# FIRST FIVE-YEAR REVIEW REPORT FOR NEPERA CHEMICAL COMPANY SUPERFUND SITE ORANGE COUNTY, NEW YORK

**Prepared by**

**U.S. Environmental Protection Agency**
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**Date**

528395

# TABLE OF CONTENTS

**LIST OF ABBREVIATIONS & ACRONYMS**

| | |
|---|---|
| ARAR | Applicable or Relevant and Appropriate Requirement |
| AWQS | Ambient Water Quality Standard |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CFR | Code of Federal Regulations |
| COC | Contaminants of Concern |
| EPA | United States Environmental Protection Agency |
| EPC | Exposure Point Concentration |
| FS | Feasibility Study |
| FYR | Five-Year Review |
| HHRA | Human Health Risk Assessment |
| ICs | Institutional Controls |
| MCLs | Maximum Contaminant Levels |
| NCP | National Oil and Hazardous Substances Pollution Contingency Plan |
| NPL | National Priorities List |
| NYSDEC | New York State Department of Environmental Conservatio |
| NYSDOH | New York State Department of Health |
| O&M | Operation and Maintenance |
| PRP | Potentially Responsible Party |
| PRG | Preliminary Remediation Goal |
| RAO | Remedial Action Objectives |
| RI | Remedial Investigation |
| ROD | Record of Decision |
| RPM | Remedial Project Manager |
| SCO | Soil Cleanup Objective |
| SVOC | Semi-Volatile Organic Compound |
| TAGM | Technical and Administrative Guidance Memorandum |
| VOC | Volatile Organic Compound |

# I. INTRODUCTION

The purpose of a Five-Year Review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP) (40 CFR Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the first FYR for the Nepera Chemical Company Superfund Site (the Site). The triggering action for this policy review is the signature date of the Preliminary Closeout Report (PCOR) for the Site. The PCOR was signed on September 27, 2013. The FYR has been prepared due to the fact that the remedial action will not leave hazardous substances, pollutants, or contaminants on site above levels that allow for unlimited use and unrestricted exposure (UU/UE), but requires five or more years to complete.

The Site is addressed in its entirety, under one operable unit, which includes both a soils component and a groundwater component. EPA's FYR for the Site was led by Mark Dannenberg, remedial project manager (RPM) for the Site. Participants included Kathryn Flynn (geologist), Nicholas Mazziotta (human health risk assessor), Mindy Pensak (ecological risk assessor), and Cecilia Echols (community involvement coordinator). The Potentially Responsible Parites: Nepera, Inc., Pfizer Corporation, and Cambrex Corporation, were notified of the initiation of the FYR. The review began in January 2018.

## Site Background

The Nepera Chemical Company site is located on Maybrook Road in Hamptonburgh, Orange County, New York. **Figure 1** provides a map of the area. The Site includes a 29-acre property which is bounded on the north by Orange County Highway 4, Beaverdam Brook to the west, the Otter Kill to the south, and an undeveloped tract of land to the east. The vicinity near the Nepera Property is residential and agricultural in nature and is zoned residential/agricultural. Three residences exist in the immediate vicinity of the Site. These residences are located approximately 250 feet, 175 feet and 450 feet to the west, north and northeast of the Nepera Property boundary, respectively. These residences rely on private wells for their drinking water. The public water supply wells for the Village of Maybrook are located approximately 800 feet to the east-northeast of the Nepera Property.

The Nepera Chemical Company used the property to discharge wastewater from their chemical manufacturing facility located in Harriman, New York. From 1953 through 1967, Nepera constructed and used lagoons at the Site for the discharge of industrial wastewater. The lagoons, comprising an area of approximately five acres, were constructed within the property. No wastewater disposal has taken place at the Site since December 1967. All of the lagoons were back-filled with soil by 1974. **Figure 2** illustrates the various aspects of the Site.

There are two aquifers that exist beneath the Site, the overburden and the bedrock aquifer. The overburden aquifer is the surficial unit which overlies the bedrock aquifer. The unconsolidated deposits that form the overburden are generally thin (*e.g.*, 5 to 20 feet). The overburden overlies the harder and denser bedrock, which is comprised of shale and sandstone. The shale bedrock has a high degree of

fracturing and the bedrock aquifer provides a primary source for public water in the area. An east-to-west trending groundwater divide is present in the overburden and bedrock aquifers in the lagoon area. As such, groundwater flow has two components, specifically, a northerly and a southerly component away from this divide. The existing groundwater monitoring well network is depicted in **Figure 3**.

## FIVE-YEAR REVIEW SUMMARY FORM

| SITE IDENTIFICATION | | |
|---|---|---|
| **Site Name:** Nepera Chemical Company Superfund Site | | |
| **EPA ID:** NY000511451 | | |
| **Region:** 2 | **State:** NY | **City/County:** Hamptonburgh, Orange County |
| **SITE STATUS** | | |
| **NPL Status:** Final | | |
| **Multiple OUs?** No | **Has the site achieved construction completion?** Yes | |
| **REVIEW STATUS** | | |
| **Lead agency:** EPA | | |
| **Author name (Federal or State Project Manager):** Mark Dannenberg | | |
| **Author affiliation:** EPA Remedial Project Manager | | |
| **Review period:** 9/30/2013 - 7/20/2018 | | |
| **Date of site inspection:** 4/26/2018 | | |
| **Type of review:** Policy | | |
| **Review number:** 1 | | |
| **Triggering action date:** 9/27/2013 | | |
| **Due date *(five years after triggering action date)*:** 9/27/2018 | | |

## II. RESPONSE ACTION SUMMARY

### Basis for Taking Action

The remedial investigation (RI) completed in 2007 indicated that both groundwater (overburden and bedrock) and the soil within the area of the lagoons were contaminated with organic contaminants. The baseline risk assessment, consisting of a human health risk assessment (HHRA), which evaluated risks to people, and a baseline ecological risk assessment (BERA), which evaluated risks to the environment,documented that this contamination posed a threat to human health and the environment because of risk from possible ingestion, inhalation, or dermal contact with the soils and/or groundwater.

The contaminants of concern (COCs) identified for the Site's soil and groundwater are benzene, chlorobenzene, ethylbenzene, toluene, xylenes, 2-amino pyridine, pyridine, alpha picoline, acetone, aniline, and 2-4 bipyridine. Based on the HHRA, the COCs posed a risk to human health from ingestion of groundwater and from direct contact with contaminated soil associated with a future construction worker. The results of the BERA suggested that there are contaminants in groundwater, soils, and sediment, but they are not present at levels posing significant risks for ecological receptors.

The chronology of Site events is presented in Table 1.

**Response Actions**

A Record of Decision was issued on September 28, 2007 (2007 ROD). The remedial action objectives (RAOs) identified for the Site are to:

1. Prevent exposure of human receptors to contaminated soils and contaminated groundwater;
2. Minimize migration of contaminants from soils to groundwater;
3. Restore the aquifer(s) to beneficial use;
4. Ensure that hazardous constituents within the soil meet acceptable levels consistent with reasonably anticipated future use; and
5. Minimize potential human contact with waste constituents.

In order to address the RAOs, the soils remedy included excavation in the source area (former lagoon area), the design and construction of an onsite biocell to contain the excavated soil, the installation of a soil vapor extraction (SVE) system within the biocell, and operation of the SVE and the biocell systems to remediate contaminated soil. The groundwater remedy required that the excavated area be treated with oxygenating or oxygen-releasing compounds to create an aerobic environment and, thereby, stimulate biodegradation of contaminants within the area of elevated groundwater contamination. In addition, a monitoring program would be implemented to monitor the effects of the soils and groundwater remedies on both the overburden and bedrock aquifers. Institutional controls (ICs) will be enacted at the Site, which include the development of an environmental easement/restrictive covenant to be filed in the property records of Orange County that include groundwater use restrictions at the Site until cleanup levels are reached. Last, a site management would be developed to address soil and groundwater at the site.

Additional activities were performed during the remedial design (RD), including: onsite soil borings, soil sampling, surveying activities, and recalculation of the volume estimates of the contaminated soil within the former source area. Based upon this information, it was determined that the estimated volume of soil that would be characteristic waste pursuant to the Resource Conservation Recovery Act (RCRA) was much greater than originally anticipated and estimated in the ROD; the resultant projected costs to excavate and dispose the soils off-site was also much greater than projected in the ROD. At the request of the PRPs, EPA considered the benefits of modifying the selected remedy for soils and determined that a change in the remedy would be appropriate.

As a result, a ROD Amendment was signed on July 22, 2011. The RAOs remained unchanged. The ROD amendment was only for the soils portion of the 2007 ROD in order to address the source areas and includes the following components:

1) Excavation of contaminated soils throughout the former lagoon area where contaminants in soils exceed New York State Department of Environmental Conservation (NYSDEC) Soil Cleanup Objectives (SCOs) for unrestricted use;
2) Transport of contaminated soils that exceed the SCOs to a permitted Treatment, Storage, and Disposal (TSD) facility for treatment and off-site disposal;
3) Post-excavation confirmatory sampling; and
4) Backfilling the excavated areas with clean fill.

The groundwater remedy selected in the 2007 ROD remained unchanged.

**Table A** below lists the cleanup levels for the Site contaminants in soil and groundwater. The cleanup objectives are based on federal and state promulgated applicable or relevant and appropriate requirements (ARARs), risk-based levels, background concentrations, and guidance values. The SCO for 2-aminopyridine was established for the protection of groundwater.

| **Table A - Cleanup Objectivess** | | |
|---|---|---|
| **Contaminant** | **Cleanup Levels for Soils (µg/kg)** | **Cleanup Levels for Groundwater (µg/L)** |
| Benzene | 60 [1] | 1 |
| Chlorobenzene | 1,100 [1] | 5 |
| Ethylbenzene | 1,000 [1] | 5 |
| Toluene | 700 [1] | 5 |
| Xylenes | 260 [1] | 5 |
| 2-amino pyridine | 400 [2] | 1 |
| Pyridine | 400 [2] | 50 |
| Alpha picoline | 575 [2] | 50 |
| Acetone | 50 [1] | 50 |
| Aniline | 1,510 [2] | 5 |
| 2,4-bipyridine [3] | 400 [2] | 50 |

[1] The values shown are from *NYSDEC Subpart 375: Remedial Program Soil Cleanup Objectives*.
[2] The values shown were derived by NYSDEC based on the *Division Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels, Division of Hazardous Waste Remediation, January 24, 1994.*
[3] The parameter was determined to be present in Site soils as a result of soil sampling activities performed in 2010.

## Status of Implementation

*Soils*

The soils remedial action was substantively complete in 2012. During the remedial action, approximately 83,210 tons of source material, *i.e.,* contaminated soils, throughout the former lagoon area were excavated and transported to a perfmitted TSD facitlity for treatment and off-site disposal. The excavated area was treated with oxygen-releasing compounds, below the water table to create an aerobic environment within the aquifers, and, thereby, stimulate biodegradation of contaminants within the aquifers. Following these activities, the excavated areas were backfilled with clean fill soil.

These actions have resulted in the removal of contaminated soil from the source area (the former lagoon area), and, thereby, have reduced the potential for the ongoing migration of contaminants (e.g., benzene compounds and 2-aminopyridine) from the source area to groundwater.

Upon completion of excavations of each lagoon, post-excavation confirmatory soil sampling was conducted to ensure that no contaminants were left behind that exceeded NYSDEC SCOs for unrestricted use. Excavation activities continued beyond the boundaries of the lagoons and down to bedrock. An evaluation of the post-excavation soil sampling data (**see Table 3**) collected in 2012 showed that the source area soils contaminated with site-related contaminants above cleanup objectives were effectively excavated and removed from the Site. However, results also indicate that some residual contamination appeared to remain in soils below the water table well outside the boundaries of the former source areas (*i.e.,* the former lagoons).

An additional investigation was performed to evaluate residual contamination found in soils beyond the extent of the excavation. Samples were collected (by geoprobe and from test pits) in areas outside of the former source areas, north of Lagoon 5. The visual characteristics of the soils were different than soils excavated from within the former source areas, and corresponded to the saturated zone. Based on these observations, as well as the thickness of the overburden, the impacted soil found north of Lagoon 5 was not considered source material but was determined to have been dispersed through groundwater transport.

Subsequently, additional areas of dispersed materials were encountered under the access road adjacent to Lagoon 4 and in the southernmost area of the Site, adjacent to the southern perimeter of Lagoons 1 and 3. These dispersed materials had the same analytical signature as those found north of Lagoon 5, and were observed below the water table, similar to the material in the area north of Lagoon 5. In addition, the southernmost limit of excavation of Lagoon 3 was extended into the former railroad bed and encroached on a wooded area that had not been part of the former lagoon operation, suggesting that the materials had been dispersed via the groundwater pathway. Collectively, the data have been used to define the locations where dispersed materials exist. The assessment and determination of dispersed materials is documented in the Interim Remedial Action Report (signed on September 26, 2013) and the Preliminary Close-Out Report (signed on September 27, 2013). It was decided that the dispersed materials would not be excavated, but instead would be managed as a part of the ongoing groundwater monitoring and remediation. All equipment demobilization activities were completed by January 13, 2013.

*Groundwater*

The excavations performed in the lagoons during the remedial action proceeded down to bedrock. As such, much of the excavated soils were located within the overburden aquifer, and, therefore, contained a significant amount of moisture. The soils were de-watered. A temporary water treatment system was installed at the Site to treat more than 2.1 million gallons of dewatering water prior to being discharged into Beaverdam Brook, which is adjacent to the Site property. The treated water was discharged under a discharge authorization issued by the NYSDEC. A significant amount of potentially contaminated, site-related groundwater was remediated in this fashion. Finally, prior to backfilling the excavated area with clean fill soils, the groundwater remedy required that the excavated area be treated with oxygenating or oxygen-releasing compounds to create an aerobic environment and, thereby, stimulate biodegradation of contaminants within the area of elevated groundwater contamination. This action was performed throughout the area of excavation.

The installation of additional monitoring wells was completed on August 13, 2013. Groundwater monitoring activities will continue until the data reflect that the cleanup objectives have been achieved for groundwater. The EPA performed a Site inspection on August 19, 2013 that verified that all remedial construction activities were completed. The preliminary site closeout report (PCOR) was completed in September 2013.

**Institutional Controls (ICs) Summary**

The ROD includes requirements for ICs on the property. The recommendation that groundwater well restrictions be imposed to prevent the installation of drinking water wells in impacted areas has been carried out, in part, by compliance with Orange County, Department of Health Services Private Water Systems Standards, which restricts installation of private wells. This will be reinforced through an actual deed restriction. In addition, the ROD also includes a requirement for instituting restrictive covenants and/or environmental easements for limiting future use of the Site until cleanup goals are achieved.

**IC Summary Table (**Planned and/or Implemented ICs)

| Media, engineered controls, and areas that do not support UU/UE based on current conditions | IC Needed | ICs Called for in the Decision Documents | Impacted Parcel(s) | IC Objective | Title of IC Instrument Implemented and Date (or planned) |
|---|---|---|---|---|---|
| Groundwater | Yes | No | Orange County, including the Site. | This is a local (County) ordinance imposed to prevent and/or regulate the installation of drinking water wells in Orange County. | Drinking water well restrictions have been indirectly carried out in part by compliance with Orange County, Department of Health Services Private Water Systems Standards. |
| Groundwater | Yes | Yes | Impacted areas of the groundwater plume. | The ROD recommends that environmental easement or deed restriction be implemented to prevent the installation of drinking water wells in impacted areas. | This IC is not currently in place for the Site. |

**Systems Operations/Operation & Maintenance (O&M)**

When remedial actions were completed, all of the equipment and systems were dismantled and/or removed from the property. O&M activities at the site are limited to groundwater monitoring. The current network of Site monitoring wells are shown in **Figure 3**. These wells are sampled semi-annually to monitor the effectiveness of the bioremediation remedy and evaluate contaminant trends in

groundwater to determine progress towards reducing contaminants in groundwater to below drinking water standards.

Potential site impacts from climate change have been assessed, and the performance of the remedy is currently not at risk due to the expected effects of climate change in the region and near the site.

## III. PROGRESS SINCE THE LAST REVIEW

This is the first FYR for the Site.

## IV. FIVE-YEAR REVIEW PROCESS

### Community Notification, Involvement & Site Interviews

On October 2, 2017, EPA Region 2 posted a notice on its website indicating that it would be reviewing site cleanups and remedies at 32 Superfund sites in New York and New Jersey, including the Nepera Chemical Site. The announcement can be found at the following web address: https://www.epa.gov/sites/production/files/2017-10/documents/five_year_reviews_fy2018_final.pdf.

In addition to this notification, a notice of the commencement of the FYR was sent to local public officials. The notice was provided to the Town of Hamptonburgh by email on June 27, 2018 with a request that the notice be posted in the municipal offices and on the Town of Hamptonburgh webpage; the notice was also posted on EPA's webpage on 6/27/2018. The purpose of the public notice was to inform the community that EPA would be conducting a FYR to ensure that the remedy implemented at the Site remains protective of public health and is functioning as designed. In addition, the notice included contact information, including addresses and telephone numbers, for questions related to the FYR process or the Site: https://www.epa.gov/superfund/nepera-chemical .

The results of the review and the report will be made available at the Site information repository located at the Town Hall in Hamptonburgh, New York, at the EPA Records Center at 290 Broadway, New York, NY, and on the U.S. EPA website for the Site.

*Document Review*

Relevant documents and data reviewed to assess the performance of the response action(s) in the process of this FYR are listed in **Table 2.**

### Data Review

*Groundwater*

The current groundwater monitoring network (**Figure 3**) includes 26 wells screened in the overburden and bedrock aquifers. The wells are mostly located on the north and south sides of the former lagoon areas but there is also an overburden well located west of the former lagoon area and four bedrock wells in the former lagoon area. Since October 2013, the monitoring wells have been sampled semi-annually. The compounds analyzed are volatile organic compounds (VOCs), semi-volatile organic compounds

(SVOCs), and the site-specific compounds 2-aminopyridine, aniline, 2,4'-bipyridine, alpha picoline, and pyridine.

Results from the October 2017 semiannual sampling show that benzene, chlorobenzene, and 2-aminopyridine remain above the cleanup levels in the overburden aquifer wells. Benzene, chlorobenzene, total xylene, 2-aminopyridine, and alpha picoline are above cleanup levels in the bedrock aquifer. Benzene and 2-Aminopyridine are generally the highest concentration of the site-specific compounds in both aquifer zones. In October 2017, the highest concentration of benzene in the overburden aquifer was 19.6 ug/l and the highest 2-Aminopyridine concentration was 140 ug/l, both occurring at monitoring well SW-8. The highest benzene bedrock concentration in October 2017 was 376 ug/l and the highest 2-Aminopyridine result was 886 ug/l, both at MW-22D-13. These wells are both located on the south side of the site, downgradient of the former lagoon areas.

The recent data shows that current contaminant concentrations are lower than the pre-excavation levels, and have generally decreased since 2013 in the overburden and bedrock monitoring wells. The maximum benzene concentrations observed in the overburden in this period was 301 µg/L and the maximum 2-Aminopyridine was 3730 µg/L, both at MW-7. In the bedrock the maximum concentrations were 450 ug/l and 1800 ug/l, respectively, both at MW-22D. Concentrations tend to be higher on the south side of the Site and in the bedrock monitoring wells. The wells in the northern area of dispersed materials (MW-2, SW-2, and DW-2-95) show similar declining trends to the downgradient wells on the south side of the site (DW-1-95, SW-8, and SW-9). Trend Plots are presented for these overburden and bedrock (deeper) monitoring wells for two contaminants (benzene and 2-aminopyridine) in Figures 4a, 4b, 4c, and 4d.

Groundwater monitoring of well clusters MW-5, MW-10, and MW-11, which are downgradient of the source areas, has shown an absence of site-related groundwater impacts in the overburden and bedrock aquifers, indicating that contaminants are not migrating off-Site. Groundwater elevation measurements indicate that the hydraulic gradient is similar to the conditions observed in the RI, with flow away from the groundwater divide.

Groundwater trends will continue to be evaluated to ensure that concentrations are declining as expected and evaluate whether additional treatment is necessary.

**Site Inspection**

The FYR Site inspection was conducted on 4/26/2018. In attendance were Mark Dannenberg (EPA RPM), Kathryn Flynn (EPA hydrogeologist), and represenatives of the PRPs (Pfizer, Inc. and Cambrex Corp.) as well as the PRP's consultant. The purpose of the inspection was to assess the protectiveness of the remedy, gather information about the current status of the Site, and to visually confirm and document the conditions of the remedy, the Site area, and the surrounding area. The Site inspection confirmed that the Site property remains fallow. The groundwater monitoring wells are secure and in good condition.

## V. TECHNICAL ASSESSMENT

**QUESTION A:** Is the remedy functioning as intended by the decision documents?

The remedy is functioning as intended by the ROD signed on September 28, 2007, as amended by the Amendment to the ROD signed on July 22, 2011.

The soil remedy has been completed and confirmation samples indicate soil cleanup levels have been met in the source area. However, contaminated soils remain outside the source area, a result of contaminant transport and dispersion through groundwater. It is anticipated that the ongoing groundwater remedy will address this contamaintion and groundwater wells in this area will continue to be evaluated to determine the effectiveness of remediation.

By removing contaminants from the former source area and placing oxygenating or oxygen-releasing compounds in the excavated area, levels of contaminants in groundwater have steadily decreased on site and off-site wells sampling indicate that the plume is stable and not migrating off the Site property. Groundwater monitoring will continue to ensure that the remedy remains effective.

The ROD includes requirements for ICs on the property. In addition, it was recommended that groundwater well restrictions be imposed to prevent the installation of drinking water wells in impacted areas has been carried out, in part, by compliance with Orange County, Department of Health Services Private Water Systems Standards, which restricts installation of private wells. The groundwater well restriction is in place preventing unacceptable use of groundwater. Efforts are underway to establish the deed restriction, it is antipcated this will be completed by December 2019.

**QUESTION B:** Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

**Question B Summary:**

There have been no changes in the physical conditions of the Site over the past five years that would impact the protectiveness of the remedy. The exposure assumptions, pathways, and toxicity data used to evaluate human health and ecological risks remain valid. The RAOs and cleanup criteria established for the Site also remain valid and the remedial actions taken (*i.e*., soil removal, groundwater biodegradation and monitoring, and IC placement) have eliminated any potential soil or groundwater pathways of concern as identified in the HHRA. Vapor intrusion is not a pathway of concern since there are no buildings presently located onsite or anticipated for construction over the next five years. Although contaminants within groundwater, surface water, soils, and sediment were evaluated as part of the baseline ecological risk assessment (BERA), the concentrations identified in these media were not present at levels posing significant risks to ecological receptors.

*Human Health Risk*

The HHRA concluded that future residential exposure to groundwater (via drinking water) and construction worker exposure to soil (via direct contact) would result in human health risk and hazard exceeding EPA threshold criteria. The COCs identified for the Site include benzene, chlorobenzene, ethylbenzene, toluene, xylenes, 2-amino pyridine, pyridine, alpha picoline, acetone, aniline, and 2-4 bipyridine. The exposure assumptions and pathways considered in the 2007 ROD and 2011 ROD Amendment followed the Risk Assessment Guidance for Superfund used by the Agency and remain

valid. Although specific parameters may have changed since the time the risk assessment was completed, the process that was used also remains valid.

The RAOs discussed in Section II remain valid. The excavations performed onsite effectively interrupt potential direct contact exposures. The residual contamination remaining onsite is also located in the subsurface and, therefore, is not expected to be contacted since the Site is not currently used. Perimeter fencing further reduces access to the property. It is expected that the land will continue to be unused over the next five years. Furthermore, groundwater beneath the Site property is classified by New York State as "GA", indicating a potential potable water supply. Although onsite groundwater is not used, there are residences, located approximately 250 feet, 175 feet and 450 feet to the west, north and northeast of the Nepera Property boundary, respectively, that rely on private supply wells for drinking water. These supply wells, however, have never been impacted by site-related contaminants. Ongoing groundwater monitoring will continue until RAOs have been achieved.

The ROD established the federal maximum contaminant levels (MCLs) and NYSDEC Class GA groundwater standards as the cleanup criteria for the COCs in groundwater, which remain valid. The cleanup levels used for benzene, chlorobenzene, ethylbenzene, toluene, xylenes, and acetone in soil were based on the NYSDEC Part 375 SCOs for unrestricted use, which also remain valid. The cleanup goals for 2-aminopyridine, pyridine, alpha picoline, and aniline were derived by NYSDEC for impact to groundwater, based on the Technical and Administrative Guidance Memorandum (TAGM) 4046 objectives. While the TAGM objectives have since been succeeded by the 6 Part 375 (2006) and CP-51 (2010) SCOs, the process that was used remains valid.

Although the site-related COCs include VOCs, vapor intrusion is not an issue since there are no buildings presently located onsite or anticipated for construction over the next five years. In addition, there have been no detections of site-related VOCs in off-site wells.

*Changes in Toxicity Characteristics:* In the absence of toxicity information applicable to 2-aminopyridine, a chronic oral reference dose for 4-aminopyridine was used as a surrogate at the time the HHRA was completed. The reference dose, 2.0E-05 mg/kg-day, was selected from the 1997 Health Effects Assessment Summary Tables (HEAST) in consultation with the Superfund Technical Support Center (STSC). However, upon additional review during this FYR period, STSC notified Region 2 staff that this RfD was no longer available for use due to incomplete and questionable reporting of results in the principal study used in its derivation. After additional research, STSC found that 4-aminopyridine remained the most appropriate surrogate for 2-aminopyridine. To date, however, there are no toxicity values recognized for use in HHRA in accordance with the toxicological hierarchy established in OSWER directive 9285.7-53 (2003). Consequently, the conclusion reached in the human health risk evaluation of 2-aminopyridine contains a high degree of uncertainty. Nevertheless, the groundwater cleanup goal established for this compound (1 µg/L) in the ROD is based on the NYSDEC Class GA Ambient Water Quality Standard for aminopyridines, which specifically includes both 2-aminopyridine and 4-aminopyridine. The cleanup goal for 2-aminopyridine in soil was derived by NYSDEC for the impact to groundwater pathway using the aforementioned NYSDEC groundwater standard. Considering soil and groundwater concentrations of 2-aminopyridine exceeded these values at the time of the ROD, the decision to include 2-aminopyridine as a COC remains valid. Therefore, the changes in toxicity value references for this compound do not impact the remedial decision that was made for the Site.

*Ecological Risk*

A baseline ecological risk assessment (BERA) was conducted to identify the potential environmental risks associated with surface water, ground water, sediment and soil. Although contaminants were identified in groundwater, soils, and sediment they were not present at levels posing significant risks to ecological receptors. The exposure assumptions and pathways, toxicity data, and RAOs for ecological receptors are still appropriate and the BERA conclusions remain valid.

**QUESTION C:** Has any **other** information come to light that could call into question the protectiveness of the remedy?

No other information has come to light that would call into question the protectiveness of the remedy.

## VI. ISSUES/RECOMMENDATIONS

| **OU(s):** | **Issue Category: Institutional Controls** | | | |
|---|---|---|---|---|
| | **Issue: ICs required by ROD for groundwater are not in place.** | | | |
| | **Recommendation: Implement necessary deed restrictions** | | | |
| **Affect Current Protectiveness** | **Affect Future Protectiveness** | **Party Responsible** | **Oversight Party** | **Milestone Date** |
| No | Yes | PRP | EPA/State | 12/2/2019 |

## OTHER FINDINGS

Finalize the site management plan.

## VII. PROTECTIVENESS STATEMENT

| **Protectiveness Statement(s)** | | |
|---|---|---|
| *Operable Unit:*<br>NA | *Protectiveness Determination:*<br>Short-term Protective | *Planned Addendum Completion Date:*<br>Click here to enter a date |
| *Protectiveness Statement:* The remedy protects human health and the environment in the short-term because contaminated soils have been excavated and Orange County well restrictions prevent exposure to contaminated groundwater. In order to be protective in the long term, on-property deed restrictions need to be implemented. | | |

| Sitewide Protectiveness Statement | |
|---|---|
| *Protectiveness Determination:*<br>Short-term Protective | *Planned Addendum Completion Date:*<br>Click here to enter a date |
| *Protectiveness Statement:* The remedy protects human health and the environment in the short-term because contaminated soils have been excavated and Orange County well restrictions prevent exposure to contaminated groundwater. In order to be protective in the long term, on-property deed restrictions need to be implemented. | |

## VIII. NEXT REVIEW

The next FYR report for the Nepera Chemical Company Superfund Site is required five years from the completion date of this review.

## APPENDIX A – TABLES

| Table 1 : Chronology of Site Events | |
|---|---|
| Site added to the NPL | May 10, 1999 |
| NYSDEC and the Nepera Trust enter into a Consent Order to develop and implement a Remedial Investigation and a Feasibility Study | September 29, 2000 |
| Remedial Investigation conducted | 2000 to 2007 |
| Feasibility Study completed | 2007 |
| Issuance of the Record of Decision | September 28, 2007 |
| EPA and the Nepera Trust enter into a Consent Agreement to perform remedial design and action activities at the Site. | October 2008 |
| The Nepera Trust performs remedial design activities | September 2008 |
| Final Remedial Design Report Submittal | November 2010 |
| USEPA issues Proposed Remedial Action Plan for an Amended ROD | May 2011 |
| Issuance of an Amendment to the ROD | July 15, 2011 |
| Initial Phase of Remedy Implementation | October 2011 |
| Evaluation of Dispersed Materials North of Lagoon No. 5, Coordination with USEPA and USEPA Approval of Management of Dispersed Materials as Part of the Groundwater Remedy | May – July, 2012 |
| Final Soil Excavation, Characterization, Post-Excavation Sampling; Drum/Waste Disposal; Backfill; and Site Restoration | August – November, 2012 |
| USEPA Approval of the Groundwater Monitoring Well Installation Plan | February 2013 |
| Additional Monitoring Well Installations | July – August 2013 |
| Final USEPA Site Inspection | August 19, 2013 |
| Interim Remedial Action Report | September 26, 2013 |
| Preliminary Closeout Report | September 27, 2013 |
| Semi-Annual Groundwater Monitoring Reports | 2013 - 2018 |
| The PRPs Statitstical Trend Analysis Report | 2018 |
| Five Year Review Site Visit | April 26, 2018 |

| Table 2: Documents Reviewed | | |
|---|---|---|
| **Author** | **Date** | **Title/Description** |
| US Environmental Protection Agency | September 2007 | Record of Decision, Nepera Chemical Company Site |
| US Environmental Protection Agency | July 2011 | Amendment to the Record of Decision |
| US Environmental Protection Agency/Nepera Trust | September 28, 2004 | Consent Decree to perform a Remedial Action |
| Nepera Trust / Cornerstone Environmental | July 2011 | Remedial Action Work Plan |
| Cornerstone Engineering | 2013 - 2017 | Quarterly and Semi-Annual Groundwater Monitoring Reports |
| Cornerstone Engineering | September 27, 2013 | Interim Remedial Action Report |
| US Environmental Protection Agency | | EPA guidance for conducting five-year reviews and other guidance and regulations to determine if any new Applicable or Relevant and Appropriate Requirements relating to the protectiveness of the remedy have been developed since the EPA issued the RODs. |

**TABLE 3**

Lagoon 1

Post Excavation Soil Sample Results

(All units in ug/kg)

| | Parameter | 2,4-Bipyridine | 2-Amino pyridine | Acetone | Alpha picoline | Aniline | Benzene | Chloro benzene | Ethyl benzene | Pyridine | Toluene | Xylene (total) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID[1] | Date Sampled / Cleanup Level | 400 | 400 | 50 | 575 | 1510 | 60 | 1100 | 1000 | 400 | 700 | 260 |
| L1-SW-001 | 8/27/2012 | <160 | <160 | <9.9 | <160 | <65 | <0.99 | <4.9 | <0.99 | <65 | <0.99 | <0.99 |
| L1-SW-002 | 8/27/2012 | <150 | <150 | <12 | <150 | <61 | <1.2 | <6.2 | <1.2 | <61 | 2.9 | 0.49 |
| L1-SW-003 | 8/27/2012 | <160 | <160 | 14.8 | <160 | <63 | <1.3 | <6.6 | 0.87 J | <63 | 20.9 | 4.9 |
| L1-SW-004 | 8/27/2012 | <160 | <160 | <13 | <160 | <62 | <1.3 | <6.7 | <1.3 | <62 | 2.5 | 0.58 J |
| L1-SW-005 | 8/27/2012 | <160 | <160 | <11 | <160 | <64 | <1.1 | <5.3 | <1.1 | <64 | 1.2 | <1.1 |
| L1-SW-006 | 10/2/2012 | <160 | <160 | <10 | <160 | <66 | <1.0 | <5.0 | <1.0 | <66 | <1.0 | <1.0 |
| L1-SW-007 | 10/2/2012 | 214 | 303 | <550 | <180 | <70 | 22.2 | 11.4 | 92.1 | <70 | 217 | 1750 |
| L1-SW-007R | 11/29/2012 | 2000 | 412 | 49.8 | <190 | <77 | 1.8 | 1.6J | 20.1 | 36.2J | 2.1 | 8.2 |

Note:

1 Sample ID: Lagoon number (L#), sidewall (SW), sample location (3-digit number), resampled (R).

**TABLE 3 (contd)**

Lagoon 2

Post Excavation Soil Sample Results

(All units in ug/kg)

| Parameter | 2,4-Bipyridine | 2-Amino pyridine | Acetone | Alpha picoline | Aniline | Benzene | Chloro benzene | Ethyl benzene | Pyridine | Toluene | Xylene (total) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID[1] / Date Sampled / Cleanup Level | 400 | 400 | 50 | 575 | 1510 | 60 | 1100 | 1000 | 400 | 700 | 260 |
| L2-SW-001 10/17/2011 | <170 | <170 | <8.8 | <170 | <66 | <0.88 | <4.4 | <0.88 | <66 | <0.88 | <0.88 |
| L2-SW-002 10/17/2011 | <160 | <160 | <10 | <160 | <65 | <1 | <5 | <1 | <65 | <1 | <1 |
| L2-SW-003 10/17/2011 | <180 | <180 | 36.5 | <180 | <73 | <1 | <5 | <1 | <73 | <1 | <1 |
| L2-SW-004 10/17/2011 | <170 | <170 | <10 | <170 | <69 | <1 | <5.2 | <1 | <69 | <1 | <1 |
| L2-SW-005 10/17/2011 | <170 | <170 | <10 | <170 | <67 | <1 | <5 | <1 | <67 | <1 | <1 |
| L2-SW-006 10/17/2011 | <160 | <160 | 15.8 | <160 | <63 | <0.99 | <5 | <0.99 | <63 | <0.99 | <0.99 |
| L2-SW-007 10/17/2011 | <150 | <150 | <9.2 | <150 | <62 | <0.92 | <4.6 | <0.92 | <62 | <0.92 | <0.92 |
| L2-SW-008[2] 10/25/2011 | 647 | 3660 | <580 | <170 | <66 | 597 | 1410 | 581 | <66 | 145 | 23200 |
| L2-SW-009[2] 10/25/2011 | 118J | 1560 | <510 | 40.9J | <65 | 469 | 220J | 25.9J | <65 | <51 | 18600 |
| L2-SW-010[2] 10/25/2011 | <160 | 1360 | <980 | <160 | 263 | 2440 | 619 | 2970 | <64 | <98 | 54100 |
| L2-SW-011[2] 10/25/2011 | 1140 | 9940 | <460 | <160 | 53.6J | 4370 | 936 | 8820 | <63 | 42J | 175000 |
| L2-SW-012[2] 10/25/2011 | <160 | <160 | <540 | <160 | <66 | 2880 | 302 | 65 | <66 | <54 | 55300 |

Notes:

1 Sample ID: Lagoon number (L#), sidewall (SW), sample location (3-digit number), resampled (R).

2 Soils removed and transported off-site for treatment/disposal. No additional post-excavation samples required; excavations interconnected

**TABLE 3 (contd)**

Lagoon 3

Post Excavation Soil Sample Results

(All units in ug/kg)

| | Parameter | 2,4-Bipyridine | 2-Amino pyridine | Acetone | Alpha picoline | Aniline | Benzene | Chloro benzene | Ethyl benzene | Pyridine | Toluene | Xylene (total) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID[1] | Date Sampled / Cleanup Level | 400 | 400 | 50 | 575 | 1510 | 60 | 1100 | 1000 | 400 | 700 | 260 |
| L3-SW-001 | 11/10/2011 | <170 | <170 | <9.9 | <170 | <68 | <0.99 | <5 | <0.99 | <0.99 | <0.99 | <68 |
| L3-SW-002 | 11/10/2011 | <160 | <160 | <9 | <160 | <65 | <0.9 | <4.5 | <0.9 | <0.9 | <0.9 | <65 |
| L3-SW-003 | 11/10/2011 | <160 | <160 | <8.5 | <160 | <65 | <0.85 | <4.3 | <0.85 | <0.85 | <0.85 | <65 |
| L3-SW-004 | 12/20/2011 | <160 | <160 | <8.7 | <160 | <64 | <0.87 | <4.4 | <0.87 | <0.87 | <0.87 | <64 |
| L3-SW-005 | 12/20/2011 | <150 | <150 | <11 | <150 | <62 | <1.1 | <5.3 | <1.1 | <1.1 | <1.1 | <62 |
| L3-SW-006 | 12/20/2011 | <160 | <160 | <10 | <160 | <65 | <1.0 | <5.0 | <1.0 | <1.0 | <1.0 | <65 |
| L3-SW-007 | 12/20/2011 | <340 | <340 | <9.4 | <340 | <130 | <0.94 | <4.7 | <0.94 | <0.94 | <0.94 | <130 |
| L3-SW-008 | 8/28/2012 | <170 | <170 | <10.0 | <170 | <68 | <1.0 | <5.0 | <1.0 | <68 | <1.0 | <1.0 |
| L3-SW-009 | 9/6/2012 | <160 | <160 | 26.3 | <160 | <65 | 2.0 | <4.2 | <0.84 | <65 | 1.0 | 0.56 |
| L3-SW-010 | 9/12/2012 | <160 | 146J | 16.1 | <160 | <63 | 0.59J | 0.25J | 0.42J | <63 | 6.6 | 2.2 |
| L3-SW-011 | 9/12/2012 | <160 | 1710 | 15.7 | <160 | <66 | 3.9 | 0.51J | <0.86 | <66 | 4.2 | 0.79J |
| L3-SW-011R | 9/27/2012 | <160 | <160 | <11 | <160 | <64 | <1.1 | <5.3 | <1.1 | <64 | 0.34J | <1.1 |
| L3-SW-012 | 9/12/2012 | <160 | 420 | 21.8 | <160 | <65 | 3.7 | 0.61J | <0.90 | <65 | 5.8 | 0.89J |
| L3-SW-012R | 9/27/2012 | 96.9J | 3940 | <10 | <170 | <69 | 0.33J | <5.2 | <1.0 | <69 | 0.22J | <1.0 |
| L3-SW-012R2 | 11/29/2012 | <190 | 119 | <11 | <190 | <77 | <1.1 | <5.3 | <1.1 | <77 | <1.1 | <1.1 |
| L3-SW-013 | 9/17/2012 | <360 | 3020 | 35.4 | <360 | <140 | 5.9 | 0.43J | 1.0 | <140 | 3.6 | 1.5 |
| L3-SW-013R | 9/27/2012 | 198J | 3530 | 21.2 | <200 | <80 | 10.2 | 0.53J | 0.88J | <80 | 0.47J | 1.0 |
| L3-SW-013R2 | 11/28/2012 | 162 | 2660 | -- | <170 | <69 | 3.0 | 0.32 | 0.55 | <69 | <0.91 | 0.70 |
| L3-SW-014 | 9/27/2012 | 205 | 1710 | 5.8J | <180 | <70 | 6.3 | 0.75J | 2.9 | <70 | 0.88J | 7.6 |
| L3-SW-014R | 11/28/2012 | <170 | 684 | -- | <170 | <69 | 6.6 | 0.92 | <1.0 | <69 | <1.0 | <1.0 |
| L3-SW-015 | 10/8/2012 | <170 | 436 | 6.1J | <170 | <66 | 38.8 | 4.3J | 11.6 | <66 | 5.3 | 54.3 |
| L3-SW-015R | 11/29/2012 | <180 | 533 | 8.1 | <180 | <72 | 0.77 | <5.6 | 1.1 | <72 | <1.1 | 4.7 |
| L3-SW-016 | 10/8/2012 | 158J | 355 | 14.1 | <170 | <67 | 16.5 | 4.9 | 6.5 | <67 | 7 | 42.9 |
| L3-SW-017 | 10/8/2012 | <150 | <150 | <8.1 | <150 | <61 | 49.2 | 1.0J | 5.3 | <61 | 2.4 | 22.8 |
| L3-SW-018 | 10/8/2012 | <180 | <180 | 25.5 | <180 | <71 | 33.4 | 6.3 | 8 | <71 | 46.5 | 34.5 |

Notes:

1 Sample ID: Lagoon number (L#), sidewall (SW), sample location (3-digit number), resampled (R).

**TABLE 3 (contd)**

Lagoon 4

Post Excavation Soil Sample Results

(All units in ug/kg)

| | Parameter | 2,4-Bipyridine | 2-Amino pyridine | Acetone | Alpha picoline | Aniline | Benzene | Chloro benzene | Ethyl benzene | Pyridine | Toluene | Xylene (total) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID[1] | Date Sampled / Cleanup Level | 400 | 400 | 50 | 575 | 1510 | 60 | 1100 | 1000 | 400 | 700 | 260 |
| L4-SW-001 | 11/3/2011 | <160 | <160 | <9.2 | <160 | <65 | <0.92 | <4.6 | <0.92 | <0.92 | <0.92 | <65 |
| L4-SW-002 | 11/3/2011 | <160 | <160 | <9.2 | <160 | <65 | <0.92 | <4.6 | <0.92 | <0.92 | <0.92 | <65 |
| L4-SW-003 | 11/8/2011 | <170 | <170 | <9.1 | <170 | <67 | <0.91 | <4.6 | <0.91 | <0.91 | <0.91 | <67 |
| L4-SW-004 | 11/8/2011 | <160 | <160 | <8.6 | <160 | <64 | <0.86 | <4.3 | <0.86 | <0.86 | <0.86 | <64 |
| L4-SW-005 | 11/8/2011 | <160 | <160 | <8.4 | <160 | <63 | <0.84 | <4.2 | <0.84 | <0.84 | <0.84 | <63 |
| L4-SW-006 | 11/8/2011 | <160 | <160 | <9.9 | <160 | <66 | <0.99 | <5 | <0.99 | <0.99 | <0.99 | <66 |
| L4-SW-007 | 11/8/2011 | <160 | <160 | <8.6 | <160 | <64 | <0.86 | <4.3 | <0.86 | <0.86 | <0.86 | <64 |
| L4-SW-008 | 12/7/2011 | <170 | 219 | <9.4 | <170 | 187 | 5.7 | 11.7 | <0.94 | 1.5 | 0.69J | 118 |

Notes:

1 Sample ID: Lagoon number (L#), sidewall (SW), sample location (3-digit number), resampled (R).

**TABLE 3 (contd)**
Lagoon 5
Post Excavation Soil Sample Results
(All units in ug/kg)

| | Parameter | 2,4-Bipyridine | 2-Amino pyridine | Acetone | Alpha picoline | Aniline | Benzene | Chloro benzene | Ethyl benzene | Pyridine | Toluene | Xylene (total) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID[1] | Date Sampled / Cleanup Level | 400 | 400 | 50 | 575 | 1510 | 60 | 1100 | 1000 | 400 | 700 | 260 |
| L5-SW-001[2] | 10/20/2011 | 6320 | 4140 | <730 | <180 | 254 | 359 | 744 | 237 | <71 | 93.9 | 3390 |
| L5-SW-002[2] | 10/20/2011 | <160 | 368 | 39.3 | <160 | 241 | 10.5 | 1540 | 1.2 | <64 | 0.84J | 11.2 |
| L5-SW-003 | 10/20/2011 | <160 | <160 | 37.8 | <160 | <65 | <0.93 | 9.9 | <0.93 | <65 | 1.1 | 0.85J |
| L5-SW-004 | 11/2/2011 | <170 | <170 | <12 | <170 | <68 | <1.2 | <6.2 | <1.2 | <68 | <1.2 | <1.2 |
| L5-SW-005 | 11/2/2011 | <170 | <170 | <8.7 | <170 | <66 | <0.87 | <4.3 | <0.87 | <66 | <0.87 | <0.87 |
| L5-SW-008 | 11/2/2011 | <170 | <170 | <9.9 | <170 | <68 | <0.99 | <5 | <0.99 | <68 | <0.99 | <0.99 |
| L5-SW-009 | 11/2/2011 | <170 | <170 | <10 | <170 | <67 | <1 | <5.1 | <1 | <67 | <1 | <1 |
| L5-SW-010 | 11/2/2011 | <160 | <160 | <9.1 | <160 | 384 | <0.91 | <4.5 | <0.91 | <64 | <0.91 | <0.91 |
| L5-SW-011 | 11/2/2011 | <160 | <160 | <9.2 | <160 | <63 | <0.92 | <4.6 | <0.92 | <63 | <0.92 | <0.92 |
| L5-SW-012 | 11/8/2011 | <160 | <160 | <9.3 | <160 | <64 | <0.93 | <4.7 | <0.93 | <64 | <0.93 | <0.93 |
| L5-SW-013 | 11/14/2011 | 105J | 506 | 16.7 | <170 | <69 | 2.4 | 2.5J | <1.2 | <69 | <1.2 | <1.2 |
| L5-SW-014 | 11/14/2011 | <170 | 5350 | 121 | <170 | <68 | 2.3 | 4.3J | <1 | <68 | <1 | <1 |
| L5-SW-015 | 11/17/2011 | <160 | <160 | <9.8 | <160 | <64 | <0.98 | <4.9 | <0.98 | <64 | <0.98 | <0.98 |
| L5-SW-016 | 11/17/2011 | <160 | <160 | <11 | <160 | <65 | <1.1 | <5.3 | <1.1 | <65 | <1.1 | <1.1 |
| L5-SW-017 | 11/17/2011 | <160 | <160 | <9 | <160 | <65 | <0.9 | <4.5 | <0.9 | <65 | <0.9 | <0.9 |
| L5-SW-018 | 11/17/2011 | <160 | <160 | <8.7 | <160 | <64 | <0.87 | <4.3 | <0.87 | <64 | <0.87 | <0.87 |
| L5-SW-019 | 11/17/2011 | <160 | <160 | <8.6 | <160 | <64 | <0.86 | <4.3 | <0.86 | <64 | <0.86 | <0.86 |
| L5-SW-20 | 11/17/2011 | 222 | 542 | <9.3 | <160 | <64 | <0.93 | <4.7 | <0.93 | <64 | <0.93 | <0.93 |
| L5-SW-020-R | 12/30/2011 | <170 | <170 | <12 | <170 | <66 | <1.2 | <6 | <1.2 | <66 | <1.2 | <1.2 |
| L5-SW-21 | 11/17/2011 | 186 | 479 | <9.0 | <160 | <66 | <1.6 | <4.5 | <0.90 | <66 | <0.90 | <0.90 |
| L5-SW-021-R | 1/20/2012 | <160 | 3210 | <8.3 | <160 | <63 | 4 | <4.2 | <0.83 | <63 | 0.58J | <0.83 |
| L5-SW-022 | 11/17/2011 | <170 | 111J | <9.3 | <170 | <67 | 1.9 | <4.6 | <0.93 | <67 | <0.93 | <0.93 |
| L5-SW-023 | 11/17/2011 | <160 | 122J | 12.2 | <160 | <63 | 0.51J | <4.5 | <0.91 | <63 | <0.91 | <0.91 |
| L5-SW-024 | 12/7/2011 | <170 | <170 | 21.5 | <170 | <69 | <0.98 | 2.8J | <0.98 | <69 | <0.98 | <0.98 |
| L5-SW-025 | 12/14/2011 | <170 | <170 | 11.4 | <170 | <67 | 0.28J | 2.7J | <0.94 | <67 | <0.94 | <0.94 |
| L5-SW-026 | 12/14/2011 | <160 | <160 | <8.6 | <160 | <64 | 2.5 | 10.5 | <0.86 | <64 | <0.86 | <0.86 |

Notes:

1 Sample ID: Lagoon number (L#), sidewall (SW), sample location (3-digit number), resampled (R).

2 Soils corresponding to these samples were excavated and treated/disposed off site

**TABLE 3 (contd)**

Lagoon 6

Post Excavation Soil Sample Results

(All units in ug/kg)

| | Parameter | 2,4-Bipyridine | 2-Amino pyridine | Acetone | Alpha picoline | Aniline | Benzene | Chloro benzene | Ethyl benzene | Pyridine | Toluene | Xylene (total) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID[1] | Date Sampled / Cleanup Level | 400 | 400 | 50 | 575 | 1510 | 60 | 1100 | 1000 | 400 | 700 | 260 |
| L6-SW-001 | 11/14/2011 | <160 | <160 | 7.5J | <160 | <65 | <0.95 | <4.8 | <0.95 | <0.95 | <0.95 | <65 |
| L6-SW-002 | 11/14/2011 | <160 | <160 | <9.2 | <160 | <65 | <0.92 | <4.6 | <0.92 | <0.92 | <0.92 | <65 |
| L6-SW-003 | 11/14/2011 | <160 | <160 | <9.4 | <160 | <64 | <0.94 | <4.7 | <0.94 | <0.94 | <0.94 | <64 |
| L6-SW-004 | 11/14/2011 | <160 | <160 | <8.8 | <160 | <65 | <0.88 | <4.4 | <0.88 | <0.88 | <0.88 | <65 |
| L6-SW-005 | 11/14/2011 | <160 | <160 | 29 | <160 | <64 | <0.93 | <4.7 | <0.93 | <0.93 | <0.93 | <64 |
| L6-SW-006 | 11/14/2011 | <160 | <160 | 18.8 | <160 | <63 | <1 | <5 | <1 | <1 | <1 | <63 |
| L6-SW-007 | 11/14/2011 | <160 | <160 | <12 | <160 | <63 | <1.2 | <6.1 | <1.2 | <1.2 | <1.2 | <63 |
| L6-SW-008 | 11/14/2011 | <150 | <150 | <8.8 | <150 | <61 | <0.88 | <4.4 | <0.88 | <0.88 | <0.88 | <61 |
| L6-SW-009 | 12/5/2011 | <160 | <160 | <9.7 | <160 | 139 | <0.97 | <4.8 | <0.97 | <0.97 | <0.97 | <64 |
| L6-SW-010 | 12/5/2011 | <170 | <170 | <8.8 | <170 | 38.9J | <0.88 | <4.4 | <0.88 | <0.88 | <0.88 | <66 |
| L6-SW-011 | 12/5/2011 | <160 | <160 | <9.8 | <160 | <64 | <0.98 | <4.9 | <0.98 | <0.98 | <0.98 | <64 |
| L6-SW-012 | 12/5/2011 | <160 | <160 | <9 | <160 | <64 | <0.9 | <4.5 | <0.9 | <0.9 | <0.9 | <64 |
| L6-SW-013 | 12/5/2011 | <160 | <160 | <9.4 | <160 | <64 | <0.94 | <4.7 | <0.94 | <0.94 | <0.94 | <64 |
| L6-SW-014 | 12/5/2011 | <170 | <170 | <10 | <170 | <68 | <1 | <5.1 | <1 | <1 | <1 | <68 |

Notes:

1 Sample ID: Lagoon number (L#), sidewall (SW), sample location (3-digit number), resampled (R).

**TABLE 3 (contd)**
Site Access Road Adjacent to Lagoon No. 4
Post Excavation Soil Sample Results
(All units in ug/kg)

| | Parameter | 2,4-Bipyridine | 2-Amino pyridine | Acetone | Alpha picoline | Aniline | Benzene | Chloro benzene | Ethyl benzene | Pyridine | Toluene | Xylene (total) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID[1] | Date Sampled / Cleanup Level | 400 | 400 | 50 | 575 | 1510 | 60 | 1100 | 1000 | 400 | 700 | 260 |
| AR-SW-001 | 11/20/2012 | <190 | <190 | 35Y | <190 | <80 | <1.0 | <5 | <1.0 | <80 | <1.0 | <1.0 |
| AR-SW-002 | 11/20/2012 | 230 | 1800 | 49Y | <180 | <76 | 13 | 3J | 4 | <76 | 6 | 20 |
| AR-SW-004[2] | 11/27/2012 | <180 | <180 | 820DJ | <180 | <74 | <1.0 | <7 | <1.0 | <74 | <1.0 | <1.0 |
| AR-SW-005 | 11/29/2012 | <170 | <170 | 43 | <170 | <68 | <1.1 | <5.4 | <1.1 | <68 | 0.4 | <1.1 |
| AR-SW-006 | 11/29/2012 | <180 | 1690 | 58.5 | <180 | <73 | <1.1 | <5.7 | <1.1 | <73 | <1.1 | <1.1 |
| AR-SW-007 | 11/29/2012 | 213 | 887 | 33.7 | <180 | 17.9 | 3.8 | <4.9 | <0.98 | <71 | <0.98 | <0.98 |
| AR-SW-008 | 11/29/2012 | <190 | 1670 | 12.9 | <190 | <75 | 24.1 | <4.9 | <0.98 | <75 | 0.18 | <0.98 |

Notes:

1 Sample ID: Lagoon number (L#), sidewall (SW), sample location (3-digit number), resampled (R).

2 AR-SW-003 not collected, bedrock encountered, no location available for sample collection.

**TABLE 4**

**GROUNDWATER MONITORING DATA TABLE**

**2013 - 2017**

| Well No. | Sample_Date | 2,4'-Bipyridine | 2-Aminopyridine | 2-Picoline | Aniline | Benzene | Chlorobenzene | Ethylbenzene | Pyridine | Toluene | Xylene (total) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 10/15/2013 | 1.2 U | 4.4 U | 1.2 U | 0.48 U | 0.28 U | 0.35 U | 0.21 U | 0.35 U | 0.44 U | 0.19 U |
| MW-1 | 4/10/2014 | 0.56 U | 2.4 U | 0.36 U | 0.26 U | 0.28 U | 0.35 U | 0.21 U | 0.30 U | 0.44 U | 0.19 U |
| MW-1 | 4/28/2015 | 0.55 U | 2.4 U | 0.35 U | 0.26 U | 0.24 U | 0.19 U | 0.27 U | 0.29 U | 0.16 U | 0.17 U |
| MW-1 | 10/22/2015 | 0.55 U | 2.4 U | 0.35 U | 0.26 U | 0.24 U | 0.19 U | 0.27 U | 0.29 U | 0.16 U | 0.17 U |
| MW-1 | 4/28/2016 | 0.87 U | 0.40 U | 0.93 U | 0.36 U | 0.24 U | 0.19 U | 0.27 U | 0.44 U | 0.16 U | |
| MW-1 | 4/25/2017 | 0.77 U | 0.35 U | 0.83 U | 0.32 U | 0.14 U | 0.17 U | 0.20 U | 0.39 U | 0.23 U | |
| MW-2 | 10/16/2013 | 1.1 U | 65 | 1.1 U | 0.44 U | 0.4 J | 0.37 J | 0.21 U | 0.32 U | 2 | 0.34 J |
| MW-2 | 4/11/2014 | 0.55 U | 2.4 U | 0.36 U | 0.26 U | 9.9 | 5 | 0.21 U | 0.30 U | 1.4 | 0.19 U |
| MW-2 | 4/29/2015 | 4 J | 4.2 U | 0.62 U | 0.46 U | 3.6 | 2.2 | 0.27 U | 0.52 U | 4.7 | 0.17 U |
| MW-2 | 10/23/2015 | 1.6 J | 40.9 | 0.35 U | 0.26 U | 15.7 | 8.7 | 0.27 U | 0.29 U | 0.77 J | 0.17 U |
| MW-2 | 4/29/2016 | 2.1 J | 17.2 | 0.91 U | 0.35 U | 11.3 | 6.4 | 0.27 U | 0.43 U | 0.16 U | |
| MW-2 | 10/26/2016 | 1.8 J | 56.6 | 0.92 U | 0.36 U | 17 | 9.4 | 0.20 U | 0.43 U | 0.58 J | |
| MW-2 | 4/26/2017 | 0.87 J | 11.4 | 0.89 U | 0.34 U | 11.7 | 6.1 | 0.20 U | 0.42 U | 0.23 U | |
| MW-5U-91 | 10/16/2013 | 1.2 U | 4.4 U | 1.2 U | 0.48 U | 0.28 U | 0.35 U | 0.21 U | 0.35 U | 0.44 U | 0.19 U |
| MW-5U-91 | 4/10/2014 | 0.54 U | 2.3 U | 0.35 U | 0.26 U | 0.28 U | 0.35 U | 0.21 U | 0.29 U | 0.44 U | 0.19 U |
| MW-5U-91 | 10/22/2014 | 0.56 U | 2.4 U | 0.36 U | 0.27 U | 0.21 U | 0.19 U | 0.31 U | 0.30 U | 0.22 U | 0.20 U |
| MW-5U-91 | 4/28/2015 | 0.56 U | 2.4 U | 0.36 U | 0.27 U | 0.24 U | 0.19 U | 0.27 U | 0.30 U | 0.16 U | 0.17 U |
| MW-5U-91 | 10/22/2015 | 0.57 U | 2.5 U | 0.37 U | 0.27 U | 0.24 U | 0.19 U | 0.27 U | 0.31 U | 0.16 U | 0.17 U |
| MW-5U-91 | 4/28/2016 | 0.81 U | 0.37 U | 0.87 U | 0.34 U | 0.24 U | 0.19 U | 0.27 U | 0.41 U | 0.16 U | |
| MW-5U-91 | 10/25/2016 | 0.86 U | 0.39 U | 0.92 U | 0.36 U | 0.14 U | 0.17 U | 0.20 U | 0.43 U | 0.23 U | 0.21 U |
| MW-5U-91 | 4/25/2017 | 0.77 U | 0.35 U | 0.83 U | 0.32 U | 0.14 U | 0.17 U | 0.20 U | 0.39 U | 0.23 U | |
| MW-7 | 10/16/2013 | 15.7 | 316 | 39 | 14.6 | 50.9 | 4.5 | 0.21 U | 11.8 | 0.44 U | 0.19 U |
| MW-7 | 4/9/2014 | 27.9 | 1500 | 110 J | 56.8 | 301 | 7.5 | 33.9 | 43.5 | 3.5 | 37.2 |
| MW-7 | 10/21/2014 | 35.9 | 709 | 53.9 | 26.1 | 19.3 | 3.2 | 0.31 U | 12.8 | 0.22 U | 0.20 U |
| MW-7 | 4/27/2015 | 51.4 J | 3730 | 160 | 90.7 | 180 | 4.6 | 19.1 | 37.6 | 2.4 | 23.2 |
| MW-7 | 10/21/2015 | 20.8 | 146 | 4.1 J | 2.3 | 93.8 | 4.5 | 9.6 | 1.2 J | 1.4 | 8.7 |
| MW-7 | 4/27/2016 | 16.5 | 107 B | 4.2 J | 0.32 U | 11.7 | 2.8 | 0.3 J | 1.1 J | 0.16 U | |
| MW-7 | 10/24/2016 | 21.8 | 347 | 26.3 | 9.2 | 56.9 | 3.2 | 4.1 | 5.1 | 0.82 J | 4.8 |
| MW-7 | 4/24/2017 | 12.7 | 113 | 7.5 | 0.32 U | 29.6 | 1.9 | 1.6 | 2.2 | 0.32 J | |
| MW-7U-95 | 4/10/2014 | 0.56 U | 2.4 U | 0.36 U | 0.27 U | 0.28 U | 0.35 U | 0.21 U | 0.30 U | 0.44 U | 0.25 J |
| MW-7U-95 | 4/28/2015 | 0.54 U | 2.3 U | 0.35 U | 0.26 U | 0.24 U | 0.19 U | 0.27 U | 0.29 U | 0.16 U | 0.17 U |
| MW-7U-95 | 4/28/2016 | 0.86 U | 0.39 U | 0.92 U | 0.36 U | 0.24 U | 0.19 U | 0.27 U | 0.43 U | 0.16 U | |
| MW-7U-95 | 4/25/2017 | 0.77 U | 0.35 U | 0.83 U | 0.32 U | 0.14 U | 0.17 U | 0.20 U | 0.39 U | 0.23 U | |
| MW-10U-01 | 10/15/2013 | 1.1 U | 4.1 U | 1.1 U | 0.45 U | 0.28 U | 0.35 U | 0.21 U | 0.33 U | 0.44 U | 0.19 U |
| MW-10U-01 | 4/9/2014 | 0.60 U | 2.6 U | 0.39 U | 0.28 U | 0.28 U | 0.35 U | 0.21 U | 0.32 U | 0.44 U | 0.19 U |
| MW-10U-01 | 10/21/2014 | 0.54 U | 2.3 U | 0.35 U | 0.26 U | 0.21 U | 0.19 U | 0.31 U | 0.29 U | 0.22 U | 0.20 U |
| MW-10U-01 | 4/27/2015 | 0.54 U | 2.3 U | 0.35 U | 0.26 U | 0.24 U | 0.19 U | 0.27 U | 0.29 U | 0.16 U | 0.17 U |
| MW-10U-01 | 10/21/2015 | 0.56 U | 2.4 U | 0.36 U | 0.27 U | 0.24 U | 0.19 U | 0.27 U | 0.30 U | 0.16 U | 0.17 U |
| MW-10U-01 | 4/27/2016 | 0.79 U | 0.36 U | 0.84 U | 0.33 U | 0.24 U | 0.19 U | 0.27 U | 0.40 U | 0.16 U | |
| MW-10U-01 | 10/24/2016 | 0.79 U | 0.36 U | 0.84 U | 0.33 U | 0.14 U | 0.17 U | 0.20 U | 0.40 U | 0.23 U | 0.21 U |
| MW-10U-01 | 4/24/2017 | 0.77 U | 0.35 U | 0.83 U | 0.32 U | 0.14 U | 0.17 U | 0.20 U | 0.39 U | 0.23 U | |
| MW-11U-01 | 10/16/2013 | 1.2 U | 4.3 U | 1.2 U | 0.47 U | 0.28 U | 0.35 U | 0.21 U | 0.34 U | 0.44 U | 0.19 U |
| MW-11U-01 | 4/9/2014 | 0.59 U | 2.5 U | 0.38 U | 0.28 U | 0.28 U | 0.35 U | 0.21 U | 0.32 U | 0.44 U | 0.19 U |
| MW-11U-01 | 10/21/2014 | 0.55 U | 2.4 U | 0.36 U | 0.26 U | 0.21 U | 0.19 U | 0.31 U | 0.30 U | 0.22 U | 0.20 U |
| MW-11U-01 | 4/27/2015 | 0.56 U | 2.4 U | 0.36 U | 0.26 U | 0.24 U | 0.19 U | 0.27 U | 0.30 U | 0.16 U | 0.17 U |
| MW-11U-01 | 10/21/2015 | 0.57 U | 2.5 U | 0.37 U | 0.27 U | 0.24 U | 0.19 U | 0.27 U | 0.31 U | 0.16 U | 0.17 U |
| MW-11U-01 | 4/27/2016 | 0.80 U | 0.36 U | 0.85 U | 0.33 U | 0.24 U | 0.19 U | 0.27 U | 0.40 U | 0.16 U | |

**TABLE 4**

**GROUNDWATER MONITORING DATA TABLE**

**2013 - 2017**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-11U-01 | 10/24/2016 | 0.81 U | 0.37 U | 0.86 U | 0.33 U | 0.14 U | 0.17 U | 0.20 U | 0.40 U | 0.23 U | 0.21 U |
| MW-11U-01 | 4/24/2017 | 0.77 U | 0.35 U | 0.83 U | 0.32 U | 0.14 U | 0.17 U | 0.20 U | 0.39 U | 0.23 U | |
| SW-2 | 10/15/2013 | 6 | 50.3 | 1.2 U | 0.50 U | 10.7 | 6.2 | 0.21 U | 0.36 U | 0.44 U | 0.19 U |
| SW-2 | 4/10/2014 | 4.4 J | 69 | 0.37 U | 0.27 U | 3 | 1.4 | 0.21 U | 0.31 U | 0.44 U | 0.19 U |
| SW-2 | 10/22/2014 | 4.2 J | 14.7 | 0.35 U | 0.26 U | 10.9 | 4.7 | 0.31 U | 0.29 U | 0.22 U | 0.20 U |
| SW-2 | 4/27/2015 | 4.7 J | 52.2 | 0.37 U | 0.27 U | 8 | 2.4 | 0.27 U | 0.31 U | 0.16 U | 0.17 U |
| SW-2 | 4/28/2016 | 4.7 J | 0.37 U | 0.86 U | 0.33 U | 12.5 | 4.7 | 0.27 U | 0.40 U | 0.16 U | |
| SW-2 | 10/25/2016 | 4.8 J | 42.1 | 0.91 U | 0.35 U | 11.4 | 4.5 | 0.20 U | 0.43 U | 0.23 U | 0.21 U |
| SW-2 | 4/25/2017 | 3.3 J | 13.1 | 0.83 U | 0.32 U | 7.3 | 2.8 | 0.20 U | 0.39 U | 0.23 U | |
| SW-3 | 10/17/2013 | | | | | 4.4 | 0.35 U | 0.21 U | | 0.44 U | 0.19 U |
| SW-3 | 4/10/2014 | 2 J | 8.5 | 0.38 U | 0.28 U | 0.28 U | 0.35 U | 0.21 U | 0.32 U | 0.44 U | 0.19 U |
| SW-3 | 4/28/2015 | 11 | 22.4 | 0.72 J | 0.26 U | 1.6 | 0.19 U | 0.27 U | 0.29 U | 0.16 U | 0.17 U |
| SW-3 | 10/22/2015 | 0.87 J | 2.3 U | 0.35 U | 0.26 U | 2.1 | 0.19 U | 0.27 U | 0.29 U | 0.16 U | 0.17 U |
| SW-3 | 4/28/2016 | 3.2 J | 4.2 J | 0.93 U | 0.36 U | 0.29 J | 0.19 U | 0.27 U | 0.44 U | 0.16 U | |
| SW-3 | 4/25/2017 | 3.1 J | 3.2 J | 0.83 U | 0.32 U | 1 | 0.17 U | 0.20 U | 0.39 U | 0.23 U | |
| SW-8 | 10/17/2013 | 3.4 J | 172 | 4.8 J | 0.46 U | 126 | 1.2 | 2.9 | 0.96 J | 0.44 U | 1.4 |
| SW-8 | 4/10/2014 | 2.3 J | 192 | 3.3 J | 0.26 U | 67.3 | 0.62 J | 1.1 | 0.30 U | 0.44 U | 0.59 J |
| SW-8 | 10/22/2014 | 11.4 | 726 | 11.4 | 0.9 J | 101 | 1 | 0.31 U | 1.2 J | 0.22 U | 0.20 U |
| SW-8 | 4/28/2015 | 2.9 J | 180 | 3.2 J | 0.26 U | 64.8 | 0.74 J | 0.46 J | 0.29 U | 0.16 U | 0.5 J |
| SW-8 | 10/22/2015 | 4.2 J | 270 | 2.2 J | 0.45 J | 39.4 | 0.5 J | 0.27 U | 0.4 J | 0.16 U | 0.17 U |
| SW-8 | 4/28/2016 | 2.6 J | 162 | 0.92 U | 0.36 U | 28.1 | 0.28 J | 0.27 U | 0.43 U | 0.16 U | |
| SW-8 | 10/25/2016 | 6.8 | 574 | 3.6 J | 0.58 J | 53.8 | 0.67 J | 0.20 U | 0.62 J | 0.23 U | 0.21 U |
| SW-8 | 4/25/2017 | 1.8 J | 82.3 | 0.83 U | 0.32 U | 25.7 | 0.29 J | 0.20 U | 0.39 U | 0.23 U | |
| SW-9 | 10/16/2013 | 1.2 U | 4.4 U | 1.2 U | 0.49 U | 1.6 | 0.35 U | 0.21 U | 0.35 U | 0.44 U | 0.19 U |
| SW-9 | 4/9/2014 | 0.57 U | 2.5 U | 0.37 U | 0.27 U | 0.36 J | 0.35 U | 0.21 U | 0.31 U | 0.44 U | 0.19 U |
| SW-9 | 10/21/2014 | 0.88 J | 2.3 U | 0.35 U | 0.26 U | 0.21 U | 11.6 | 0.31 U | 0.29 U | 0.22 U | 0.20 U |
| SW-9 | 4/27/2015 | 0.60 U | 3.4 J | 0.39 U | 0.28 U | 0.24 U | 0.19 U | 0.27 U | 0.32 U | 0.16 U | 0.17 U |
| SW-9 | 10/21/2015 | 0.54 U | 2.3 U | 0.35 U | 0.26 U | 0.56 | 0.19 U | 0.27 U | 0.29 U | 0.16 U | 0.17 U |
| SW-9 | 4/27/2016 | 0.77 U | 2.4 JB | 0.83 U | 0.32 U | 1.9 | 0.19 U | 0.27 U | 0.39 U | 0.16 U | |
| SW-9 | 10/24/2016 | 0.80 U | 3.6 J | 0.85 U | 0.33 U | 0.36 J | 0.17 U | 0.20 U | 0.40 U | 0.23 U | 0.21 U |
| SW-9 | 4/24/2017 | 0.77 U | 2.1 J | 0.83 U | 0.32 U | 0.52 | 0.17 U | 0.20 U | 0.39 U | 0.23 U | |
| DW-1-95 | 10/16/2013 | 1.1 U | 32.3 | 1.6 J | 0.46 U | 4.2 | 0.35 U | 0.51 J | 0.33 U | 0.44 U | 0.37 J |
| DW-1-95 | 4/9/2014 | 0.57 U | 2.7 J | 0.53 J | 0.27 U | 1.9 | 0.35 U | 0.26 J | 0.31 U | 0.44 U | 0.88 J |
| DW-1-95 | 10/21/2014 | 0.55 U | 2.4 U | 0.35 U | 0.26 U | 0.21 U | 0.19 U | 0.31 U | 0.29 U | 0.22 U | 0.20 U |
| DW-1-95 | 4/27/2015 | 0.75 J | 47.7 | 2.5 J | 0.97 J | 43.9 | 0.19 U | 0.46 J | 0.32 U | 0.24 J | 0.93 J |
| DW-1-95 | 10/21/2015 | 0.64 J | 16.6 | 1.2 J | 0.91 J | 9.4 | 0.19 U | 0.3 J | 0.72 J | 0.16 U | 0.73 J |
| DW-1-95 | 4/27/2016 | 0.78 U | 44.8 B | 2.7 J | 0.32 U | 43.5 | 0.19 U | 0.48 J | 0.85 J | 0.16 U | |
| DW-1-95 | 10/24/2016 | 0.82 U | 17.6 | 2.1 J | 1.6 J | 30.9 | 0.17 U | 0.43 J | 0.81 J | 0.23 U | 0.49 J |
| DW-1-95 | 4/24/2017 | 0.77 U | 24.1 | 2.7 J | 1.3 J | 32.8 | 0.3 J | 0.44 J | 1.1 J | 0.23 U | |
| DW-2-95 | 10/15/2013 | 3.2 J | 164 | 5.4 J | 5.6 | 2.5 | 0.35 U | 0.21 U | 2.9 | 0.44 U | 0.19 U |
| DW-2-95 | 4/11/2014 | 0.56 U | 2.4 U | 0.36 U | 0.27 U | 2.6 | 0.35 U | 0.21 U | 0.30 U | 0.89 J | 0.83 J |
| DW-2-95 | 10/23/2014 | 3.3 J | 151 | 5.3 | 5.8 | 0.21 U | 0.19 U | 0.31 U | 3.6 | 0.22 U | 0.20 U |
| DW-2-95 | 4/29/2015 | 4.2 J | 386 | 7.4 J | 9.3 | 2.6 | 0.19 U | 0.27 U | 3.9 | 0.85 J | 0.94 J |
| DW-2-95 | 10/23/2015 | 2.6 J | 122 | 3.8 J | 5.2 | 2.6 | 0.19 U | 0.27 U | 2.3 | 0.76 J | 0.95 J |
| DW-2-95 | 4/29/2016 | 2.5 J | 92 | 3.2 J | 3.8 | 2.3 | 0.19 U | 0.27 U | 2.1 | 0.59 J | |
| DW-2-95 | 4/25/2017 | 1.9 J | 59.6 | 2.3 J | 0.32 U | 2.9 | 0.19 J | 0.20 U | 1 J | 0.56 J | |
| MW-1D-91 | 10/17/2013 | 4.4 J | 32.9 | 1.2 U | 0.47 U | 22.8 | 1.3 | 0.21 U | 0.34 U | 0.44 U | 0.19 U |
| MW-1D-91 | 4/10/2014 | 4.5 J | 28.6 | 0.36 U | 0.26 U | 11.5 | 0.73 J | 0.21 U | 0.30 U | 0.44 U | 0.19 U |

**TABLE 4**

**GROUNDWATER MONITORING DATA TABLE**

**2013 - 2017**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1D-91 | 10/22/2014 | 7.1 | 69.1 | 0.68 J | 0.85 J | 35.1 | 1.6 | 0.31 U | 0.30 U | 0.22 U | 0.20 U |
| MW-1D-91 | 4/28/2015 | 6.8 | 35.8 | 0.55 J | 0.26 U | 10.6 | 0.69 J | 0.27 U | 0.29 U | 0.16 U | 0.17 U |
| MW-1D-91 | 10/22/2015 | 3.8 J | 2.3 U | 0.35 U | 0.26 U | 12.6 | 0.79 J | 0.27 U | 0.29 U | 0.16 U | 0.17 U |
| MW-1D-91 | 4/28/2016 | 6.5 | 24.1 | 0.85 U | 0.33 U | 11.8 | 0.72 J | 0.27 U | 0.40 U | 0.16 U | |
| MW-1D-91 | 10/25/2016 | 7.5 | 49.3 | 0.85 U | 0.33 U | 18.6 | 0.97 J | 0.20 U | 0.40 U | 0.23 U | 0.21 U |
| MW-1D-91 | 4/25/2017 | 5.4 | 21.8 | 0.83 U | 0.32 U | 9.2 | 0.57 J | 0.20 U | 0.39 U | 0.23 U | |
| MW-4D-91 | 10/17/2013 | 1.1 U | 4.0 U | 1.1 U | 0.44 U | 0.28 U | 0.35 U | 0.21 U | 0.32 U | 0.44 U | 0.19 U |
| MW-4D-91 | 4/10/2014 | 0.58 U | 2.5 U | 0.38 U | 0.27 U | 0.28 U | 0.35 U | 0.21 U | 0.31 U | 0.44 U | 0.19 U |
| MW-4D-91 | 10/22/2014 | 0.56 U | 2.4 U | 0.36 U | 0.27 U | 0.21 U | 0.19 U | 0.31 U | 0.30 U | 0.22 U | 0.20 U |
| MW-4D-91 | 4/28/2015 | 0.56 U | 2.4 U | 0.36 U | 0.26 U | 0.24 U | 0.19 U | 0.27 U | 0.30 U | 0.16 U | 0.17 U |
| MW-4D-91 | 10/22/2015 | 0.61 U | 2.6 U | 0.39 U | 0.29 U | 0.24 U | 0.19 U | 0.27 U | 0.33 U | 0.16 U | 0.17 U |
| MW-4D-91 | 4/28/2016 | 0.80 U | 0.36 U | 0.85 U | 0.33 U | 0.24 U | 0.19 U | 0.27 U | 0.40 U | 0.16 U | |
| MW-4D-91 | 10/25/2016 | 0.84 U | 0.38 U | 0.90 U | 0.35 U | 0.14 U | 0.17 U | 0.20 U | 0.42 U | 0.23 U | 0.21 U |
| MW-4D-91 | 4/25/2017 | 0.77 U | 0.35 U | 0.83 U | 0.32 U | 0.14 U | 0.17 U | 0.20 U | 0.39 U | 0.23 U | |
| MW-5D-91 | 10/16/2013 | 1.1 U | 4.1 U | 1.1 U | 0.45 U | 0.28 U | 0.35 U | 0.21 U | 0.32 U | 0.44 U | 0.19 U |
| MW-5D-91 | 4/10/2014 | 0.59 U | 2.5 U | 0.38 U | 0.28 U | 0.28 U | 0.35 U | 0.21 U | 0.32 U | 0.44 U | 0.19 U |
| MW-5D-91 | 10/22/2014 | 0.54 U | 2.3 U | 0.35 U | 0.26 U | 0.21 U | 0.19 U | 0.31 U | 0.29 U | 0.22 U | 0.20 U |
| MW-5D-91 | 4/28/2015 | 0.54 U | 2.3 U | 0.35 U | 0.26 U | 0.24 U | 0.19 U | 0.27 U | 0.29 U | 0.16 U | 0.17 U |
| MW-5D-91 | 10/22/2015 | 0.56 U | 2.4 U | 0.36 U | 0.26 U | 0.24 U | 0.19 U | 0.27 U | 0.30 U | 0.16 U | 0.17 U |
| MW-5D-91 | 4/28/2016 | 0.79 U | 0.36 U | 0.84 U | 0.33 U | 0.24 U | 0.19 U | 0.27 U | 0.40 U | 0.16 U | |
| MW-5D-91 | 10/25/2016 | 0.83 U | 0.38 U | 0.89 U | 0.34 U | 0.14 U | 0.17 U | 0.20 U | 0.42 U | 0.23 U | 0.21 U |
| MW-5D-91 | 4/25/2017 | 0.77 U | 0.35 U | 0.83 U | 0.32 U | 0.14 U | 0.17 U | 0.20 U | 0.39 U | 0.23 U | |
| MW-6D-95 | 10/16/2013 | 1.1 U | 4 U | 1.1 U | 0.44 U | 0.28 U | 0.35 U | 0.21 U | 0.32 U | 0.44 U | 0.19 U |
| MW-6D-95 | 4/9/2014 | 0.56 U | 2.4 U | 0.36 U | 0.27 U | 0.28 U | 0.35 U | 0.21 U | 0.30 U | 0.44 U | 0.19 U |
| MW-6D-95 | 10/21/2014 | 0.60 U | 2.6 U | 0.39 U | 0.28 U | 0.21 U | 0.19 U | 0.31 U | 0.32 U | 0.22 U | 0.20 U |
| MW-6D-95 | 4/27/2015 | 0.59 U | 2.6 U | 0.38 U | 0.28 U | 0.24 U | 0.19 U | 0.27 U | 0.32 U | 0.16 U | 0.17 U |
| MW-6D-95 | 10/21/2015 | 0.54 U | 2.3 U | 0.35 U | 0.26 U | 0.24 U | 0.19 U | 0.27 U | 0.29 U | 0.16 U | 0.17 U |
| MW-6D-95 | 4/27/2016 | 0.86 U | 0.39 U | 0.92 U | 0.36 U | 0.24 U | 0.19 U | 0.27 U | 0.43 U | 0.16 U | |
| MW-6D-95 | 10/24/2016 | 0.78 U | 0.36 U | 0.83 U | 0.32 U | 0.14 U | 0.17 U | 0.20 U | 0.39 U | 0.23 U | 0.21 U |
| MW-6D-95 | 4/24/2017 | 0.77 U | 0.35 U | 0.83 U | 0.32 U | 0.14 U | 0.17 U | 0.20 U | 0.39 U | 0.23 U | |
| MW-10D-01 | 10/15/2013 | 1.1 U | 4.1 U | 1.2 U | 0.46 U | 0.28 U | 0.35 U | 0.21 U | 0.33 U | 0.44 U | 0.19 U |
| MW-10D-01 | 4/9/2014 | 0.56 U | 2.4 U | 0.36 U | 0.27 U | 0.28 U | 0.35 U | 0.21 U | 0.30 U | 0.44 U | 0.19 U |
| MW-10D-01 | 10/21/2014 | 0.54 U | 2.3 U | 0.35 U | 0.26 U | 0.21 U | 0.19 U | 0.31 U | 0.29 U | 0.22 U | 0.20 U |
| MW-10D-01 | 4/27/2015 | 0.54 U | 2.3 U | 0.35 U | 0.26 U | 0.24 U | 0.19 U | 0.27 U | 0.29 U | 0.16 U | 0.17 U |
| MW-10D-01 | 10/21/2015 | 0.54 U | 2.3 U | 0.35 U | 0.26 U | 0.24 U | 0.19 U | 0.27 U | 0.29 U | 0.16 U | 0.17 U |
| MW-10D-01 | 4/27/2016 | 0.79 U | 0.36 U | 0.84 U | 0.33 U | 0.24 U | 0.19 U | 0.27 U | 0.40 U | 0.16 U | |
| MW-10D-01 | 10/24/2016 | 0.79 U | 0.36 U | 0.84 U | 0.33 U | 0.14 U | 0.17 U | 0.20 U | 0.40 U | 0.23 U | 0.21 U |
| MW-10D-01 | 4/24/2017 | 0.77 U | 0.35 U | 0.83 U | 0.32 U | 0.27 J | 0.17 U | 0.20 U | 0.39 U | 0.23 U | |
| MW-11D-01 | 10/16/2013 | 1.2 U | 4.4 U | 1.2 U | 0.49 U | 0.28 U | 0.35 U | 0.21 U | 0.35 U | 0.44 U | 0.19 U |
| MW-11D-01 | 4/9/2014 | 0.57 U | 2.5 U | 0.37 U | 0.27 U | 0.28 U | 0.35 U | 0.21 U | 0.31 U | 0.44 U | 0.19 U |
| MW-11D-01 | 10/21/2014 | 0.54 U | 2.3 U | 0.35 U | 0.26 U | 0.21 U | 0.19 U | 0.31 U | 0.29 U | 0.22 U | 0.20 U |
| MW-11D-01 | 4/27/2015 | 0.54 U | 2.3 U | 0.35 U | 0.26 U | 0.24 U | 0.19 U | 0.27 U | 0.29 U | 0.16 U | 0.17 U |
| MW-11D-01 | 10/21/2015 | 0.54 U | 2.3 U | 0.35 U | 0.26 U | 0.24 U | 0.19 U | 0.27 U | 0.29 U | 0.16 U | 0.17 U |
| MW-11D-01 | 4/27/2016 | 0.81 U | 0.37 U | 0.87 U | 0.34 U | 0.24 U | 0.19 U | 0.27 U | 0.41 U | 0.16 U | |
| MW-11D-01 | 10/24/2016 | 0.81 U | 0.37 U | 0.86 U | 0.33 U | 0.14 U | 0.17 U | 0.20 U | 0.40 U | 0.23 U | 0.21 U |
| MW-11D-01 | 4/24/2017 | 0.77 U | 0.35 U | 0.83 U | 0.32 U | 0.14 U | 0.17 U | 0.20 U | 0.39 U | 0.23 U | |
| MW-16D-13 | 10/16/2013 | 1.2 U | 5.2 J | 1.2 U | 0.48 U | 0.4 J | 0.35 U | 0.21 U | 0.88 J | 0.44 U | 0.19 U |
| MW-16D-13 | 4/11/2014 | 1 J | 5.4 J | 0.62 J | 3.2 | 0.63 J | 0.35 U | 0.21 U | 0.9 J | 0.53 J | 0.64 J |

**TABLE 4**

**GROUNDWATER MONITORING DATA TABLE**

**2013 - 2017**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-16D-13 | 10/23/2014 | 0.54 U | 3.3 J | 0.35 U | 1.1 J | 0.21 U | 0.19 U | 0.31 U | 0.29 U | 0.22 U | 0.20 U |
| MW-16D-13 | 4/29/2015 | 0.59 U | 2.5 U | 0.38 U | 0.28 U | 0.24 U | 0.19 U | 0.27 U | 0.32 U | 0.16 U | 0.17 U |
| MW-16D-13 | 10/23/2015 | 0.55 U | 2.4 U | 0.36 U | 0.26 U | 0.38 J | 0.19 U | 0.27 U | 0.30 U | 0.45 J | 1.2 |
| MW-16D-13 | 4/29/2016 | 0.82 U | 0.38 U | 0.88 U | 0.34 U | 0.24 U | 0.19 U | 0.27 U | 0.41 U | 0.16 U | |
| MW-16D-13 | 10/26/2016 | 0.81 U | 0.37 U | 0.87 U | 0.34 U | 0.14 U | 0.17 U | 0.20 U | 0.41 U | 0.23 U | |
| MW-16D-13 | 4/26/2017 | 0.74 U | 0.34 U | 0.79 U | 0.30 U | 0.14 U | 0.17 U | 0.20 U | 0.37 U | 0.23 U | |
| MW-17D-13 | 10/16/2013 | 1.2 U | 34.2 | 1.2 U | 0.49 U | 38.3 | 8.9 | 0.21 U | 0.35 U | 0.44 U | 0.38 J |
| MW-17D-13 | 4/11/2014 | 0.69 J | 23.4 | 0.36 U | 0.26 U | 23.6 | 2.6 | 0.21 U | 0.30 U | 0.44 U | 0.19 U |
| MW-17D-13 | 10/23/2014 | 0.61 U | 28.8 | 0.39 U | 0.29 U | 0.21 U | 4.1 | 0.31 U | 0.33 U | 0.22 U | 0.20 U |
| MW-17D-13 | 4/29/2015 | 0.56 U | 15.7 | 0.36 U | 0.26 U | 27.8 | 4.1 | 0.27 U | 0.30 U | 0.16 U | 0.17 U |
| MW-17D-13 | 10/23/2015 | 1.1 J | 8.9 | 0.35 U | 0.26 U | 42.4 | 5.3 | 0.27 U | 0.29 U | 0.16 U | 0.17 U |
| MW-17D-13 | 4/29/2016 | 0.81 U | 6.1 | 0.87 U | 0.34 U | 20.1 | 4.3 | 0.20 U | 0.41 U | 0.23 U | |
| MW-17D-13 | 10/26/2016 | 0.82 U | 10.9 | 0.88 U | 0.34 U | 41.8 | 5.2 | 0.20 U | 0.41 U | 0.23 U | |
| MW-17D-13 | 4/26/2017 | 0.80 U | 5.5 | 0.85 U | 0.33 U | 16.1 | 2.7 | 0.20 U | 0.40 U | 0.23 U | |
| MW-18D-13 | 10/17/2013 | 7.1 | 47.5 | 1.1 U | 0.45 U | 1.2 | 0.35 U | 0.21 U | 0.32 U | 0.44 U | 0.19 U |
| MW-18D-13 | 4/10/2014 | 1.9 J | 12.1 | 0.38 U | 0.27 U | 0.34 J | 0.35 U | 0.21 U | 0.31 U | 0.44 U | 0.19 U |
| MW-18D-13 | 10/23/2014 | 6.9 | 61.7 | 0.35 U | 0.26 U | 0.21 U | 0.19 U | 0.31 U | 0.29 U | 0.22 U | 0.20 U |
| MW-18D-13 | 4/29/2015 | 1.7 J | 7.6 | 0.35 U | 0.26 U | 1 | 0.19 U | 0.27 U | 0.29 U | 0.16 U | 0.17 U |
| MW-18D-13 | 10/22/2015 | 3.5 J | 2.5 U | 0.37 U | 0.27 U | 1.7 | 0.19 U | 0.27 U | 0.31 U | 0.16 U | 0.17 U |
| MW-18D-13 | 4/29/2016 | 2.3 J | 0.36 U | 0.85 U | 0.33 U | 0.75 | 0.19 U | 0.27 U | 0.40 U | 0.16 U | |
| MW-18D-13 | 10/26/2016 | 8.8 | 22.5 | 0.84 U | 0.33 U | 4.6 | 0.17 U | 0.20 U | 0.40 U | 0.23 U | |
| MW-18D-13 | 4/26/2017 | 1 J | 0.52 J | 0.85 U | 0.33 U | 0.22 J | 0.17 U | 0.20 U | 0.40 U | 0.23 U | |
| MW-19D-13 | 10/17/2013 | 5.4 | 69.8 | 2.9 J | 0.46 U | 83.1 | 11.8 | 0.21 U | 0.91 J | 0.44 U | 0.48 J |
| MW-19D-13 | 4/10/2014 | 3.1 J | 40.7 | 1.9 J | 0.26 U | 54.6 | 7.6 | 0.21 U | 0.29 U | 0.44 U | 0.49 J |
| MW-19D-13 | 10/23/2014 | 4.5 J | 58.6 | 1.3 J | 0.26 U | 0.21 U | 5.7 | 0.31 U | 0.7 J | 0.22 U | 0.20 U |
| MW-19D-13 | 4/29/2015 | 5.1 | 55.4 | 3.2 J | 0.93 J | 60.1 | 7 | 0.27 U | 0.29 U | 0.27 J | 0.65 J |
| MW-19D-13 | 10/22/2015 | 3.3 J | 19.9 | 0.51 J | 0.27 U | 61.5 | 4.3 | 0.27 U | 0.37 J | 0.16 U | 0.32 J |
| MW-19D-13 | 4/29/2016 | 3 J | 42.8 | 0.84 U | 0.33 U | 61.6 | 3.9 | 0.27 U | 0.40 U | 0.16 U | |
| MW-19D-13 | 10/26/2016 | 2 J | 0.39 U | 0.91 U | 5.4 | 65.6 | 3.4 | 0.20 U | 0.43 U | 0.23 U | |
| MW-19D-13 | 4/26/2017 | 3.4 J | 18.4 | 1.1 J | 0.30 U | 39.5 | 6.4 | 0.20 U | 0.37 U | 0.23 U | |
| MW-20D-13 | 10/17/2013 | 17.5 | 359 | 99.8 | 31.8 | 218 | 9.8 | 19.6 | 3.3 | 2.3 | 16.5 |
| MW-20D-13 | 4/10/2014 | 23.4 | 533 | 73.2 | 12.6 | 144 | 5 | 7.4 | 2.5 | 1.3 | 6.8 |
| MW-20D-13 | 10/23/2014 | 23.2 | 454 | 65.9 | 2.5 | 0.21 U | 3.1 | 0.31 U | 1.7 J | 0.22 U | 0.20 U |
| MW-20D-13 | 4/29/2015 | 25.5 J | 609 | 73.8 | 5 J | 184 | 7.8 | 8.3 | 3.0 U | 1.4 | 18.8 |
| MW-20D-13 | 10/22/2015 | 19 | 267 | 60.2 | 3.1 | 172 | 6.3 | 4.5 | 0.99 J | 1.1 | 13.8 |
| MW-20D-13 | 4/29/2016 | 17.1 | 180 | 31.8 | 0.33 U | 146 | 5.2 | 3.9 | 0.40 U | 0.83 J | |
| MW-20D-13 | 10/26/2016 | 21.2 | 226 | 49.7 | 1.7 J | 170 | 5.9 | 2.8 | 0.6 J | 0.99 J | |
| MW-20D-13 | 4/26/2017 | 24 | 262 | 42.6 | 0.32 U | 163 | 4.9 | 1.8 | 0.79 J | 0.74 J | |
| MW-21D-13 | 10/16/2013 | 1.2 U | 4.3 U | 1.2 U | 0.47 U | 4.2 | 0.44 J | 0.21 U | 0.34 U | 0.44 U | 0.19 U |
| MW-21D-13 | 4/10/2014 | 0.56 J | 3 J | 0.36 U | 0.27 U | 0.96 J | 1.5 | 0.21 U | 0.30 U | 0.44 U | 0.19 U |
| MW-21D-13 | 10/22/2014 | 1.4 J | 7.6 | 0.55 J | 0.26 U | 4.2 | 0.19 U | 0.31 U | 0.29 U | 0.22 U | 0.20 U |
| MW-21D-13 | 4/28/2015 | 0.55 U | 2.4 U | 0.35 U | 0.26 U | 1.8 | 0.19 U | 0.27 U | 0.29 U | 0.16 U | 0.17 U |
| MW-21D-13 | 10/22/2015 | 0.55 U | 2.4 U | 0.36 U | 0.26 U | 1.7 | 0.19 U | 0.27 U | 0.30 U | 0.16 U | 0.17 U |
| MW-21D-13 | 4/28/2016 | 0.86 J | 3.8 J | 0.87 U | 0.34 U | 2 | 0.19 U | 0.27 U | 0.41 U | 0.16 U | |
| MW-21D-13 | 10/25/2016 | 0.9 J | 6.9 | 0.88 U | 0.34 U | 2.3 | 0.17 U | 0.20 U | 0.41 U | 0.23 U | 0.21 U |
| MW-21D-13 | 4/25/2017 | 0.77 U | 1.1 J | 0.83 U | 0.32 U | 1.2 | 0.17 U | 0.20 U | 0.39 U | 0.23 U | |
| MW-22D-13 | 10/16/2013 | 6.2 | 462 | 11 | 1.3 J | | | | 1.2 J | | |
| MW-22D-13 | 10/17/2013 | | | | | 450 | 11.4 | 33.9 | | 1.4 | 21.2 |

**TABLE 4**
**GROUNDWATER MONITORING DATA TABLE**
**2013 - 2017**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-22D-13 | 4/9/2014 | 8.6 | 516 | 28.3 | 2.1 | 318 | 9 | 17.1 | 1.5 J | 0.85 J | 14.3 |
| MW-22D-13 | 10/21/2014 | 18.7 | 944 | 96.8 | 12 | 0.21 U | 0.19 U | 0.31 U | 6.2 | 0.22 U | 0.20 U |
| MW-22D-13 | 4/27/2015 | 15.1 | 1800 | 78 | 0.27 U | 406 | 11.2 | 27.9 | 1.8 J | 1.5 | 23.5 |
| MW-22D-13 | 10/21/2015 | 15.6 | 905 | 78.3 | 2.9 | 383 | 10.7 | 31.8 | 2.3 | 1.4 | 23.5 |
| MW-22D-13 | 4/27/2016 | 13.3 | 668 B | 29.1 | 0.32 U | 351 | 9.1 | 20.2 | 0.88 J | 1.2 | |
| MW-22D-13 | 10/24/2016 | 28.5 | 999 | 108 | 4 | 287 | 10 | 26.8 | 3.9 | 1.7 | 21.8 |
| MW-22D-13 | 4/24/2017 | 11.3 | 628 | 29 | 0.32 U | 250 | 7.4 | 10.5 | 1.2 J | 0.88 J | |

# APPENDIX B – FIGURES

| | |
|---|---|
| Figure 1: | Site Location Map |
| Figure 2: | Site Property, Former Lagoon Area, and RI Groundwater Monitoring Well Locations |
| Figure 3: | Current Groundwater Monitoring Well Network |
| Figures 4a, 4b, 4c, and 4d: | Contaminant Trend Plots |


YAHOO!
KAISERTOWN
County Airport
MORRISON HEIGHTS
47
99
211
208
NEELYTOWN
Maybrook
84
416
Rt 211 E
CAMPBELL HALL JUNCTION
Rock Tavern
Little Britain Rd
STONY FORD
Campbell Hall
BURNSIDE
83
Toleman Rd
Scotchtown Ave
GIRARDE
LAGRANGE
Sarah Wells Trl
HAMPTONBURGH
Everett Rd
8
KIPPS
Washingtonville
94
© 2007 Yahoo! Inc.
Data © 2007 Navteq, TeleAtlas

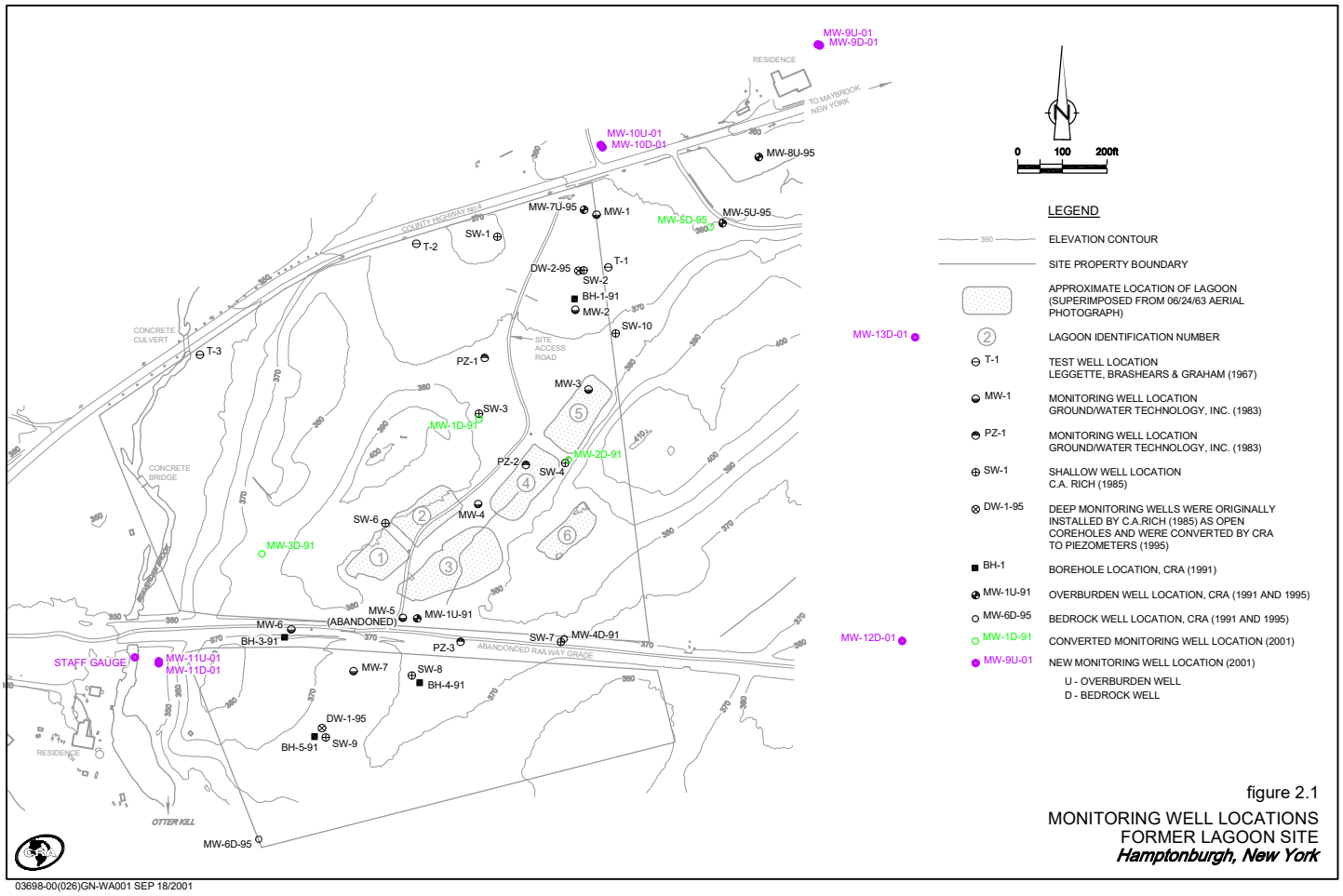
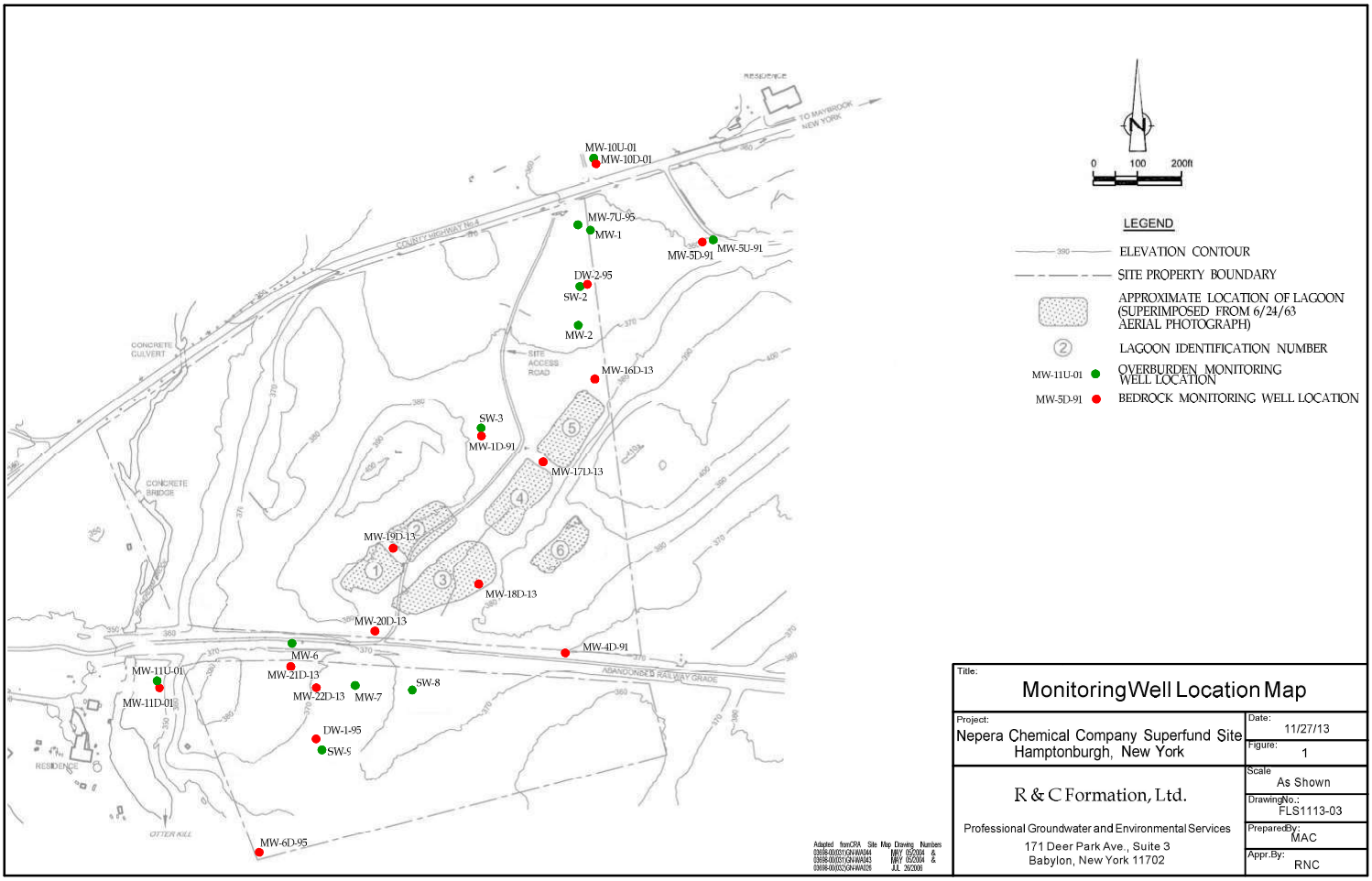



figure 2.1

MONITORING WELL LOCATIONS
FORMER LAGOON SITE
***Hamptonburgh, New York***

03698-00(026)GN-WA001 SEP 18/2001




Adapted from CRA Site Map Drawing Numbers
03696-0001(01)GN-WA044 MAY 05/2004 &
03696-0001(01)GN-WA043 MAY 05/2004 &
03696-0002(02)GN-WA028 JUL 20/2000

Title: **Monitoring Well Location Map**

Project: Nepera Chemical Company Superfund Site
Hamptonburgh, New York

Date: 11/27/13

Figure: 1

Scale: As Shown

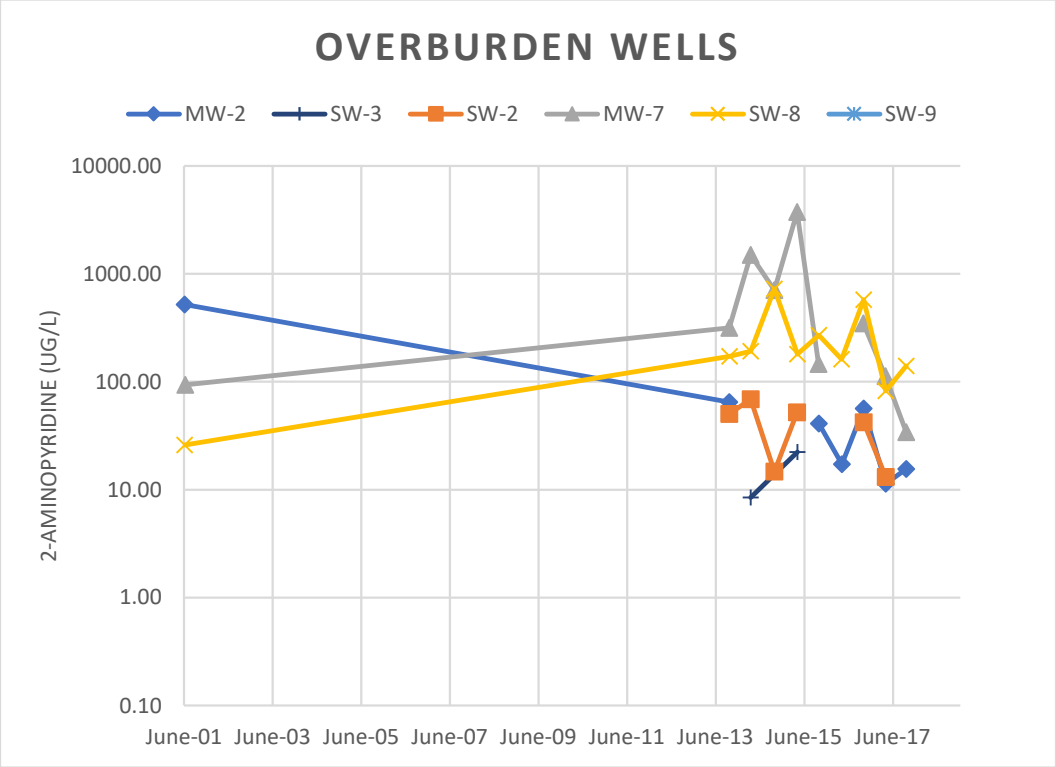
Drawing No.: FLS1113-03

Prepared By: MAC

Appr. By: RNC

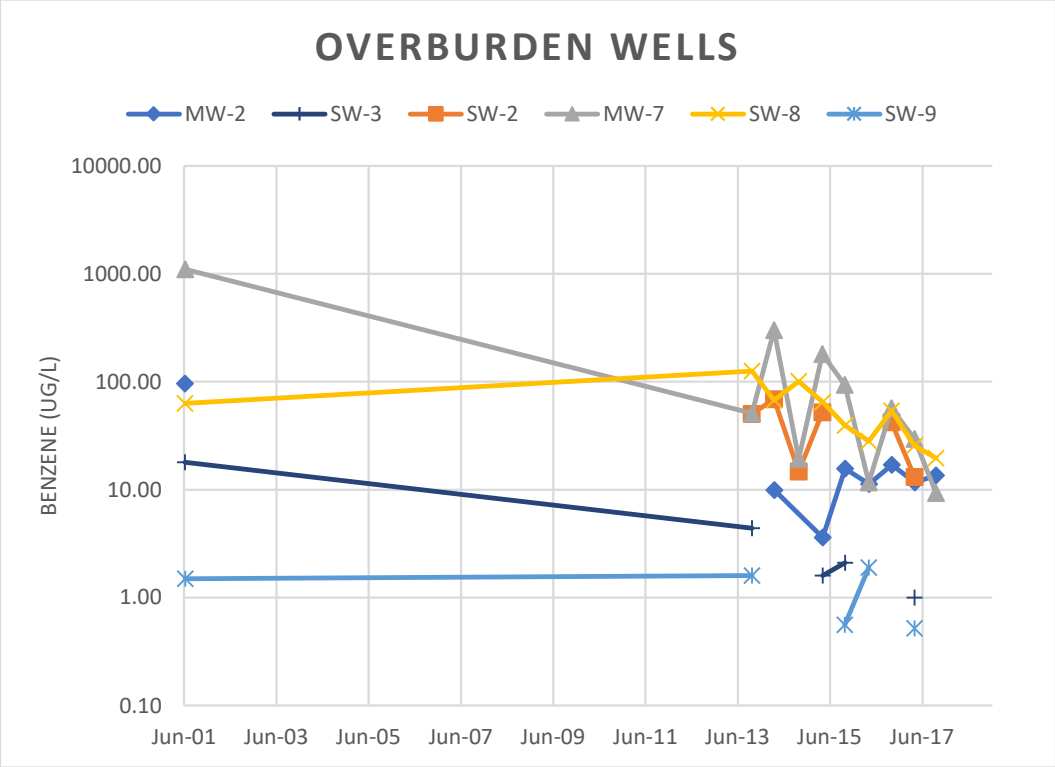
R & C Formation, Ltd.
Professional Groundwater and Environmental Services
171 Deer Park Ave., Suite 3
Babylon, New York 11702

Figure 4a: Trend Plot (Overburden Wells – 2-aminopyridine)



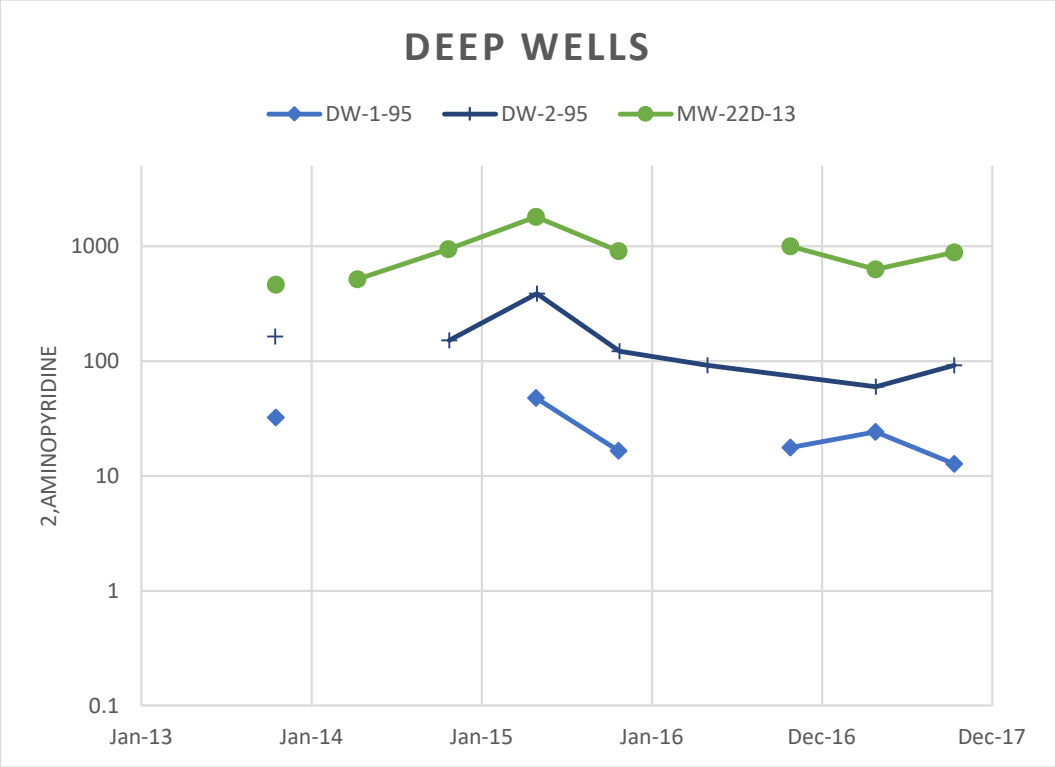

Notes: Non-detects not plotted.

Figure 4b: Trend Plot (Overburden Wells – Benzene)



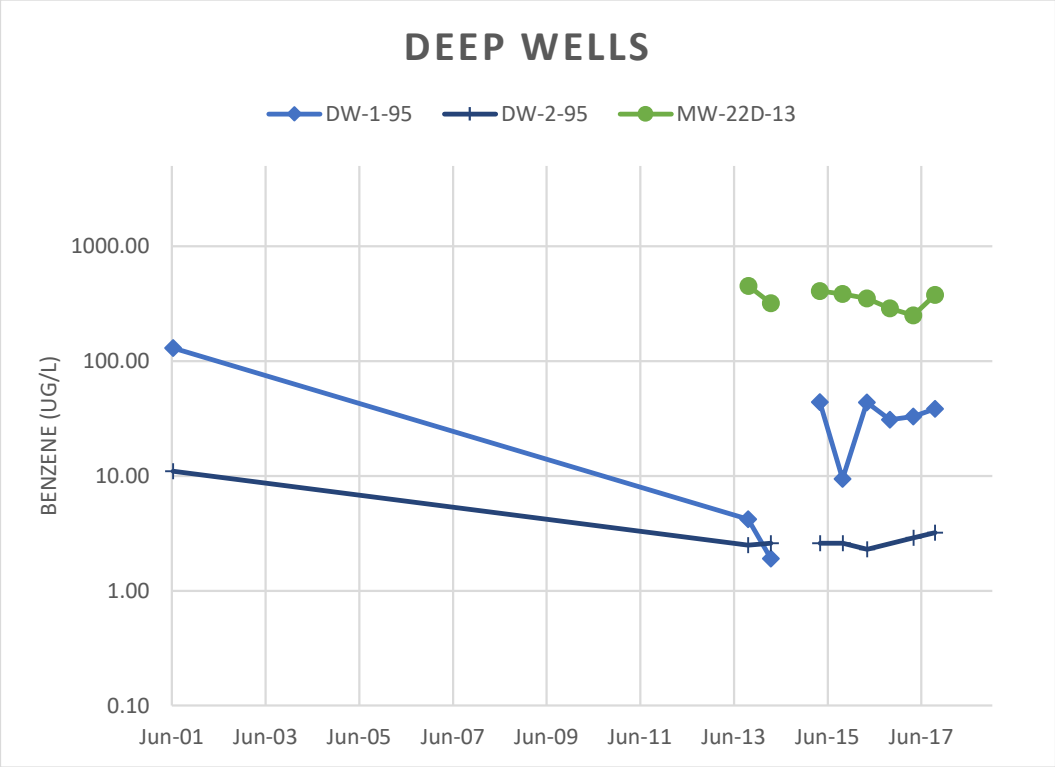

Notes: Non-detects not plotted.

Figure 4c: Trend Plot (Bedrock Wells – 2-aminopyridine)




Notes: Non-detects not plotted.

Figure 4d: Trend Plot (Bedrock Wells – Benzene)




Notes: Non-detects not plotted.