	82.2-120		%REC	232485	1	11/08/2016 01:29	NP
Surr: Toluene-d8	102	81.8-120		%REC	232485	1	11/08/2016 01:29	NP

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 9-Nov-16

Client:	ERM-Southeast	**Client Sample ID:**	MW-9-20161101-01
Project Name:	Murata	**Collection Date:**	11/1/2016 1:45:00 PM
Lab ID:	1611187-013	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5030B)**				
1,1,1-Trichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 01:52	NP
1,1-Dichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 01:52	NP
1,1-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 01:52	NP
1,2-Dichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 01:52	NP
cis-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 01:52	NP
Tetrachloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 01:52	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 01:52	NP
Trichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 01:52	NP
Vinyl chloride	BRL	2.0		ug/L	232485	1	11/08/2016 01:52	NP
Surr: 4-Bromofluorobenzene	99.6	70.7-125		%REC	232485	1	11/08/2016 01:52	NP
Surr: Dibromofluoromethane	109	82.2-120		%REC	232485	1	11/08/2016 01:52	NP
Surr: Toluene-d8	103	81.8-120		%REC	232485	1	11/08/2016 01:52	NP

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 9-Nov-16

Client:	ERM-Southeast	**Client Sample ID:**	MW-7-20161101-01
Project Name:	Murata	**Collection Date:**	11/1/2016 4:25:00 PM
Lab ID:	1611187-014	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5030B)**				
1,1,1-Trichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 02:15	NP
1,1-Dichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 02:15	NP
1,1-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 02:15	NP
1,2-Dichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 02:15	NP
cis-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 02:15	NP
Tetrachloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 02:15	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 02:15	NP
Trichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 02:15	NP
Vinyl chloride	BRL	2.0		ug/L	232485	1	11/08/2016 02:15	NP
Surr: 4-Bromofluorobenzene	101	70.7-125		%REC	232485	1	11/08/2016 02:15	NP
Surr: Dibromofluoromethane	109	82.2-120		%REC	232485	1	11/08/2016 02:15	NP
Surr: Toluene-d8	104	81.8-120		%REC	232485	1	11/08/2016 02:15	NP

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 9-Nov-16

Client:	ERM-Southeast	**Client Sample ID:**	DUP-01-20161031-01
Project Name:	Murata	**Collection Date:**	10/31/2016
Lab ID:	1611187-015	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5030B)**				
1,1,1-Trichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 02:38	NP
1,1-Dichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 02:38	NP
1,1-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 02:38	NP
1,2-Dichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 02:38	NP
cis-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 02:38	NP
Tetrachloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 02:38	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 02:38	NP
Trichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 02:38	NP
Vinyl chloride	BRL	2.0		ug/L	232485	1	11/08/2016 02:38	NP
Surr: 4-Bromofluorobenzene	99.5	70.7-125		%REC	232485	1	11/08/2016 02:38	NP
Surr: Dibromofluoromethane	108	82.2-120		%REC	232485	1	11/08/2016 02:38	NP
Surr: Toluene-d8	101	81.8-120		%REC	232485	1	11/08/2016 02:38	NP

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 9-Nov-16

Client:	ERM-Southeast	**Client Sample ID:**	DUP-02-20161031-01
Project Name:	Murata	**Collection Date:**	10/31/2016
Lab ID:	1611187-016	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5030B)**				
1,1,1-Trichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 03:02	NP
1,1-Dichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 03:02	NP
1,1-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 03:02	NP
1,2-Dichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 03:02	NP
cis-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 03:02	NP
Tetrachloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 03:02	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 03:02	NP
Trichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 03:02	NP
Vinyl chloride	BRL	2.0		ug/L	232485	1	11/08/2016 03:02	NP
Surr: 4-Bromofluorobenzene	101	70.7-125		%REC	232485	1	11/08/2016 03:02	NP
Surr: Dibromofluoromethane	111	82.2-120		%REC	232485	1	11/08/2016 03:02	NP
Surr: Toluene-d8	102	81.8-120		%REC	232485	1	11/08/2016 03:02	NP

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 9-Nov-16

Client:	ERM-Southeast	**Client Sample ID:**	DUP-03-20161101-01
Project Name:	Murata	**Collection Date:**	11/1/2016
Lab ID:	1611187-017	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5030B)**				
1,1,1-Trichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 03:25	NP
1,1-Dichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 03:25	NP
1,1-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 03:25	NP
1,2-Dichloroethane	BRL	5.0		ug/L	232485	1	11/08/2016 03:25	NP
cis-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 03:25	NP
Tetrachloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 03:25	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 03:25	NP
Trichloroethene	BRL	5.0		ug/L	232485	1	11/08/2016 03:25	NP
Vinyl chloride	BRL	2.0		ug/L	232485	1	11/08/2016 03:25	NP
Surr: 4-Bromofluorobenzene	97.6	70.7-125		%REC	232485	1	11/08/2016 03:25	NP
Surr: Dibromofluoromethane	111	82.2-120		%REC	232485	1	11/08/2016 03:25	NP
Surr: Toluene-d8	104	81.8-120		%REC	232485	1	11/08/2016 03:25	NP

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 9-Nov-16

Client:	ERM-Southeast	**Client Sample ID:**	TB-01-20161102-01
Project Name:	Murata	**Collection Date:**	11/2/2016
Lab ID:	1611187-018	**Matrix:**	Aqueous

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5030B)**				
1,1,1-Trichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 18:27	NP
1,1-Dichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 18:27	NP
1,1-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 18:27	NP
1,2-Dichloroethane	BRL	5.0		ug/L	232485	1	11/07/2016 18:27	NP
cis-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 18:27	NP
Tetrachloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 18:27	NP
trans-1,2-Dichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 18:27	NP
Trichloroethene	BRL	5.0		ug/L	232485	1	11/07/2016 18:27	NP
Vinyl chloride	BRL	2.0		ug/L	232485	1	11/07/2016 18:27	NP
Surr: 4-Bromofluorobenzene	100	70.7-125		%REC	232485	1	11/07/2016 18:27	NP
Surr: Dibromofluoromethane	107	82.2-120		%REC	232485	1	11/07/2016 18:27	NP
Surr: Toluene-d8	101	81.8-120		%REC	232485	1	11/07/2016 18:27	NP

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client ERM Work Order Number 1611187

Checklist completed by [signature] 11/2/16
Signature Date

Carrier name: FedEx __ UPS __ Courier __ Client ✓ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes __ No __ Not Present ✓

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (0°≤6°C)* Yes ✓ No __

Cooler #1 1.3° Cooler #2 _____ Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes ✓ No __

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted __ Yes ✓ No __

Water - pH acceptable upon receipt? Yes ✓ No __ Not Applicable __

Adjusted? _____ Checked by _____

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\\Aes_server\I\Sample Receipt\My Documents\COCs and pH Adjustment Sheet\Sample_Cooler_Recipt_Checklist_Rev1.rtf

Client: ERM-Southeast
Project Name: Murata
Workorder: 1611187

ANALYTICAL QC SUMMARY REPORT

BatchID: 232485

Sample ID: **MB-232485** Client ID: Units: **ug/L** Prep Date: **11/07/2016** Run No: **329289**
SampleType: **MBLK** TestCode: **TCL VOLATILE ORGANICS SW8260B** BatchID: **232485** Analysis Date: **11/07/2016** Seq No: **7151337**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	BRL	5.0									
1,1-Dichloroethane	BRL	5.0									
1,1-Dichloroethene	BRL	5.0									
1,2-Dichloroethane	BRL	5.0									
cis-1,2-Dichloroethene	BRL	5.0									
Tetrachloroethene	BRL	5.0									
trans-1,2-Dichloroethene	BRL	5.0									
Trichloroethene	BRL	5.0									
Vinyl chloride	BRL	2.0									
Surr: 4-Bromofluorobenzene	49.41	0	50.00		98.8	70.7	125				
Surr: Dibromofluoromethane	53.21	0	50.00		106	82.2	120				
Surr: Toluene-d8	50.92	0	50.00		102	81.8	120				

Sample ID: **LCS-232485** Client ID: Units: **ug/L** Prep Date: **11/07/2016** Run No: **329289**
SampleType: **LCS** TestCode: **TCL VOLATILE ORGANICS SW8260B** BatchID: **232485** Analysis Date: **11/07/2016** Seq No: **7151336**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
1,1-Dichloroethene	65.75	5.0	50.00		132	65.3	137				
Trichloroethene	55.13	5.0	50.00		110	73.1	128				
Surr: 4-Bromofluorobenzene	49.53	0	50.00		99.1	70.7	125				
Surr: Dibromofluoromethane	51.11	0	50.00		102	82.2	120				
Surr: Toluene-d8	49.98	0	50.00		100.0	81.8	120				

Sample ID: **1611187-001AMS** Client ID: **MW-18-20161031-01** Units: **ug/L** Prep Date: **11/07/2016** Run No: **329289**
SampleType: **MS** TestCode: **TCL VOLATILE ORGANICS SW8260B** BatchID: **232485** Analysis Date: **11/07/2016** Seq No: **7151559**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
1,1-Dichloroethene	72.40	5.0	50.00		145	60	150				

Qualifiers:
> Greater than Result value
< Less than Result value
B Analyte detected in the associated method blank
BRL Below reporting limit
E Estimated (value above quantitation range)
H Holding times for preparation or analysis exceeded
J Estimated value detected below Reporting Limit
N Analyte not NELAC certified
R RPD outside limits due to matrix
Rpt Lim Reporting Limit
S Spike Recovery outside limits due to matrix

Client: ERM-Southeast
Project Name: Murata
Workorder: 1611187

ANALYTICAL QC SUMMARY REPORT

BatchID: 232485

Sample ID: **1611187-001AMS**	Client ID: **MW-18-20161031-01**	Units: **ug/L**	Prep Date: **11/07/2016**	Run No: **329289**
SampleType: **MS**	TestCode: **TCL VOLATILE ORGANICS SW8260B**	BatchID: **232485**	Analysis Date: **11/07/2016**	Seq No: **7151559**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Trichloroethene	51.15	5.0	50.00		102	70	136				
Surr: 4-Bromofluorobenzene	50.64	0	50.00		101	70.7	125				
Surr: Dibromofluoromethane	52.07	0	50.00		104	82.2	120				
Surr: Toluene-d8	49.57	0	50.00		99.1	81.8	120				

Sample ID: **1611187-001AMSD**	Client ID: **MW-18-20161031-01**	Units: **ug/L**	Prep Date: **11/07/2016**	Run No: **329289**
SampleType: **MSD**	TestCode: **TCL VOLATILE ORGANICS SW8260B**	BatchID: **232485**	Analysis Date: **11/07/2016**	Seq No: **7151560**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
1,1-Dichloroethene	70.69	5.0	50.00		141	60	150	72.40	2.39	17.7	
Trichloroethene	50.33	5.0	50.00		101	70	136	51.15	1.62	20	
Surr: 4-Bromofluorobenzene	49.65	0	50.00		99.3	70.7	125	50.64	0	0	
Surr: Dibromofluoromethane	51.10	0	50.00		102	82.2	120	52.07	0	0	
Surr: Toluene-d8	49.62	0	50.00		99.2	81.8	120	49.57	0	0	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Groundwater Sampling Field Forms

Appendix D

March 31, 2017
Project No. 0190949
Murata

Environmental Resources Management
3200 Windy Hill Rd. Suite 1500W
Atlanta, GA 30339
(678) 486-2700

ERM

WATER LEVEL MEASUREMENT DATA SHEET

Client: Murata Electronics
Site/Location: Rockmart, GA

Date: 10/31/16
Sampler's Name: KS / MR

Well I.D.	Date	Time	Well Diameter (inches)	Depth to Water (Feet BTOC)	Total Depth (Feet BTOC)	Depth to NAPL (Feet BTOC)	Notes (Odor, dedicated pump present, note if lock/cap need replacment,etc.)
MW-9	10/31	1015	2	54.36	58.90		
MW-18	10/31	1020	2	58.31	60.36		
MW-5		1030	2	51.83	71.80		~~Weeds Bolts~~
MW-10		1033	2	DRY	26.13		
MW-23		1037	2	29.54	71.38		
MW-3		1040	2	41.89	43.59		
MW-17		1045	2	47.88	75.45		
MW-27		1053	2	19.73	19.95		
MW-28		1057	2	6.62	>103		open borehole?
MW-11		1102	2	52.61	52.69		
MW-29		1104	2	63.23	65.91		
MW-6		1115	2	67.19	77.90		
MW-22		1118	2	63.37	78.58		
MW-26		1130	2	44.92	93.10		
MW-1		1134	2	DRY	57.20		
MW-12		1145	4	56.95	7103		
MW-13		1142	2	54.50	55.30		
MW-2			2	DRY	36.75		
MW-20		1204	2	5981	631		
MW-16			4	DRY			
MW-8		1207	2	5977	690		
MW-4		1215	2	52.88	664		
MW-19		1218	2	6572	68.69		
MW-7		1222	2	5862	742		

ERM

PDB Sample Matrix

Client: Murata
Site/Location: Rockmart, GA
Date: 10/31/16
Sampler's Name: ~~KS/MR~~

Well I.D.	Sample Date	Sample Time	Notes (Odor, dedicated pump present, note if
MW-18	10-31-16	1340	
MW-5	↓	1350	
MW-17		1354	
MW-23		1405	
MW-28		1412	
MW-6		1416	
MW-29		1423	
MW-22		1430	
MW-26		1436	
MW-20		1442	
DUP-1		—	From MW-20
MW-8		1452	DUP-02
MW-4	↓	1500	
MW-9	11/1/16	1345	DUP-03
MW-7	11/1/16	1625	Low Flow

GROUND WATER SAMPLING LOG SHEET

ERM

Client: Murata Electronics | Project No.: 190949 | Sampling Date: 11-1-16

Site/Location: Rockmart, GA | Sampler's Name: MR / RS

Well ID: MW-7 | Pump Type/Model: Bladder | Sample Collection Time: 1625

Total Depth (ft)[1]: 74.2 | Tubing Material: LDPE | Sample Purge Rate (L/min)[3]: .2

Depth to Water (ft): 58.62 | Pump Intake Depth (ft): ~69 | Sample ID: MW-7-20161101-01

Well Diameter (in): 2 | Start/Stop Purge Time: 1451 | QA/QC Collected? No

Well Volume (gal) = 0.041d²h: 9.7 L | Purge Rate (L/min)[2]: .200 | QA/QC I.D.: -

d = well diameter (inches) h = length of water column (feet) | Total Purge Volume (L): 17 | Laboratory Analyses: VOCs

Well Condition: Good | Sampling Method (check all that apply): ☐ soda straw (VOCs) ☐ vacuum jug (SVOCs) ☑ pump head discharge (Inorganics including cyanide)

Purge Method: Low flow | ☒ Bladder pump = pump discharge (all analytes) ☐ Bailer (only used if necessary)

Time	Temp. (°C)	Spec. Cond. (mS/cm)	DO (mg/L)	pH (SU)	ORP (mV)	Turbidity (NTUs)	Purge Volume (L)	H_2O Depth (ft)	Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.)
1456	19.35	639	0.61	6.83	162.9	35.2	1	61.07	
1501	19.88	532	1.94	7.05	160.7	22.2	2	63.06	
									- Drawdown excessive - flow rate
1506	20.19	436.7	3.07	7.09	153.6	18.3	3	63.6	~~Increased to~~ could not be increased w/ bladder setup
1511	20.41	391.6	4.18	7.12	150.1	15.7	4	64.51	Drawdown ignored due to time
1516	21.06	363.0	4.83	7.13	145.2	11.2	5	64.80	constraints
1521	20.33	352.0	5.40	7.16	138.9	12.4	6	65.06	
1526	20.86	352.7	5.46	7.16	140.70	10.5	7	65.27	
1831	21.35	381.2	5.83	7.22	136.6	12.4	8	65.39	
1536	20.14	434.5	6.09	7.21	134.2	11.7	9	65.51	
1541	20.89	481.5	5.82	7.27	134.5	11.33	10	65.78	
1546	21.39	528.3	5.62	7.28	128.10	9.93	11	65.96	
1551	21.64	568.6	4.99	7.28	127.5	7.75	12	66.12	
1556	22.18	604.1	4.31	7.29	127.8	7.21	13	66.29	
1601	22.27	622.2	4.17	7.30	128.9	6.88	14	66.37	
1606	22.46	636.5	3.79	7.30	127.0	5.22	15	66.51	
1611	22.38	643.6	3.81	7.31	128.0	5.17	16	66.71	
1616	22.49	652.6	3.70	7.31	127.9	5.08	17	66.92	- Stable
									Sampled @ 1625
Stabilizing Criteria[5]	+/- 1°C	+/- 3%	+/- 10% (see note below)[7]	+/- 0.1 unit	+/- 10 mV (see note below)[8]	+/- 10% or <10 NTUs	(see note below)[4]	(see note below)[6]	

(1) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom.
(2) - Purge rate to be 0.5 lpm or less.
(3) - Sampling rate to be 0.25 lpm or less.
(4) - Field parameter measurements to be recorded every 3 to 5 minutes.
(5) - Stabilization criteria based on three most recent consecutive measurements.
(6) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft.
(7) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.
(8) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

Uniform Environmental Covenants

Appendix E

March 31, 2017
Project No. 0190949
Murata

Environmental Resources Management
3200 Windy Hill Rd. Suite 1500W
Atlanta, GA 30339
(678) 486-2700

After Recording Return to:
Murata Erie NA Inc.
2200 Lake Park Dr
Smyrna, Ga 30080

CROSS-REFERENCE: Deed Book:

Page:

Environmental Covenant

This instrument is an Environmental Covenant executed pursuant to the Georgia Uniform Environmental Covenants Act, OCGA § 44-16-1, *et seq.* This Environmental Covenant subjects the Property identified below to the activity and/or use limitations specified in this document. The effective date of this Environmental Covenant shall be the date upon which the fully executed Environmental Covenant has been recorded in accordance with OCGA § 44-16-8(a).

Fee Owner of Property/Grantor:
Murata Erie NA Inc.
2200 Lake Park Dr.
Smyrna, Ga 30080

Grantee/Holder:
Murata Erie NA Inc.
2200 Lake Park Dr.
Smyrna, Ga 30080

Grantee/Entity with express power to enforce:
State of Georgia
Department of Natural Resources
Environmental Protection Division
2 Martin Luther King Jr. Drive, SE
Suite 1456 East Tower
Atlanta, GA 30334

Parties with interest in the Property: None

Property:

The property subject to this Environmental Covenant is the Murata Electronics site, located at 308 Prospect Rd, in Rockmart, Polk County, Georgia (hereinafter "Property"). The tracts of land were conveyed on July 31, 1974 and August 30, 1974 from Patillo Construction Company, Inc. to Murata Manufacturing Company, Inc. and recorded in Deed Book 251, Page 188 and Deed Book 234 Page 307, Polk County Records. The land was later transferred in 1984 from Murata Manufacturing Company, Inc. to Murata Erie NA, Inc. at Deed Book 1225 Page 0433. The Property is located in Land Lot 700 of the 3rd Section, 21st District of Polk County, Georgia, and contains 9.8 acres. A complete legal description of the site is attached as Exhibit A and includes a map of the Property.

Tax Parcel Number(s):

054-053 of Polk County, Georgia

Name and Location of Administrative Records:

The corrective action at the Property that is the subject of this Environmental Covenant is described in the following document[s] (as same may be amended from time to time with written approval from EPD):

- Voluntary Investigation & Remediation Plan, March 31, 2017

These documents are available at the following locations in the files for HSI No. 10771:

Georgia Environmental Protection Division
Response and Remediation Program
2 MLK Jr. Drive, SE, Suite 1054 East Tower
Atlanta, GA 30334
M-F 8:00 AM to 4:30 PM excluding state holidays

Murata Erie NA, Inc.

Description of Contamination and Corrective Action:

This Property has been listed on the state's hazardous site inventory and has been designated as needing corrective action due to the presence of hazardous wastes, hazardous constituents, or hazardous substances regulated under state law. Contact the property owner or the Georgia Environmental Protection Division for further information concerning this Property. This notice is provided in compliance with the Georgia Hazardous Site Response Act.

This Declaration of Covenant is made pursuant to the Georgia Uniform Environmental Covenants Act, O.C.G.A. § 44-16-1 *et seq*. by Murata Erie NA Inc., its successors and assigns, Murata Erie NA, and the State of Georgia, Department of Natural Resources, Environmental Protection Division (hereinafter "EPD"), its successors and assigns. This Environmental Covenant is required because a release of tetrachloroethylene occurred on the Property. Tetrachloroethylene is a "regulated substance" as defined under the Georgia Hazardous Site Response Act, O.C.G.A. § 12-8-90 *et seq.*, and the rules promulgated thereunder (hereinafter "HSRA" and "Rules", respectively). The Corrective Action consists of institutional controls (Limiting property use to non-residential activities and groundwater use restriction) to protect human health and the environment.

Grantor, Murata Erie NA, Inc. (hereinafter "Murata"), hereby binds Grantor, its successors and assigns to the activity and use restriction(s) for the Property identified herein and grants such other rights under this Environmental Covenant in favor of the Murata Erie NA, Inc. and EPD. EPD shall have full right of enforcement of the rights conveyed under this Environmental Covenant pursuant to HSRA, O.C.G.A. § 12-8-90 *et seq*., and the rules promulgated thereunder. Failure to timely enforce compliance with this Environmental Covenant or the use or activity limitations contained herein by any person shall not bar subsequent enforcement by such person and shall not be deemed a waiver of the person's right to take action to enforce any non-compliance. Nothing in this Environmental Covenant shall restrict EPD from exercising any authority under applicable law.

Murata makes the following declaration as to limitations, restrictions, and uses to which the Property may be put and specifies that such declarations shall constitute covenants to run with the land,

pursuant to O.C.G.A. § 44-16-5(a); is perpetual, unless modified or terminated pursuant to the terms of this Covenant pursuant to O.C.G.A. § 44-16-9 and 10; and shall be binding on all parties and all persons claiming under them, including all current and future owners of any portion of or interest in the Property (hereinafter "Owner"). Should a transfer or sale of the Property occur before such time as this Environmental Covenant has been amended or revoked then said Environmental Covenant shall be binding on the transferee(s) or purchaser(s).

The Environmental Covenant shall inure to the benefit of Murata, EPD and their respective successors and assigns and shall be enforceable by the Director or his agents or assigns, Murata or its successors and assigns, and other party(ies) as provided for in O.C.G.A. § 44-16-11 in a court of competent jurisdiction.

Activity and/or Use Limitation(s)

1. Registry. Pursuant to O.C.G.A. § 44-16-12, this Environmental Covenant and any amendment or termination thereof, may be contained in EPD's registry for environmental covenants.

2. Notice. The Owner of the Property must give thirty (30) day advance written notice to EPD of the Owner's intent to convey any interest in the Property. No conveyance of title, easement, lease, or other interest in the Property shall be consummated by the Owner without adequate and complete provision for continued monitoring, operation, and maintenance of the Corrective Action. The Owner of the Property must also give thirty (30) day advance written notice to EPD of the Owner's intent to change the use of the Property, apply for building permit(s), or propose any site work that would affect the Property.

3. Notice of Limitation in Future Conveyances. Each instrument hereafter conveying an interest in the Property subject to this Environmental Covenant shall contain a notice of the activity and use limitations set forth in this Environmental Covenant and shall provide the recorded location of the Environmental Covenant.

4. Monitoring. The groundwater detection-monitoring program detailed in the VIRP dated March 31, 2017 must be implemented to ensure compliance with the HSRA RRS, as provided in the VIRP.

5. Periodic Reporting. Annually, by no later than March 31, 2018 (and for a period of 5 years) following the effective date of this Environmental Covenant, the Owner shall submit to EPD an Annual Report including, but not limited to: groundwater detection-monitoring report results, maintenance and inspection activities, certification of non-residential use of the Property, and documentation stating whether or not the activity and use limitations in this Environmental Covenant are being abided by.

6. Activity and Use Limitation(s). The Property shall be used only for non-residential uses, as defined in Section 391-3-19-.02 of the Rules as of the date of this Environmental Covenant. Any residential use on the Property shall be prohibited. Any activity on the Property that may result in the release or exposure to the regulated substances that were contained as part of the Corrective Action, or create a new exposure pathway, is prohibited.

7. Groundwater Limitation. The use or extraction of groundwater beneath the Property for drinking water or for any other non-remedial purposes shall be prohibited, except to the extent that groundwater extraction and sampling be conducted for the purpose of compliance with this UEC and the VIRP.

8. Right of Access. In addition to any rights already possessed by EPD and Murata, the Owner shall allow authorized representatives of EPD and Murata the right to enter the Property at reasonable times for the purpose of evaluating the Corrective Action; to take samples, to inspect the Corrective

Action conducted at the Property, to determine compliance with this Environmental Covenant, and to inspect records that are related to the Corrective Action.

9. Recording of Environmental Covenant and Proof of Notification. Within thirty (30) days after the date of the Director's signature, the Owner shall file this Environmental Covenant with the Recorders of Deeds for each County in which the Property is located, and send a file stamped copy of this Environmental Covenant to EPD within thirty (30) days of recording. Within that time period, the Owner shall also send a file-stamped copy to each of the following: (1) each person holding a recorded interest in the Property subject to the covenant, (2) each municipality, county, consolidated government, or other unit of local government in which real property subject to the covenant is located, and (3) each owner in fee simple whose property abuts the property subject to the Environmental Covenant.

10. Termination or Modification. The Environmental Covenant shall remain in full force and effect in accordance with O.C.G.A. § 44-16-1 *et seq*., unless and until the Director determines that the Property is in compliance with the Type 1, 2, 3, or 4 Risk Reduction Standards, as defined in Georgia Rules of Hazardous Site Response (Rules) Section 391-3-19-.07, whereupon the Environmental Covenant may be amended or revoked in accordance with Section 391-3-19-08(7) of the Rules and O.C.G.A. § 44-16-1 *et seq*.

11. Severability. If any provision of this Environmental Covenant is found to be unenforceable in any respect, the validity, legality, and enforceability of the remaining provisions shall not in any way be affected or impaired.

12. No EPD Interest in Property Created. This Environmental Covenant does not in any way create any interest by EPD in the Property that is subject to the Environmental Covenant. Furthermore, the act of approving this Environmental Covenant does not in any way create any interest by EPD in the Property in accordance with O.C.G.A. § 44-16-3(b).

Representations and Warranties.

Grantor hereby represents and warrants to the other signatories hereto:

a) That the Grantor has the power and authority to enter into this Environmental Covenant, to grant the rights and interests herein provided and to carry out all obligations hereunder;
b) That the Grantor is the sole owner of the Property and holds fee simple title which is free, clear and unencumbered;
c) That the Grantor has identified all other parties that hold any interest (e.g., encumbrance) in the Property and notified such parties of the Grantor's intention to enter into this Environmental Covenant;
d) That this Environmental Covenant will not materially violate, contravene, or constitute a material default under any other agreement, document or instrument to which Grantor is a party, by which Grantor may be bound or affected;
e) That the Grantor has served each of the people or entities referenced in Activity 10 above with an identical copy of this Environmental Covenant in accordance with O.C.G.A. § 44-16-4(d).
f) That this Environmental Covenant will not materially violate or contravene any zoning law or other law regulating use of the Property; and
g) That this Environmental Covenant does not authorize a use of the Property that is otherwise prohibited by a recorded instrument that has priority over the Environmental Covenant.

Notices.

Any document or communication required to be sent pursuant to the terms of this Environmental Covenant shall be sent to the following persons:

Georgia Environmental Protection Division
Branch Chief
Land Protection Branch
2 Martin Luther King Jr. Drive SE
Suite 1054 East Tower
Atlanta, GA 30334

Grantor has caused this Environmental Covenant to be executed pursuant to The Georgia Uniform Environmental Covenants Act, on the _____ day of _____, 20___.

Signed, sealed, and delivered in the presence of:

_____
Unofficial Witness (*Signature*)

_____
Unofficial Witness Name (*Print*)

_____

_____
Unofficial Witness Address (*Print*)

_____
Notary Public (*Signature*)

My Commission Expires:_____

For the Grantor:

Murata Erie NA, Inc.
Name of Grantor (*Print*)

_____ (Seal)
Grantor's Authorized Representative (*Signature*)

_____
Authorized Representative Name (*Print*)

_____
Title of Authorized Representative (*Print*)

Dated:_____
(NOTARY SEAL)

Signed, sealed, and delivered in the presence of:

_____
Unofficial Witness *(Signature)*

_____
Unofficial Witness Name (*Print*)

_____

_____
Unofficial Witness Address (*Print*)

_____
Notary Public *(Signature)*

My Commission Expires:_____

For the State of Georgia
Environmental Protection Division:

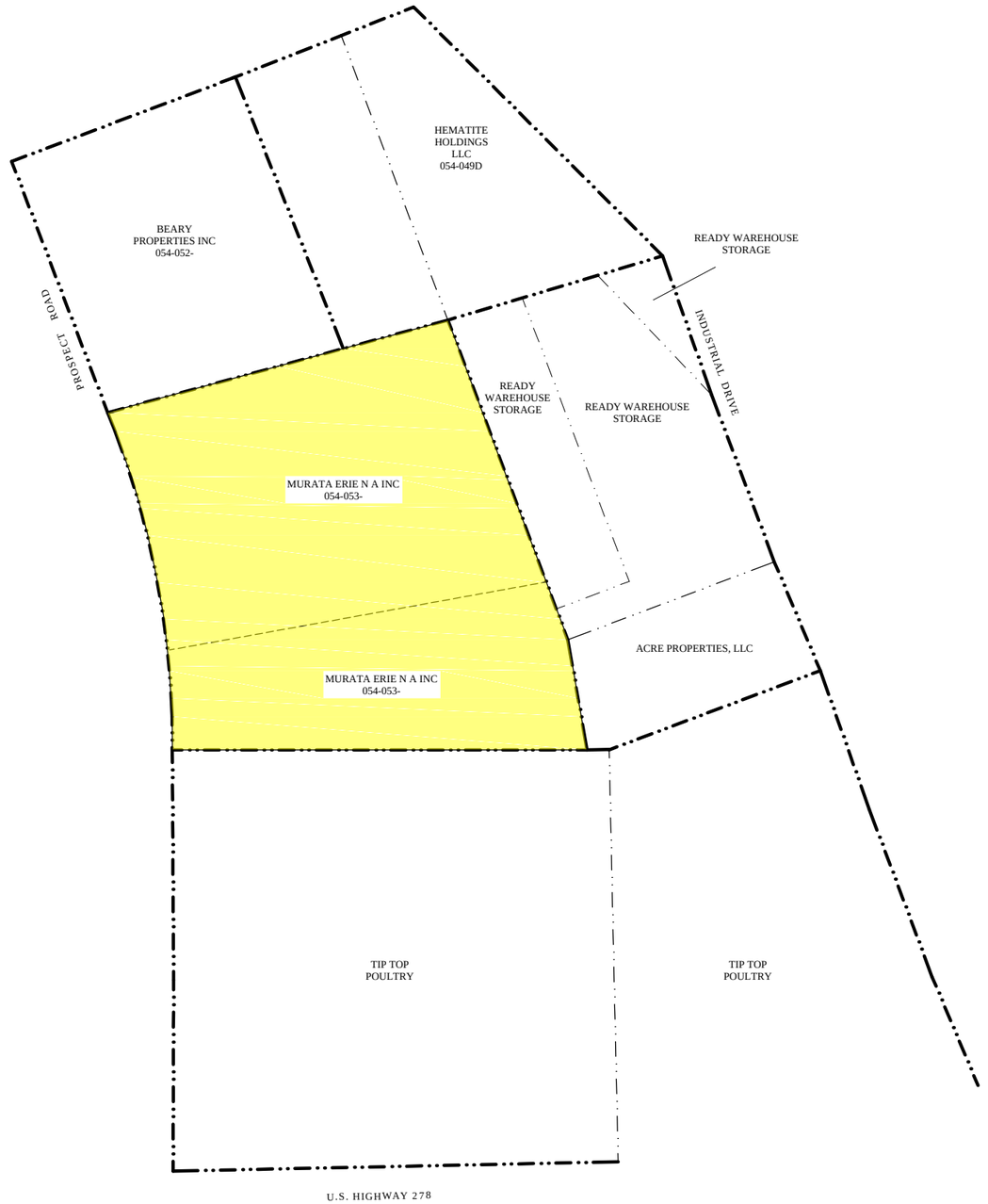
_____ (Seal)
(Signature)

Judson H. Turner
Director

Dated:_____

(NOTARY SEAL)

Exhibit A
Legal Description and Map



054-053-
MURATA ERIE N A INC

All that tract or parcel of land lying and being in Land Lot 700 of the 3rd Section and 21st District of Polk County, Georgia, containing 6.30 acres and being more particularly described as follows according to survey for Pattillo Construction Company, Incorporated, dated August 16, 1973, by williams, Sweitzer and Barnum, Inc.:

Beginning at an iron pipe on the northeasterly right-of-way of Prospect Road (80 foot right-of-way) 445.5 feet southeasterly as measured along the northeasterly right-of-way of Prospect Road and following the curvature thereof from the corner formed by the intersection of the northeasterly right-of-way of Prospect Road with the southeasterly right-of-way of an Unnamed Street (60 foot right-of-way); said beginning point being at the southwesterly corner of property now or formerly belonging to Rockmart Industrial Development Corp. and being on the southeasterly line of a 30 foot Atlanta Gas Light Company Easement; from said beginning point run north 74 degrees 47 minutes east along the southeasterly line of said Rockmart Industrial Development Corp. property and said easement, 588.8 feet to an iron pipe on the southwesterly line of property now or formerly belonging to Artman Industries; running thence south 20 degrees 34 minutes east along the southwesterly line of Artman Industries property, 484.2 feet to an iron pipe placed at the northeasterly corner of property now or formerly belonging to Rockmart Industrial Development Corp., running thence south 79 degrees 46 minutes west along the northwesterly line of said Rockmart Industrial Development Corp. property, 646.6 feet to an iron pipe placed on the easterly right-of-way of Prospect Road; running thence northerly and northwesterly along the easterly and northeasterly right-of-way of Prospect Road and following the curvature thereof, an arc distance of 397.6 feet to an iron pipe (chord distance being 396.1, bearing north 13 degrees 14 minutes west); continuing thence north 21 degrees 57 minutes west along the northeasterly right-of-way of Prospect Road, 30.2 feet to the iron pipe at the point of beginning.

All that tract or parcel of land lying and being in Land Lot 700 of the 3rd Section, 21st District of Polk County, Georgia, containing 3.48 acres and being more particularly described as follows according to survey for Murata Manufacturing Company, Inc. dated July 24, 1974 by Williams, Sweitzer and Barnum, Inc.:

Beginning at an iron pin on the northeasterly right-of-way of Prospect Road (said road having an 80-foot right-of-way) 690.2 feet northerly as measured along the eastern right-of-way of Prospect Road and following the curvature thereof from the corner formed by the intersection of the easterly right-of-way of Prospect Road with the northern right-of-way of Nathan Dean bypass (said road having 130-foot right-of-way); thence running along the eastern right-of-way of Prospect road the following directions and distances: north 0 degrees 19 minutes west 71.2 feet to an iron pin, north 2 degrees 22 minutes west along an arc of 96.3 feet subtended by a chord of 96.2 feet to an iron pin; thence running north 79 degrees 46 minutes east 646.6 feet along the southeastern line of the property now owned by Murata Manufacturing Company, Inc. to an iron pin; thence running south 20 degrees 34 minutes east 284.8 feet to an iron pin; thence running south 88 degrees 47 minutes west 732.1 feet to an iron pin the eastern right-of-way of Prospect Road and the point of beginning.

N

SCALE IN FEET
100 50 25 0 100

E:\MurataGIS\CAD\29540Plats_SVedit.dwg

NO.	DATE	APPR.	REVISION	NO.	DATE	APPR.	REVISION

MURATA REMEDIAL ACTION

MURATA ERIE N A INC — ROCKMART, GEORGIA

DRAWN BY	PROJECT ENGINEER
M HYRE	H. SARTAIN
DESIGN ENGINEER	PROJECT MANAGER
T. HARBAGE	H. SARTAIN

ERM

NOT FOR CONST-RUCTION

LEGAL DESCRIPTION AND PROPERTY OWNERSHIP MAP

SCALE	DATE
1"=100'	FEBRUARY 28, 2007
PROJECT NO.	AutoCAD 2002
0029540	29540PLATS.DWG

DRAWING NO. **A-1**

REV. NO. **0**

SHEET **1** OF **1**

After Recording Return to:
Beary Properties, Inc.
2500 W Arthingon
Chicago, IL 60612

CROSS-REFERENCE: Deed Book:

Page:

Environmental Covenant

This instrument is an Environmental Covenant executed pursuant to the Georgia Uniform Environmental Covenants Act, OCGA § 44-16-1, *et seq.* This Environmental Covenant subjects the Property identified below to the activity and/or use limitations specified in this document. The effective date of this Environmental Covenant shall be the date upon which the fully executed Environmental Covenant has been recorded in accordance with OCGA § 44-16-8(a).

Fee Owner of Property/Grantor: Beary Properties, Inc.
2500 W Arthingon
Chicago, IL 60612

Grantee/Holder: Murata Erie NA Inc.
2200 Lake Park Dr.
Smyrna, Ga 30080

Grantee/Entity with express power to enforce: State of Georgia
Department of Natural Resources
Environmental Protection Division
2 Martin Luther King Jr. Drive, SE
Suite 1456 East Tower
Atlanta, GA 30334

Parties with interest in the Property: Allstar Enterprises Inc.

Property:

The property subject to this Environmental Covenant is the Beary Properties site, located at 515 Industrial Drive, in Rockmart, Polk County, Georgia (hereinafter "Property"). The tract of land were conveyed on June 27, 2005 from Michael H Rayburn to Beary Properties, Inc. and recorded in Deed Book 1098, Page 467, Polk County Records. The Property is located in Land Lot 700 of the 3rd Section, 21st District of Polk County, Georgia, and contains 4.3 acres. A complete legal description of the tract is attached as Exhibit A, including a map of the Property.

Tax Parcel Number(s):

054-052 of Polk County, Georgia

Name and Location of Administrative Records:

The corrective action at the Property that is the subject of this Environmental Covenant is described in the following document (as same may be amended from time to time with written approval from EPD):

- Voluntary Investigation & Remediation Plan, March 31, 2017

These documents are available at the following locations in the files for HSI No. 10771:

Georgia Environmental Protection Division
Response and Remediation Program
2 MLK Jr. Drive, SE, Suite 1054 East Tower
Atlanta, GA 30334
M-F 8:00 AM to 4:30 PM excluding state holidays

Description of Contamination and Corrective Action:

This Property has been listed on the state's hazardous site inventory and has been designated as needing corrective action due to the presence of hazardous wastes, hazardous constituents, or hazardous substances regulated under state law. Contact the property owner or the Georgia Environmental Protection Division for further information concerning this Property. This notice is provided in compliance with the Georgia Hazardous Site Response Act.

This Declaration of Covenant is made pursuant to the Georgia Uniform Environmental Covenants Act, O.C.G.A. § 44-16-1 *et seq*. by Beary Properties, Inc., its successors and assigns, Murata Erie NA Inc., and the State of Georgia, Department of Natural Resources, Environmental Protection Division (hereinafter "EPD"), its successors and assigns. This Environmental Covenant is required because a release of tetrachloroethylene occurred on the Property. Tetrachloroethylene is a "regulated substance" as defined under the Georgia Hazardous Site Response Act, O.C.G.A. § 12-8-90 *et seq.*, and the rules promulgated thereunder (hereinafter "HSRA" and "Rules", respectively). The Corrective Action consists of institutional controls (Limiting property use to non-residential activities and groundwater use restriction) to protect human health and the environment.

Grantor, Beary Properties, Inc., (hereinafter "Beary"), hereby binds Grantor, its successors and assigns to the activity and use restriction(s) for the Property identified herein and grants such other rights under this Environmental Covenant in favor of the Murata Erie NA, Inc. and EPD. EPD shall have full right of enforcement of the rights conveyed under this Environmental Covenant pursuant to HSRA, O.C.G.A. § 12-8-90 *et seq*., and the rules promulgated thereunder. Failure to timely enforce compliance with this Environmental Covenant or the use or activity limitations contained herein by any person shall not bar subsequent enforcement by such person and shall not be deemed a waiver of the person's right to take action to enforce any non-compliance. Nothing in this Environmental Covenant shall restrict EPD from exercising any authority under applicable law.

Beary makes the following declaration as to limitations, restrictions, and uses to which the Property may be put and specifies that such declarations shall constitute covenants to run with the land, pursuant to O.C.G.A. § 44-16-5(a); is perpetual, unless modified or terminated pursuant to the terms of this Covenant pursuant to O.C.G.A. § 44-16-9 and 10; and shall be binding on all parties and all persons

claiming under them, including all current and future owners of any portion of or interest in the Property (hereinafter "Owner"). Should a transfer or sale of the Property occur before such time as this Environmental Covenant has been amended or revoked then said Environmental Covenant shall be binding on the transferee(s) or purchaser(s).

The Environmental Covenant shall inure to the benefit of Murata, EPD and their respective successors and assigns and shall be enforceable by the Director or his agents or assigns, Murata or its successors and assigns, and other party(ies) as provided for in O.C.G.A. § 44-16-11 in a court of competent jurisdiction.

Activity and/or Use Limitation(s)

1. Registry. Pursuant to O.C.G.A. § 44-16-12, this Environmental Covenant and any amendment or termination thereof, may be contained in EPD's registry for environmental covenants.

2. Notice. The Owner of the Property must give thirty (30) day advance written notice to EPD of the Owner's intent to convey any interest in the Property. No conveyance of title, easement, lease, or other interest in the Property shall be consummated by the Owner without adequate and complete provision for continued monitoring, operation, and maintenance of the Corrective Action. The Owner of the Property must also give thirty (30) day advance written notice to EPD of the Owner's intent to change the use of the Property, apply for building permit(s), or propose any site work that would affect the Property.

3. Notice of Limitation in Future Conveyances. Each instrument hereafter conveying an interest in the Property subject to this Environmental Covenant shall contain a notice of the activity and use limitations set forth in this Environmental Covenant and shall provide the recorded location of the Environmental Covenant.

4. Monitoring. The groundwater detection-monitoring program detailed in the VIRP dated March 31, 2017 must be implemented to ensure compliance with the HSRA RRS, as provided in the VIRP.

5. Periodic Reporting. Annually, by no later than March 31, 2018 (and for a period of 5 years) following the effective date of this Environmental Covenant, the Owner shall submit to EPD an Annual Report including, but not limited to: groundwater detection-monitoring report results, maintenance and inspection activities, certification of non-residential use of the Property, and documentation stating whether or not the activity and use limitations in this Environmental Covenant are being abided by.

6. Activity and Use Limitation(s). The Property shall be used only for non-residential uses, as defined in Section 391-3-19-.02 of the Rules as of the date of this Environmental Covenant. Any residential use on the Property shall be prohibited. Any activity on the Property that may result in the release or exposure to the regulated substances that were contained as part of the Corrective Action, or create a new exposure pathway, is prohibited.

7. Groundwater Limitation. The use or extraction of groundwater beneath the Property for drinking water or for any other non-remedial purposes shall be prohibited, except to the extent that groundwater extraction and sampling be conducted for the purpose of compliance with this UEC and the VIRP.

8. Right of Access. In addition to any rights already possessed by EPD and/or the Murata, the Owner shall allow authorized representatives of EPD and/or Murata the right to enter the Property at reasonable times for the purpose of evaluating the Corrective Action; to take samples, to inspect the Corrective Action conducted at the Property, to determine compliance with this Environmental Covenant, and to inspect records that are related to the Corrective Action.

9. Recording of Environmental Covenant and Proof of Notification. Within thirty (30) days after the date of the Director's signature, the Owner shall file this Environmental Covenant with the Recorders of Deeds for each County in which the Property is located, and send a file stamped copy of this Environmental Covenant to EPD within thirty (30) days of recording. Within that time period, the Owner shall also send a file-stamped copy to each of the following: (1) <name of Holder>, (2) each person holding a recorded interest in the Property subject to the covenant, (3) each person in possession of the real property subject to the covenant, (4) each municipality, county, consolidated government, or other unit of local government in which real property subject to the covenant is located, and (5) each owner in fee simple whose property abuts the property subject to the Environmental Covenant.

10. Termination or Modification. The Environmental Covenant shall remain in full force and effect in accordance with O.C.G.A. § 44-16-1 *et seq*., unless and until the Director determines that the Property is in compliance with the Type 1, 2, 3, or 4 Risk Reduction Standards, as defined in Georgia Rules of Hazardous Site Response (Rules) Section 391-3-19-.07, whereupon the Environmental Covenant may be amended or revoked in accordance with Section 391-3-19-08(7) of the Rules and O.C.G.A. § 44-16-1 *et seq*.

11. Severability. If any provision of this Environmental Covenant is found to be unenforceable in any respect, the validity, legality, and enforceability of the remaining provisions shall not in any way be affected or impaired.

12. No EPD Interest in Property Created. This Environmental Covenant does not in any way create any interest by EPD in the Property that is subject to the Environmental Covenant. Furthermore, the act of approving this Environmental Covenant does not in any way create any interest by EPD in the Property in accordance with O.C.G.A. § 44-16-3(b).

Representations and Warranties.

Grantor hereby represents and warrants to the other signatories hereto:

a) That the Grantor has the power and authority to enter into this Environmental Covenant, to grant the rights and interests herein provided and to carry out all obligations hereunder;
b) That the Grantor is the sole owner of the Property and holds fee simple title which is free, clear and unencumbered;
c) That the Grantor has identified all other parties that hold any interest (e.g., encumbrance) in the Property and notified such parties of the Grantor's intention to enter into this Environmental Covenant;
d) That this Environmental Covenant will not materially violate, contravene, or constitute a material default under any other agreement, document or instrument to which Grantor is a party, by which Grantor may be bound or affected;
e) That the Grantor has served each of the people or entities referenced in Activity 10 above with an identical copy of this Environmental Covenant in accordance with O.C.G.A. § 44-16-4(d).
f) That this Environmental Covenant will not materially violate or contravene any zoning law or other law regulating use of the Property; and
g) That this Environmental Covenant does not authorize a use of the Property that is otherwise prohibited by a recorded instrument that has priority over the Environmental Covenant.

Notices.

Any document or communication required to be sent pursuant to the terms of this Environmental Covenant shall be sent to the following persons:

Georgia Environmental Protection Division
Branch Chief
Land Protection Branch
2 Martin Luther King Jr. Drive SE
Suite 1054 East Tower
Atlanta, GA 30334

Beary Properties, Inc.
515 Industrial Drive
Rockmart, Georgia

Murata Erie NA Inc.
2200 Lake Park Dr.
Smyrna, Ga 30080

Grantor has caused this Environmental Covenant to be executed pursuant to The Georgia Uniform Environmental Covenants Act, on the _____ day of _____, 20___.

Signed, sealed, and delivered in the presence of:

_____
Unofficial Witness (*Signature*)

_____
Unofficial Witness Name (*Print*)

_____
Unofficial Witness Address (*Print*)

_____
Notary Public (*Signature*)

My Commission Expires:_____

For the Grantor:

Beary Properties, Inc.
Name of Grantor (*Print*)

_____ (Seal)
Grantor's Authorized Representative (*Signature*)

_____
Authorized Representative Name (*Print*)

_____
Title of Authorized Representative (*Print*)

Dated:_____
(NOTARY SEAL)

Signed, sealed, and delivered in the presence of:

_____
Unofficial Witness *(Signature)*

_____
Unofficial Witness Name (*Print*)

_____
Unofficial Witness Address (*Print*)

For the State of Georgia
Environmental Protection Division:

_____ (Seal)
(Signature)

Judson H. Turner
Director

Dated:_____

(NOTARY SEAL)

Notary Public *(Signature)*

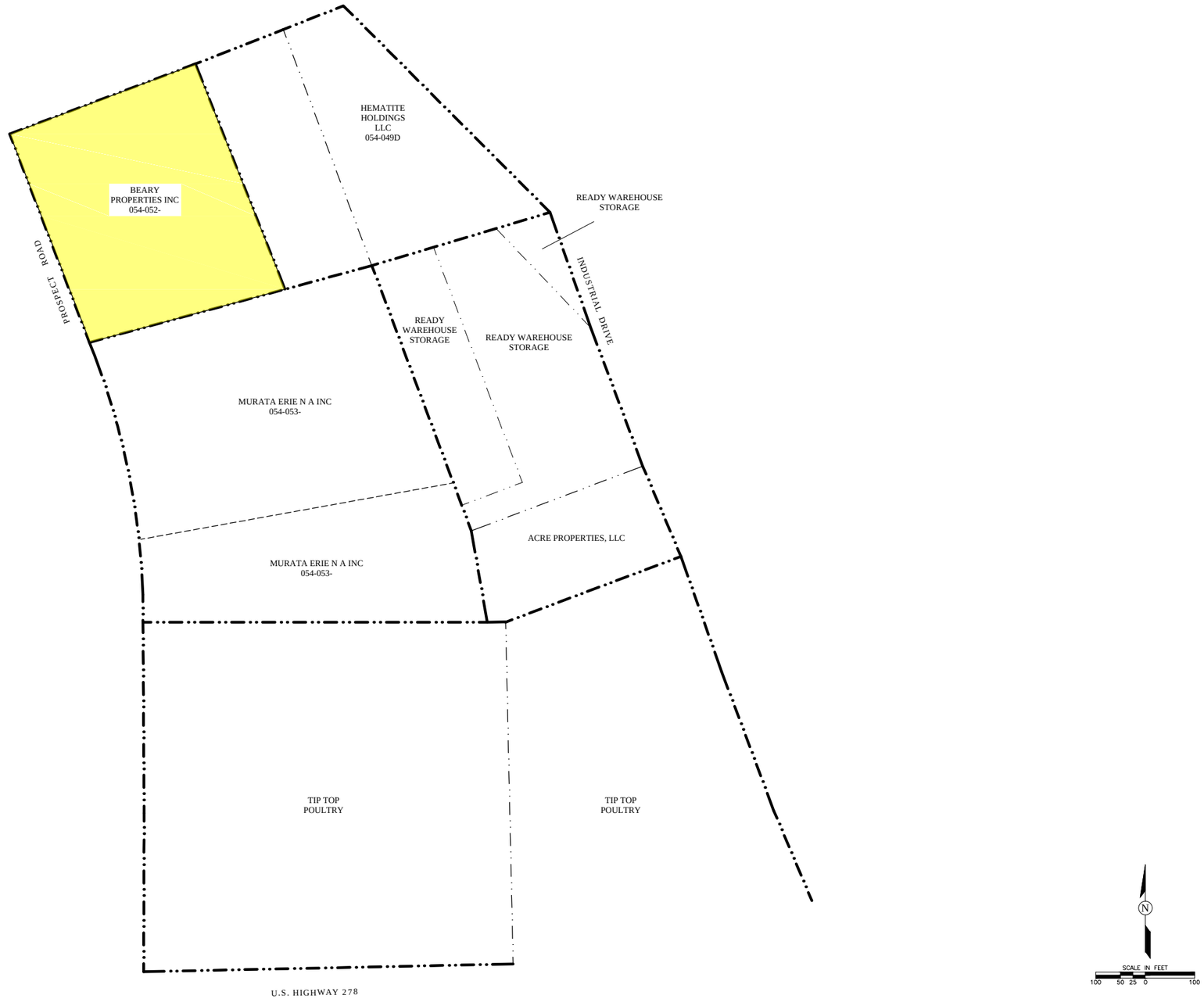
My Commission Expires:_____

Exhibit A
Legal Description and Map

054-052-
BEARY PROPERTIES INC

All that tract or parcel of land lying and beginning in Land Lot 700 of the 21st District, 3rd Section, Polk County, Georgia and begin more particularly described as follows:

Beginning at a point marked by an iron pin located at the interstection of the southeasterly right-of-way line of Industrial Drive (60 foot R/W) and the northeasterly right-of-way line of Prospect Road (80 foot R/W); running thence north 69 degrees 20 minutes 50 seconds east and along the southeeasterly right-of-way line of industrial drive a distance of 400.72 feet to a point marked by an iron pin; thence leaving the southeasterly right-of-way line of Industrial Drive and running thence south 21 degrees 40 minutes 36 seconds east a distance of 489.33 feet to a point marked by an iron pin; running thence south 75 degrees 30 minutes 21 seconds west 407.30 feet to a point marked by an iron pin located on the northeasterly right-of-way line of Prospect Road; running thence north 21 degrees 14 minutes 01 seconds west along the northeasterly right-of-way line of Prospect Road a distance of 445.58 feet to a point marked by an iron pin located at the intersection of the southeasterly right-of-way line of Industrial Drive and the northeasterly right-of-way line of Prospect Road and the point of beginning.



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NO.	DATE	APPR.	REVISION	NO.	DATE	APPR.	REVISION

MURATA REMEDIAL ACTION

MURATA ERIE N A INC — ROCKMART, GEORGIA

DRAWN BY: M. HYRE	PROJECT ENGINEER: H. SARTAIN
DESIGN ENGINEER: T. HARBAGE	PROJECT MANAGER: H. SARTAIN

ERM

NOT FOR CONST-RUCTION

LEGAL DESCRIPTION AND PROPERTY OWNERSHIP MAP

SCALE: 1"=100'	DATE: FEBRUARY 28, 2007
PROJECT NO.: 0029540	AutoCAD 2002: 29540PLATS.DWG

DRAWING NO.: **A-1**

REV. NO.: **0**

SHEET 1 OF 1

After Recording Return to:
Hematite Holdings LLC
481 Iron Hill Road
Taylorsville, GA 30178

CROSS-REFERENCE: Deed Book:

Page:

Environmental Covenant

This instrument is an Environmental Covenant executed pursuant to the Georgia Uniform Environmental Covenants Act, OCGA § 44-16-1, *et seq.* This Environmental Covenant subjects the Property identified below to the activity and/or use limitations specified in this document. The effective date of this Environmental Covenant shall be the date upon which the fully executed Environmental Covenant has been recorded in accordance with OCGA § 44-16-8(a).

Fee Owner of Property/Grantor: Hematite Holdings LLC
481 Iron Hill Road
Taylorsville, GA 30178

Grantee/Holder: Murata Erie NA Inc.
2200 Lake Park Dr.
Smyrna, Ga 30080

Grantee/Entity with express power to enforce: State of Georgia
Department of Natural Resources
Environmental Protection Division
2 Martin Luther King Jr. Drive, SE
Suite 1456 East Tower
Atlanta, GA 30334

Parties with interest in the Property: Allstar Enterprises LLC

Property:

The property subject to this Environmental Covenant is the Hematite Holdings site, located at 457 Industrial Drive, in Rockmart, Polk County, Georgia (hereinafter "Property"). The tract of land were conveyed on August 23, 2012 from Bruce Albea to Hematite Holdings LLC and recorded in Deed Book 1438, Page 95, Polk County Records. The Property is located in Land Lot 700 of the 3rd Section, 21st District of Polk County, Georgia, and contains 5.6 acres. A complete legal description of the tract is attached as Exhibit A, including a map of the Property.

Tax Parcel Number(s):

054-049D of Polk County, Georgia

Name and Location of Administrative Records:

The corrective action at the Property that is the subject of this Environmental Covenant is described in the following document (as same may be amended from time to time with written approval from EPD):

- Voluntary Investigation & Remediation Plan, March 31, 2017

These documents are available at the following locations in the files for HSI No. 10771:

Georgia Environmental Protection Division
Response and Remediation Program
2 MLK Jr. Drive, SE, Suite 1054 East Tower
Atlanta, GA 30334
M-F 8:00 AM to 4:30 PM excluding state holidays

Description of Contamination and Corrective Action:

This Property has been listed on the state's hazardous site inventory and has been designated as needing corrective action due to the presence of hazardous wastes, hazardous constituents, or hazardous substances regulated under state law. Contact the property owner or the Georgia Environmental Protection Division for further information concerning this Property. This notice is provided in compliance with the Georgia Hazardous Site Response Act.

This Declaration of Covenant is made pursuant to the Georgia Uniform Environmental Covenants Act, O.C.G.A. § 44-16-1 *et seq*. by Hematite Holdings LLC, its successors and assigns, Murata Erie NA Inc., and the State of Georgia, Department of Natural Resources, Environmental Protection Division (hereinafter "EPD"), its successors and assigns. This Environmental Covenant is required because a release of tetrachloroethylene occurred on the Property. Tetrachloroethylene is a "regulated substance" as defined under the Georgia Hazardous Site Response Act, O.C.G.A. § 12-8-90 *et seq.*, and the rules promulgated thereunder (hereinafter "HSRA" and "Rules", respectively). The Corrective Action consists of institutional controls (Limiting property use to non-residential activities and groundwater use restriction) to protect human health and the environment.

Grantor, Hematite Holdings LLC, (hereinafter "Hematite"), hereby binds Grantor, its successors and assigns to the activity and use restriction(s) for the Property identified herein and grants such other rights under this Environmental Covenant in favor of the Murata Erie NA, Inc. and EPD. EPD shall have full right of enforcement of the rights conveyed under this Environmental Covenant pursuant to HSRA, O.C.G.A. § 12-8-90 *et seq*., and the rules promulgated thereunder. Failure to timely enforce compliance with this Environmental Covenant or the use or activity limitations contained herein by any person shall not bar subsequent enforcement by such person and shall not be deemed a waiver of the person's right to take action to enforce any non-compliance. Nothing in this Environmental Covenant shall restrict EPD from exercising any authority under applicable law.

Hematite makes the following declaration as to limitations, restrictions, and uses to which the Property may be put and specifies that such declarations shall constitute covenants to run with the land, pursuant to O.C.G.A. § 44-16-5(a); is perpetual, unless modified or terminated pursuant to the terms of this Covenant pursuant to O.C.G.A. § 44-16-9 and 10; and shall be binding on all parties and all persons claiming under them, including all current and future owners of any portion of or interest in the Property (hereinafter "Owner"). Should a transfer or sale of the Property occur before such time as this Environmental Covenant has been amended or revoked then said Environmental Covenant shall be binding on the transferee(s) or purchaser(s).

The Environmental Covenant shall inure to the benefit of Murata, EPD and their respective successors and assigns and shall be enforceable by the Director or his agents or assigns, Murata or its successors and assigns, and other party(ies) as provided for in O.C.G.A. § 44-16-11 in a court of competent jurisdiction.

Activity and/or Use Limitation(s)

1. Registry. Pursuant to O.C.G.A. § 44-16-12, this Environmental Covenant and any amendment or termination thereof, may be contained in EPD's registry for environmental covenants.

2. Notice. The Owner of the Property must give thirty (30) day advance written notice to EPD of the Owner's intent to convey any interest in the Property. No conveyance of title, easement, lease, or other interest in the Property shall be consummated by the Owner without adequate and complete provision for continued monitoring, operation, and maintenance of the Corrective Action. The Owner of the Property must also give thirty (30) day advance written notice to EPD of the Owner's intent to change the use of the Property, apply for building permit(s), or propose any site work that would affect the Property.

3. Notice of Limitation in Future Conveyances. Each instrument hereafter conveying an interest in the Property subject to this Environmental Covenant shall contain a notice of the activity and use limitations set forth in this Environmental Covenant and shall provide the recorded location of the Environmental Covenant.

4. Monitoring. The groundwater detection-monitoring program detailed in the VIRP dated March 31, 2017 must be implemented to ensure compliance with the HSRA RRS, as provided in the VIRP.

5. Periodic Reporting. Annually, by no later than March 31, 2018 (and for a subsequent 4 year period) following the effective date of this Environmental Covenant, the Owner shall submit to EPD an Annual Report including, but not limited to: groundwater detection-monitoring report results, maintenance and inspection activities, certification of non-residential use of the Property, and documentation stating whether or not the activity and use limitations in this Environmental Covenant are being abided by.

6. Activity and Use Limitation(s). The Property shall be used only for non-residential uses, as defined in Section 391-3-19-.02 of the Rules as of the date of this Environmental Covenant. Any residential use on the Property shall be prohibited. Any activity on the Property that may result in the release or exposure to the regulated substances that were contained as part of the Corrective Action, or create a new exposure pathway, is prohibited.

7. Groundwater Limitation. The use or extraction of groundwater beneath the Property for drinking water or for any other non-remedial purposes shall be prohibited, except to the extent that groundwater extraction and sampling be conducted for the purpose of compliance with this UEC and the VIRP.

8. Right of Access. In addition to any rights already possessed by EPD and/or the Murata, the Owner shall allow authorized representatives of EPD and/or Murata the right to enter the Property at reasonable times for the purpose of evaluating the Corrective Action; to take samples, to inspect the Corrective Action conducted at the Property, to determine compliance with this Environmental Covenant, and to inspect records that are related to the Corrective Action.

9. Recording of Environmental Covenant and Proof of Notification. Within thirty (30) days after the date of the Director's signature, the Owner shall file this Environmental Covenant with the Recorders of Deeds for each County in which the Property is located, and send a file stamped copy of this Environmental Covenant to EPD within thirty (30) days of recording. Within that time period, the Owner shall also send a file-stamped copy to each of the following: (1) Murate Erie NA, Inc., (2)

each person holding a recorded interest in the Property subject to the covenant, (3) each person in possession of the real property subject to the covenant, (4) each municipality, county, consolidated government, or other unit of local government in which real property subject to the covenant is located, and (5) each owner in fee simple whose property abuts the property subject to the Environmental Covenant.

10. Termination or Modification. The Environmental Covenant shall remain in full force and effect in accordance with O.C.G.A. § 44-16-1 *et seq*., unless and until the Director determines that the Property is in compliance with the Type 1, 2, 3, or 4 Risk Reduction Standards, as defined in Georgia Rules of Hazardous Site Response (Rules) Section 391-3-19-.07, whereupon the Environmental Covenant may be amended or revoked in accordance with Section 391-3-19-08(7) of the Rules and O.C.G.A. § 44-16-1 *et seq*.

11. Severability. If any provision of this Environmental Covenant is found to be unenforceable in any respect, the validity, legality, and enforceability of the remaining provisions shall not in any way be affected or impaired.

12. No EPD Interest in Property Created. This Environmental Covenant does not in any way create any interest by EPD in the Property that is subject to the Environmental Covenant. Furthermore, the act of approving this Environmental Covenant does not in any way create any interest by EPD in the Property in accordance with O.C.G.A. § 44-16-3(b).

Representations and Warranties.

Grantor hereby represents and warrants to the other signatories hereto:

a) That the Grantor has the power and authority to enter into this Environmental Covenant, to grant the rights and interests herein provided and to carry out all obligations hereunder;
b) That the Grantor is the sole owner of the Property and holds fee simple title which is free, clear and unencumbered;
c) That the Grantor has identified all other parties that hold any interest (e.g., encumbrance) in the Property and notified such parties of the Grantor's intention to enter into this Environmental Covenant;
d) That this Environmental Covenant will not materially violate, contravene, or constitute a material default under any other agreement, document or instrument to which Grantor is a party, by which Grantor may be bound or affected;
e) That the Grantor has served each of the people or entities referenced in Activity 10 above with an identical copy of this Environmental Covenant in accordance with O.C.G.A. § 44-16-4(d).
f) That this Environmental Covenant will not materially violate or contravene any zoning law or other law regulating use of the Property; and
g) That this Environmental Covenant does not authorize a use of the Property that is otherwise prohibited by a recorded instrument that has priority over the Environmental Covenant.

Notices.

Any document or communication required to be sent pursuant to the terms of this Environmental Covenant shall be sent to the following persons:

Georgia Environmental Protection Division
Branch Chief
Land Protection Branch
2 Martin Luther King Jr. Drive SE

Suite 1054 East Tower
Atlanta, GA 30334

Hematite Holdings LLC
481 Iron Hill Road
Taylorsville, GA 30178

Murata Erie NA Inc.
2200 Lake Park Dr.
Smyrna, Ga 30080

Grantor has caused this Environmental Covenant to be executed pursuant to The Georgia Uniform Environmental Covenants Act, on the _____ day of _____, 20___.

Signed, sealed, and delivered in the presence of:

_____
Unofficial Witness (*Signature*)

_____
Unofficial Witness Name (*Print*)

_____

_____
Unofficial Witness Address (*Print*)

_____
Notary Public (*Signature*)

My Commission Expires:_____

For the Grantor:

Hematite Holdings LLC
Name of Grantor (*Print*)

_____ (Seal)
Grantor's Authorized Representative (*Signature*)

_____
Authorized Representative Name (*Print*)

_____
Title of Authorized Representative (*Print*)

Dated:_____
(NOTARY SEAL)

Signed, sealed, and delivered in the presence of:

_____
Unofficial Witness *(Signature)*

_____
Unofficial Witness Name (*Print*)

_____

_____
Unofficial Witness Address (*Print*)

_____
Notary Public *(Signature)*

My Commission Expires:_____

For the State of Georgia
Environmental Protection Division:

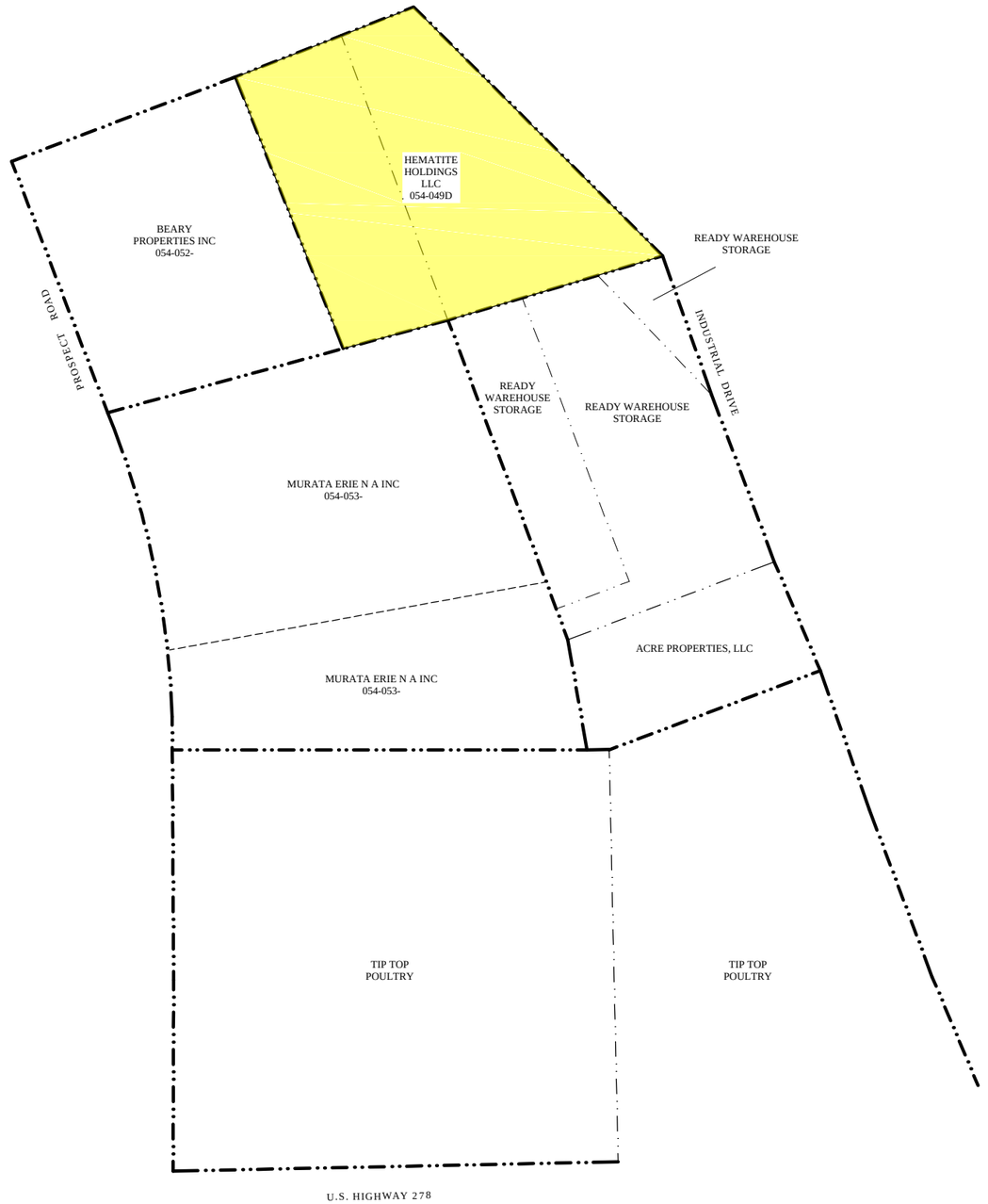
_____ (Seal)
(Signature)

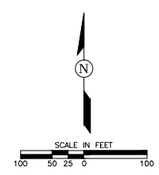
Judson H. Turner
Director

Dated:_____

(NOTARY SEAL)

Exhibit A
Legal Description and Map





054-049D
HEMATITE HOLDINGS LLC

All that tract or parcel of land lying a nd being in Land Lot Number 700 in the 21st District and 3rd Section of Polk County, Georgia, and being more fully described as follows, to-wit:

To find the point of beginning, commence at the intersec tion of the easterly right-of-way line of Prospect Road (a paved public roadway having a right-of-way width of 80 feet) and the southerly right-of-way line of Industrial Drive (a paved public roadway having a right-of-way width of 60 feet) run thence north 69 degrees 21 minutes 17 seconds east, and along the southerly right-of-way line of Industrial Drive, 400.64 feet to an iron pin and the point of beginning;

From said point of beginning, run thence north 69 degrees 21 minutes 17 seconds east, and along said right-of-way line of Industrial Drive, 196.36 feet to an iron pin; run thence south 19 degrees 52 minutes 01 seconds east, 508.98 feet to an iron pin; run thence south 75 degrees 32 minutes 24 seconds west, 181.69 feet to an iron pin; run thence north 21 degrees 40 minutes 36 seconds west, 489.44 feet to an iron pin and the point of beginning.

All that tract or parce of land lying and being in Land Lots 700, 701, 705, 706 and 707 in the 21st District and 3rd Section of Polk County, Georgia, and being more particularly described as follows:

To find the point of beginning start at the intersection of the East right ow way line of Prospect Road and the South right-of-way line of Industrial Drive; thence run along the south right-of-way line of Industrial Drive a distance of 597 feet to an iron pin which is the true point of beginning; from said true point of beginning run south 20 degrees 34 minutes east a distance of 509.15 feet to an iron pin; thence run north 73 degrees 21 minutes east a distance of 375.47 feet to an iron pin located on the west right-of-way line of Industrial Drive a distance of 589.65 feet to an iron pin; thence run south 68 degrees 34 minutes west a distance of 130.55 feet to the true point of beginning.

E:\MurataGIS\CAD\29540Plats_SVedit.dwg

NO.	DATE	APPR.	REVISION	NO.	DATE	APPR.	REVISION

MURATA REMEDIAL ACTION

MURATA ERIE N A INC — ROCKMART, GEORGIA

DRAWN BY: M. HYRE	PROJECT ENGINEER: H. SARTAIN
DESIGN ENGINEER: T. HARBAGE	PROJECT MANAGER: H. SARTAIN

ERM

NOT FOR CONST-RUCTION

LEGAL DESCRIPTION AND PROPERTY OWNERSHIP MAP

SCALE: 1"=100'	DATE: FEBRUARY 28, 2007
PROJECT NO.: 0029540	AutoCAD 2002: 29540PLATS.DWG

DRAWING NO. **A-1**

REV. NO. **0**

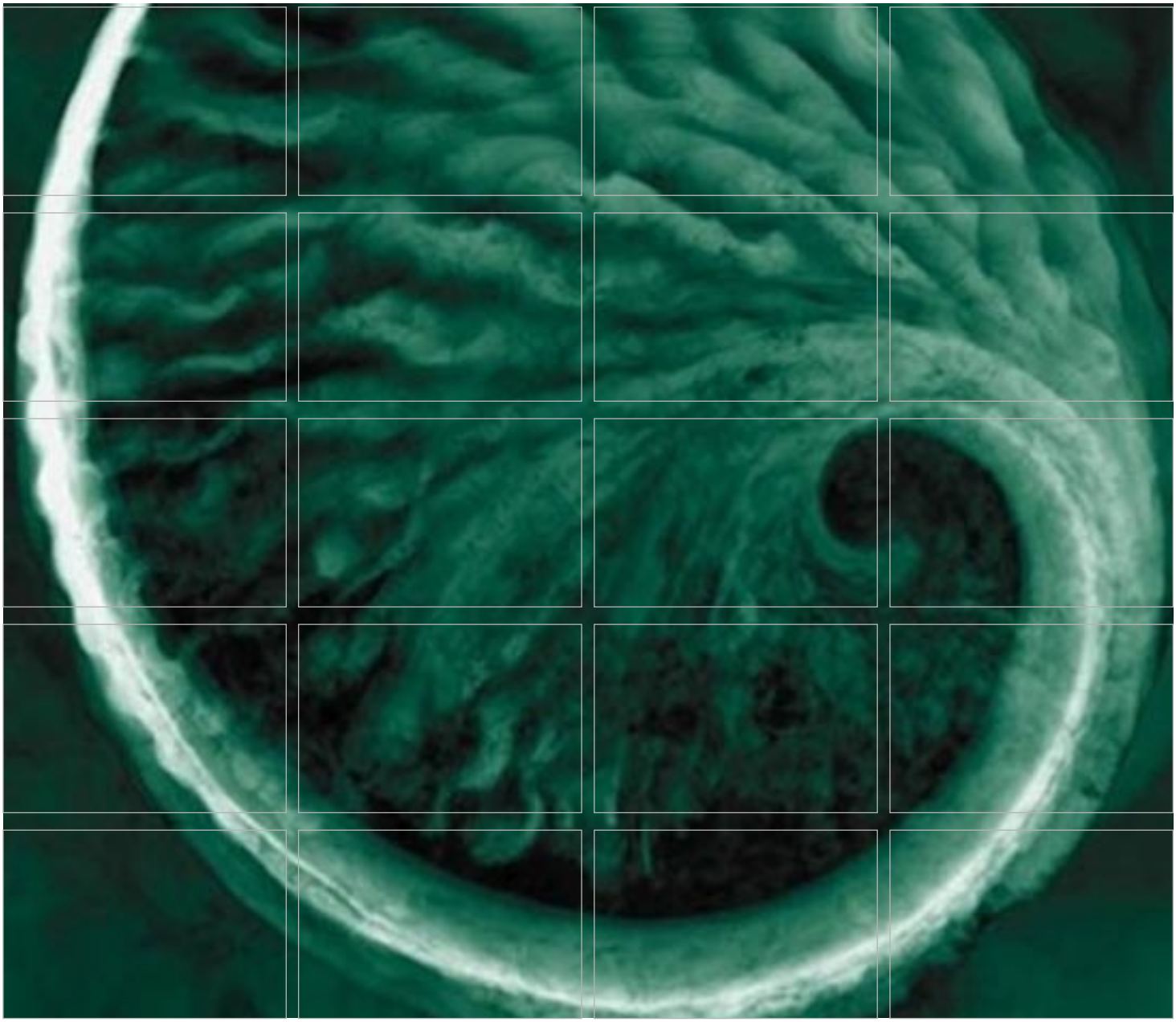
SHEET 1 OF 1

Soil Confirmation Sampling Work Plan

Appendix F

March 31, 2017
Project No. 0190949
Murata

Environmental Resources Management
3200 Windy Hill Rd. Suite 1500W
Atlanta, GA 30339
(678) 486-2700



SOIL CONFIRMATION SAMPLING WORK PLAN

Murata Electronics, N.A.
308 Prospect Road
Rockmart, Polk County, Georgia
HSI Site No. 10771
ERM Project No.: 0190949

March 31, 2017

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FIGURES

1.0 SOIL INVESTIGATION

The purpose of this *Soil Confirmation Sampling Work Plan* ("Work Plan") is to document the procedures that will be used to evaluate concentrations of VOCs in soil at the commercial facility located at 308 Prospect Road in Rockmart, Georgia (see Figure F-1).

The following sections provide details of the Work Plan. As part of the VIRP, Murata will perform soil confirmation sampling within the former source areas (see Figure F-1) to confirm that concentrations meet Type 4 (non-residential) Risk Reduction Standards. Sixty-eight (68) soil samples will be collected from thirty-four (34) locations in the general vicinity of the sample locations detailed in the HSRA CSR. Each sample will be analyzed for Site VOCs and compared to results presented to EPD in 2005.

1.2 APPROACH

ERM plans to conduct all field activities following guidance outlined in the U.S. Environmental Protection Agency (EPA) Field Branches Quality System and Technical Procedures prepared by the EPA Region IV Science and Ecosystem Support Division (SESD). ERM will conduct sampling in a manner that minimizes disturbance of the soil prior to collection of the sample. For example, when sampling with an auger bucket, the sample for VOC analysis will be collected directly from the auger bucket or from minimally disturbed material immediately after an auger bucket is emptied onto a clean surface. Samples collected using a Geoprobe® will be removed directly from the liner upon retrieval.

1.3 PRE-DRILLING

Prior to starting the intrusive work, ERM performed utility mark-outs for underground and overhead utilities. This task includes notification of the Georgia Utility Protection Authority (Georgia one-call) to contact member companies to complete utility markings on public properties (e.g. public right of ways and/or easement). In addition, ERM will contract a private professional utility locator to perform additional mark-outs of the areas to be drilled. ERM and the private utility locate contractor will conduct a Site walk-over to mark the boring locations and identify subsurface utilities. The final drilling locations will be determined on-site, after the utility clearance activities and in coordination with facility personnel. The proposed location of each soil boring is shown on Figure F-1.

1.4 SOIL SAMPLING

Two soil samples will be collected from 34 sample locations. Samples will be collected form two depth intervals; the first will be collected from surface soils

(0-2 feet bgs) and a second sample from a depth interval determined by highest PID reading above the water table.

As part of the soil sampling activities an ERM Geologist will (1) visually examine the soil core/sample to characterize the subsurface geology, (2) evaluate recovered samples for visible evidence of contamination, and (3) field screen samples with a PID for the presence of organic vapors. Prior to use, the PID will be calibrated using an isobutylene standard of known concentration. Soil descriptions and PID screening results will be documented on the soil boring logs or field notes.

1.4.1 Surface Soil Sample Collection

Each soil boring will be initiated with a decontaminated stainless steel hand auger advanced up to 2 feet bgs. Samples will be collected by ERM personnel wearing clean nitrile gloves and transferred using TerraCore®, or other syringe type sampler, into containers provided by the analytical laboratory. A PID will be used to screen the remaining soils. The field geologist will record the highest PID measurement in the field log. Duplicate samples and field equipment rinse blanks will be collected on a frequency of 1 per 10 samples.

1.4.2 Geoprobe® Soil Sample Collection

One additional soil sample will be collected between 2-feet bgs and the water table based on PID measurements using a decontaminated hand auger or Geoprobe® drilling rig. A decontaminated stainless steel hand auger will be advanced from 2-5-feet bgs. Soils below 5-feet bgs will be retrieved using a Geoprobe® drilling rig. Acetate core liners will be used to collect 5-foot continuous soil cores for the remaining of the borehole depth until terminating at the water table.

Each 5-foot core will be screened for volatile organic vapors using a PID. Measurements will be recorded in the field log and a soil sample will be collected from the interval will the highest reading. Samples will be collected directing from the core liner using TerraCore®, or other syringe type sampler, by ERM personnel wearing clean nitrile gloves and transferred into containers provided by the analytical laboratory. Duplicate samples and field equipment rinse blanks will be collected on a frequency of 1 per 10 samples.

Downhole Geoprobe® sampling equipment will be thoroughly decontaminated between borings.

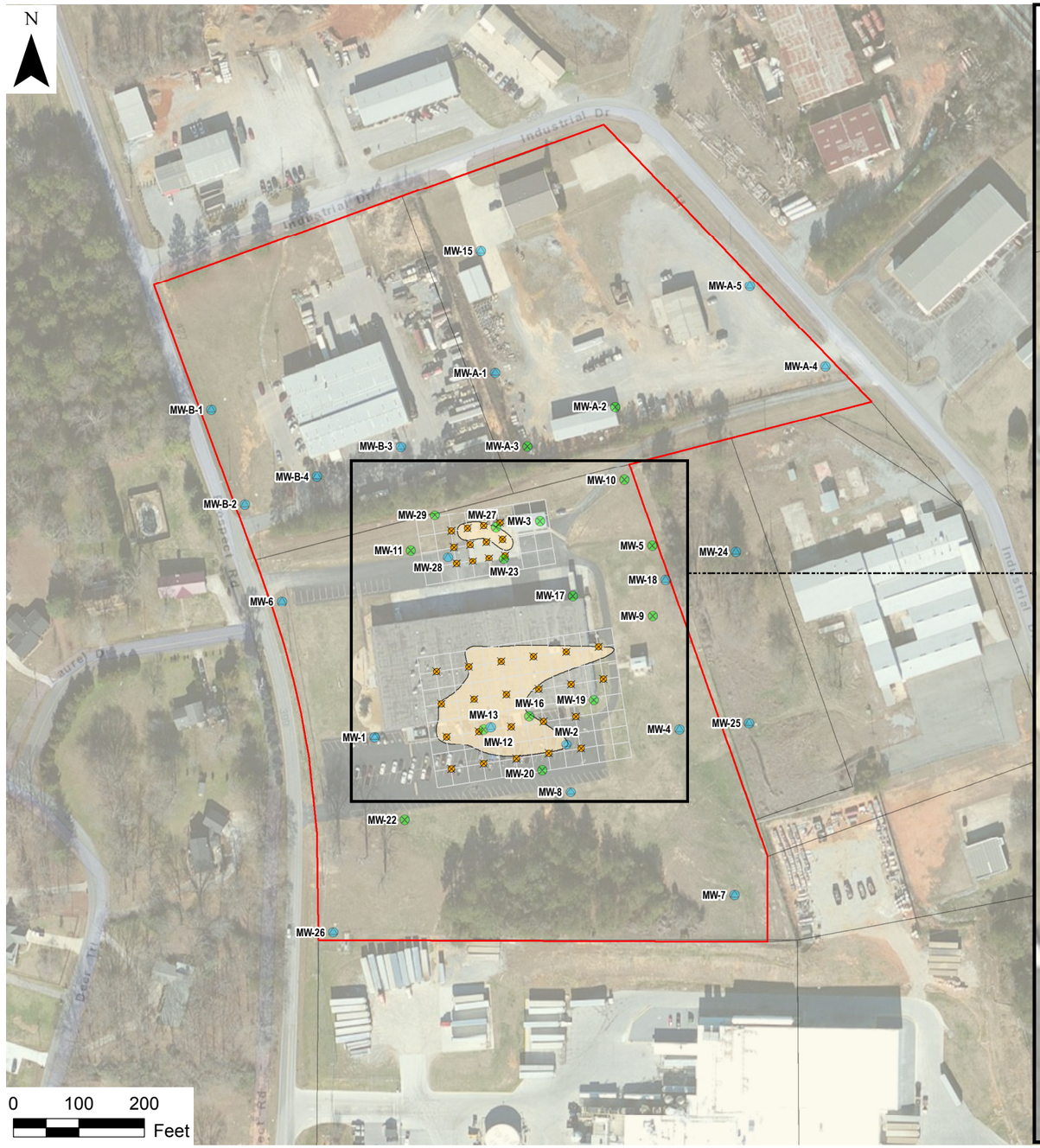
1.5 ANALYTICAL PARAMETERS

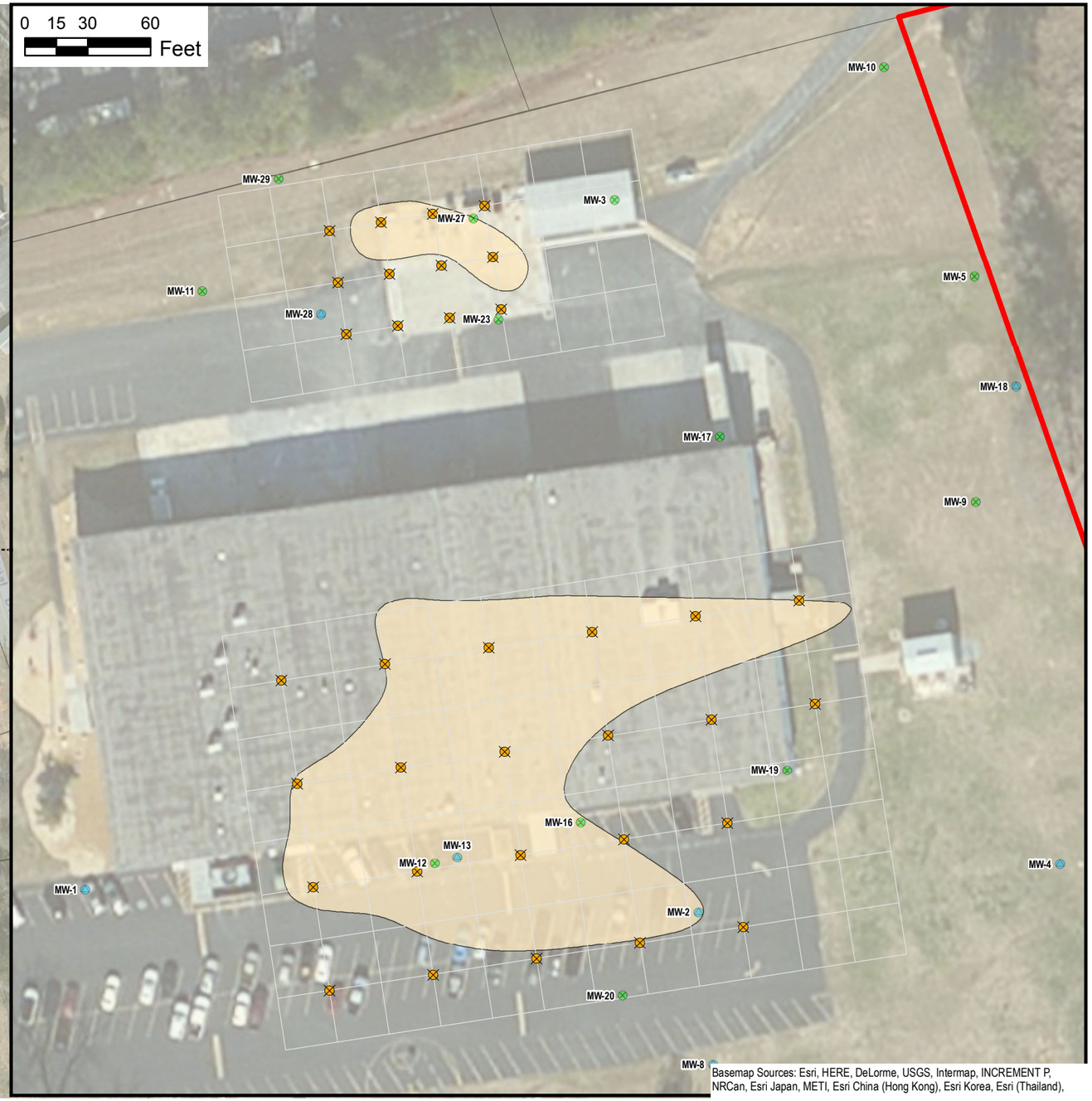
Soil will be placed in laboratory supplied 40mL vials prepreserved with methanol or sodium bisulfate. ERM will transfer soils from the field into the glassware using clean TerraCore®, or other syringe type sampler. Filled sample bottles will be properly labeled and placed into ice-filled coolers and managed

under proper chain-of-custody protocols. Samples will be submitted to an accredited laboratory for analysis of VOCs using US EPA SW-846 Method 8260B. A trip blank will be included in each cooler for delivery to the laboratory and analyzed for VOCs using US EPA SW-846 Method 8260B.

1.6 BOREHOLE ABANDONMENT AND IDW MANAGEMENT

Each borehole will be abandoned using bentonite chips. The ground surface will be repaired using the material like that as disturbed (grass, concrete, asphalt, etc.). Soil cuttings generated from the borings will be placed into a 55-gallon steel drums and properly labeled, sealed, and stored in a facility-approved location pending analytical results.





Basemap Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand),

Environmental Resources Management

DESIGN:	S Vizuete	DRAWN:	N Vrey	CHKD.:	H Sartain
DATE:	3/30/2017	SCALE:	AS SHOWN	REVISION:	0
FILE:	E:\MurataGIS\MXD\2017\2017 03-Mar VIRP Rpt\F_F-1_PropSoilSamp_SoilConfWP.mxd				

FIGURE F-1 - PROPOSED SOIL SAMPLE LOCATION MAP

Soil Confirmation Work Plan

Murata Electronics N.A., Inc.

Rockmart, Georgia

- Proposed VIRP Soil Sample Locations
- Monitoring Well Location
- Injection Well Location
- Grid
- Soil Historical Contamination
- APPLICANT & QUALIFYING PROPERTIES

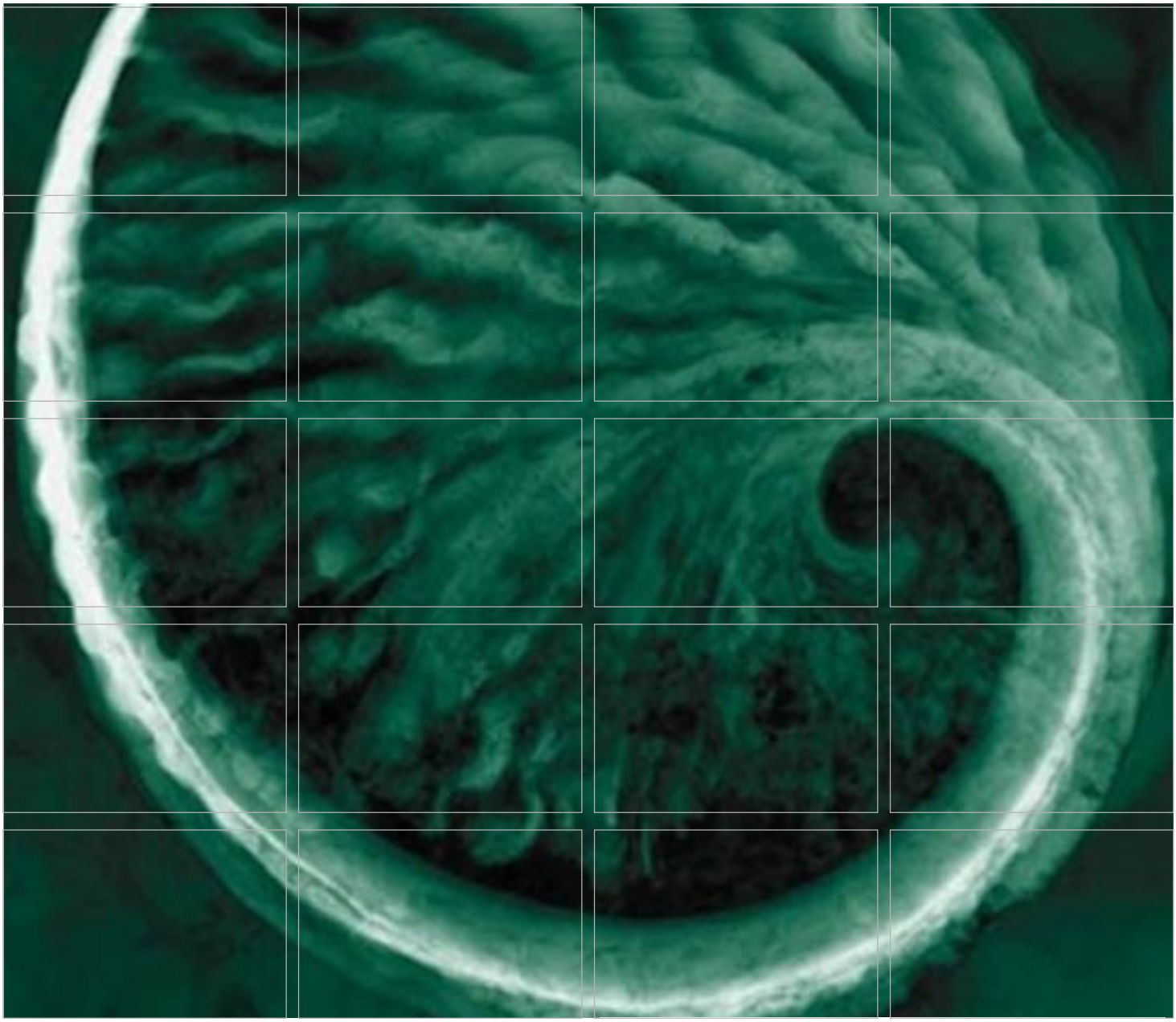
ERM

Vapor Intrusion Assessment Work Plan

Appendix G

March 31, 2017
Project No. 0190949
Murata

Environmental Resources Management
3200 Windy Hill Rd. Suite 1500W
Atlanta, GA 30339
(678) 486-2700



VAPOR INTRUSION ASSESMENT WORK PLAN

Murata Electronics, N.A.
308 Prospect Road
Rockmart, Polk County, Georgia
HSI Site No. 10771
ERM Project No.: 0190949

March 31, 2017

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The world's leading sustainability consultancy

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ATTACHMENTS

1.0 PURPOSE AND SCOPE

The purpose of this Vapor Intrusion Evaluation Work Plan ("Work Plan") is to document the procedures that will be used to evaluate the potential for vapor intrusion (VI) in the facility located at 308 Prospect Road in Rockmart, Georgia. The project area for this Work Plan is defined as the Facility (see Figure G-1).

1.1 CONCEPTUAL SITE MODEL

A conceptual site model (CSM) for the Facility was developed based on historical Facility operations, Facility usage, and the findings from environmental investigation activities conducted for the project. The CSM is detailed in the *Voluntary Investigation and Remediation Plan*.

1.2 VAPOR INTRUSION EVALUATION OVERVIEW

Environmental Resources Management (ERM) has been retained by Murata to design and implement the VI evaluation of the Facility. The Georgia Environmental Protection Division (EPD) has not developed guidance regarding implementation of VI investigations; therefore, ERM has relied on the following documents to prepare this Work Plan in a manner consistent with the current state of the practice:

- Interstate Technical Regulatory Council's (ITRC's) *Vapor Intrusion Pathway: A Practical Guideline*, dated January 2007;
- United States Environmental Protection Agency (US EPA) Office of Solid Waste and Emergency Response (OSWER) *Vapor Intrusion Guidance* (draft 2002 and draft 2013);
- Massachusetts Department of Environmental Protection, *Interim Final Vapor Intrusion Guidance*, December 2011;
- New Jersey Department of Environmental Protection, *Vapor Intrusion Technical Guidance*, March 2013; and
- Generally accepted best management practices.

The Work Plan describes the following activities:

- notification of the occupants to inform them of the proposed investigation activities, why the activities are required and how the investigation will be accomplished;

- completion of a pre-sampling visit and indoor survey to identify sampling locations that fit the objectives of the evaluation with minimal disturbance of property and ongoing operations, to identify whether there are potential sources of constituents within the buildings that will be analyzed for in the samples and possibly cross-contaminate samples to be collected or interfere with the interpretation of the results and screen the building for the presence of organic vapors; and
- implementation of sampling activities, including the following:
    - sub-slab soil gas sampling;
    - indoor air sampling (if necessary); and
    - outdoor ambient air sampling (if necessary).

The general locations and number of planned samples are shown on Figure G-2. Locations will be adjusted upon completion of site surveys conducted prior to sample collection. Details regarding sampling locations, methodology and analysis are included in the following sections.

2.0 NOTIFICATION AND PRE-SAMPLING VISIT

Prior to initiation of the field sampling program, a pre-sampling visit will be scheduled with the Facility.

During the pre-sampling visit, an ERM representative will complete a pre-sampling questionnaire and indoor air survey (Attachment G-1) by interviewing a facility representative. During the visit, the representative will obtain as-built drawings for the building when available and attempt to verify the placement of gravel/fill material prior to the building's development with the owner or knowledgeable person. ERM will work with the occupants of the Facility to coordinate the pre-sampling visit and select sampling locations that will not interrupt ongoing operations.

The indoor air survey will be used to determine property-specific conditions that may affect the design and/or results of the sampling program. Information regarding building condition and contents is used to specify equipment needs for the intrusive field investigation and to identify background factors that could influence the results. The indoor air survey includes the following information:

- occupant information (e.g., number of occupants, time spent in primary living spaces, smoking habits);
- building construction (e.g., number of floors, presence of a basement, type of heating and cooling systems);
- building chemical use that could interfere with the analytical results (e.g., dry cleaning, paint for house renovation, solvents for car repair, etc.); and
- visual observations made by the ERM indoor air surveyors.

A photoionization detector (PID) will be used as a general check for the presence of potential domestic sources of volatile organic compounds (VOCs) during the pre-sampling interview. If possible, chemicals/cleaning agents may be removed from properties where indoor air sampling will be conducted. Chemicals/cleaning agents will be returned after completion of sampling activities. Cleaning products, household chemicals and their constituents can possibly cross-contaminate collected samples and interfere with the interpretation of the results.

3.0 SAMPLE COLLECTION PROCEDURES

The following sections describe the procedures for sub-slab soil gas sample collection as well as indoor air, and ambient outdoor air sample collection if needed. In addition, field documentation, analytical needs, and sample identification methods are outlined. Scheduling and planning of sampling activities will be completed in 2018. Scheduling will take into consideration weather conditions at the time of sampling as sampling will not be able to occur during or immediately following (i.e., within 24 hours) a high wind/rain/storm event. Sampling events may need to be postponed or rescheduled to accommodate these weather conditions. Results of the sub-slab soil gas will be compared to target screening levels calculated for commercial sub-slab soil vapor, using the US EPA Vapor Intrusion Screening Level (VISL) calculator to determine whether indoor air and ambient outdoor air sample collection is needed.

3.1 SUB-SLAB SOIL GAS

Sub-slab soil gas samples will be collected in Facility. Samples will be collected from beneath the foundation slab as the construction is slab on grade. Samples will be collected from the approximate locations proposed in Figure G-2. Locations within the commercial structures will generally be located toward the center of each area within the commercial structures away from building edges and foundations. Locations will be modified based on access/building plans, equipment locations and utilities, and reducing the impact to ongoing operations in the buildings. Locations may need to be modified to avoid sub-surface utilities, cracks in the foundation or other features that may limit the reliability of the sampling results.

3.1.1 Sub-Surface Clearance

Sub-surface clearance activities will be conducted prior to installation of sampling points. Geophysical surveys (ground penetrating radar (GPR), radio frequency line location or similar) will be conducted at the commercial properties in an effort to locate potential subsurface utilities. As-built drawings of the commercial and residential structures will be reviewed if available and utilities will be marked prior to sampling point installation. Georgia 811 will also be contacted in accordance with local regulations.

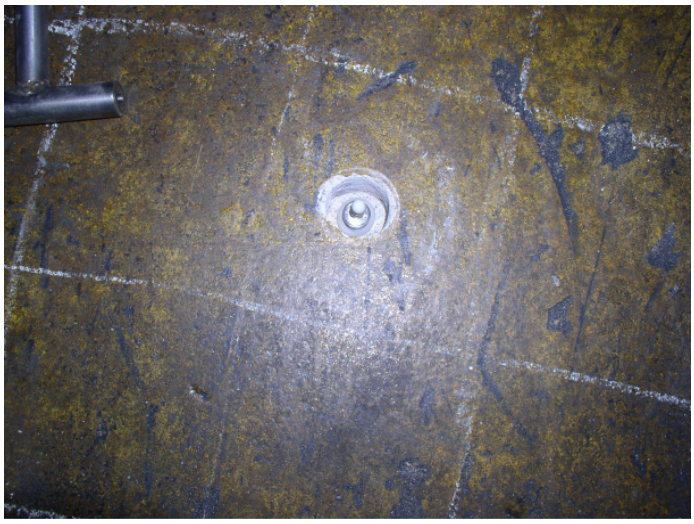
3.1.2 Sub-Slab Soil Gas Sample Collection

Prior to sub-slab sampling, a PID will be used as a general check for the presence of potential domestic sources of VOC vapors in the vicinity of the sampling location. If VOC-containing products are observed at the time of sampling, they will be documented with a photograph and on the air sample data sheet (Attachment G-2).

Sub-slab sampling points will be installed as follows:

- a pilot 1.5-inch diameter hole will be drilled into the concrete slab using an electric hammer drill to approximately 1.75 inches deep;
- a 5/8-inch diameter hole will be drilled through the remaining thickness of the slab and approximately 1-inch into the sub-slab material to form a void;
- hole will be cleaned of concrete cuttings and dust using a pipe brush;
- a Vapor Pin™ with a silicone sleeve will be placed over the hole and tapped into place using a dead blow hammer (the silicone sleeve will form a water and air tight seal with the concrete);
- a syringe will be used to conduct a purge check of the sample point (soil gas should be relatively easy to extract without generation of a significant vacuum);
- sub-slab sampling ports will be installed immediately following completion of indoor sampling; and
- sub-slab sampling points will be left in place for ~2 hours to allow for re-equilibration with the surrounding soil prior to quality assurance checks and soil gas sampling.

A typical installation of a soil vapor sampling point is shown below.



Vapor Pin™ sub-slab sampling point

3.1.3 Leak Check and Shut-in Test

After installation of the sampling point, a water dam will be placed around the point and filled with water. The water will be monitored for five minutes to check for leaks in the seal between the concrete and the Vapor Pin™. If leaks are observed based on water draining into the sampling point, the sampling point will be extracted and reset. The water dam will be used until the seal is determined to be adequate.

Nylon (or Teflon) tubing will be attached from the sampling port to a 2.7-liter Summa® canister and a shut-in test will be completed to determine the security of the sampling train between the sampling port and the sampling canister. The shut-in test is performed by generating a vacuum inside the sample tubing while keeping the sampling port and the sampling canister closed. A vacuum of approximately 100 inches of water is generated using a plastic syringe and the vacuum is monitored for 1 minute. If vacuum is maintained for the observed period, then the sampling train is deemed adequate and sampling can begin. If vacuum is lost during the observation period, then tubing connections should be tightened/altered until there is no observable loss in vacuum during the test. After the shut-in test is validated, the sampling train should not be altered.

Typical water dam set-up

Shut-in test and sampling configuration

After completion of quality control activities, the sampling port will be opened and access to the plastic syringe will be closed. The sampling canister is equipped with a flow controller limiting flow to approximately 200 ml/min (i.e., approximately a 13.5 minute sampling time into a 2.7-liter sampling canister). The sampling canister is opened and the vacuum in the canister is monitored during sampling collection. Sampling is complete when vacuum measurements indicate approximately no vacuum in the canister (approximately 13.5 minutes). Residual vacuum is not required in the 2.7-liter sampling canisters because the full sampling period (i.e., 13.5 minutes) will be actively monitored by field personnel (i.e., a witnessed sample). If residual vacuum remains in the 2.7-liter sampling canisters, it cannot exceed 15 inches of mercury (in Hg) or laboratory reporting limits will be affected. Residual vacuum, if any, will be confirmed and recorded by the laboratory after receipt of the canisters.

Sub-slab soil gas canisters and flow regulators will be batched-certified clean by the laboratory prior to use. Sampling information will be recorded on the appropriate air sampling data sheet including starting and ending vacuum reading of each canister. A copy of a template air sampling data sheet is included in Attachment G-2. A typical sampling configuration (included shut-in test set-up) is shown above.

If indoor air samples will be collected in the same structures as sub-slab soil gas samples, the indoor air sampling will be completed first and then

sub-slab sampling points will be sampled. Upon completion of sample collection, sub-slab sampling ports will be capped and left in place with a metal or plastic flush-mounted cover until the investigation has been completed unless the property owner requests that they are removed in which case the sampling points will be pulled and the hole sealed with concrete or caulk.

3.2 INDOOR AIR SAMPLE COLLECTION (IF NECESSARY)

If the results of the initial sub-slab sampling event indicate that indoor air sampling is necessary, the indoor air sampling locations will be collocated with the previously installed sub-slab sampling ports.

Prior to indoor air sampling, a PID will be used as a general check for the presence of potential domestic sources of VOC vapors in the vicinity of the sampling location. If VOC-containing products are observed at the time of sampling, they will be documented with a photograph and on the air sampling data sheet (Attachment G-2) and may be removed from the property if appropriate.

A Summa® canister equipped with calibrated 8-hour flow regulators will be used to collect the indoor air samples. The canisters and flow regulators will be batch certified clean by the laboratory prior to use. The sample canisters will be deployed after completion of the appropriate field forms and will be retrieved approximately 8 hours later. Personnel will check on each Summa® canister to monitor changes in vacuum and note any activity changes in the vicinity of the sample location. The vacuum reading of each canister will be recorded on the air sampling data sheet (Attachment G-2) prior to and upon the recheck of the sample to verify that the Summa® canister is functioning correctly. Residual vacuum will also be recorded on the air sampling data sheet at the conclusion of the sampling period. The residual vacuum remaining in the indoor air canister at the conclusion of the sampling period will not be less than approximately 5 in Hg and must not be greater than 15 in Hg. Maintaining a residual vacuum is recommended for the indoor air sampling canisters to demonstrate that the canister was collecting air throughout the entire sampling period. The residual vacuum will also be confirmed and recorded by the laboratory after receipt of the canisters. Sampling locations where residual vacuum is not able to be maintained within the sampling canisters at the conclusion of the sampling period will be resampled.

The air intake of each canister will be located at breathing zone heights of approximately 3 to 5 feet above the floor surface. When feasible, areas

where chemicals or cleaning agents are used or stored will be avoided. The indoor air sample will be collected away from exterior windows or doors, if possible. At the time of sample retrieval, noticeable changes in the condition of the sampling area, such as open windows or doors, changes to the operation of the heating/ventilation system, or condition or location of items in proximity to the canister, will be noted on the air sample data sheet.

Typical indoor air sampling set-up (with typical turned-down flow controller).

3.3 OUTDOOR AMBIENT AIR SAMPLE COLLECTION (IF NECESSARY)

Outdoor ambient air samples will be collected concurrent with each 8-hour indoor air sampling event. The collection of these samples will commence between 15 to 30 minutes prior to initiating the indoor air sample and will continue until at least 30 minutes before indoor air monitoring is complete.

The outdoor ambient air sample will be collected from a location approximately upwind of the Facility. To the extent allowed by site features, air samples will be collected away from buildings (5 to 15 feet) and away from wind obstructions, such as trees. Furthermore, to the extent known and feasible, a representative sample location will be

selected that reduce bias toward known point sources (e.g., industrial facilities, fuel terminals, gas stations or dry cleaners).

The air intake of each canister will be located at breathing zone heights of approximately 3 to 5 feet above the floor surface. The air intake will be positioned facing downward to protect against rainwater. Outdoor ambient air samples will be collected with a Summa® canister equipped with an 8-hour flow regulator. The canister and flow regulator will be batch certified clean by the laboratory prior to use. The sample canister will be deployed after completion of the appropriate air sample data sheet and will be retrieved approximately 8 hours later. Personnel will periodically check on the Summa® canister over the 8-hour sampling period to monitor changes in vacuum and note activity and wind direction changes in the vicinity of the sample location. The vacuum reading of each canister will be recorded on the air sampling data sheet (Attachment G-2) prior to and upon recheck of the sample. Residual vacuum will also be recorded on the air sampling data sheet at the conclusion of the sampling period. The residual vacuum remaining in the outdoor ambient air canister at the conclusion of the sampling period will not be less than approximately 5 inches of mercury (in Hg). Maintaining a residual vacuum is recommended for sampling canisters to demonstrate that the canister was collecting air throughout the entire sampling period. The residual vacuum will also be confirmed and recorded by the laboratory after receipt of the canisters.

Typical outdoor air sampling set-up

3.4 SAMPLE IDENTIFICATION

The following nomenclature will be used to identify analytical samples:

Sub-slab soil gas locations:

Sample ID # = SS-Murata-XX-yyyymmdd-01

Indoor air locations:

Sample ID # = IA- Murata -XX-yyyymmdd-01

Outdoor ambient air locations:

Sample ID # = OA- Murata -XX-yyyymmdd-01

"XX" represents the two-digit sample identifier, starting with 01 for each type of sample.

Duplicate samples will be collected and submitted to the laboratory as blind duplicates. Duplicate samples will be noted on air sampling data sheets. The duplicate samples will be identified as follows:

For any type of location: Site ID # = DUP-Murata-XX-yyyymmdd-01

3.5 ANALYTICAL

Sub-slab soil gas samples will be analyzed by TO-15 Full Scan and indoor air and outdoor ambient air samples will be analyzed by US EPA Method TO-15 Selective Ion Monitoring (SIM). The TO-15 SIM analysis is used for the indoor air and outdoor ambient air samples to achieve lower laboratory reporting limits. Samples will be submitted to Alpha Analytical Laboratory of Mansfield, Massachusetts which is Georgia approved via the National Environmental Laboratory Accreditation Program (NELAP).

Analytical results for sub-slab soil gas, indoor air and outdoor ambient air samples will be reported for site-specific analytes (i.e., compounds detected in previous groundwater investigation activities above VISL groundwater screening levels). Target screening levels calculated for commercial sub-slab soil vapor, using the US EPA VISL calculator, will be obtained using the current version of the VISL calculator at the time of the evaluation. Analytical results will be compared to these screening levels as an initial assessment of the data.

One blind duplicate sample will be collected for every 10 samples for quality assurance/quality control (QA/QC) purposes.

3.6 FIELD DOCUMENTATION AND SITE MAP DEVELOPMENT

Field activities will be recorded in a dedicated field notebook. In addition, the air sampling data sheet (Attachment B-2) will be completed and photographs will be taken to document activities conducted at each sample location. Field personnel will document the following information either in a field notebook or on the air sampling data sheet:

- date, time, weather conditions and personnel collecting the samples,
- the location of each sample;
- field sampling procedures;
- Status of each sampling canister during the recheck prior to site demobilization (i.e., changes in vacuum readings);
- changes noted since the indoor air survey had been completed;
- changes noted of any observations that may influence outdoor samples;
- household chemicals observed during sampling; and
- site activities of note.

A sketch map of each property and structure will be included in the field notes, and relevant features will be represented. The sketch will primarily be used to illustrate sample locations relative to identifiable structures.

4.0 REPORTING

Following receipt and review of the vapor intrusion evaluation data (building survey, chemical inventory and analytical results), results of the assessment will be included in the following semiannual progress report. The report will include the following information:

- summary of sampling methods and sampling analysis;
    - discussion of deviations from the original work plan if applicable;
    - summary of QA/QC measures completed including results of sampling point leak testing and shut-in tests and locations of duplicate samples.
- summary of property conditions and results of the building surveys and chemical inventories;
    - discussion of results of the geophysical investigation and the presence of potential preferential pathways (i.e., utilities) identified at the building locations.
- analytical results;
    - tabulated analytical results;
    - tabulated comparison of analytical results to the US EPA commercial target screening levels calculated using the US EPA VISL Calculator;
- summary figures;
    - summary of updated sampling locations in the Facility, including the locations of underground utilities (if present), the placement of any gravel/fill below the buildings (if known), and other potential preferential pathways identified through the survey;
    - summary of primary compounds of concern in sub-slab soil gas, indoor air (if collected) and outdoor ambient air (if collected) displayed on the Site figure; and

- conclusions and recommendations.

In addition to the report details noted above, multiple lines of evidence will be considered during the evaluation of the data collected. This will include the following:

- assessment of building conditions, foundation construction, utilities and preferential pathways;

- assessment of confounding factors including the presence of background indoor air sources; and

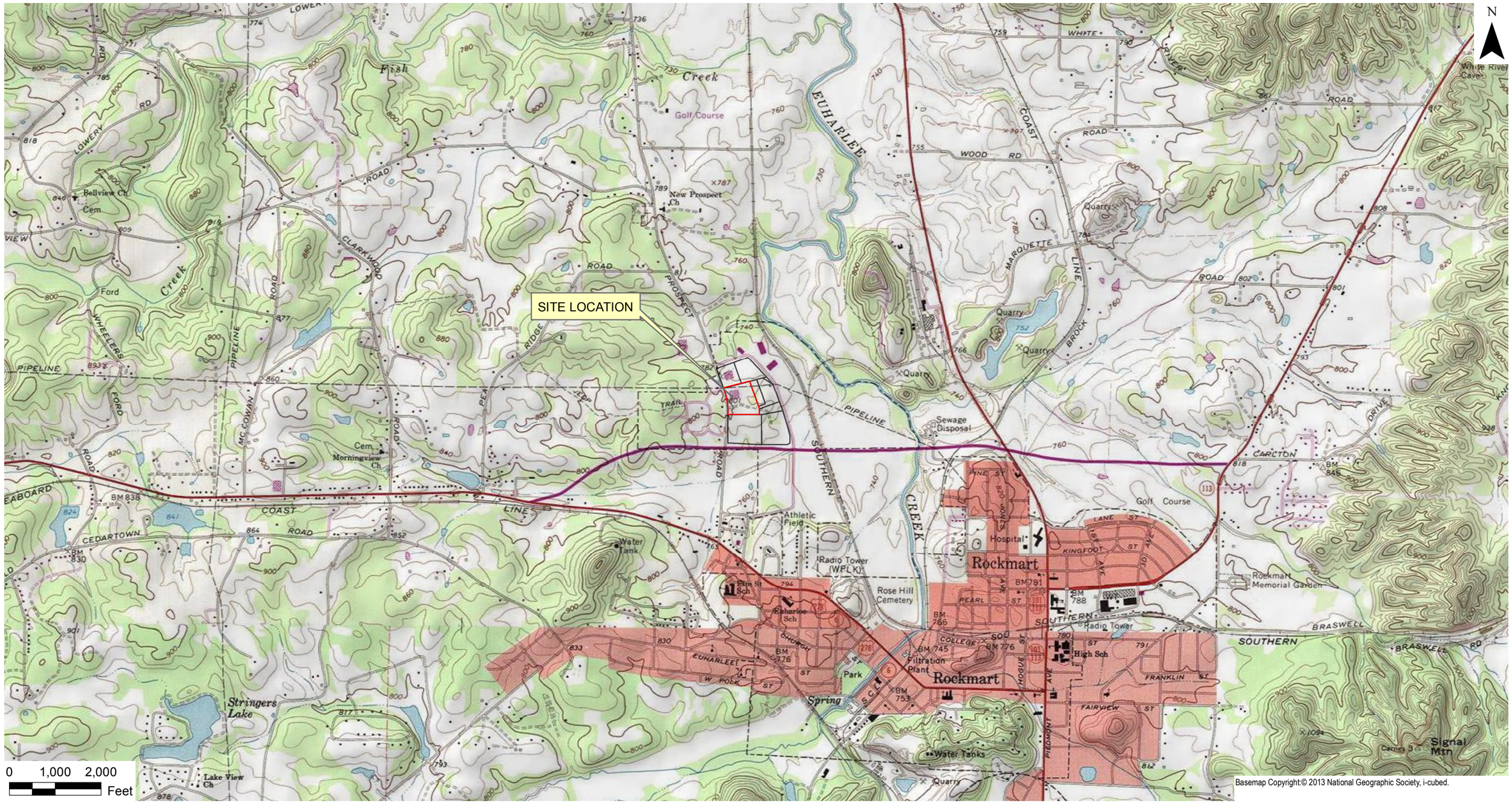
- groundwater data collected during previous investigation activities.

The data analysis discussed above will be used to support recommended next steps for the vapor intrusion evaluation at the Facility. Next steps will be determined based on a weight of evidence approach and may include, for example, no further monitoring, additional monitoring, background indoor air source investigations, the need for site-specific attenuation factors, or evaluation of possible mitigation technologies. As current vapor intrusion Site data are limited, the process for the evaluation of next steps in the investigation will be determined upon review of the analytical results and building evaluation

Figures

March 31, 2017
Project No. 0190949
Murata Rockmart, GA

Environmental Resources Management
3200 Windy Hill Rd. Suite 1500W
Atlanta, GA 30339
(678) 486-2700



Environmental Resources Management

DESIGN:	S Vizuete	DRAWN:	N Vrey	CHKD.:	H Sartain
DATE:	3/23/2017	SCALE:	AS SHOWN	REVISION:	0
FILE:	E:\MurataGIS\MXD\2017\2017 03-Mar VIRP Rpt\FG-1_SiteLocMap_VIworkPlan.mxd				

FIGURE G-1
SITE LOCATION MAP

Vapor Intrusion Assessment Work Plan

Murata Erie N.A., Inc.

Rockmart, Georgia

CONTOUR INTERVAL 10 FEET
DOTTED LINES REPRESENT 5-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

QUADRANGLE LOCATION

ERM

Environmental Resources Management

DESIGN:	S Vizuete	DRAWN:	N Vrey	CHKD.:	H Sartain
DATE:	3/23/2017	SCALE:	AS SHOWN	REVISION:	0

FILE: E:\MurataGIS\MXD\2017\2017 03-Mar VIRP Rpt\FG-2_SoilGasLoc_VIworkPlan.mxd

FIGURE G-2 - PROPOSED SOIL GAS SAMPLE LOCATION MAP

Vapor Intrusion Assessment Work Plan

Murata Electronics N.A., Inc.

Rockmart, Georgia

▲ Proposed Sub-Slab Soil Gas Sample Location

Soil Above RRS

ERM

Pre-Sampling Questionnaire and Indoor Air Survey

Attachment G-1

March 31, 2017
Project No. 0190949
Murata Rockmart, GA

Environmental Resources Management
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Atlanta, GA 30339
(678) 486-2700

Environmental Resources Management
The Towers at Wildwood Plaza
3200 Windy Hill Road, SE
Atlanta, Georgia 30339

INDOOR AIR QUESTIONNAIRE AND BUILDING SURVEY

Preparer's name: _____ Date: _____

Preparer's affiliation: _____ Phone #: _____

Site Name: _____ Project #: _____

Part I – Occupants/Property Owners

Occupant Address: _____

Occupant Contact: _____ Owner / Renter / other: _____

Contact's Phone: home ( )_____ work ( )_____ cell ( )_____

# of occupants in space: Children under age 13 _____ Children age 13-18 _____ Adults _____

Property Owner Address (if different): _____

Property Owner Contact: _____ Owner / Renter / other: _____

Contact's Phone: home ( )_____ work ( )_____ cell ( )_____

# of occupants in building(total):Children under age 13 _ Children age 13-18 _____ Adults _____

Part II – Building Characteristics

Building type: residential / multi-family residential / office / strip mall / commercial / industrial

Describe building: _____ Year constructed: _____

Sensitive population: day care / nursing home / hospital / school / other (specify): _____

Number of floors below grade: _____ (full basement / crawl space / slab on grade)

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Atlanta, Georgia 30339

Number of floors at or above grade: _____

Depth of basement below grade surface: _____ ft. Basement size: _____ ft^2

Basement floor construction: concrete / dirt / floating / stone / other (specify): _____

Foundation walls: poured concrete / cinder blocks / stone / other (specify) _____

Basement sump present? *Yes / No* Sump pump? *Yes / No* Water in sump? *Yes / No*

Groundwater on floor? *Yes / No*

Type of heating system (circle all that apply):

hot air circulation	hot air radiation	wood	steam radiation heat
pump	hot water radiation	kerosene heater	electric baseboard

other (specify): _____

Type of ventilation system (circle all that apply):

central air conditioning	mechanical fans	bathroom ventilation fans
individual air conditioning units	kitchen range hood fan	outside air intake

other (specify): _____

Type of fuel utilized (circle all that apply):

Natural gas / electric / fuel oil / wood / coal / solar / kerosene

Describe duct work if any (include supply and cold air return ductwork, and its current condition where visible, including whether there is a cold air return and the tightness of duct joints)

_____
_____
_____
_____
_____

Provide a general description of activities in the space. Include commercial activities of business by floor or general use of each floor of each residence.

_____
_____
_____
_____
_____

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3200 Windy Hill Road, SE
Atlanta, Georgia 30339

Are the basement walls or floor sealed with waterproof paint or epoxy coatings? *Yes / No*

Is there a whole house fan? *Yes / No*

Septic system? *Yes / Yes (but not used) / No*

Irrigation/private well? *Yes / Yes (but not used) / No*

Type of ground cover outside of building: grass / concrete / asphalt / other (specify)

Existing subsurface depressurization (radon) system in place? *Yes / No* *active / passive*

Sub-slab vapor/moisture barrier in place? *Yes / No*
Type of barrier: _____

Part III - Outside Contaminant Sources

Other stationary sources nearby (gas stations, emission stacks, etc.): _____

Heavy vehicular traffic nearby (or other mobile sources): _____

Part IV – Indoor Contaminant Sources (if Indoor Air sampling is occurring)

Identify all potential indoor sources found in the building (including attached garages), the location of the source (floor and room), and whether the item was removed from the building 48 hours prior to indoor air sampling event. Any ventilation implemented after removal of the items should be completed at least 24 hours prior to the commencement of the indoor air sampling event. Use either of the two tables below as appropriate.

Potential Sources	**Location(s)**	**Removed** (Yes / No / NA)
Gasoline storage cans		
Gas-powered equipment		
Kerosene storage cans		
Paints / thinners / strippers		
Cleaning solvents		
Oven cleaners		
Carpet / upholstery cleaners		
Other house cleaning products		
Moth balls		
Polishes / waxes		
Insecticides		
Furniture / floor polish		
Nail polish / polish remover		
Hairspray		
Cologne / perfume		
Air fresheners		
Fuel tank (inside building)		NA
Wood stove or fireplace		NA
New furniture / upholstery		
New carpeting / flooring		NA
Hobbies - glues, paints, etc.		

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3200 Windy Hill Road, SE
Atlanta, Georgia 30339

List specific products found that have the potential to affect indoor air quality (if indoor air samples are to be collected). Do not open a container to determine the contents or to take a field instrument reading. If field measurements are collected they will be from around the closed container only.

Location	Product Description	Size (units)	Chemical Ingredients	Field Instrument Reading (units)	Removed? Y/N

* Describe the condition of the product containers as Unopened (UO), Used (U), or Deteriorated (D)

** Photographs of the front and back of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible

Part V – Miscellaneous Items

Do any occupants of the building smoke? *Yes / No* How often? _____

Last time someone smoked in the building? _____ hours / *days ago*

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3200 Windy Hill Road, SE
Atlanta, Georgia 30339

Does the building have an attached garage directly connected to living space? *Yes / No*

If so, is a car usually parked in the garage? *Yes / No*

Are gas-powered equipment or cans of gasoline/fuels stored in the garage? *Yes / No*

Do the occupants of the building have their clothes dry cleaned? *Yes / No*

If yes, how often? weekly / monthly / 3-4 times a year

Do any of the occupants use solvents in work? *Yes / No*

If yes, what types of solvents are used? _____

If yes, are their clothes washed at work? *Yes / No*

Have any pesticides/herbicides been applied around the building or in the yard? *Yes* / No

If so, when and which chemicals? _____

Has there ever been a fire in the building? *Yes / No* If yes, when? _____

Has painting or staining been done in the building in the last 6 months? *Yes / No*

If yes, when _____ and where? _____

Part VI – Sampling Information

Sample Technician: _____ Phone number: ( ) _____ - _____

Company: _____

Sample Type (check all that apply): Indoor Air / Sub-Slab / Near Slab Soil Gas / Exterior Soil Gas

Sample locations (floor, room):

SAMPLING DATA – See Air sampling Data Sheet

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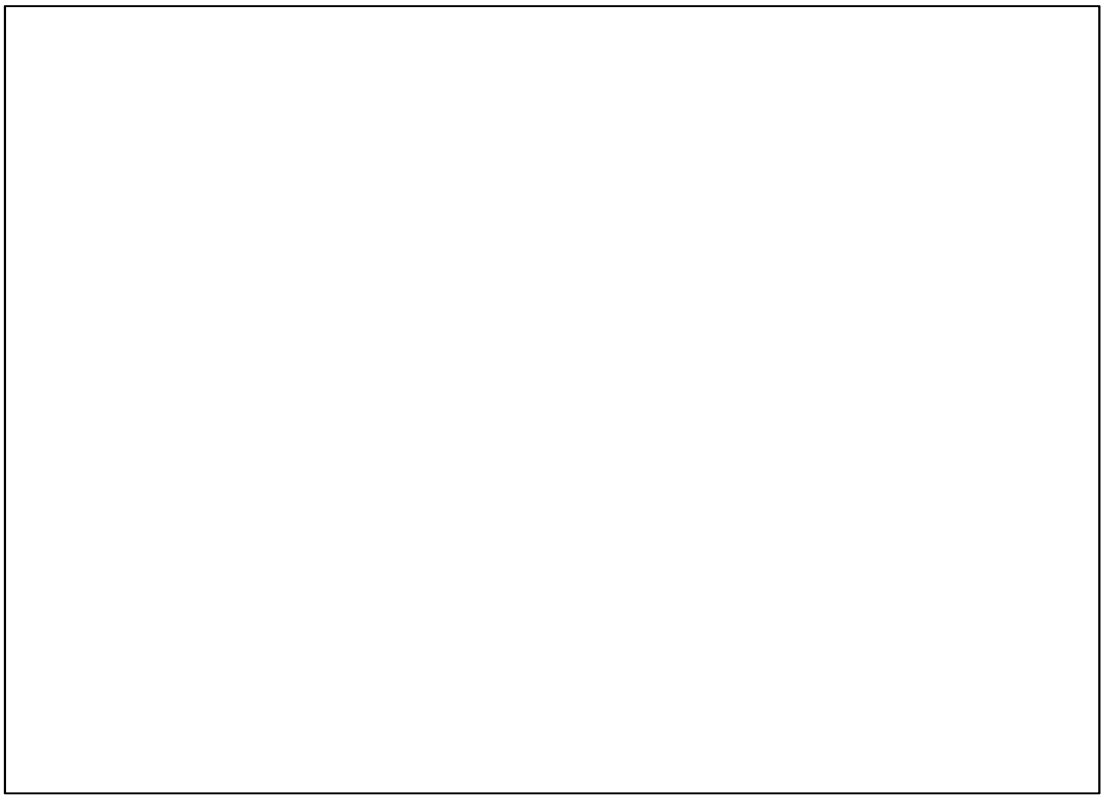
3200 Windy Hill Road, SE
Atlanta, Georgia 30339

-Drawing of Sample Location(s) in Building



Type of field instrument used (include summary of results): _____

Part VII - Meteorological Conditions

Was there significant precipitation within 12 hours prior to (or during) the sampling event? *Yes / No*

Describe the general weather conditions: _____

Part VIII – General Observations

Provide any information that may be pertinent to the sampling event and may assist in the data interpretation process.

Air Sampling Data Sheet

Attachment G-2

March 31, 2017
Project No. 0190949
Murata Rockmart, GA

Environmental Resources Management
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(678) 486-2700

Environmental Resources Management
The Towers at Wildwood Plaza
3200 Windy Hill Road, SE
Atlanta, Geogia 30339
Phone: (678) 486-2700

Project #:	0190949
Project Name:	Murata
Location:	
Project Manager:	Nic Vrey

Sample Location:		**Collector(s):**	
Address:			
PID Meter Used: (Model, Serial #)		**Date:**	

Sample ID:

Duplicate Sample? (Y/N) **Duplicate Sample ID:**

Type of sample (circle one): INDOOR AIR AMBIENT AIR SOIL GAS

Photograph description:

Summa® Information

Canister Serial Number:	Flow Controller Number:
Start Date/Time:	Stop Date/Time:
Start Pressure: (inches Hg) [1]	Stop Pressure: (inches Hg) [2]

Other Sampling Information:

Story/Level		Ground Surface (pavement, flooring)		Depth of Vapor Probe (if applicable)	
Room		Slab thickness (if applicable)		Distance from Building (if applicable)	
Indoor Air Temp (ºF)		Potential Vapor Pathways Observed?		Distance to nearest Roadway (ft.)	
Intake Height Above Ground Level (ft.)		Noticeable Odor?		Weather	
Barometric Pressure Initial ("Hg or mb)		Barometric Pressure Final ("Hg or mb)		Wind Speed (mph)	

Interim Monitoring

Initial Sample Purge (soil gas only):	PID Reading (ppm):		Noticeable Odor? (Y/N)	
Reading #1:	Time:	Summa Vacuum ("Hg):	Noticeable Odor? (Y/N)	
Reading #2:	Time:	Summa Vacuum ("Hg):	Noticeable Odor? (Y/N)	
Reading #3:	Time:	Summa Vacuum ("Hg):	Noticeable Odor? (Y/N)	
Reading #4:	Time:	Summa Vacuum ("Hg):	Noticeable Odor? (Y/N)	
Reading #5:	Time:	Summa Vacuum ("Hg):	Noticeable Odor? (Y/N)	

Sketch of Sample Location:

Comments:

1 - Verify pressure did not decrease noticeably from laboratory reported value.

2 - If final pressure does not change much from initial pressure, send the sample to the laboratory and indicate "HOLD" on the chain-of-custody. Also request that the laboratory determine the final pressure and contact the ERM coordinator for further instruction.