IOWA ARMY AMMUNITION PLANT

DRAFT

2007 GROUNDWATER SAMPLING REPORT
for
IOWA ARMY AMMUNITION PLANT
MIDDLETOWN, IOWA

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ACRONYMS AND ABBREVIATIONS

Accutest	Accutest Laboratories
AO	American Ordnance
btoc	below top of casing
CLP	Contract Laboratory Program
COC	chain-of-custody
DO	dissolved oxygen
DNX	hexahydro-1,3-dinitroso-5-nitro-1,3,5-triazine
E&E	Ecology and Environment, Inc.
Eberline	Eberline Services
EPA	(U.S.) Environmental Protection Agency
FFA	Federal Facility Agreement
Freon 113	1,1,2-trichloro-1,2,2-trifluoroethane
FS	Feasibility Study
HAL	Health Advisory Level
HGL	HydroGeoLogic, Inc.
HMX	cyclotetramethylenetetranitramine
IAAAP	Iowa Army Ammunition Plant
IDW	investigation derived waste
LCS	laboratory control sample
MCL	Maximum Contaminant Level
µg/L	micrograms per liter
mL/min.	milliliters per minute
MNX	hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine
MS/MSD	matrix spike/matrix spike duplicate
NA	natural attenuation
NPL	National Priorities List
ORP	oxidation reduction potential
OU	operable unit
PARCC	precision, accuracy, representativeness, completeness, and comparability
pCi/L	picoCuries per liter
PPE	personal protective equipment
PRG	Preliminary Remediation Goal
QA	Quality Assurance
QC	Quality Control
QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
RDX	cyclotrimethylenetrinitramine
RI	Remedial Investigation
RPD	relative percent difference
SDG	sample delivery group
SOP	standard operating procedure
SVOC	semivolatile organic compound
Tetra Tech	Tetra Tech, Inc.

TNT	trinitrotoluene
TNX	hexahydro-1,3,5-trinitroso-1,3,5-triazine
toc	top of casing
VOC	volatile organic compound

1.0 INTRODUCTION

This document presents the results of the June 2007 installation-wide groundwater and surface water sampling events at the Iowa Army Ammunition Plant (IAAAP), in Middletown, Iowa. Sampling activities were conducted between June 5, 2007, and June 12, 2007. A summary of the sampling status of the IAAAP sites including the sites sampled in June 2007 is presented in Table 1-1, which also includes the Army Environmental Data Base – Restoration number for each site. The locations of IAAAP sites discussed in this report are shown on Figure 1-1. Note that groundwater sampling at some IAAAP sites is being conducted under other programs.

Surface water sampling was conducted at three locations along Spring Creek and the data are reported herein. The results of previous surface water sampling associated with the Comprehensive Watersheds Evaluation are discussed in an appendix to the Operable Unit (OU) -3 Feasibility Study (FS) (Tetra Tech, 2007a).

1.1 PROJECT AUTHORITY

The IAAAP facility signed a Federal Facility Agreement (FFA) (dated September 20, 1990) with the United States Environmental Protection Agency (EPA) Region 7 (EPA, 1990). The data collected during the June 2007 sampling event will be used to augment data collected over several years and to summarize and evaluate available groundwater and surface water environmental data at IAAAP. Groundwater and surface water sampling was performed in accordance with the requirements of Contract W911S0-04-F-0026.

1.2 GROUNDWATER MONITORING PURPOSE AND SCOPE

The primary purpose of groundwater sampling at IAAAP is to provide additional groundwater and surface water data for sites that have not been the subject of remediation work at the time of sampling. The June 2007 sampling event and previous periodic monitoring events were meant to represent interim sampling events until remedial solutions can be evaluated and implemented under an approved FS. Therefore, these sampling events are not considered long-term monitoring.

1.3 FACILITY DESCRIPTION

IAAAP is a government facility, owned by the United States Army and operated by a private contractor, American Ordnance, LLC (AO). The IAAAP is located in the southeastern part of Iowa, near the town of Middletown, Des Moines County, approximately 10 miles west of the Mississippi River. The IAAAP is a secured facility covering approximately 19,000 acres in a rural setting. Approximately 7,751 acres are currently leased for agricultural use, 7,500 acres are forested land, and the remaining area is used for administrative and industrial operations. The principal mission of IAAAP has been loading, assembling, and packing operations associated with the production of a variety of conventional ammunition and fusing systems.

IAAAP is bordered by U.S. Highway 34 to the north, upland agricultural farms to the east and west, and the Skunk River Valley to the south. Surface topography is characterized by flat to gently rolling uplands dissected by entrenched streams and rivers. Approximately one-fifth of the IAAAP property is occupied by active or formerly active production or storage facilities. Sites include surface impoundments, production lines, landfills, disposal areas, burn areas, demolition areas, and a fire training area. The facility map (Figure 1-1) shows site locations, creeks, and other features of interest. The offsite area consists of the Brush Creek watershed south of the facility and the Skunk River floodplain surrounding Brush Creek near Highway 61. Land use in the offsite area is predominantly agricultural.

IAAAP was initially developed in 1941 for the production of munitions for World War II and operated from September 1941 until August 1945. Production resumed in 1949 and has continued to the present. From 1947 through mid-1975, the former Atomic Energy Commission operated facilities on the site, which then reverted to Army control in 1975 (E&E, 1987).

1.4 GROUNDWATER SAMPLING HISTORY

Pursuant to the Resource Conservation and Recovery Act (RCRA) Hazardous and Solid Waste Amendments of 1984, the EPA completed an assessment of the facility in 1987 and reported that releases had occurred (E&E, 1987). The IAAAP was subsequently proposed for the National Priorities List (NPL), and in August 1990 the facility was placed on the NPL.

Prior to 1999, groundwater was sampled during site-specific and installation-wide investigations, including the installation-wide Remedial Investigation (RI). In Fall 1999, routine sampling of monitoring wells and various surface water locations was implemented by the U. S. Army Corps of Engineers. Subsequent sampling events took place in Spring 2000, Fall 2000, Spring 2001, Spring 2002, Spring 2003, Fall 2003, Spring 2004, Fall 2004, Fall 2005, Spring 2006, and Fall 2006. Typically during the fall events (with the exception of Fall 1999), a smaller set of wells were sampled. Results have been reported in annual monitoring reports [Harza, 2000; URS, 2002b; HGL, 2003, 2004a, 2004b, 2005; and Tetra Tech, 2005, 2007b].

1.5 ENVIRONMENTAL SETTING

The fundamental geologic and hydrogeologic features, along with the prominent surface water bodies, are described in the following sections.

1.5.1 Geology

1.5.1.1 Onsite Area

The IAAAP is located in the Dissected Till Plain section of the Central Lowland Province of the Southern Iowa Drift Plain Region. IAAAP is reported to be underlain by a sequence of unconsolidated glacial deposits of Pleistocene age overlying sedimentary bedrock units (IGS, 1980). The glacial tills consist primarily of silty clay and clayey silt with thin sand seams and lenses and are assigned to the Kellersville Till Member (Illinoian Age) of the Glasford Formation

of southeastern Iowa. The tills extend to depths in excess of 100 feet in portions of the north half of IAAAP, but are thin or absent locally in deeper stream valleys in the northeast and in the south around Mathes Lake.

The bedrock underlying IAAAP consists of a sequence of limestone interbedded with varying thicknesses of shales and sandstones ranging in age from Cambrian to Mississippian. Harris and Parker (1964) report that the uppermost bedrock unit beneath the site is the Mississippian Osage Series of southeastern Iowa, composed predominantly of cherty limestone interbedded with minor amounts of shale. The Osage series is divided into three members, as follows (in descending order): the Warsaw Formation, Keokuk Limestone, and Burlington Limestone. The Warsaw Formation consists primarily of blue-gray calcareous shales; fragmental, fossiliferous, dolomitic limestone; and calcarenites. The Keokuk Limestone is predominantly composed of gray or brownish-gray cherty, argillaceous limestone and dolomites (Harris and Parker, 1964). The Burlington Limestone has been separated into three distinct members. The predominant lithology of the uppermost Cedar Creek Member is coarsely crystalline crinoidal limestone. The middle Haight Creek Member is characterized by abundant chert and the dominance of dolomite over limestone. The cherts are typically off-white to light gray, and the dolomites are brownish-gray, finely crystalline and friable (Harris and Parker, 1964). The lowermost Dolbee Creek Member mostly consists of very dense, coarsely crystalline, crinoidal limestone (Harris and Parker, 1964). Regionally, the general slope of the Mississippian Osage Series bedrock is toward the southwest.

1.5.1.2 Offsite Area

Three different geologic profiles have been defined for the offsite area: an upland profile, a transition zone profile and a lowland profile (URS, 2002a). The upland area is underlain with a dissected glacial till plain as described above in Section 1.5.1.1. The transition zone geologic profile extends from the upland bluff south to approximately Highway 61. In general, this geologic profile consists of (in descending order): colluvium, alluvial clay, alluvial sands and gravels, and a clay-rich glacial till. The alluvial clay and gray sands and gravels pinch out laterally against the brown alluvial sands of the lowland profile. The lowland profile extends from approximately Old Highway 61 to the south side of the Skunk River. Geology in the lowland profile consists of alluvial sand and silt floodplain deposits of the Skunk River overlying the clay-rich glacial till unit that also underlies the transition zone profile. The glacial till is underlain by glacial outwash sands in both the transition zone and lowland profiles. Bedrock likely underlies the glacial outwash sands (URS, 2002a).

1.5.2 Hydrogeology

1.5.2.1 Onsite Area

In Des Moines County, Iowa, there are four principal aquifers: the surficial soils aquifer and the bedrock aquifers of Mississippian, Devonian, and Cambro-Ordovician units (IGS, 1980). Of the bedrock aquifers, only the Mississippian is of primary interest in regards to environmental impacts.

The shallow surficial soil aquifer at IAAAP occupies the upland till plain and is predominantly in clay-rich glacial tills that exhibit low hydraulic conductivities and yield only small quantities of groundwater to wells. For the purposes of investigation and interpretation, the surficial soils aquifer

is described using the following terminology: shallow till (typically containing the water table surface), intermediate till, and basal till. Within the tills, there are reportedly some occurrences of buried-channel sands that are laterally discontinuous across the facility. Depth to the water table surface in the shallow till is generally less than 10 to 15 feet. Shallow groundwater flow typically mimics surface topography. The low permeability of the clay till matrix limits lateral and vertical flow of groundwater. However, lateral and vertical flow may be less restricted (or more pronounced) in the tills that have well-developed fracture networks. Groundwater also discharges to the more deeply incised surface drainages (e.g., creeks) through seeps at the glacial till and bedrock outcrops.

Information on hydrogeologic conditions in the bedrock aquifers underlying the deeper till is sparse. Generally, groundwater in the limestone is considered to occur primarily within open bedding planes and/or joints. Therefore, the occurrence and orientation of these features may, in part, control groundwater flow. It is common for much of the groundwater in these bedrock units to be found in the more fractured and weathered upper sequence just under the basal till. Where this is the case, the basal till and the uppermost Mississippian bedrock, defined in previous investigations (Harza, 1997) as the uppermost 20 feet of bedrock underlying the till, may comprise a single hydraulic system. Facility-wide groundwater levels suggest that overall flow direction in the bedrock is to the south and east toward the Skunk and Mississippi Rivers, when not intercepted by incised surface drainages.

1.5.2.2 Offsite Area

The principal aquifer in the offsite area is within the alluvial sands (and gravels where present) of the transition zone and lowland hydrogeologic profiles. A deeper aquifer is found in the underlying deep glacial outwash sands. Groundwater flow in the transition zone and lowland profiles is toward the south except near Brush Creek and the Skunk River. Groundwater flow near these surface water bodies is heavily influenced by their water levels. On the south side of the Skunk River, flow is to the north towards the Skunk River.

1.5.3 Surface Water

The major drainage basins, creeks, and surface water bodies at IAAAP are shown on Figure 1-1. Little Flint Creek drains a small area in the north portion of the facility. The remainder of the IAAAP property and surrounding areas is drained by, from west to east, the Skunk River, Long Creek, Brush Creek, and Spring Creek. Brush Creek and Long Creek are tributaries of the Skunk River, which flows to the Mississippi River. Spring Creek is a tributary of the Mississippi River. Flow in the offsite reaches of Brush Creek is influenced by the water levels of both the creek and the Skunk River. Historically Brush Creek has transitioned from a losing stream to a gaining stream near its confluence with the Skunk River. This transition does not occur when water levels are high within the aquifer and surface water bodies.

1.6 GROUNDWATER MONITORING REPORT ORGANIZATION

This groundwater monitoring report is organized as follows:

- **Section 1.0- – Introduction** summarizes project authority, purpose, and scope; facility description; previous investigations; and environmental setting.

- **Section 2.0 – Field Activities** summarizes field activities completed, including water level measurements, collection of field water quality parameters, groundwater sampling, and surface water sampling.

- **Section 3.0 – Data Quality Review and Validation** describes the process and results associated with data quality assurance.

- **Section 4.0 – Nature and Extent of Contamination** presents and interprets chemical data. This section begins with an overall summary of detected constituents and then contains summaries for each site sampled.

- **Section 5.0 – Recommended Monitoring Well Maintenance** presents observations and recommendations for monitoring well maintenance.

- **Section 6.0 – References** provides references used to develop this report.

1.7 SCOPE OF WORK REFINEMENT

The status of other activities and investigations at IAAAP, as well as the results of earlier sampling events, have been reviewed to establish a refined scope of work for the June 2007 facility-wide sampling event. The work plan for June 2007 activities was finalized and transmitted to EPA in a letter dated August 28, 2007.

Table 1-1 provides a list of IAAAP sites included in the June 2007 facility-wide monitoring program as well as other IAAAP sites. Note that four onsite sites (Line 2, Line 800, West Burn Pads, and the Fire Training Area) and the offsite plume have recently been subjected to treatability studies to enhance the bioremediation process. The results of treatability activities for these areas and future plans for remediation and monitoring are included in separate reports, including Appendix H of the Draft OU-3 FS (Tetra Tech 2007a), a September 2007 technical memorandum (Tetra Tech, 2007c), and a remedial design report for the offsite area (Tetra, 2006). Full-scale injections have taken place at three of the onsite areas including Line 2, Line 800, and West Burn Pads Area (Tetra Tech, 2007c) and offsite. Work at the Fire Training Area is focused on determining whether enhancements to the microbial community to expedite constituents of concern are possible. Future monitoring needs for these four onsite areas and the offsite plume will be evaluated as part of reports associated with the treatability studies program.

Prior to the June 2007 sampling event, selected sites and wells were removed from the sampling program because previous results had not exhibited recent concentrations above screening criteria. The only wells that remain in the program are those that have had an exceedance of groundwater screening criteria on at least one occasion in the past three sampling events.

In addition to area- and well-specific changes to the sampling program, several general changes to the groundwater sampling program were made in an August 28, 2007 letter regarding the 2007 groundwater sampling plan. The refinements were implemented beginning with the June 2007

sampling events and will also apply to future sampling events unless otherwise noted in a separate groundwater sampling plan. The changes were:

- Groundwater sampling will occur on an annual, rather than semi-annual, basis for three reasons. First, there is no apparent seasonality in groundwater concentrations. Evaluation of semi-annual data over a number of years has not revealed any discernable or predictable correlation between rainfall or melt volume and contaminant concentrations. Since precipitation and melt volume are higher during the spring months, annual sampling will be conducted in the spring to reduce the likelihood of encountering dry wells. Second, the evaluation of historical data indicates that time/concentration trends (which are typically slowly decreasing or stable) can be sufficiently monitored in the future using an annual sampling frequency. Third, groundwater seepage velocity at IAAAP is generally slow, based on measured gradients and hydraulic conductivities, contributing to contaminant concentrations remaining stable over time. For instance, the work plan for installation of an additional well at Trench 5 references a groundwater seepage velocity of only 8.2 feet per year in the shallow till.

- Water level gauging will occur on an annual, rather than semi-annual, basis because of the well-established understanding of groundwater flow direction and lack of processes (such as high-volume pumping from or injection into groundwater wells) that would cause a significant alteration of flow direction and/or gradients.

- The collection of natural attenuation (NA) parameter measurements will continue at sampled wells but will be limited to field parameters (e.g., dissolved oxygen, pH, temperature, turbidity, and oxidation-reduction potential). Previous detailed evaluation of NA data and processes has demonstrated that natural attenuation is occurring at many of the sites.

- As conducted during some of the previous sampling events, samples that are to be analyzed for metals will be filtered prior to analysis. This will minimize the potential effect of turbidity on sample results and will allow for the comparison of dissolved metals concentration to the appropriate screening criteria.

During the June 2007 sampling event, necessary deviations from the sampling plan occurred due to insufficient water at the Pesticide Pit sump and JAW-18 at Line 3A. Also, offsite well MW-516 was not sampled because it was inaccessible due to the presence of crops in the field.

2.0 FIELD ACTIVITIES

This section summarizes the field activities completed during the June 2007 groundwater sampling event. Field activities included:

- Measuring groundwater levels at selected monitoring wells.
- Measuring water quality parameters during monitoring well purging [e.g., dissolved oxygen (DO), oxidation reduction potential (ORP), pH, temperature, specific conductance, and turbidity].
- Collecting and analyzing groundwater samples from 54 monitoring wells from ten sites within the IAAAP facility and from the offsite area.
- Collecting and analyzing surface water samples from two onsite locations along Spring Creek, and from one location along a tributary to Spring Creek near West Burn Pads Area.
- Collecting and analyzing quality assurance (QA) samples including field blanks, field duplicates and matrix spike (MS)/matrix spike duplicate (MSD) samples.
- Disposing of investigation derived waste (IDW) and personal protective equipment (PPE).
- Documenting all field activities.

All field activities were completed in accordance with the standard operating procedures (SOPs) provided in the Draft Final Facility-Wide Work Plan (URS, 2002a).

2.1 GROUNDWATER LEVEL MEASUREMENTS

During the June 2007 sampling event, groundwater levels were gauged at wells to be sampled and at other selected locations in the vicinity of the wells that were sampled. Measurements were collected to provide information for well purging and to provide information for any future evaluation of water level trends that might be necessary.

Water levels were measured from the surveyed reference point found on the top of casing (toc) using an electronic water level meter. The water level meter was decontaminated between measurements at each monitoring well with Liquinox® and deionized water. All measurements were recorded in the field logbooks and sampling sheets maintained by the sampling teams. Table 2-1 presents the groundwater level measurements collected in June 2007.

2.2 WELL PURGING AND MEASUREMENT OF WATER QUALITY PARAMETERS

The purpose of well purging is to obtain representative, aquifer-quality water from the geologic unit being sampled, while minimizing disturbance to the collected samples. Field water quality parameters (i.e., specific conductance, pH, temperature, ORP, and DO) were measured to monitor

the progress of purging and to verify that representative groundwater samples were collected. Previous detailed evaluation of additional NA parameters has demonstrated that natural attenuation is taking place at many of the sites (Tetra Tech, 2005, 2007b).

Low-flow techniques were attempted in each well to minimize turbidity and purge water volumes. The goal of low-flow purging is to maintain less than 0.3 feet of drawdown at a pumping rate not to exceed 500 milliliters per minute (mL/min). Groundwater purging was conducted in the following manner:

- Before sampling, the air quality in the well casing and the breathing zone was monitored with a RAE Systems MiniRae photoionization detector equipped with a 10.6 electron volt lamp. Air quality measurements were recorded in the field logbooks and sample collection field sheets.

- The depth to groundwater was measured, and the volume of water to be purged was calculated in the event that drawdown exceeded 0.3 feet.

- Many of the sampled wells were equipped with Well Wizards® (dedicated bladder pumps), which were used when purging and sampling. Where no dedicated sampling pumps were available, or they were not functioning, a portable Geopump® peristaltic sampling pump with new disposable tubing was used. In wells with no dedicated pump and where groundwater depths were greater than 30 feet below top of casing (btoc), a Monsoon pump by Proactive® or an equivalent pump was used.

- The depth to groundwater was monitored during purging to determine drawdown.

- Specific conductance, pH, temperature, ORP, and DO were measured using the YSI 556 probe fitted with a flow-through cell. Turbidity was measured using a Lamotte 2020 turbidity meter.

- The field instruments were calibrated to the manufacturers' specifications prior to shipment to the field. Verification of field instrument calibrations (and recalibration, as necessary) was completed daily during the field event.

- All water quality measurements were recorded on the water sample collection field sheets (included in Appendix A).

Well purging was completed in accordance with the SOPs included in the Draft Final Facility-Wide Work Plan (URS, 2002a). Sample collection field sheets, provided in Appendix A, include the details of purging at each well. Field water quality measurements recorded during the June 2007 sampling event are provided in Table 2-2.

2.3 GROUNDWATER SAMPLING AT MONITORING WELLS

A summary of the June 2007 groundwater sampling program, including IAAAP sites, well numbers, and analytical parameters is presented in Table 2-3. Section 4.0 provides a discussion of the analytical results. The groundwater sampling effort was completed in accordance with the

SOPs provided in the Draft Final Facility-Wide Work Plan (URS, 2002a). All groundwater samples were collected in approved laboratory-supplied sample containers, preserved, and labeled appropriately. Samples, including quality control (QC) samples, were packed in coolers with wet ice to 4 degrees Celsius (°C), and shipped to the laboratory via Federal Express for analysis. Accutest Laboratories (Accutest) of Orlando, Florida, performed the laboratory analyses.

The June 2007 groundwater sampling event included sampling 54 monitoring wells (located within ten onsite areas plus the offsite area) between June 5 and June 12, 2007. Areas, well numbers, analytical parameters, and sampling variances are presented in Table 2-3. QC samples including field blanks, duplicate samples, and MS/MSDs were also collected, as described in additional detail in Section 3.0.

2.4 SURFACE WATER SAMPLING

The June 2007 groundwater monitoring event included the collection of three surface water samples at IAAAP. Two samples were collected along Spring Creek and one sample from a tributary to Spring Creek. These locations are situated in the upstream reaches of Spring Creek adjacent to impacted groundwater associated with the West Burn Pads Area (IAAP-032). The surface water sampling effort was completed in accordance with the SOPs provided in the Draft Final Facility-Wide Work Plan (URS, 2002a). Surface water sampling locations and analytical parameters for the June 2007 monitoring event are presented in Table 2-4. All of the surface water samples were collected on June 7, 2007.

Surface water samples were retrieved using an extendable pole with the sample bottle firmly attached to the end. Samples were appropriately preserved, labeled, packed in coolers with wet ice to 4°C, and shipped to Accutest via Federal Express for analysis.

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3.0 DATA QUALITY REVIEW AND VALIDATION

The data review process for the June 2007 monitoring event consisted of data generation, a laboratory review, and a review by the Tetra Tech chemist. Level IV data validation was performed on selected sampling data that represented 10 percent of the total samples collected during the 2007 sampling activities. The laboratory parameters and methods for which the samples were analyzed are identified in Table 3-1.

3.1 LABORATORY DATA REVIEW AND VALIDATION

The first level of chemical data review was conducted by the analytical laboratories: Accutest for chemical data and Eberline Services (Eberline) for radiological data. The laboratories had the initial responsibility for the correctness and completeness of the data. Section 4.0, Quality Control Project Plan (QAPP) in the IAAAP Facility-Wide Work Plan (URS, 2002a) describes the laboratory review and validation processes.

3.1.1 Data Review

The second level of chemical data review was completed by the Tetra Tech project chemist. All analytical data were subjected to this review. The QC parameters examined included the following:

- Completeness of data package,
- Review of laboratory case narrative,
- Compliance with required holding times and sample preservation,
- Presence or absence of compounds in laboratory and field blanks,
- Surrogate spike recovery in samples,
- Results of blank spike or laboratory control sample (LCS),
- Results of MS/MSD samples,
- Field and laboratory duplicate samples, and
- Method-specific laboratory QC parameters.

3.1.2 Data Validation

DataChek validated ten percent of the analytical data as defined in the project QAPP. The data validation was completed following the procedures described in EPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganic Data Review, (EPA, 2002), and EPA CLP National Functional Guidelines for Organic Data Review, (EPA, 1999). For those analytical methods not addressed by the CLP guidelines, the validation was based on the method requirements and technical judgment, following the logic of the CLP validation guidelines. The full validation of analytical data included reviewing all the parameters identified above and the additional parameters listed below:

- Initial calibration,
- Continuing calibration,
- Chromatogram review,
- Standard preparation log review,

- Sample preparation log review,
- Run log review,
- Sample result recalculation using the raw data,
- Instrument tuning, and
- Internal standards.

3.2 TETRA TECH REVIEW AND VALIDATION RESULTS

The data review process was implemented to assess the quality of data resulting from the field sampling program. The process determined whether the data meet the QA/QC objectives established for the monitoring project. Data assessment involved a consideration of data use, the decision type, identification of data that were qualified or did not meet project QA/QC requirements, and limitations on data use. The data review was based on the laboratory data summary reports and raw data. The qualifiers used during validation are described in Table 3-2.

3.2.1 Laboratory Sample Delivery Groups

Accutest Laboratories sample delivery groups (SDGs) reviewed were F50081, F50113, F50180, F50211, F50212, F50232, F50272, and F50306. Samples validated were found in F50113, F50180, and F50232. Eberline SDGs reviewed and validated were 070-06066 and 07-06083.

3.2.1.1 Data Package Completeness

The data packages were reviewed to verify that each SDG contained the data contractually required in the deliverable and that all samples listed on the chain-of-custody (COC) forms were analyzed for the requested parameters. The review indicated that all data packages were complete.

3.2.1.2 Holding Times and Sample Preservation

The validity of the analytical results can be based partially on the holding time and preservation of the sample from the time of collection to the time of analysis. The samples were received in good condition with preservation criteria met. The samples were analyzed within the acceptable holding time. No qualification was necessary.

3.2.2 Blank Samples

The purpose of laboratory blank analysis is to determine the existence and magnitude of contamination resulting from laboratory activities. If problems with a blank exist, all associated data must be evaluated to determine whether there is inherent variability in the data, or if the problem is an isolated occurrence.

Methylene chloride was detected in blanks associated with S07-JAW-31-GW-REG, S07-L9-MW11-GW-REG and S07-JAW-30-GW-REG. Methylene chloride detections in these samples may be attributed to laboratory contamination. Arsenic was detected at 4.1 micrograms per liter (µg/L) in a bracketing calibration blank of S07-EBP-MW2-GW-REG. The concentration in the sample may be estimated. No contamination was found in the blanks of any validated samples.

3.2.3 Surrogate Compound Percent Recoveries

Surrogate standards or system monitoring compounds are defined as non-target compounds added to blanks, laboratory QC samples, and field samples prior to extraction or purging. They are used in organic analyses to monitor the percent recovery efficiencies or accuracy of the sample preparation and analytical procedures. Phenol-d5 recovery in S07-JAW-31-GW-MSD was above the acceptable limit at 45 percent. Due to dilution, 3,4-Dinitrophenol was not detected in S07-JAW-54-GW-REG and S07-JAW-54-GW-FD. Surrogate recoveries for all validated samples were within evaluation criteria. Data did not require qualification.

3.2.4 Laboratory Control Samples

Data for LCSs are generated to provide information on the accuracy of the analytical method and on the laboratory performance. One LCS was analyzed with each analytical batch. Methyl bromide recovery was high in several LCSs. The compound was not detected in the samples, so data are unaffected. All LCS recoveries were within the QC limits for the validated samples.

3.2.5 Field Duplicate Analysis

The data generated from the analysis of field duplicate samples are used to evaluate the precision of the sample collection and analysis procedures. High relative percent difference (RPD) between an original sample and its field duplicate may indicate a difference in sample matrix or sample collection rather than problems with precision of sample analysis. When estimated "J" or nondetected "U" results are reported, there is a potential for increased variability between the primary and duplicate sample results. Three groundwater primary and field duplicate sample pairs were collected during the 2007 sampling and submitted to the laboratory for analysis. No anomalies were found during review or validation. No data qualification was required.

3.2.6 Matrix Spike/Matrix Spike Duplicate Analysis

Data for MS/MSD samples are generated to determine precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. During the 2007 sampling event three groundwater samples were collected and submitted to the laboratory to be spiked and analyzed with their respective SDGs (Table 3-3). The laboratory also ran batch QC samples, analyzing an MS/MSD pair with every analytical batch. The sample from JAW-31 was used for the SVOC MS/MSD in F50081. All MS/MSD recoveries for related samples were within the QC limits. The batch MS/MSD for volatiles in F50113, using an unrelated sample, had several compounds outside of acceptable limits. No qualifiers were required.

3.3 PRECISION, ACCURACY, REPRESENTATIVENESS, COMPLETENESS, AND COMPARABILITY (PARCC) PARAMETERS

3.3.1 Precision and Accuracy

Precision is a measure of the agreement between duplicate sample measurements of the same quantity and is reflected in the RPD between spikes and the RPD for the field duplicate analysis.

The recovery of a predetermined amount of a spike within control limits indicates satisfactory accuracy with respect to the method on the individual sample and general matrix. Precision for the IAAAP 2007 validated data was measured at 98.8 percent.

Accuracy is measured by the results from the recovery of known amounts of compounds or elements from LCS, MS, and surrogate recoveries. The overall measure of accuracy for IAAAP samples was calculated by comparing the number of spike recoveries that were within the laboratory limits by the total number of LCS, MS, and surrogate spikes. For 2007 data the overall validated accuracy was measured at 98.1 percent.

3.3.2 Representativeness

Representativeness is a qualitative parameter that expresses the degree to which the data and sampling design accurately and precisely represent a characteristic of a media, population, or environmental condition within a given area at a specific time. Representativeness is dependant upon the proper design of a sampling program and laboratory QC program. It is controlled through the use of approved SOPs for sample collection, handling and transport by field staff, and by the use of proper analytical procedures, appropriate methods, and meeting holding times by the contract laboratory. The collection, analysis, and evaluation of field duplicates were performed as a metric to evaluate representativeness. Representativeness is also assessed by the evaluation of laboratory and field blank results to determine whether analytes detected in environmental samples are truly representative of the concentrations in that matrix, or if they are artifacts of the sampling, shipping, storage, or analytical processes. Designated analytical protocols were followed. Holding times were met for all analyses. Overall, no major problems were identified for the 2007 sampling event. The samples are representative.

3.3.3 Comparability

Comparability is a qualitative parameter that expresses the confidence with which one data set can be compared to another. Comparability is dependent upon the design of the sampling plans and execution of activities consistent with the QAPP. This goal is achieved through the use of standard techniques to collect representative samples, consistent application of analytical method protocols, and reporting analytical results with appropriate units. Comparability is evaluated through the use of QC samples. RPD is a common metric to evaluate the comparability between duplicate samples. Appropriate procedures for sampling and shipping were implemented as specified in the IAAAP Facility-Wide Work Plan (URS, 2002a). Results from the 2007 sampling event are comparable to previous sampling results.

3.3.4 Completeness

Completeness is calculated by comparing the number of samples actually collected in the field to the number of samples planned to be collected by the scope-specific work plans. Sixty samples were collected out of sixty-three planned. Sample collection completeness is 95 percent.

Acceptable data completeness is defined as the percentage of usable data versus the total amount of data generated. Acceptable data are generated following a review of the data using the analytical method criteria. Acceptable data are all data that have completed the review or

validation process and have not been rejected. No data reviewed were unusable. Out of the total data points validated in 2007 samples, no data points were rejected, resulting in a completeness of 100 percent.

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4.0 SAMPLING RESULTS

4.1 SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

Following is a summary of the constituents detected in groundwater during the June 2007 sampling event. A detailed summary of results, organized by area, is contained in Section 4.2.

4.1.1 Explosive Compounds Detected in Groundwater

Explosive compounds were analyzed in samples from seven of the 11 areas sampled including Line 1, Line 3, Line 3A, Line 5A/5B, East Burn Pads Area, North Burn Pads Area and Offsite Area. The explosive compounds detected in groundwater samples collected at IAAAP included cyclotrimethylenetrinitramine (RDX) and the RDX degradation products hexahydro-1,3,5-trinitroso-1,3,5-triazine (TNX) and hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine (MNX).

4.1.2 Metals Detected in Groundwater

Metals were analyzed in samples from a total of five of the eleven sites sampled during June 2007. Samples were collected for the analysis of chromium, arsenic and uranium in June 2007 and each of these metals was detected. Arsenic was analyzed in samples from Line 1, Line 2, and East Burn Pads Area. Chromium was analyzed in a sample from the Pesticide Pit. Uranium was analyzed in samples from the Firing Site.

4.1.3 Volatile Organic Compounds Detected in Groundwater

Volatile organic compounds (VOCs) were analyzed in samples collected at only one site, Line 9, during sampling conducted in June 2007. VOCs detected included the following four compounds: 1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113), 1,1-Dichloroethene, 2-butanone, and methylene chloride.

4.1.4 Semivolatile Organic Compounds Detected in Groundwater

Semivolatile Organic Compounds (SVOCs) were sampled at one well, JAW-31, at Line 9 during June 2007 sampling. No SVOCs were detected in the groundwater sample collected from JAW-31.

4.1.5 Radiochemistry Detected in Groundwater

Gross alpha and gross beta were measured in 2 samples from the Firing Site. Each constituents was detected at both of the locations sample.

4.2 SITE-SPECIFIC GROUNDWATER SAMPLING RESULTS

This section describes the nature and extent of chemicals exceeding groundwater screening criteria at each site for the June 2007 groundwater sampling event. The sampling locations and parameters for periodic monitoring are based on an ongoing review of groundwater data, resulting in a sampling program that is periodically modified to meet the sampling goal. The goal of sampling is to collect only the data that will be used to evaluate exceedances of screening

criteria. Therefore, the wells remaining in the program include only those wells that have had an exceedance of screening criteria within the past three sampling events.

The groundwater screening criteria used for comparison at IAAAP are, in order of descending priority, the Maximum Contaminant Levels (MCLs) (EPA, 2004a), Health Advisory Levels (HALs) (EPA, 2004a), and EPA Region IX tap water Preliminary Remediation Goals (PRGs) (EPA 2004b). The available groundwater screening criteria for those analytes detected during the June 2007 sampling event are presented in Table 4-1.

During the June 2007 facility-wide sampling event, groundwater samples were collected at the following eleven sites: Line 1, Line 2, Line 3, Line 3A, Line 5A/5B, Line 9, Pesticide Pit, Firing Site, East Burn Pads, North Burn Pads, and Offsite Area (Table 2-3).

Tables 4-2 through 4-13 summarize the constituents detected in groundwater and surface water samples collected during the June 2007 sampling event. The list of constituents for each table is a site-specific list, which includes only those constituents that were detected in at least one well at the site during the June 2007 sampling event. For selected wells and parameters, the historical concentration trends are presented in Appendix B.

4.2.1 Line 1

In June 2007, samples were collected from shallow wells JAW-40, JAW-50, and GZ-2A and from the deep well JAW-602 (Table 2-3). JAW-40, JAW-50, and GZ-2A were analyzed for RDX. JAW-602 was analyzed for arsenic. June 2007 data are summarized on Table 4-2 and the results are presented graphically on Figure 4-1.

4.2.1.1 Shallow Groundwater/Water Table – Shallow Glacial Till

In June 2007, RDX was detected above the groundwater screening criteria of 2 µg/L in shallow wells JAW-50 (27 µg/L) and GZ-2A (22.9 µg/L). RDX was not detected in shallow well JAW-40. RDX has been detected on only one occasion (Fall 2006) in JAW-40.

Following an anomalously high RDX concentration in GZ-2A in 2004, subsequent sampling events have indicated that RDX concentrations were back down to historic levels, yet they still remain above screening criteria.

4.2.1.2 Deep Groundwater

In June 2007, dissolved arsenic was detected in JAW-602 at a concentration of 9.2 µg/L, which is below the screening criteria of 10 µg/L. Concentrations of arsenic in JAW-602 have shown an historic downward trend (Appendix B) and concentrations during two of the last three sampling events have been below the screening criteria of 10 µg/L.

4.2.2 Line 2

In June 2007, groundwater samples were collected from intermediate wells 12-C, 12-F, and L2-MW5 (Table 2-3). All wells were analyzed only for dissolved arsenic. June 2007 data are summarized on Table 4-3 and the results are presented graphically on Figure 4-2.

In June 2007, arsenic was detected in each of the three wells sampled, although only the concentration in 12-C (33.1 µg/L) was above the 10 µg/L screening criteria for arsenic. Concentrations in 12-F have been below the screening criteria for the past three sampling events (Appendix B).

4.2.3 Line 3

In June 2007 a groundwater sample was collected from shallow well JAW-54 (Table 2-3) and analyzed for RDX. Data are summarized on Table 4-4 and the results are presented graphically on Figure 4-3.

RDX concentrations in JAW-54 have shown a decreasing trend since sampling began in 1993, although concentrations remain above the screening criteria (Appendix B). In June 2007, RDX was detected in JAW-54 at a concentration of 295 µg/L, compared to the screening criteria of 2 µg/L.

4.2.4 Line 3A

In June 2007, samples were collected from shallow wells JAW-15, JAW-17, JAW-20, and JAW-22 and from intermediate well JAW-21. Sample collection was proposed for JAW-18 but the well was dry. All collected samples were analyzed for RDX (Table 2-3). June 2007 data are summarized on Table 4-5 and the results are presented graphically on Figure 4-4.

4.2.4.1 Shallow Groundwater/Water Table – Shallow Glacial Till

In June 2007, RDX was detected above the groundwater screening criteria (2 µg/L) in samples from each of the four shallow wells that were sampled. Concentrations ranged from 2.5 µg/L (JAW-20) to 13.5 µg/L (JAW-22).

4.2.4.2 Intermediate Groundwater – Intermediate Glacial Till

In June 2007, RDX was detected in the sample from JAW-21 at a concentration of 2.4 µg/L, which is slightly above the groundwater screening criteria of 2 µg/L.

4.2.4.3 Deep Groundwater – Basal Till and/or Upper Bedrock

JAW-18 was not sampled in June 2007 because the well was dry.

4.2.5 Lines 5A and 5B

In June 2007, samples were collected from shallow wells 5A-MW1, 5A-MW2, and 5B-MW1, (Table 2-3). All wells were sampled for RDX. Samples from wells 5A-MW1 and 5A-MW2 were also analyzed for 2,4,6-trinitrotoluene (TNT). Data are summarized on Table 4-6 and the results are presented graphically on Figure 4-5.

RDX was detected at concentrations exceeding the screening criteria in each of the wells sampled. RDX concentrations ranged from 2.1 µg/L (5A-MW1) to 80.3 µg/L (5B-MW1), compared to the screening criteria of 2 µg/L. RDX concentrations in 5A-MW1 have been slightly above the screening criteria for the past two sampling events. TNT was detected in

5A-MW2 at a concentration of 2.4 µg/L, which exceeds the 2 µg/L screening criteria. TNT was detected below the screening criteria in well 5A-MW1.

4.2.6 Line 9

In June 2007, samples were collected at shallow wells JAW-29, JAW-30, JAW-31, and L9-MW11. Samples from all wells were analyzed for VOCs and the sample collected from JAW-31 was also analyzed for SVOCs (Table 2-3). Data are summarized on Table 4-7 and the results are presented graphically on Figure 4-6.

Freon 113 was detected in each of the four wells sampled. Concentrations exceeding the 59,000 µg/L screening criteria were detected in JAW-29 (808,000E µg/L), JAW-30 (77,200 µg/L), and L9-MW11 (312,000 µg/L). Freon 113 was detected in JAW-31 at a concentration of 39,900 µg/L, which is below the screening criteria. The Freon 113 concentration in JAW-31 has shown a decreasing trend between June 2002 and June 2007 (Appendix B).

1,1-dichloroethene was detected at only one location, (L9-MW11), and the concentration (535 µg/L) exceeded the 7 µg/L screening criteria. Methylene chloride was detected at all four locations and concentrations, ranging from 149JB µg/L to 7,060JB µg/L, exceeded the screening criteria of 5 µg/L. At a single location (L9-MW11) 2-butanone was detected at a concentration below the screening criteria.

No SVOCs, which include pentachlorophenol, were detected in JAW-31.

4.2.7 Pesticide Pit

In June 2007, a sample was collected from shallow well JAW-617 and the sample was analyzed for total chromium (Table 2-3). The sample was not filtered. An attempt was made to sample the pesticide pit sump in June 2007, but no sample was collected because the sump was dry. June 2007 data are summarized on Table 4-8 and the results are presented graphically on Figure 4-7.

In June 2007, total chromium was detected in well JAW-617 at a concentration of 76.1 µg/L, which is below the 100 µg/L screening criteria. It is common for filtered metals samples to have a lower metals concentration than the total concentration due to the presence of metals on fine-grained suspended material. Therefore, if the sample collected from JAW-617 had been filtered, it is likely that the filtered concentration would be similar to, or lower than, the unfiltered concentration depending on the degree and effect of sample turbidity. Prior to the June 2007 sampling, the most recently-collected samples (Spring and Fall 2006) had concentrations of dissolved chromium that exceeded the screening criteria.

4.2.8 Firing Site

In June 2007, groundwater samples were collected from shallow wells JAW-32 and JAW-34 and analyzed for uranium, gross alpha and gross beta (Table 2-3). June 2007 data are summarized on Table 4-9 and the results are presented graphically on Figure 4-8.
In June 2007 samples collected from JAW-32, the uranium concentration was 345 µg/L, the gross alpha concentration was 141 picocuries per liter (pCi/L), and the gross beta concentration

was 56 pCi/L. These concentrations all exceed the screening criteria, which are 30 µg/L, 15 pCi/L, and 4 pCi/L, respectively. Gross beta was detected at 38 pCi/L in JAW-34, compared to the screening criteria of 4 pCi/L. Gross alpha and uranium concentrations in JAW-34 were below the screening criteria in June 2007. Gross alpha and uranium have been below the screening criteria for the past three sampling events.

4.2.9 East Burn Pads

In June 2007 samples were collected from shallow wells EDA-2, EDA-3, EDA-4, EBP-MW3, EBP-MW4, and EBP-MW5, and from the deep well EBP-MW2 (Table 2-3). All wells were sampled for RDX only, with the exception of EBP-MW2, which was analyzed for dissolved arsenic only. June 2007 data are summarized on Table 4-10 and the results are presented graphically on Figure 4-9.

4.2.9.1 Shallow Groundwater/Water Table

In June 2007 RDX was detected above the 2 µg/L screening criteria in all six of the shallow wells for which RDX was analyzed. RDX concentrations ranged from 4 µg/L (EDA-4) to 66 µg/L (EDA-2). Similar concentrations were detected previously at the same locations (Appendix B).

4.2.9.2 Deep Groundwater

In June 2007, dissolved arsenic was detected in EBP-MW2 at a concentration of 13 µg/L, which exceeds the groundwater screening criteria of 10 µg/L.

4.2.10 North Burn Pads Area

In June 2007 a groundwater sample was collected from deep well JAW-627 and analyzed for RDX (Table 2-3). June 2007 data are summarized on Table 4-11 and the results are presented graphically on Figure 4-10.

The RDX concentration in the sample from JAW-627 was 10.7 µg/L, which exceeds the groundwater screening criterion of 2 µg/L and represents the maximum concentration of RDX detected at JAW-627 (Appendix B).

4.2.11 Offsite Area

The offsite RDX plume area is located south of the southeast facility boundary and generally west of Brush Creek and north of the Skunk River (Figure 1-1). Some of the offsite wells are located south of the Skunk River. Treatability study injections began in MW-117 after the Spring 2006 sampling event. Offsite groundwater sampling is being conducted specifically for the treatability study. In addition, periodic groundwater monitoring was conducted in June 2007 as described in this report. Note that the June 2007 sampling results may be affected by the injections occurring in the area of MW-117.

In June 2007, 23 wells were sampled and each well was analyzed for RDX, MNX, TNX, and hexahydro-1,3-dinitroso-5-nitro-1,3,5-triazine (DNX) (Table 2-3). A total of 21 shallow wells

(MW-117, MW-117S, MW-121, MW-123, MW-125, MW-136, MW-303, MW-304, MW-307, MW-309, MW-407, MW-408, MW-409, MW-501, MW-509, MW-510, MW-511, MW-513, MW-514, MW-515, and MW-517) were sampled. Two deep wells (MW-117D and MW-509D) were sampled. Shallow well MW-516 was not sampled because the well was not accessible because of the presence of crops in the fields. June 2007 data are summarized on Table 4-12 and the results are presented graphically on Figure 4-11.

4.2.11.1 Shallow Groundwater- Alluvium

In June 2007, RDX was detected in 13 of the 21 shallow wells sampled. Concentrations in 11 of the wells were above the 2 µg/L screening criteria and exceedances ranged in concentration from 5.2 µg/L (MW-408) to 128 µg/L (MW-309).

MNX was detected in samples from eight shallow wells and the maximum MNX concentration (0.55 µg/L) was detected in MW-117. TNX was detected in samples from four shallow wells and the maximum TNX concentration (0.34 µg/L) was detected in MW-303. No screening criteria are available for MNX and TNX. DNX was not detected in any well.

4.2.11.2 Deep Groundwater - Glacial Outwash

During the sampling conducted in June 2007, no explosives were detected in either of the two deep wells sampled.

As the offsite groundwater remediation progresses, monitoring results will be presented and evaluated in future status reports.

4.3 SURFACE WATER

In June 2007 two surface water samples (SC2 and SC5) were collected from locations along Spring Creek and one sample (SCT2) was collected along a tributary to Spring Creek. All three of these sampling locations are in the Explosives Disposal Area near the West Burn Pads Area. The three surface water samples were analyzed for explosives and VOCs (Table 2-4). June 2007 data are summarized on Table 4-13, and the results are presented graphically on Figure 4-10.

In June 2007 explosives and VOC concentrations were higher at location SCT2 than at the other two locations. RDX was detected at location SCT2 at a concentration of 5.1 µg/L, which exceeds the 2 µg/L groundwater screening criteria. RDX was also detected at location SC2, but at a concentration below the screening criteria. Cyclotetramethylenetetranitramine (HMX) was detected at SCT2 at a concentration below the screening criteria, and HMX was not detected at either SC2 or SC5. No other explosives were detected at any of the three locations.

Freon 113 was detected at all three surface water locations and concentrations ranged from 9.3 µg/L (SC5) to 87.8 µg/L (SCT2). All of the Freon 113 concentrations were below the 59,000 µg/L screening criteria. Acetone was detected at estimated concentrations of 5.4J µg/L (SC2) and 5.9J µg/L (SCT2) compared to the acetone groundwater screening criteria of 5,500 µg/L.

The concentrations of all constituents analyzed in samples collected from SC5 have been below the screening criteria during all sampling events at SC5. VOC concentrations at SC2 have been below the screening criteria during every sampling event at SC2.

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5.0 OBSERVATIONS ON WELL CONDITION AND POTENTIAL WELL MAINTENANCE

During the June 2007 sampling event, well conditions and potential maintenance requirements for sampled and gauged wells were noted and are summarized below.

- Locks were missing at 12C (Line 2) and G-29 (East Burn Pad) and the lock at G-16 (Pesticide Pit) was noted as being too tight.

- A broken hinge was noted at JAW-603 (Line 1) and EDA-02 (East Burn Pad). A broken lid was noted at EDA-01 (East Burn Pad).

- The presence of vegetation made access to wells difficult at the following five wells at the Firing Site: JAW-32, JAW-33, JAW-34, JAW-618, and JAW-619. High grass made access difficult at JAW-42 (Line 1).

- JAW-601 (Line 1) had standing water inside the protective casing of the well and the polyvinyl chloride pipe of the well was covered with dark residue.

The wells above include wells that were sampled for chemical analysis and also wells that were gauged only to obtain water elevation data and were not sampled. The 2008 Groundwater and Surface Water Sampling Work Plan will describe which wells will continue to be sampled in 2008. For wells where sampling will be conducted in the future, appropriate corrective action is proposed, beginning with a more detailed pre-maintenance inspection. For wells that will no longer be sampled or gauged, well abandonment is proposed to be conducted according to recommendations and priorities to be described in a facility-wide plan for maintenance and abandonment, which is currently being prepared.

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TABLES

Table 1-1
Iowa Army Ammuntion Plant Sites

Site by Watershed	Groundwater Program	Last Periodic Monitoring
Skunk River Watershed		
Deactivation Furnace	Non-ER,A	NA
Demolition Area	Non-ER,A	September 2007
Line 3A Pond	OU-3 RI/FS	NA
Line 3A Sewage Treatment Plant	Non-ER,A	NA
Long Creek Watershed		
Building 600-86 Septic	OU-3 RI/FS	August 1997
Construction Debris Landfill	OU-3 RI/FS	October 2005
Contaminated Clothing Laundry	Non-ER,A	NA
Firing Site	OU-3 RI/FS, Periodic Monitoring	June 2007
Fly Ash Disposal Area	NA	NA
Fly Ash Landfill	Non-ER,A	September 2007
Inert Disposal Area	OU-3 RI/FS, Trench 5 (RCRA)	Fall 2006
Line 3A	OU-3 RI/FS, Periodic Monitoring	June 2007
Line 4B	OU-3 RI/FS	June 2003
Line 5B	OU-3 RI/FS, Periodic Monitoring	June 2007
Line 8	NA	NA
Possible Demolition Site	OU-3 RI/FS	NA
Brush Creek Watershed		
Central Test Area	OU-3 RI/FS	NA
Line 1	OU-3 RI/FS, Periodic Monitoring	June 2007
Line 2	OU-3 RI/FS, Periodic Monitoring	June 2007
Line 3	OU-3 RI/FS, Periodic Monitoring	June 2007
Line 4A	OU-3 RI/FS	--
Line 5A	OU-3 RI/FS, Periodic Monitoring	June 2007
Line 6	OU-3 RI/FS	Spring 2006
Line 800	OU-3 RI/FS, Treatability Studies	Fall 2006
Line 9	OU-3 RI/FS, Periodic Monitoring	June 2007
Off-Site	OU-3, Periodic Monitoring, In Remediation	June 2007
Old Fly Ash Waste Pile	OU-3 RI/FS	NA
Pesticide Pit	OU-3, Periodic Monitoring	June 2007
Sewage Treatment Plant	Non-ER,A	NA
Spring Creek Watershed		
Ammunition Box Chipper Disposal	OU-3 RI/FS	Spring 2002
Burn Cages	OU-3 RI/FS, part of West Burn Pad	NA
Contaminated Waste Processor	Non-ER,A	NA
East Burn Pad	OU-3 RI/FS, Periodic Monitoring	June 2007
Explosive Waste Incinerator	OU-3 RI/FS	April 2007
Fire Training Pit	OU-3 RI/FS, Treatability Studies	April 2007
Incendiary Disposal Area	OU-3 RI/FS	NA
North Burn Pad	OU-3 RI/FS, Periodic Monitoring	June 2007
West Burn Pad	OU-3 RI/FS, Treatability Studies	Fall 2006

NA - Not applicable since there is no permanent well in the site

Non-ER,A - Sites that are not included in Army's Environmental Restoration program, and not part of OU-3.

OU-3 - Operable Unit 3, all sites with permanent groundwater wells are included in OU-3, however, not all OU-3 sites are monitored periodically.

RI/FS - Remedial Investigation / Feasibility Study (Tetra Tech, 2007), no groundwater sampling had been done specifically for OU-3 RI/FS.

Treatability Studies - The sites are part of the treatablity studies program

Table 2-1
Water Level Data, June 2007 Groundwater Monitoring

Well	Ground Elevation (ft AMSL)	Well TOC Elevation (ft AMSL)	Screened Unit	2007 Depth to Water (ft. btoc)	Groundwater Elevation (ft AMSL)	Comment from Water Table Log Sheet
Line 1 and Line 1 Impoundment						
GZ-2A	671.6	674.06	Shallow till	6.15	667.91	
JAW-39	692.4	695.22	Shallow till	6.28	688.94	
JAW-40	693.0	695.84	Shallow till	5.28	690.56	
JAW-42	686.9	689.82	Shallow till	6.33	683.49	High grass
JAW-50	714.3	716.85	Shallow till	10.05	706.80	
JAW-51	714.7	717.89	Shallow till	7.9	709.99	
JAW-601 (B)	678.7	681.41	Upper bedrock	NM	NM	Water at top of casing, PVC covered with dark residue
JAW-602 (B)	711.2	713.91	Upper bedrock	20.23	693.68	
JAW-603 (B)	714.8	717.42	Upper bedrock	20.59	696.83	Broken hinge
Line 2						
12-C	689.2	691.27	Intermediate till	8.7	682.57	No lock
12-F	688.3	690.22	Intermediate till	7.16	683.06	
L2-MW4	681.5	683.76	intermediate	4.65	679.11	
L2-MW5	678.4	680.71	intermediate	12.25	668.46	
L2-MW7	NA	680.85	intermediate	7.77	673.08	
Line 3						
JAW-54	695.8	697.67	Shallow till	4.65	693.02	
Line 3A						
JAW-15	710.7	712.88	Shallow till	7.31	705.57	
JAW-17	709.3	711.83	Shallow till	6.69	705.14	
JAW-18 (B)	709.2	711.74	Upper bedrock	NM	NM	Dry
JAW-19	713.2	715.77	Shallow till	NM	NM	
JAW-20 (B)	711.9	713.82	Upper bedrock	28.95	684.87	
JAW-21	711.88	714.66	Intermediate	7.16	707.50	
JAW-22	711.4	713.57	Shallow till	8	705.57	
Line 5A and 5B						
5A-MW1	723.8	726.14	Shallow till	4.25	721.89	
JAW-606	720.3	722.29	Shallow till	5.73	716.56	
JAW-607	727.8	730.11	Shallow till	7.09	723.02	
JAW-608	727.7	729.84	Shallow till	6.49	723.35	
5A-MW2	724.70	726.82	Shallow	5.72	721.10	
5B-MW1	727.09	729.58	Shallow	7.65	721.93	

Table 2-1
Water Level Data, June 2007 Groundwater Monitoring

Well	Ground Elevation (ft AMSL)	Well TOC Elevation (ft AMSL)	Screened Unit	2007 Depth to Water (ft. btoc)	Groundwater Elevation (ft AMSL)	Comment from Water Table Log Sheet
Line 9						
JAW-29	711.2	713.35	Shallow till	10.54	702.81	
JAW-30	711.37	714.15	Shallow till	8.31	705.84	
JAW-31	711.0	712.85	Shallow till	10.57	702.28	
JAW-610	710.1	711.94	Shallow till	11.14	700.80	
JAW-611	710.8	712.62	Shallow till	7.64	704.98	
JAW-612	708.0	709.56	Shallow till	6.06	703.50	
L9-MW11	708.0	710.36	shallow	9.71	700.65	
East Burn Pads						
EDA-01	692.5	694.11	Shallow till	8.22	685.89	Lid broken
EDA-02 (B)	671.6	672.66	Upper bedrock	20.11	652.55	Hinge broken
EDA-03 (B)	674.3	675.96	Upper bedrock	22.1	653.86	
EDA-04	683.4	684.6	Shallow till	7.21	677.39	
G-29	681.9	683.85	Shallow till	7.9	675.95	No lock
JAW-04 (B)	658.0	660.51	Upper bedrock	NM	NM	
JAW-05	684.3	686.31	Shallow till	8.3	678.01	
JAW-06	675.4	677.55	Shallow till	6.27	671.28	
JAW-07	687.0	689.19	Shallow till	12	677.19	
JAW-64	684.1	686.12	Shallow till	6.88	679.24	
EBP-MW1 (B)	668.3	670.27	Bedrock	33.57	636.70	
EBP-MW2	682.2	684.22	Basal till	45.32	638.90	
EBP-MW3	688.0	690.09	Shallow till	6.34	683.75	
EBP-MW4	NA	679.79	shallow	36.19	643.60	
EBP-MW5	NA	665.33	shallow	31.64	633.69	
EBP-MW6	NA	664.91	shallow	23.66	641.25	
Pesticide Pit						
Sump	NA	NA	NA	NM	NM	Dry
JAW-617	691.6	693.83	Shallow till	6.81	687.02	
G-16	693.5	696.11	Shallow till	7.1	689.01	Lock was very tight

Table 2-1
Water Level Data, June 2007 Groundwater Monitoring

Well	Ground Elevation (ft AMSL)	Well TOC Elevation (ft AMSL)	Screened Unit	2007 Depth to Water (ft. btoc)	Groundwater Elevation (ft AMSL)	Comment from Water Table Log Sheet
Inert Disposal Area						
C-00-2	NA	696.43	Shallow till	12.76	683.67	
CAMU-99-1D (B)[2]	689.0	694.11	Upper bedrock	NM	NM	
CAMU-99-2D (B)[2]	701.5	706.67	Upper bedrock	NM	NM	
CAMU-99-2S[2]	701.6	706.51	Shallow till	NM	NM	
CAMU-99-3S[2]	706.0	711.40	Shallow till	NM	NM	
G-4	706.0	707.96	Shallow till	NM	NM	
G-5	689.1	692.23	Intermediate till	NM	NM	
IDA-MW2 (B)	701.4	703.03	Bedrock	NM	NM	
JAW-26	701.7	703.43	Shallow till	NM	NM	
T-6 (B)	711.2	712.63	Upper bedrock	NM	NM	
Firing Site						
JAW-32	688.5	690.73	Shallow till	12.27	678.46	Waist high bush
JAW-33	682.4	684.88	Shallow till	NM	NM	Dry, Waist high weeds, thorny bushes, wasp nest
JAW-34 (B)	682.2	684.74	Upper bedrock	18.7	666.04	Waist high weeds, thorny bushes
JAW-35 (B)	640.0	642.74	Upper bedrock		642.74	
JAW-618 (B)	690.5	692.92	Upper bedrock	50.38	642.54	Waist high bush
JAW-619 (B)	682.4	684.56	Upper bedrock	42.25	642.31	Waist high weeds, thorny
North Burn Pads						
JAW-13 (B)	667.2	669.61	Upper bedrock/Till	15.61	654.00	
JAW-627 (B)	680.6	683.10	Upper bedrock	33.53	649.57	
Offsite Area						
MW-117	551.81	551.96	Shallow	27.17	524.79	
MW-117S	551.98	551.46	Shallow	26.83	524.63	
MW-117D	551.99	551.81	Deep	27.77	524.04	
MW-121	548.40	545.96	Shallow	22	523.96	
MW-123	546.35	545.96	Shallow	20.49	525.47	
MW-125	546.52	546.19	Shallow	20.94	525.25	
MW-136	526.95	529.42	Shallow	5.99	523.43	
MW-303	539.20	541.72	Shallow	17.21	524.51	
MW-304	531.40	533.98	Shallow	9.8	524.18	
MW-307	551.66	551.41	Shallow	27.34	524.07	
MW-309	547.67	547.24	Shallow	22.52	524.72	

Table 2-1
Water Level Data, June 2007 Groundwater Monitoring

Well	Ground Elevation (ft AMSL)	Well TOC Elevation (ft AMSL)	Screened Unit	2007 Depth to Water (ft. btoc)	Groundwater Elevation (ft AMSL)	Comment from Water Table Log Sheet
Offsite Area (continued)						
MW-407	527.56	529.97	Shallow	6.1	523.87	
MW-408	525.17	527.34	Shallow	5.58	521.76	
MW-409	542.85	545.37	Shallow	20.42	524.95	
MW-501	540.62	542.67	Shallow	18.49	524.18	
MW-509	526.85	529.09	Shallow	5.25	523.84	
MW-509D	526.8	529.06	Deep	5.23	523.83	
MW-510	528.26	530.66	Shallow	8.45	522.21	
MW-511	526.07	528.50	Shallow	6	522.50	
MW-513	523.69	526.47	Shallow	6.51	519.96	
MW-514	522.81	525.28	Shallow	5.65	519.63	
MW-515	522.33	524.52	Intermediate	5.46	519.06	
MW-516	522.38	524.97	Shallow	NM	NM	
MW-517	528.8	531.15	Shallow	10.08	521.07	

Note:

(B) = Upper bedrock or bedrock well.
(D) = Deep well
TOC/btoc = Top of casing/Below top of casing.
ft = feet
in = inches
AMSL = Above mean sea level.
NM = Not measured.
NA = Data not available.

Table 2-2
Water Quality Parameters, June 2007

Area	Well I.D.	Sampling Zone	Parameter					
			pH	Temperature	Dissolved Oxygen	Specific Conductivity	Turbidity	ORP
			Units					
			SU	Celsius	mg/L	µS/cm	NTU	millivolts
East Burn Pads	EBP-MW2	Deep	7.14	13.39	0.05	932	>1000A	-145.5
	EBP-MW3	Shallow	6.78	12.08	1.36	529	0	-48.6
	EBP-MW4	Shallow	7.10	14.40	3.17	836	160	-5.8
	EBP-MW5	Shallow	7.04	14.83	1.62	657	2.65	-69.5
	EDA-02	Shallow	7.15	17.09	IF	885	0.7	15.0
	EDA-03	Shallow	7.20	13.85	1.33	588	0	-61.1
	EDA-04	Shallow	7.18	16.17	0.17	874	0	-128.0
Firing Site	JAW-32	Shallow	7.24	21.27	5.30	553	0.2	9.0
	JAW-34	Shallow	6.92	19.91	1.26	1335	0	12.5
Line 1	GZ-2A	Shallow	7.03	15.43	0.19	789	4.94	-66.2
	JAW-40	Shallow	7.17	16.44	1.50	677	0.5	0.6
	JAW-50	Shallow	6.97	15.29	0.41	761	0.06	5.5
	JAW-602	Deep	7.38	13.43	0.07	697	0.01	-90.4
Line 2	12-C	Intermediate	7.35	16.18	0.87	854	3.3	-140.8
	12-F	Intermediate	7.45	15.64	0.65	843	2.5	-146.7
	L2-MW5	Intermediate	7.51	13.57	0.72	599	0.4	-120.8
Line 3	JAW-54	Shallow	7.30	14.25	2.34	407	0.5	-26.2
Line 3A	JAW-15	Shallow	6.99	17.27	4.14	684	1.2	54.6
	JAW-17	Shallow	7.07	13.32	10.45	661	0.95	97.0
	JAW-18	Deep	NS	NS	NS	NS	NS	NS
	JAW-20	Shallow	7.04	19.33	4.37	693	1.9	46.5
	JAW-21	Intermediate	6.97	13.47	3.79	420	2	44.5
	JAW-22	Shallow	6.86	22.11	1.24	1317	0.95	62.7
Line 5A/5B	5A-MW1	Shallow	6.82	13.21	IF	560	2.6	78.9
	5A-MW2	Shallow	6.86	12.67	1.09	391	2.3	82.7
	5B-MW1	Shallow	7.05	12.71	IF	549	0.65	54.9
Line 9	JAW-29	Shallow	7.36	25.62	1.16	618	2.38	-26.8
	JAW-30	Shallow	7.26	14.45	0.18	610	0.24	-38.4
	JAW-31	Shallow	7.08	16.06	1.42	634	0.97	-25.4
	L9-MW11	Shallow	6.64	14.35	0.14	1090	0	-87.0
North Burn Pads	JAW-627	Shallow	7.13	13.65	IF	868	0	60.5
Offsite Area	MW-117	Shallow	7.36	16.27	1.22	498	0	-101.6
	MW-117D	Deep	7.56	15.66	0.07	473	6.5	-125.2
	MW-117S	Shallow	7.00	15.73	2.70	421	0	-38.1
	MW-121	Shallow	6.94	14.38	0.63	723	10.44	-50.9
	MW-123	Shallow	6.96	14.90	0.28	705	0.08	-53.7
	MW-125	Shallow	6.72	14.91	2.09	826	1.47	-8.3
	MW-136	Shallow	7.55	15.28	2.38	665	0.24	-118.9
	MW-303	Shallow	7.89	15.87	4.72	444	0.1	-68.5
	MW-304	Shallow	7.45	14.34	2.04	514	4.05	-64.1
	MW-307	Shallow	7.39	13.89	5.34	529	0	-8.4
	MW-309	Shallow	7.52	14.68	5.25	496	0	-53.1

Table 2-2
Water Quality Parameters, June 2007

Area	Well I.D.	Sampling Zone	Parameter					
			pH	Temperature	Dissolved Oxygen	Specific Conductivity	Turbidity	ORP
			Units					
			SU	Celsius	mg/L	µS/cm	NTU	millivolts
Offsite Area	MW-407	Shallow	7.42	13.41	0.29	578	0.3	-38
	MW-408	Shallow	7.30	15.09	0.71	756	0.7	-145.4
	MW-409	Shallow	7.49	15.11	0.06	643	0.7	-72.1
	MW-501	Shallow	7.27	15.44	4.35	645	1.3	14.5
	MW-509	Shallow	7.33	13.02	4.91	360	4.4	76.7
	MW-509D	Deep	7.45	13.43	0.39	530	1.11	14.0
	MW-510	Shallow	7.46	13.28	0.07	576	0.6	-57.6
	MW-511	Shallow	7.49	14.23	0.64	529	5.2	-57.0
	MW-513	Shallow	7.47	13.91	0.40	494	0	-4.0
	MW-514	Shallow	7.21	14.90	0.73	658	4.5	-129.0
	MW-515	Shallow	7.47	14.14	0.23	585	1.6	-143.3
	MW-516	Shallow	**Not Sampled - Inaccessible**					
	MW-517	Shallow	7.35	13.6	0.65	590	3.9	-100.9
Pesticide Pit	JAW-617	Shallow	6.98	14.01	IF	567	1.4	42.2
	SUMP	NA	**Not Sampled - Sump Dry**					

Notes:
A = Turbidity exceeds instrument maximum measurement capacity.
IF = Instrument Failure, dissolved oxygen probe.
mg/L = milligrams per Liter
µS/cm = micro Siemens per centimeter
NS = not sampled
NTU = Nephelometric Turbidity Units
ORP = Oxidation Reduction Potential
SU = Standard Unit

Table 2-3
Groundwater Sampling Matrix, June 2007

Site	Well Number	Sampling Zone	Analytical Parameters						Notes on Chemical Analyzed
			Explosives (Method 8330)	Metals (Method 6010B & 7470)	VOCs (Method 8260)	SVOCs (Method 8270)	Uranium (Method 6020)	Gross α/β (Method 900/9310)	
Line 1	JAW-40	Shallow	X						RDX only
	JAW-50	Shallow	X						RDX only
	JAW-602	Deep		X					arsenic only
	GZ-2A	Shallow	X						RDX only
Line 2	12-C	Intermediate		X					arsenic only
	12-F	Intermediate		X					arsenic only
	L2-MW5	Intermediate		X					arsenic only
Line 3	JAW-54	Shallow	X						RDX only
Line 3A	JAW-15	Shallow	X						RDX only
	JAW-17	Shallow	X						RDX only
	JAW-18	Deep	NS						Well was dry
	JAW-20	Shallow	X						RDX only
	JAW-21	Intermediate	X						RDX only
	JAW-22	Shallow	X						RDX only
Line 5A/5B	5A - MW1	Shallow	X						RDX and TNT
	5A - MW2	Shallow	X						RDX and TNT
	5B - MW1	Shallow	X						RDX only
Line 9	JAW-29	Shallow			X				VOCs only
	JAW-30	Shallow			X				VOCs only
	JAW-31	Shallow			X	X			VOCs and SVOCs (including PAHs)
	L9-MW11	Shallow			X				VOCs only
Pesticide Pit	JAW-617	Shallow		X					chromium only
	Sump	NA		NS					Sump was dry
Firing Site	JAW-32	Shallow					X	X	Gross α/β and Uranium
	JAW-34	Shallow					X	X	Gross α/β and Uranium
East Burn Pad	EDA-02	Shallow	X						RDX only
	EDA-03	Shallow	X						RDX only
	EDA-04	Shallow	X						RDX only
	EBP-MW2	Deep		X					arsenic only
	EBP-MW3	Shallow	X						RDX only
	EBP-MW4	Shallow	X						RDX only
	EBP-MW5	Shallow	X						RDX only

Table 2-3
Groundwater Sampling Matrix, June 2007

Site	Well Number	Sampling Zone	Analytical Parameters						Notes on Chemical Analyzed
			Explosives (Method 8330)	Metals (Method 6010B & 7470)	VOCs (Method 8260)	SVOCs (Method 8270)	Uranium (Method 6020)	Gross α/β (Method 900/9310)	
North Burn Pad	JAW-627	Deep	X						RDX only
Offsite	MW-117	Shallow	X						RDX, MNX, TNX and DNX
	MW-117S	Shallow	X						RDX, MNX, TNX and DNX
	MW-117D	Deep	X						RDX, MNX, TNX and DNX
	MW-121	Shallow	X						RDX, MNX, TNX and DNX
	MW-123	Shallow	X						RDX, MNX, TNX and DNX
	MW-125	Shallow	X						RDX, MNX, TNX and DNX
	MW-136	Shallow	X						RDX, MNX, TNX and DNX
	MW-303	Shallow	X						RDX, MNX, TNX and DNX
	MW-304	Shallow	X						RDX, MNX, TNX and DNX
Off Site (continued)	MW-307	Shallow	X						RDX, MNX, TNX and DNX
	MW-309	Shallow	X						RDX, MNX, TNX and DNX
	MW-407	Shallow	X						RDX, MNX, TNX and DNX
	MW-408	Shallow	X						RDX, MNX, TNX and DNX
	MW-409	Shallow	X						RDX, MNX, TNX and DNX
	MW-501	Shallow	X						RDX, MNX, TNX and DNX
	MW-509	Shallow	X						RDX, MNX, TNX and DNX
	MW-509D	Deep	X						RDX, MNX, TNX and DNX
	MW-510	Shallow	X						RDX, MNX, TNX and DNX
	MW-511	Shallow	X						RDX, MNX, TNX and DNX
	MW-513	Shallow	X						RDX, MNX, TNX and DNX
	MW-514	Shallow	X						RDX, MNX, TNX and DNX
	MW-515	Shallow	X						RDX, MNX, TNX and DNX
	MW-516	Shallow	NS						was not accessible
	MW-517	Shallow	X						RDX, MNX, TNX and DNX

NA - Not applicable

Metals samples are collected for dissoleved metals ONLY

NS - Well was included in sampling plan but was not sampled. See "Notes on Chemical Analyzed" column for explanation.

Table 2-4
Surface Water Sampling Matrix, June 2007

Sample Location	Sampling Location	Location Description	Rationale	Analytical Parameters					
				Explosives	Metals	VOCs	SVOCs	Uranium[1]	Gross α/β
Spring Creek	SC2	Downstream of West Burn Pads Area	To monitor migration of contaminants into Spring Creek	X		X			
Spring Creek	SC5	Upstream of West Burn Pads Area	To establish baseline concentrations upstream of the site	X		X			
Spring Creek Tributary	SCT2	Spring Creek tributary north of West Burn Pads Area	To monitor migration of contaminants into Spring Creek	X		X			

Table 3-1
Sampling Parameters and Methods
Groundwater and Surface Water Sampling, June 2007

Parameters Analyzed	Method
Explosives (and degradants)	SW846 8330
Metals	SW846 6010B
Semivolatile Organics (SVOC)	SW846 8270C
Volatile Organics (VOC)	SW846 8260B
Radiological Chemistry	
Gross Alpha/Gross Beta	EPA 900.0
Uranium	ASTM D5174 Modified

Table 3-2
Data Qualifier Definitions
Groundwater and Surface Water Sampling, June 2007

Qualifier	Definition
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit or the reported analyte value was not detected above 5x or 10x the level reported in laboratory or field blanks.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
B	The analyte was detected at a concentration below the reporting limit, and above the methods detection limit.
E	The analyte was detected at a concentration exceeding the calibration limit.

Table 3-3
Matrix Spike and Matrix Spike Duplicates
Groundwater and Surface Water Sampling, June 2007

Sampling Location	Analytes
JAW-17	RDX
L2-MW5	Arsenic
MW-409	RDX

Table 4-1
Summary of Screening Criteria for Groundwater

Chemical	IAAAP Comparison Criteria	Source[i]
Explosives (µg/L)		
1,3,5-Trinitrobenzene (1,3,5-TNB)	1,100	Region 9 PRG
1,3-Dinitrobenzene (1,3-DNB)	1	HAL
2,4,6-Trinitrotoluene (2,4,6-TNT)	2	HAL
2,4-Dinitrotoluene (2,4-DNT)	1	Proposed
2,6-Dinitrotoluene (2,6-DNT)	1	Proposed
2-Amino-4,6-dinitrotoluene	NA	NA
2-Nitrotoluene (2-NT)	0.05	Region 9 PRG
3-Nitrotoluene (3-NT)	122	Region 9 PRG
4-Amino-2,6-dinitrotoluene	NA	NA
4-Nitrotoluene (4-NT)	61	Region 9 PRG
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2	HAL
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	400	HAL
Mono-nitroso-RDX (MNX)	NA	NA
Nitrobenzene (NB)	3.4	Region 9 PRG
Nitrotoluene (NT)	61	Region 9 PRG
Pentaerythritol tetranitrate / PETN	NA	NA
Tetryl	NA	NA
Metals (µg/L)		
Aluminum	36499	Region 9 PRG
Antimony	6	MCL/HAL
Arsenic	10	MCL
Barium	2,000	MCL/HAL
Boron	600	HAL
Cadmium	5	MCL
Chromium (total)	100	MCL
Hexavalent Chromium	109	Region 9 PRG
Copper	1300	Action level
Iron	6000	RDA
Lead	15	Action level
Magnesium	NA	NA
Manganese	1700	Region 9 PRG
Mercury	2	MCL/ HAL
Nickel	100	HAL
Selenium	50	MCL/HAL
Silver	100	HAL
Vanadium	36.5	Region 9 PRG
Zinc	2000	HAL
Volatile Organic Compounds (µg/L)		
1,1,1,2-Tetrachloroethane	70	HAL
1,1,2,2-Tetrachloroethane	0.3	HAL
1,1,1-Trichloroethane (1,1,1-TCA)	200	MCL
1,1,2-Trichloroethane	5	MCL
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	59000	Region 9 PRG
1,1-Dichloroethane (1,1-DCA)	810	Region 9 PRG
1,1-Dichloroethene (1,1-DCE)	7	MCL
1,2-Dichloroethane (1,2-DCA)	5	MCL
1,2-Dichloroethenes (Total)	NA	NA
1,2-Dichloropropane	5	MCL

Table 4-1
Summary of Screening Criteria for Groundwater

Chemical	IAAAP Comparison Criteria	Source[1]
Volatile Organic Compounds (µg/L)		
1,2-Dimethylbenzene (o-Xylene)	NA	NA
1,3-Dichloropropane	122	Region 9 PRG
2-Butanone (Methyl ethyl ketone)	1900	Region 9 PRG
2-Hexanone	NA	NA
Acetone	610	Region 9 PRG
Benzene	5	MCL
Bromochloromethane	90	HAL
Bromodichloromethane	80	MCL
Carbon Disulfide	1000	Region 9 PRG
Carbon tetrachloride	5	MCL
Chloroethane	4.6	Region 9 PRG
Chlorofluromethane	NA	NA
Chlorotrifluoromethane	NA	NA
Chloroform	80	MCL
Chloromethane	30	HAL
cis-1,2-Dichloroethene	70	MCL
cis-1,3-Dichloropropene	NA	NA
Dibromochloromethane / Chlorodibromomethane	60	HAL
Dibromomethane	NA	NA
Dichlorodifluoromethane	1000	HAL
Ethylbenzene	700	MCL
Methylene Chloride (Dichloromethane)	5	MCL
Methyl isobutyl ketone (4-Methly-2-pentone)	160	Region 9 PRG
Styrene	100	MCL
Tetrachloroethylene	5	MCL
Toluene	1000	MCL
Trans-1,2-Dichloroethene	100	MCL
Trans-1,3-Dichloropropene	0.4	Region 9 PRG
Trichloroethylene (TCE)	5	MCL
Vinyl chloride	2	MCL
m,p-Xylene	NA	NA
o-Xylene	NA	NA
Xylenes (Total)	10000	MCL
Semivolatile Organic Compounds (µg/L)		
1,2,3-Trichlorobenzene	NA	NA
1,2,4-Trichlorobenzene	70	MCL
1,2-Dichlorobenzene	600	MCL
1,3-Dichlorobenzene	600	HAL
1,4-Dichlorobenzene	75	MCL
2,4,5-Trichlorophenol	3600	Region 9 PRG
2,4,6-Trichlorophenol	3.6	Region 9 PRG
2,4-Dichlorophenol	20	HAL
2,4-Dimethylphenol	730	Region 9 PRG
2,4-Dinitrophenol	73	Region 9 PRG
2,4-Dinitrotoluene	1	Proposed
2,6-Dinitrotoluene	1	Proposed
2-Chloronaphthalene	490	Region 9 PRG
2-Chlorophenol	40	HAL

Table 4-1
Summary of Screening Criteria for Groundwater

Chemical	IAAAP Comparison Criteria	Source[i]
Semivolatile Organic Compounds (µg/L)		
2-Methyl-4,6-dinitrophenol	NA	NA
2-Methylnaphthalene	NA	NA
2-Methylphenol	1800	Region 9 PRG
2-Nitroaniline	1	Region 9 PRG
2-Nitrophenol	NA	NA
3,3'-Dichlorobenzidine	0.15	Region 9 PRG
3-Methyl-4-chlorophenol	NA	NA
3-Nitroaniline	NA	NA
4-Bromophenyl-phenyl ether	NA	NA
4-Chloroaniline	150	Region 9 PRG
4-Chlorophenyl-phenyl ether	NA	NA
4-Methylphenol	180	Region 9 PRG
4-Nitroaniline	NA	NA
4-Nitrophenol	60	HAL
Acenaphthene	370	Region 9 PRG
Acenaphthylene	NA	NA
Aniline	12	Region 9 PRG
Anthracene	1800	Region 9 PRG
Benzo[a]anthracene	0.092	Region 9 PRG
Benzo[a]pyrene	0.0092	Region 9 PRG
Benzo[b]fluoranthene	0.092	Region 9 PRG
Benzo[g,h,i]perylene	NA	NA
Benzo[k]fluoranthene	0.092	Region 9 PRG
Benzoic Acid	150000	Region 9 PRG
Benzyl alcohol	11000	Region 9 PRG
Bis(2-chloroethoxy)methane	NA	NA
Bis(2-chloroethyl)ether	0.0098	Region 9 PRG
Bis(2-chloroisopropyl)ether	300	HAL
Bis(2-ethylhexyl)phthalate	6	MCL
Butylbenzyl phthalate	7300	Region 9 PRG
Carbazole	3.4	Region 9 PRG
Chlorobenzene	106	Region 9 PRG
Chrysene	9.2	Region 9 PRG
Di-n-butyl phthalate	3600	Region 9 PRG
Di-n-octyl phthalate	1500	Region 9 PRG
Dibenz[a,h]anthracene	0.0092	Region 9 PRG
Dibenzofuran	24	Region 9 PRG
Diethyl phthalate	29000	Region 9 PRG
Dimethyl phthalate	360000	Region 9 PRG
Fluoranthene	1500	Region 9 PRG
Fluorene	240	Region 9 PRG
Hexachlorobenzene	1	MCL
Hexachlorobutadiene	1	HAL
Hexachlorocyclopentadiene	50	MCL
Hexachloroethane	1	HAL
Indeno[1,2,3-c,d]pyrene	0.092	Region 9 PRG
Isophorone	100	HAL
Cumene / Isopropylbenzene	NA	NA

Table 4-1
Summary of Screening Criteria for Groundwater

Chemical	IAAAP Comparison Criteria	Source[1]
Semivolatile Organic Compounds (µg/L)		
Isopropyltoluene	NA	NA
2-Methylphenol / 2-Cresol / o-Cresol	1825	Region 9 PRG
N-Nitrosodi-n-propylamine	0.0096	Region 9 PRG
N-Nitrosodiphenylamine	0.0096	Region 9 PRG
Naphthalene	100	HAL
Nitrobenzene	3.4	Region 9 PRG
Pentachlorophenol	1	MCL
Phenanthrene	NA	NA
Phenol	4000	HAL
Pyrene	180	Region 9 PRG
1,2,4-Trimethylbenzene	12.3	Region 9 PRG
1,3,5-Trimethylbenzene	12.3	Region 9 PRG
Inorganics (µg/L)		
Nitrate	10,000	MCL
Nitrite	1000	MCL
Nitrate/Nitrite	10,000	MCL
Potassium	NA	NA
Orthophosphate	NA	NA
Total Phosphates	NA	NA
Pesticides (µg/L)		
(2,4,5-Trichlorophenoxy) acetic acid / 245T / Weedone	70	HAL
Bromacil	90	HAL
Dalapon / alpha,alpha-Dichloropropionic acid	200	HAL/MCL

Notes:
µg/L = Micrograms Per Liter
HAL = Health Advisory Level--Lifetime Risk (Winter 2004)
IAAAP = Iowa Army Ammunition Plant
MCL = Maximum Contaminant Level (Winter 2004)
NA = Not Available
PRG = Preliminary Remediation Goal
Proposed = DNT Mixture Screening Level negotiated with USEPA Region 7
[1] The Regulatory Standards used were USEPA MCLs or Lifetime HALs. If MCLs or HALs were not available, USEPA Region 9 PRGs for tap water were used.
RDA - recommended daily allowance

Table 4-2
Chemicals Detected at Line 1
Groundwater Monitoring, June 2007

		Sample Location	JAW-40	JAW-50	JAW-602	GZ-2A
		Sample Type	REG	REG	REG	REG
		Sampling Date	06/05/2007	06/05/2007	06/06/2007	06/05/2007
		Sampling Zone	Shallow	Shallow	Deep	Shallow
Analyte Group	**Analyte Name**	**Screening Criteria [1]**	**ug/L**	**ug/L**	**ug/L**	**ug/L**
EXPLOSIVES	RDX	2	0.19 U	**27**		**22.9**
METALS - DISS	Arsenic	10			9.3 J	

Note:

(1) Groundwater screening criteria includes, in order of descending priority, the Maximum Contaminant Level, Health Advisory Levels, and USEPA Region IX tap water Preliminary Remediation Goals. Shaded and bold cell indicates concentration exceeds the screening criteria. For metals analysis, screening was conducted only for dissolved results.

Blank results field indicates the constituent was not analyzed.

J - The analyte concentration estimated.

U - Not detected

DISS - Dissolved metal (filtrate)

REG - Regular sample. Not a quality assurance sample.

Table 4-3
Chemicals Detected at Line 2
Groundwater Monitoring, June 2007

		Sample Location	12-C	12-F	L2-MW5
		Sample Type	REG	REG	REG
		Sampling Date	06/05/2007	06/05/2007	06/05/2007
		Sampling Zone	Intermediate	Intermediate	Intermediate
Analyte Group	Analyte Name	Screening Criteria [1]	ug/L	ug/L	ug/L
METALS-DISS	Arsenic	10	**33.1**	9.7 B	5.3 B

Note:

(1) Groundwater screening criteria includes, in order of descending priority, the Maximum Contaminant Level, Health Advisory Levels, and USEPA Region IX tap water Preliminary Remediation Goals. Shaded and bold cell indicates concentration exceeds the screening criteria. For metals analysis, screening was conducted only for dissolved results.

Blank results field indicates the constituent was not analyzed.

B - Analyte concentration detected above the method detection limit but below the reporting limit.

DISS - Dissolved metal (filtrate)

REG - Regular sample. Not a quality assurance sample.

Table 4-4
Chemicals Detected at Line 3
Groundwater Monitoring, June 2007

		Sample Location	JAW-54	JAW-54
		Sample Type	REG	FD
		Sampling Date	06/05/2007	06/05/2007
		Sampling Zone	Shallow	Shallow
Analyte Group	**Analyte Name**	**Screening Criteria [1]**	**ug/L**	**ug/L**
EXPLOSIVES	RDX	2	**295**	**257**

Note:

(1) Groundwater screening criteria includes, in order of descending priority, the Maximum Contaminant Level, Health Advisory Levels, and USEPA Region IX tap water Preliminary Remediation Goals. Shaded and bold cell indicates concentration exceeds the screening criteria. For metals analysis, screening was conducted only for dissolved results.

REG - Regular sample. Not a quality assurance sample.

FD - Field Duplicate

Table 4-5
Chemicals Detected at Line 3A
Groundwater Monitoring, June 2007

		Sample Location	JAW-15	JAW-17	JAW-20	JAW-21	JAW-22
		Sample Type	REG	REG	REG	REG	REG
		Sampling Date	06/07/2007	06/08/2007	06/08/2007	06/08/2007	06/07/2007
		Sampling Zone	Shallow	Shallow	Shallow	Intermediate	Shallow
Analyte Group	Analyte Name	Screening Criteria [1]	ug/L	ug/L	ug/L	ug/L	ug/L
EXPLOSIVES	RDX	2	**11.2**	**12.8**	**2.5**	**2.4**	**13.5**

Note:

(1) Groundwater screening criteria includes, in order of descending priority, the Maximum Contaminant Level, Health Advisory Levels, and USEPA Region IX tap water Preliminary Remediation Goals. Shaded and bold cell indicates concentration exceeds the screening criteria. For metals analysis, screening was conducted only for dissolved results.

(2) Site-specific Preliminary Remediation Goal established in the OU-3 Feasibility Study. Shaded, bold, and underlined cell indicates concentration exceeds the screening criteria.

Blank results field indicates the constituent was not analyzed.

REG - Regular sample. Not a quality assurance sample.

Table 4-6
Chemicals Detected at Line 5A/5B
Groundwater Monitoring, June 2007

		Sample Location	5A-MW1	5A-MW2	5B-MW1
		Sample Type	REG	REG	REG
		Sampling Date	06/05/2007	06/06/2007	06/06/2007
		Sampling Zone	Shallow	Shallow	Shallow
Analyte Group	**Analyte Name**	**Screening Criteria [1]**	**ug/L**	**ug/L**	**ug/L**
EXPLOSIVES	RDX	2	**2.1**	**7.1**	**80.3**
EXPLOSIVES	2,4,6-Trinitrotoluene	2	0.92	**2.4**	

Note:

(1) Groundwater screening criteria includes, in order of descending priority, the Maximum Contaminant Level, Health Advisory Levels, and USEPA Region IX tap water Preliminary Remediation Goals. Shaded and bold cell indicates concentration exceeds the screening criteria. For metals analysis, screening was conducted only for dissolved results.

Blank results field indicates the constituent was not analyzed.

REG - Regular sample. Not a quality assurance sample.

Table 4-7
Chemicals Detected at Line 9
Groundwater Monitoring, June 2007

		Sample Location	JAW-29	JAW-30	JAW-31	L9-MW11
		Sample Type	REG	REG	REG	REG
		Sampling Date	06/06/2007	06/07/2007	06/06/2007	06/07/2007
		Sampling Zone	Shallow	Shallow	Shallow	Shallow
Analyte Group	**Analyte Name**	**Screening Criteria [1]**	**ug/L**	**ug/L**	**ug/L**	**ug/L**
VOLATILES	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	59000	**808000** E	**77200**	39900	**312000**
VOLATILES	1,1-Dichloroethene	7	5000 U	1000 U	1000 U	**535**
VOLATILES	2-Butanone / Methyl Ethyl Ketone	4000	25000 U	5000 U	5000 U	252 J
VOLATILES	Methylene chloride	5	**7060** JB	**1450** JB	**1360** J	**149** JB

Note:

(1) Groundwater screening criteria includes, in order of descending priority, the Maximum Contaminant Level, Health Advisory Levels, and USEPA Region IX tap water Preliminary Remediation Goals. Shaded and bold cell indicates concentration exceeds the screening criteria. For metals analysis, screening was conducted only for dissolved results.

B - Analyte concentration detected above the method detection limit but below the reporting limit.

U - Not detected at or above detection limit

E - The value is an estimate

J - The value is an estimate

REG - Regular sample. Not a quality assurance sample.

Table 4-8
Chemicals detected at Pesticide Pit
Groundwater Monitoring, June 2007

		Sample Location	JAW-617
		Sample Type	REG
		Sampling Date	06/06/2007
		Sampling Zone	Shallow
Analyte Group	**Analyte Name**	**Screening Criteria [1]**	**ug/L**
METALS	Chromium	100	76.1

Note:

(1) Groundwater screening criteria includes, in order of descending priority, the Maximum Contaminant Level, Health Advisory Levels, and USEPA Region IX tap water Preliminary Remediation Goals. Shaded and bold cell indicates concentration exceeds the screening criteria. For metals analysis, screening was conducted only for dissolved results.

Blank results field indicates the constituent was not analyzed.
REG - Regular sample. Not a quality assurance sample.

Table 4-9
Chemicals Detected at Firing Site
Groundwater Monitoring, June 2007

		Sample Location	JAW-32	JAW-32	JAW-34
		Sample Type	REG	FD	REG
		Sampling Date	06/12/2007	06/12/2007	06/12/2007
		Sampling Zone	Shallow	Shallow	Shallow
Analyte Group	**Analyte Name**	**Screening Criteria [1]**	**ug/L (pCi/L)**	**ug/L (pCi/L)**	**ug/L (pCi/L)**
METALS	Uranium	30	**344.68**	**338.64**	17.23
RADIOCHEMISTRY	Alpha gross (pCi/L)	15	**141.49**	**164.07**	14.72
RADIOCHEMISTRY	Beta gross (pCi/L)	4	**55.59**	**61.32**	**38.26**

Note:

(1) Groundwater screening criteria includes, in order of descending priority, the Maximum Contaminant Level, Health Advisory Levels, and USEPA Region IX tap water Preliminary Remediation Goals. Shaded and bold cell indicates concentration exceeds the screening criteria. For metals analysis, screening was conducted only for dissolved results.

REG - Regular sample. Not a quality assurance sample.

FD - Field duplicate

Table 4-10
Chemicals Detected at East Burn Pad
Groundwater Monitoring, June 2007

		Sample Location	EBP-MW2	EBP-MW3	EBP-MW3	EBP-MW4	EBP-MW5	EDA-2	EDA-3	EDA-4
		Sample Type	REG	REG	FD	REG	REG	REG	REG	REG
		Sampling Date	06/07/2007	06/08/2007	06/08/2007	06/08/2007	06/08/2007	06/06/2007	06/07/2007	06/07/2007
		Sampling Zone	Deep	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
Analyte Group	Analyte Name	Screening Criteria [1]	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
EXPLOSIVES	RDX	2		**24.3**	**23.1**	**4.9**	**40.5**	**66**	**15**	**3.7**
METALS-DISS	Arsenic	10	**12.6**							

Note:

(1) Groundwater screening criteria includes, in order of descending priority, the Maximum Contaminant Level, Health Advisory Levels, and USEPA Region IX tap water Preliminary Remediation Goals. Shaded and bold cell indicates concentration exceeds the screening criteria. For metals analysis, screening was conducted only for dissolved results.

Blank results field indicates the constituent was not analyzed.

DISS - Dissolved metal (filtrate)

REG - Regular sample. Not a quality assurance sample.

FD - Field Duplicate

Table 4-11
Chemicals Detected at North Burn Pads
Groundwater Monitoring, June 2007

		Sample Location	**JAW-627**
		Sample Type	**REG**
		Sampling Date	**06/07/2007**
		Sampling Zone	**Deep**
Analyte Group	**Analyte Name**	**Screening Criteria [1]**	**ug/L**
EXPLOSIVES	RDX	2	**10.7**

Note:

(1) Groundwater screening criteria includes, in order of descending priority, the Maximum Contaminant Level, Health Advisory Levels, and USEPA Region IX tap water Preliminary Remediation Goals. Shaded and bold cell indicates concentration exceeds the screening criteria. For metals analysis, screening was conducted only for dissolved results.

Blank results field indicates the constituent was not analyzed.

B - Analyte concentration detected above the method detection limit but below the reporting limit.

REG - Regular sample. Not a quality assurance sample.

Table 4-12
Chemicals Detected at Off Site Area
Groundwater Monitoring, June 2007

		Sample Location	MW-117	MW-117D	MW-117S	MW-121	MW-123	MW-125	MW-136	MW-303	MW-304
		Sample Type	REG	REG	REG	REG	REG	REG	REG	REG	REG
		Sampling Date	06/12/2007	06/12/2007	06/12/2007	06/10/2007	06/11/2007	06/11/2007	06/11/2007	06/12/2007	06/12/2007
		Sampling Zone	Shallow	Deep	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
Analyte Group	Analyte Name	Screening Criteria [1]	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
EXPLOSIVES	1-Nitroso-3,5-dinitro-1,3,5-triazacyclohexane/ MNX	NL	0.55	0.19 U	0.19 U	0.19 U	0.099 J	0.19 U	0.19 U	0.19 U	0.2
EXPLOSIVES	Hexahydro-1,3,5-trinitroso-1,3,5-triazine/ TNX	NL	0.26	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.34	0.1 J
EXPLOSIVES	RDX	2	**90.4**	0.19 U	0.19 U	0.19 U	**4.7**	0.39	0.19 U	**57.3**	**33.5**

Note:

(1) Groundwater screening criteria includes, in order of descending priority, the Maximum Contaminant Level, Health Advisory Levels, and USEPA Region IX tap water Preliminary Remediation Goals. Shaded and bold cell indicates concentration exceeds the screening criteria. For metals analysis, screening was conducted only for dissolved results.

Blank results field indicates the constituent was not analyzed.
REG - Regular sample. Not a quality assurance sample.
FD - Field Duplicate
B - Analyte concentration detected above the method detection limit but below the reporting limit.
J - The analyte concentration estimated.
U - Not detected

Table 4-12
Chemicals Detected at Off Site Area
Groundwater Monitoring, June 2007

		Sample Location	MW-304	MW-307	MW-309	MW-407	MW-408	MW-409	MW-501	MW-509	MW-509D
		Sample Type	FD	REG	REG	REG	REG	REG	REG	REG	REG
		Sampling Date	06/12/2007	06/10/2007	06/10/2007	06/10/2007	06/11/2007	06/12/2007	06/11/2007	06/10/2007	06/10/2007
		Sampling Zone	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Deep
Analyte Group	**Analyte Name**	**Screening Criteria [1]**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**
EXPLOSIVES	1-Nitroso-3,5-dinitro-1,3,5-triazacyclohexane/ MNX	NL	0.21	0.19 U	0.14 J	0.25	0.19 U	0.18 J	0.19 U	0.2 U	0.2 U
EXPLOSIVES	Hexahydro-1,3,5-trinitroso-1,3,5-triazine/ TNX	NL	0.11 J	0.19 U	0.32	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U
EXPLOSIVES	RDX	2	**34**	0.19 U	**128**	**19.3**	**5.2**	**10.6**	0.074 J	0.2 U	0.2 U

Note:

(1) Groundwater screening criteria includes, in order of descendi tap water Preliminary Remediation Goals. Shaded and bold c dissolved results.

Blank results field indicates the constituent was not analyzed.
REG - Regular sample. Not a quality assurance sample.
FD - Field Duplicate
B - Analyte concentration detected above the method detection
J - The analyte concentration estimated.
U - Not detected

Table 4-12
Chemicals Detected at Off Site Area
Groundwater Monitoring, June 2007

		Sample Location	MW-510	MW-511	MW-513	MW-514	MW-515	MW-517
		Sample Type	REG	REG	REG	REG	REG	REG
		Sampling Date	06/10/2007	06/11/2007	06/12/2007	06/11/2007	06/12/2007	06/11/2007
		Sampling Zone	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
Analyte Group	**Analyte Name**	**Screening Criteria [1]**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**
EXPLOSIVES	1-Nitroso-3,5-dinitro-1,3,5-triazacyclohexane/ MNX	NL	0.22	0.18 J	0.19 U	0.2 U	0.19 U	0.19 U
EXPLOSIVES	Hexahydro-1,3,5-trinitroso-1,3,5-triazine/ TNX	NL	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U
EXPLOSIVES	RDX	2	**19.1**	**16**	**7.8**	0.2 U	0.19 U	0.19 U

Note:

(1) Groundwater screening criteria includes, in order of descendi
tap water Preliminary Remediation Goals. Shaded and bold c
dissolved results.

Blank results field indicates the constituent was not analyzed.
REG - Regular sample. Not a quality assurance sample.
FD - Field Duplicate
B - Analyte concentration detected above the method detection
J - The analyte concentration estimated.
U - Not detected

Table 4-13
Chemicals Detected at Spring Creek and Tributary
June 2007

		Sample Location	SC2	SC5	SCT2
		Sample Type	REG	REG	REG
		Sampling Date	06/07/2007	06/07/2007	06/07/2007
Analyte Group	Analyte Name	Screening Criteria [1]	ug/L	ug/L	ug/L
EXPLOSIVES	HMX	400	0.19 U	0.19 U	2.6
EXPLOSIVES	RDX	2	0.093 J	0.19 U	**5.1**
VOLATILES	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	59000	57.5	9.3	87.8
VOLATILES	1,1-Dichloroethene	7	1 U	1 U	1 U
VOLATILES	2-Butanone / Methyl Ethyl Ketone	4000	5 U	5 U	5 U
VOLATILES	Acetone	5500	5.4 J	25 U	5.9 J
VOLATILES	Methylene chloride	5	5 U	5 U	5 U

Note:

(1) Groundwater screening criteria includes, in order of descending priority, the Maximum Contaminant Level, Health Advisory Levels, and USEPA Region IX tap water Preliminary Remediation Goals. Shaded and bold cell indicates concentration exceeds the screening criteria. For metals analysis, screening was conducted only for dissolved results.

Blank results field indicates the constituent was not analyzed.

REG - Regular sample. Not a quality assurance sample.

FD - Field Duplicate

B - Analyte concentration detected above the method detection limit but below the reporting limit.

U - Not detected

J - The analyte concentration estimated.

FIGURES

APPENDIX A

GROUNDWATER SAMPLING FIELD DOCUMENTATION

Sample Collection Field Sheets

Sample Collection Sheets are included in the electronic version only

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**JAW-40 (Line 1)**
Date/Time Collected:	6/15/07	Personnel:	
Sampling Method: Peristaltic Pump		Sample Media:	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date		Well Depth (ft BTOC)	
Time Started		Depth to Water (ft BTOC)	5.22
Time Completed		Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate ML/min
1525		7.25	13.51	681	-22.9	2.19	1.40	6.76	350
1530		7.24	13.76	676	-15.4	1.53	1.32	8.54	210
1535		7.16	14.61	675	-13.0	1.46	0.92	10.02	210
1540		7.14	15.55	675	-9.5	1.59	0.70	10.71	150
1545		7.16	15.72	679	-3.4	1.59	0.66	11.39	125
1550		7.16	15.94	674	-6.6	1.59	0.61	12.00	100
1555		7.16	16.24	677	-5.7	1.64	0.63	12.47	100
1600		7.17	16.63	677	-4.4	1.69	0.58	12.73	75
1605		7.17	16.54	677	-3.6	1.61	0.57	13.07	75
1610		7.18	17.32	676	-3.0	1.52	0.63	13.41	75
1615		7.17	16.73	682	-2.0	1.59	0.59	13.44	75
1620		7.18	16.46	677	-1.8	1.53	0.58	13.59	75
1625		7.17	16.46	674	-.9	1.55	0.54	13.69	

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth=	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name:	Project No.
Location:	Well No. TAW-4D Line 1
Date/Time Collected: 6/5/07	Personnel MS/[illegible]/KL
Sampling Method:	Sample Media

Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested

WELL PURGING DATA

Date		Well Depth (ft BTOC)	
Time Started		Depth to Water (ft BTOC)	
Time Completed	1635	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1630		7.13	16.93	625	-.2	1.54	0.59	13.76	.75
1635		7.17	16.94	627	+.6	1.50	0.45	13.96	

2½ gal

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location:**Middletown, Iowa**		Well No.	**JAW-50 (Line 1)**
Date/Time Collected:	6/5/07	Personnel:	MW/JW
Sampling Method:	Well Wizard	Sample Media:	groundwater

Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date		Well Depth (ft BTOC)	
Time Started		Depth to Water (ft BTOC)	10.13
Time Completed		Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1241		7.41	13.81	752	+6.7	3.26	1.60		400
1246		7.00	12.94	760	-0.2	1.24	1.15	12.53	200
1251		6.90	13.99	759	-6.7	.83	0.45	13.01	200
1256		6.85	15.33	760	+4.6	.72	0.32	13.08	25
1301		6.95	16.13	768	+2.1	.70	0.25	12.84	100
1306		6.85	15.94	763	+1.3	.67	0.24	13.00	100
1311		6.97	16.52	763	+1.9	.61	0.00	12.94	75
1316		6.99	17.47	765	+2.8	.58	0.04	12.90	100
1321		6.99	17.79	768	+3.0	.55	0.11	13.92	100
1326		6.93	16.25	767	+4.2	.50	0.05	12.62	50
1331		6.93	14.14	764	+3.5	.54	0.11	12.49	50
1336		6.99	12.24	775	+2.7	.61	0.16	12.69	100
1341		6.96	15.90	760	+3.4	.53	0.10	12.93	100

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth=	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name:		Project No.	
Location:		Well No.	TMW-50 Lot 1
Date/Time Collected:	6/5/07	Personnel	MB/AC
Sampling Method:		Sample Media	
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested

WELL PURGING DATA

Date		Well Depth (ft BTOC)	
Time Started		Depth to Water (ft BTOC)	
Time Completed		Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1346		6.96	15.39	760	59	.47	0.06	13.12	100
1351	24L	6.97	15.29	761	93	.41	0.06	12.46	180

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**JAW-602 (Line 1)**
Date/Time Collected:	6/6/07 1037	Personnel:	MM/AC
Sampling Method:	Hurricane Monsoon	Sample Media:	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(1) 500 ml Poly	None, Cool to 4°C	Metals-Diss (Lab will filter and preserve)

WELL PURGING DATA

Date	7 June 07	Well Depth (ft BTOC)	
Time Started	9.47	Depth to Water (ft BTOC)	20.19 ft
Time Completed		Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	8
Well Head		Amount Purged (liters)	7.3/4 gal.

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU) ±.2	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate mL/MIN
947	1	7.36	13.21	692	-44.8	1.49	0.86	20.35	480
947	1	7.32	13.24	689	-58.7	0.48	0.79	20.39	500
952	1	7.32	13.33	687	-68.6	0.41	0.54	20.41	500
957	3g	7.33	13.36	689	-74.4	0.21	0.09	20.44	450
1002	1	7.34	13.19	690	-81.6	0.17	0.20	20.46	450
1007	1	7.34	13.25	691	-83.1	0.15	0.17	20.48	450
1012	1	7.33	13.84	686	-83.0	0.13	0.21	20.49	500
1017	1	7.35	13.84	687	-87.5	0.12	0.23	20.50	500
1022	1	7.35	13.93	687	-87.8	0.11	0.20	20.52	500
1027	3 3/4	7.36	13.70	690	-90.0	0.11	0.00	20.54	500
1032	1	7.35	13.93	688	-91.0	0.07	0.00	20.58	490
1037	1 9x	7.35	13.43	687	-90.4	0.07	0.01	20.58	400

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth=	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**GZ-2A (Line 1)**
Date/Time Collected: 6/5/07		Personnel:	MILES / ANNIE
Sampling Method: PERISTALIC		Sample Media:	groundwater

Sample QA Split: ☐ Split Sample No. ______

Sample QC Duplicate: ☐ Duplicate Sample No. ______

MS/MSD Requested: ☐ MS/MSD Sample No. ______

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	5 June 07.	Well Depth (ft BTOC)	
Time Started	0:	Depth to Water (ft BTOC)	6.15 ft.
Time Completed		Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head	0.0	Amount Purged (liters)	

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate (mL/min)
909		7.11	13.15	728	.52	.44	8.79	6.68	~~6.68~~ 300
914		7.14	13.37	708	26.7	.47	7.96	7.05	150
919		7.16	13.62	707	26.0	~~2~~.58	5.52	7.55	100
924	Stopped sampling – water ~~no~~ stopped being drawn up – coil								
925		7.16	14.45	703	-13.9	1.13	~~59~~.27	7.19	100
930		7.03	13.74	747	-13.5	.63	9.10	7.37	120
935		7.02	13.30	753	-17.8	.47		7.51	120
	Stopped again – moved pump to low idle side will wait 5 min								
1021		7.17	15.83	789	-20.6	2.63	7.62	7.47	100
1026		7.03	14.13	799	-59.3	1.75	4.91	7.63	100
1031		7.02	14.47	795	-63.0	.40	5.25	7.71	75
1036		7.03	15.06	796	-64.6	.46	4.99	7.79	50
1041		7.03	15.40	798	-65.9	.30	5.09	7.86	50

Margin note: turb 5.39

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = YSI 556 Multi-Parameter Probe Unit # Field Parameters Measured in Flow Through Cell

Pump Placement Depth= Well Diameter (in.) = Screen Interval (ft BTOC) =

Turbidity of Sample = Notes:

GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name:		Project No.	114622-2303
Location:		Well No.	62-14 (Nest D)
Date/Time Collected:	6/5/07 1046	Personnel	MRee / MKE
Sampling Method:		Sample Media	
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested

WELL PURGING DATA

Date		Well Depth (ft BTOC)	
Time Started		Depth to Water (ft BTOC)	
Time Completed		Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
									ML/min
1046	6	7.09	15.43	799	-66.2	.19	4.94	7.94	50

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

1 of 2

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**12-C (Line 2)**
Date/Time Collected:	6/5/07 1015	Personnel:	ROSI RCE
Sampling Method:	PERISTALTIC PUMP	Sample Media:	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(1) 500 ml Poly	None, Cool to 4°C	Metals-Diss (Lab will filter and preserve)

WELL PURGING DATA

Date	6/5/07	Well Depth (ft BTOC)	
Time Started	9 05	Depth to Water (ft BTOC)	8.26
Time Completed	10 15	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.30 TO 0.065
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	11

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm) FCE 6/5/07	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
0905		7.39	13.96	894	-41.7	1.75	1.5	9.26	200 mLs/min
0910		7.29	12.74	884	-149.3	1.43	0.15	10.6	300
0915		7.29	13.37	870	-150.1	1.30	0.70	11.71	175
0920		7.30	13.40	861	-145.3	1.25	0.30	12.52	200
0925		7.30	14.12	859	-142.2	1.16	0.30	13.15	175
0930		7.31	13.54	865	-148	1.24	0.30	13.60	175
0935		7.30	14.58	858	-148.4	1.13	0.75	14.25	175
0940		7.32	14.07	864	-155.6	1.20	1.3	14.78	150
0945		7.32	14.28	852	-150.8	1.18	2.0	15.16	100
0950		7.33	14.44	852	-144.3	1.15	1.3	15.57	100
0955		7.34	13.91	851	-142.3	1.12	1.4	16.14	100
1000		7.35	15.26	847	-142.9	1.02	1.2	16.35	75
1005		7.35	16.05	849	-132.7	0.94	1.7	16.56	65

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth=	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

GROUNDWATER FIELD SAMPLING DATA SHEET SHT 2/2

Project Name:	AAAP	Project No.	114622-2709
Location:		Well No.	12C HNE2
Date/Time Collected:	6/5/07 1015	Personnel	ROS/RCE
Sampling Method:	PERISTALTIC PUMP	Sample Media	GROUND WATER
Sample QA Split:	☐	Split Sample No.	Q
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(1) 500 mL POLY	NONE COOL TO 4°C	METALS-6010B (LAB WILL FILTER & PRESERVE)

WELL PURGING DATA

Date	6/05/07	Well Depth (ft BTOC)	
Time Started	1005	Depth to Water (ft BTOC)	
Time Completed	1015	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1010		7.35	16.12	853	-135.7	0.90	1.9	16.77	65
1015	11	7.35	16.12	854	-140.8	0.87	3.3	17.00	68

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

1 of 2

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**12-F (Line 2)**
Date/Time Collected:	6/5/07	Personnel:	RDS / RCE
Sampling Method:	PERISTALTIC Pump	Sample Media:	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(1) 500 ml Poly	None, Cool to 4°C	Metals-Diss (Lab will filter and preserve)

WELL PURGING DATA

Date	6/06/07	Well Depth (ft BTOC)	
Time Started	1156	Depth to Water (ft BTOC)	7.21
Time Completed	1316	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.40 to 0.075
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	18

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1150		7.46	14.42	892	-118.9	1.62	2.8	7.65	200 ML/MIN
1201		7.37	13.80	965	-149.2	0.69	1.4	8.88	150
1206		7.36	14.75	972	-151.9	0.63	1.6	9.64	110
1211		7.36	15.04	979	-155.0	0.59	1.5	10.35	110
1216		7.37	15.10	981	-158.1	0.59	3.4	11.02	100
1221		7.36	15.63	973	-155.4	0.68	2.7	11.67	100
1226		7.42	12.75	929	-156.7	0.65	3.6	14.30	500
1231		7.47	12.37	894	-164.7	0.63	9.9	17.42	300
1236		7.47	12.56	881	-158.9	0.72	5.5	20.35	500
1241	14	7.48	13.94	851	-153.4	0.74	3.4	21.70	400
1246		7.51	12.69	826	-137.1	0.68	2.2	24.31	400
1251		7.48	13.01	820	-134.2	0.63	2.4	25.06	100
1256		7.47	14.75	826	-132.4	0.70	2.4	25.46	100

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth=	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

2 OF 2

Project Name: **IAAAP**		Project No.	T14622-27023
Location: Middletown, Iowa		Well No.	~~MW-309~~ 12F (~~OLD SHEET~~) LINE 2
Date/Time Collected: 6/5/07 1316		Personnel	RDS / RCC
Sampling Method: peristaltic pump		Sample Media	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/05/07	Well Depth (ft BTOC)	
Time Started	1156	Depth to Water (ft BTOC)	7.21
Time Completed	1316	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1301		7.47	16.07	837	-128.6	0.61	2.9	25.85	75 ML/MIN
1306		7.48	16.76	849	-138.0	0.57	2.6	26.22	75
1311		7.46	15.40	851	-143.1	0.66	2.4	26.63	75
1316	4	7.45	15.64	843	-143.7	0.65	2.5	27.11	75
	TOTAL	18L	PURGED						

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**L2-MW5 (Line 2)**
Date/Time Collected: 6/5/07 1125		Personnel:	RDS / RCE
Sampling Method:	Peristaltic Pump	Sample Media:	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☒	MS/MSD Sample No.	L2MW5 (LINE 2)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(1) 500 ml Poly	None, Cool to 4°C	Metals-Diss (Lab will filter and preserve)

WELL PURGING DATA

Date	6/05/07	Well Depth (ft BTOC)	
Time Started	1050	Depth to Water (ft BTOC)	12.26
Time Completed	1125	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.225
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	11

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU) RDS 6/5/07	Water Elevation (ft)	Purge Rate
1050		7.57	13.99	568	-10.3	2.72	0.00	12.42	150 mL/MIN
1055		7.55	13.97	589	-31.9	1.96	7.7	12.45	225
1100		7.53	13.71	598	-99.4	1.02	30.00	12.48	225
1105		7.52	13.44	600	-93.8	0.78	2.5	12.49	225
1110		7.51	13.44	599	-100.9	0.75	2.4	12.50	225
1115		7.52	13.22	600	-112.1	0.76	2.0	12.51	225
1120		7.51	13.15	598	-118.9	0.74	0.40	12.52	225
1125	11 L	7.51	13.57	599	-120.8	0.72	0.40	12.53	225

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**JAW-54 (Line 3)**
Date/Time Collected:	6/5/07 1610	Personnel:	RDS/RCE
Sampling Method:	Well Wizard	Sample Media:	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☑	Duplicate Sample No.	JAW 54 (LINE 3)
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/5/07	Well Depth (ft BTOC)	
Time Started	1455	Depth to Water (ft BTOC)	4.73
Time Completed	1610	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1455		7.83	13.32	476	-49	5.09	0.95	5.25	100 ML/min
1500		7.24	15.41	590	-31.3	2.44	1.10	5.00	100
1505		7.21	13.97	597	-22.2	1.52	2.10	5.26	250
1510		7.27	13.52	559	-26.2	1.55	1.30	5.19	170
1515		7.31	13.58	530	-22.5	2.29	0.95	5.19	200
1520		7.33	13.47	482	-22.5	2.17	0.95	5.21	150
1525		7.34	13.85	452	-25.2	2.11	0.70	5.21	150
1530		7.33	13.97	435	-25.9	2.14	1.30	5.21	150
1535		7.32	13.92	423	-28.9	2.01	0.65	5.21	150
1540		7.30	13.65	417	-29.5	1.81	0.80	5.31	220
1545		7.32	14.09	415	-32.8	1.88	0.55	5.26	200
1550		7.30	12.97	410	-31.0	1.57	0.60	5.35	250
1555		7.28	12.60	407	-29.3	2.64	0.55	5.27	150

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**	Project No. **T14622.~~2008~~** RW 6/5/07 2703
Location: **Middletown, Iowa** 6/5/07 1610	Well No. VAW 54 (LINE 3)
Date/Time Collected: WE C	Personnel: DOS/REE
Sampling Method: ~~Low Flow with peristaltic pump~~	Sample Media: Groundwater
Sample QA Split: RE 6/05/07 ☐ WELL WI22020	Split Sample No.
Sample QC Duplicate: ☒	Duplicate Sample No. VAW 54 (LINE 3)
~~MS/MSD Requested:~~ ☐	MS/MSD Sample No.

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 LITER AMBER GLASS	NONE Cool To 4°C	EXPLOSIVES (SW 846 8330)

WELL PURGING DATA

Date	6/05/07	Well Depth (ft BTOC)	
Time Started	1455	Depth to Water (ft BTOC)	4.73
Time Completed	1610	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	

FIELD MEASUREMENTS

-24.9

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV) RW 6/5/07 ~~-24.9~~	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1600		7.29	13.75	407	~~407~~	2.58	0.45	5.28	175 mL/MIN
1605		7.27	13.75	407	-24.4	2.42	0.60	5.27	175
1610	14	7.30	14.25	407	-26.2	2.34	0.50	5.20	150

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Sulfide=	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**JAW-15 (Line 3A)**
Date/Time Collected: 6/7/07 1615		Personnel:	RDS / JCE
Sampling Method: Well Wizard		Sample Media:	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/7/07	Well Depth (ft BTOC)	
Time Started	1535	Depth to Water (ft BTOC)	8.33
Time Completed	1615	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.125
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	7

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1535		7.28	14.95	675	61.8	5.42	2.8	8.65	400 ML/MIN
1540		7.02	15.12	704	54.6	4.40	1.8	8.86	175
1545		7.01	15.35	695	55.1	4.47	3.1	8.95	175
1550		6.98	15.62	686	58.7	4.47	1.1	8.95	125
1555		6.98	16.24	683	58.3	4.20	1.5	8.95	125
1600 1560		6.98	16.76	680	57.4	3.57	1.2	8.95	125 * YSI POWER
1605 1565		7.00	17.45	685	57.5	4.17	1.2	8.91	125 OFF ON ITS OWN
1610		7.00	17.02	686	54.4	4.11	0.90	8.92	125
1615	7	6.99	17.27	684	54.6	4.14	1.20	8.92	125

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**JAW-17 (Line 3A)**
Date/Time Collected: 6/8/07 925		Personnel:	RDS/RCE
Sampling Method: Well Wizard		Sample Media:	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
~~MS/MSD Requested:~~	☒	~~MS/MSD Sample No.~~	JAW 17 (LINE 3A)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/8/07	Well Depth (ft BTOC)	
Time Started	830	Depth to Water (ft BTOC)	6.69
Time Completed	925	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.325
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	13

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L) *	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
830		6.96	14.57	654	175.6	3.32	1.0	6.96	300 mL/min
835		6.93	12.77	700	168.7	1.97	1.4	6.96	300
840		6.94	12.75	695	154.5	8.21	1.5	6.96	300
845		6.93	13.24	688	158.4	4.50	0.25	6.85	150
850		7.00	13.95	683	162.8	5.39	1.10	6.80	75
855		7.02	13.99	684	139.7	6.15	0.95	6.86	200
900		7.02	13.71	677	123.2	5.68	0.40	6.85	200 * YSI POWER OFF
905		7.03	13.75	674	116.4	8.35	0.25	6.85	200
910		7.03	13.93	671	109.1	9.84	1.20	6.85	200
915		7.08	14.64	673	101.9	9.74	1.10	6.85	225
920		7.04	13.44	665	99.9	7.53	1.10	6.85	225
925	13	7.09	13.32	661	97.0	10.45	0.95	6.85	225
930									

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes: * DO READINGS ERRATIC	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**JAW-18 (Line 3A)**
Date/Time Collected: 6/8/07		Personnel: RDS/RCE	
Sampling Method:	Well Wizard	Sample Media:	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/8/07	Well Depth (ft BTOC)	
Time Started	1020	Depth to Water (ft BTOC)	
Time Completed		Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
		WELL DRY							

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**JAW-20 (Line 3A)**
Date/Time Collected: 6/8/07 1155		Personnel:	KOS / RCE
Sampling Method:	Well Wizard	Sample Media:	groundwater

Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/8/07	Well Depth (ft BTOC)	
Time Started	1100	Depth to Water (ft BTOC)	28.95
Time Completed	1155	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.040
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	7

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1100		7.13	14.45	673	67.6	3.61	1.2	29.48	300 mL/min
1105		7.06	13.48	674	~~399~~ 67.6	2.09	1.9	30.18	200
1110		6.97	14.22	674	41.3	1.96	2.6	30.57	200
1115		6.97	14.98	675	43.6	2.00	1.7	30.80	150
1120		6.99	16.14	679	45.3	2.54	1.5	30.93	100
1125		7.00	16.68	682	46.2	2.44	1.7	31.05	80 *VSI pump OFF
1130		7.01	17.12	684	45.9	3.43	1.4	31.18	80
1135		7.02	17.62	688	48.3	3.63	1.5	31.28	40
1140		7.02	18.54	687	47.2	3.02	1.8	31.32	40
1145		7.04	19.24	690	46.0	4.12	1.2	31.38	40
1150		7.04	19.63	693	46.6	4.55	1.7	31.45	40
1155	7	7.04	19.33	693	46.5	4.37	1.9	31.53	40
1200									

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 4"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Spr 1 of 2

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**JAW-21 (Line 3A)**
Date/Time Collected:	6/8 1405	Personnel:	RDS/RCE
Sampling Method:	Well Wizard	Sample Media:	groundwater

Sample QA Split: ☐ Split Sample No. ______

Sample QC Duplicate: ☐ Duplicate Sample No. ______

MS/MSD Requested: ☐ MS/MSD Sample No. ______

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/8/07	Well Depth (ft BTOC)	
Time Started	1300	Depth to Water (ft BTOC)	7.16
Time Completed	1405	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.20
Breathing Zone		Level of Drawdown (ft BTOC)	~~15~~ RDS 6/8/07
Well Head		Amount Purged (liters)	15

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1300		7.2	14.36	464	18.5	12.40	—	7.37	200 mL/min
1305		7.04	14.92	453	20.5	3.98	20	7.30	200
1310		7.00	14.17	445	22.8	5.72	24	7.35	200
1315		6.84	13.95	435	35.6	5.58	15	7.35	200
1320		6.84	14.01	428	35.7	4.36	11	7.35	200
1325		6.67	13.87	422	105.2	5.14	6.3	7.35	200
1330		6.87	14.72	422	90.7	4.68	5.4	7.30	175
1335		6.99	14.30	420	5.1	4.77	4.4	7.35	200 * YSI POWER OUT
1340		6.88	14.02	420	46.7	4.73	4.0	7.35	200
1345		6.87	13.98	419	43.7	4.17	6.0	7.35	200
1350		6.85	13.79	419	37.8	4.12	2.5	7.40	200
1355		6.89	13.87	420	29.6	4.03	2.6	7.40	200
1400		6.85	13.80	420	29.0	4.23	2.0	7.40	200

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = YSI 556 Multi-Parameter Probe Unit # Field Parameters Measured in Flow Through Cell

Pump Placement Depth = Well Diameter (in.) = 2" Screen Interval (ft BTOC) =

Turbidity of Sample = Notes:

* WELL RECHARGE & FLOW OK (WATER DISCHARGE CONNECTION TO WELL FIXTURES ~~(PIPE)~~ NOT GOOD AT WELL ~~AIR~~ WATER PIPE DAMAGED)

RDS 6/8/07

SINT 2 of 2

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

RDS 6/8/07

Project Name: **IAAAP**	Project No. **T14622.~~2608~~** 2703
Location: **Middletown, Iowa**	Well No. JAW-21 (LINE 3A)
Date/Time Collected: 6/8/07 1405	Personnel: RDS / RCE
Sampling Method: ~~Low Flow with peristaltic pump~~	Sample Media: Groundwater
Sample QA Split: well water ☐ 205	Split Sample No.
Sample QC Duplicate: ☐ 6/8/07	Duplicate Sample No.
MS/MSD Requested: ☐	MS/MSD Sample No.

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2(1) Liter Glass Amber	None, cool 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/8/07	Well Depth (ft BTOC)	
Time Started	1300	Depth to Water (ft BTOC)	7.16
Time Completed	1405	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.20
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	15

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1405	15	6.97	13.77	420	49.5	3.79	2.0	7.40	200 ml/min * YSI probe out

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Sulfide=	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**JAW-22 (Line 3A)**
Date/Time Collected: 6/7/07 1055		Personnel:	EDG / DCE
Sampling Method:	Well Wizard	Sample Media:	groundwater

Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/7/07	Well Depth (ft BTOC)	
Time Started	1020	Depth to Water (ft BTOC)	8.11
Time Completed	1055	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.100
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	4

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1020		6.96	18.82	1107	140.2	3.32	1.50	8.42	300 mL/min
1025		6.87	18.79	1214	112.6	1.94	6.05	8.61	150
1030		6.84	19.64	1274	90.4	1.71	0.95	8.66	100
1035		6.84	20.65	1294	79.2	1.46	1.50	8.71	100
1040		6.84	21.45	1301	73.7	1.26	1.30	8.71	106
1045		6.85	22.31	1306	66.8	1.15	1.20	8.65	40
1050		6.86	23.15	1316	64.1	1.21	1.00	8.65	80 * 451 pump OFF
1055	4	6.86	22.11	1317	62.7	1.24	0.95	8.70	100

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**5A-MW-1 (Line 5A/5B)**
Date/Time Collected:	6/6/17 1005	Personnel:	RDS / RCE
Sampling Method:	Peristaltic Pump	Sample Media:	groundwater

Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/6/17	Well Depth (ft BTOC)	19.95
Time Started	935	Depth to Water (ft BTOC)	4.74
Time Completed	1005	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.100
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	6

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
935		6.77	12.19	561	103.2	1.31	5.5	534	200 mL/min
940		6.80	12.37	561	99.3	0.99	2.7	5.51	200
945		6.81	12.46	561	95.5	0.91	4.8	5.42	190
950		6.82	12.34	563	87.4	0.91	3.7	5.63	190
955		6.83	12.68	560	86.5	*	3.2	5.47	150
1000		6.83	13.13	559	80.8	*	2.9	5.30	110
1005	6	6.82	13.21	560	78.9	*	2.6	5.29	100

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes: * DO PROBE NOT IN SYNC WILL CHANGE BEFORE NEXT WELL AND CALIBRATE	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**5A-MW-2 (Line 5A/5B)**
Date/Time Collected: 6/6/7 855		Personnel:	ROS/RCE
Sampling Method:	Peristaltic Pump	Sample Media:	groundwater

Sample QA Split: ☐ Split Sample No. _____

Sample QC Duplicate: ☐ Duplicate Sample No. _____

MS/MSD Requested: ☐ MS/MSD Sample No. _____

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/6/7	Well Depth (ft BTOC)	20.0'
Time Started	825	Depth to Water (ft BTOC)	5.95
Time Completed	855	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0-150 ~~0.075~~
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	5

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
825		6.91	11.75	396	146.2	2.04	6.8	6.69	150 mL/min
830		6.85	11.83	396	121.1	1.18	4.5	7.40	125
835		6.86	12.13	397	105.5	1.10	2.2	7.66	100
840		6.86	12.32	397	95.2	1.11	2.8	7.78	75
845		6.87	12.57	395	89.2	1.05	3.2	7.74	75
850		6.87	12.67	393	85.3	1.07	3.9	7.73	75
855	5	6.86	12.67	391	82.7	1.09	2.3	7.73	75
900									

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**5B-MW-1 (Line 5A/5B)**
Date/Time Collected:	6/6/07 1325	Personnel:	ROJ/RCE
Sampling Method:	Peristaltic Pump	Sample Media:	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/6/07	Well Depth (ft BTOC)	20.45
Time Started	1250	Depth to Water (ft BTOC)	6.67
Time Completed	13.25	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.175
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	8

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1250		7.03	13.12	606	92.2	*	10.0	7.19	210 mL/MIN
1255		6.98	12.12	592	88.2		6.8	7.45	210
1300		6.91	12.22	584	72.3		5.2	7.48	225
1305		6.97	12.48	576	66.0		2.3	7.52	190
1310		7.00	12.73	569	63.8		1.2	7.40	175
1315		7.03	12.90	560	58.1		0.50	7.36	175
1320		7.06	12.78	553	55.8		0.65	7.34	175
1325	8	7.05	12.71	549	54.9	*	0.66	7.34	175

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes: * DO PROBE AND METER OUT OF SYNC. Bottom Soft	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2702**
Location:**Middletown, Iowa**		Well No.	**JAW-29 (Line 9)**
Date/Time Collected:	6/6/07 1407	Personnel:	MM / AC
Sampling Method:	Well Wizard	Sample Media:	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(3) 40 ml vials	HCL, Cool to 4°C	VOCs

WELL PURGING DATA

Date	6/6/07	Well Depth (ft BTOC)	
Time Started		Depth to Water (ft BTOC)	7.55
Time Completed		Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	0.5 gallons.

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate mL/min
13:12		7.48	14.40	580.1	-49.6	2.49	1.68	8.~~72~~	110
13:17		7.33	10.53	585	-35.8	1.61	3.31	9.25	110
1322		7.30	15.81	584	-34.4	1.49	3.05	9.54	(A) ~~110~~ 50
1327		7.30	17.45	590.5	-29.3	1.49	3.32	9.75	10
1332		7.30	18.96	588	-26.4	1.41	3.71	9.86	30
1337		7.32	20.42	589	-27.8	1.45	3.43	9.91	10
1342		7.32	22.00	601	-26.0	1.39	3.91	9.97	10
1347		7.32	23.00	604	-27.2	1.36	3.~~36~~	9.99	10
1352		7.32	24.09	608	-23.4	1.29	2.99	10.03	10
1357		7.33	24.~~00~~	614	-28.2	1.27	3.36	10.05	10
1402		7.30	25.16	617	-27.1	1.20	~~AL: 59~~	10.05	10
	A	~~4.30~~	~~25.00~~				254		
1407	1/2 gal	2.~~36~~	25.~~02~~	618	-26.8	1.18	2.38	10.07	

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**	Project No. **T14622-2702**
Location: **Middletown, Iowa**	Well No. **Jaw-30 (Line 9)**
Date/Time Collected: 6/7/07 ~~1558~~ 855 AM	Personnel: MMS/AC
Sampling Method: LL	Sample Media: groundwater

Sample QA Split: ☐ Split Sample No. ______

Sample QC Duplicate: ☐ Duplicate Sample No. ______

MS/MSD Requested: ☐ MS/MSD Sample No. ______

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
~~(3)~~ 40 ml vials (6)	HCL, Cool to 4°C	VOCs

WELL PURGING DATA

Date	6/7/07	Well Depth (ft BTOC)	
Time Started	~~1558~~ 910	Depth to Water (ft BTOC)	8.71 ft
Time Completed	855	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	~~2.12 ga~~ 2.5 gal (AC)

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
910		7.46	14.64	635	+3.5	2.73	8.96	9.11	360
915		7.28	13.10	610	-4.2	0.32	14.2	9.20	360
920		7.27	13.99	604	-17.8	0.41	6.59	9.04	160
925		7.28	14.00	605	-25.6	0.27	3.02	9.12	180
930		7.27	13.93	606	-28.7	0.22	1.32	9.10	180
935		7.27	14.04	607	-30.4	0.31	1.13	9.13	190
940		7.26	14.10	607	-33.4	0.26	0.42	9.12	180
945		7.26	14.18	608	-36.5	0.21	0.87	9.13	180
950		7.26	14.23	609	-37.8	0.19	0.75	9.09	180
955	2½ gal	7.26	14.45	610	-38.4	0.18	0.24	9.09	180

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2702**
Location: **Middletown, Iowa**		Well No.	**Jaw-31 (Line 9)**
Date/Time Collected:	6/6/07 14:58	Personnel:	MM/KC
Sampling Method:	WWW	Sample Media:	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(3) 40 ml vials	HCL, Cool to 4°C	VOCs
(2) 1 Liter Amber Glass	None, Cool to 4°C	SVOCs

WELL PURGING DATA

Date	6/6/07	Well Depth (ft BTOC)	
Time Started		Depth to Water (ft BTOC)	7.61 ft.
Time Completed		Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	3 gal.

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate mL/min.
14:59		7.17	12.02	630	-50.2	1.59	3.18	11.19	400
1504		7.12	12.31	624	-40.0	1.74	0.67	12.68	450
1509		7.12	13.54	627	-34.6	1.70	0.79	12.95	100
1514		7.11	15.73	629	-27.6	1.60	0.15	12.92	125
1519		7.11	16.25	635	-26.1	1.58	0.30	12.91	120
1524		7.10	16.25	638	-24.1	1.50	0.39	12.94	110
1529		7.09	16.50	637	-23.2	1.49	0.40	12.95	110
1534		7.08	16.06	634	-25.4	1.42	0.97	12.98	110

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2702**
Location: **Middletown, Iowa**		Well No.	**L9-MW11 (Line 9)**
Date/Time Collected: 6/7/07 / 1010		Personnel:	MMG/AC
Sampling Method: PERISTALTIC		Sample Media:	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(3) 40 ml vials	HCL, Cool to 4°C	VOCs
(AC)		

WELL PURGING DATA

Date	6/7/07	Well Depth (ft BTOC)	32.9
Time Started		Depth to Water (ft BTOC)	10.93
Time Completed	1010	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	2½ gal

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV) -93.1	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate mL/min
935		6.76	13.70	1123	~~-125.8~~	2.09	0.00	10.74	290
940		6.86	12.93	1099	-84.8	0.27	0.00	11.58	290
945		6.67	13.18	1086	-84.1	0.23	0.00	12.03	290
950		6.66	13.62	1080	-85.4	0.22	0.00	12.21	190
955		6.64	14.06	1083	-86.9	0.19	0.00	12.24	170
1000		6.66	14.19	1092	-88.0	0.16	0.00	12.19	150
1005		6.65	14.40	1090	-87.6	0.15	0.00	12.15	150
1010	2½ gal	6.64	14.35	1090	-87.0	0.14	0.00	12.13	150

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**JAW-617 (Pesticide Pit)**
Date/Time Collected: 6/6/07 1500		Personnel:	RDS/RCE
Sampling Method:	Well Wizard	Sample Media:	groundwater

Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(1) 500 ml Poly	None, Cool to 4°C	Metals-Diss (Lab will filter and preserve)

WELL PURGING DATA

Date	6/6/07	Well Depth (ft BTOC)	
Time Started	1415	Depth to Water (ft BTOC)	7.11
Time Completed	1500	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.150
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	9

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L) *	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1415		6.93	14.88	596	25.0	~~5.25~~	0.00	7.40	200 ML/MIN
1420		7.04	14.24	591	30.2		0.00	7.30	200
1425		7.04	13.50	577	34.5			7.49	200
1430		7.04	13.35	573	35.8			7.45	200
1435		7.02	13.60	570	38.0			7.45	150
1440		7.04	13.66	569	37.3			7.45	150
1445		7.04	13.60	569	36.6			~~7.59~~ 7.48	150
1450		7.02	13.81	569	39.4		2.66	7.50	150
1455		7.01	13.92	568	40.2		1.4	7.50	150
1500	9	6.90	14.01	567	42.2	*	1.4	7.50	150

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes: ~ 2-Turbidity meter out of sync Recalibrated	
	* Col probe and meter non function	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location:**Middletown, Iowa**		Well No.	**Sump (Pesticide Pit)**
Date/Time Collected:		Personnel:	
Sampling Method:		Sample Media:	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(1) 500 ml Poly	None, Cool to 4°C	Metals-Diss (Lab will filter and preserve)

WELL PURGING DATA

Date	6/6/07	Well Depth (ft BTOC)	
Time Started	800	Depth to Water (ft BTOC)	
Time Completed		Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate

Sump Dry

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

1J2

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**JAW-32 (Firing Site)**
Date/Time Collected:	6/9/07 1230	Personnel:	RDS / RCE
Sampling Method:	Well Wizard	Sample Media:	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Poly	HNO3	Rad Parameters (Gross Alpha/Beta)
(1) 1 Liter Poly	HNO3	Rad Parameters (Total Uranium)

WELL PURGING DATA

Date	6/9/07	Well Depth (ft BTOC)	
Time Started	1115	Depth to Water (ft BTOC)	13.30
Time Completed	1230	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.080
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	8

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft) *	Purge Rate
1115		7.20	13.96	479	14.4	7.15	2.1	13.4 *	40 mL/min
1120		7.10	16.20	485	17.8	4.98	4.0		175
1125		7.09	15.24	493	13.0	5.01	3.1		90
1130		6.98	15.79	498	17.0	5.31	2.9		140
1135		7.06	15.73	506	17.5	6.00	2.0		50
1140		6.97	16.37	516	81.0	6.20	2.0		80
1145		7.04	16.10	516	37.8	4.59	1.9		70
1150		7.05	14.23	524	28.0	7.50	1.9		70
1155		7.02	14.04	523	27.4	7.33	1.6		140
1200		7.06	14.10	524	31.0	7.35	1.4		140
1205		7.07	14.99	525	36.0	6.28	1.7		40
1210		7.08	14.42	529	32.8	7.15	1.9		100
1215		7.06	14.49	529	34.1	7.65	2.5		100

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes: * TOP OF PUMP NO WATER ELEV	

SAM 2022

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**	Project No. **T14622.~~2608~~** 2703
Location: **Middletown, Iowa**	Well No. JAW 32 (FIRING SITE)
Date/Time Collected: 6/9/07 1230	Personnel: POS / RCE
Sampling Method: ~~Low Flow with peristaltic pump~~	Sample Media: Groundwater
Sample QA Split: ☐ WELL WI7440	Split Sample No.
Sample QC Duplicate: ☐	Duplicate Sample No.
MS/MSD Requested: ☐	MS/MSD Sample No.

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 LITER POLY	HNO3	RAD PARAMETERS (GROSS ALPHA / BETA
1 1 LITER POLY	HNO3	RAD PARAMETERS (TOTAL URANIUM)

WELL PURGING DATA

Date	6/9/07	Well Depth (ft BTOC)	
Time Started	1115	Depth to Water (ft BTOC)	13.30
Time Completed	1230	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.080
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	8

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
			~~4~~ Rpt 6/9						
1220		7.20	~~12~~28	528	16.8	5.33	2.4	*	100 ml/s/min
1225		7.10	15.87	533	17.2 *	6.45	2.7		100
1230	8	7.11	15.82	534	19.3 *	9.27	2.8		80
6/10/07									
0820		7.13	12.41	520	193.5	4.55	2.91		
			WELL RAN DRY DURING SAMPLING						
			GOT 2 LITERS ON 6/9/07						
			WILL COME BACK 6/10/07 TO FINISH OFF SAMPLE BOTTLES						

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Sulfide=	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes: * TOP OF PUMP NO WATER ELEV	
	* GETTING AIR IN FLOW TUBE AFFECTING DO & ORP NO STABILITY	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	~~MW-513~~ ~~(OFF-SITE)~~ JAW 32 FIRING SITE
Date/Time Collected:	6/12/07 1559	Personnel	KOS / RCE
Sampling Method:	~~Hurricane~~ WELL WIZARD	Sample Media	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
~~(2) 1 Liter Amber Glass~~	~~None, Cool to 4°C~~	~~Explosives (SW-846 8330)~~
(1) 1 LITER POLY	NONE	DISSOLVED URANIUM

WELL PURGING DATA

Date	6/12/07	Well Depth (ft BTOC)	
Time Started	1535	Depth to Water (ft BTOC)	TOP OF PUMP
Time Completed	1559	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.090
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	2.5

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1535		~~7.55~~ 7.31	15.91	545	-18.1	5.70	1.90	*	115 ml/min
1538		7.39	16.14	541	-9.0	5.19	0.30	13.4	50
1541		7.26	18.17	545	-7.3	5.85	1.55		100
1544		7.25	18.54	547	-0.1	5.47	0.84		80
1547		7.25	18.96	547	3.7	5.47	0.15		50
1550		7.25	19.71	544	5.3	5.47	0.40		50
1553		7.24	20.14	550	8.2	4.42	0.20		50
1556		7.24	21.07	552	8.2	4.28	0.05		50
1559	2.5	7.24	21.27	553	9.0	5.30	0.20		80

* READ EVERY 3 MIN DUE TO LOW RECHARGE W/O VOLUME

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =

YSI 556 Multi-Parameter Probe Unit #

Field Parameters Measured in Flow Through Cell

Pump Placement Depth =

Well Diameter (in.) = 2

Screen Interval (ft BTOC) =

Turbidity of Sample =

Notes:

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**JAW-34 (Firing Site)**
Date/Time Collected: 6/9/07 1010		Personnel: RDS / RCE	
Sampling Method: Well Wizard		Sample Media:	groundwater

Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Poly	HNO3	Rad Parameters (Gross Alpha/Beta)
(1) 1 Liter Poly	HNO3	Rad Parameters (Total Uranium)

WELL PURGING DATA

Date	6/9/07	Well Depth (ft BTOC)	
Time Started	925	Depth to Water (ft BTOC)	19.34
Time Completed	1010	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.060
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	9

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
925		6.97	14.52	1404	197.4	3.80	2.16	19.68	300 mL/min
930		6.97	13.25	1318	108.4	2.45	0.95	20.13	300
935		6.94	13.14	1305	75.7	2.57	0.50	20.50	300
940		6.96	13.34	1295	53.7	3.66	0.45	20.75	300
945		6.97	14.01	1293	49.3	2.42	0.45	20.65	125
950		6.99	15.24	1301	44.6	2.16	0.20	20.73	125
955		7.00	15.25	1300	37.4	2.13	0.45	20.78	125
1000		6.99	14.99	1301	31.0	2.11	0.35	20.86	150
1005		6.98	15.46	1298	29.8	2.09	0.35	20.90	80
1010	9	6.99	16.20	1302	27.9	2.12	0.60	20.91	60

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 4"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

1 of 2

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	~~MW-513~~ ~~(OFF-SITE)~~ JAW 34 ENG SITE
Date/Time Collected: 6/12/07 1740		Personnel	DDS / RLE
Sampling Method: ~~Hurricane~~		Sample Media	groundwater
Sample QA Split: WELL WATER	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
~~(2) 1 Liter Amber Glass~~	~~None, Cool to 4°C~~	~~Explosives (SW-846 8330)~~
(1) LITER Poly	NONE	DISSOLVED URANIUM

WELL PURGING DATA

Date	6/12/07	Well Depth (ft BTOC)	
Time Started	1630	Depth to Water (ft BTOC)	20.30
Time Completed	1745	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.08
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	6

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate	
1630		7.47	16.17	1246	-19.5	3.75	0.00	20.69	125 mL/MIN	
1635		7.06	16.22	1274	-7.2	1.89	0.00	20.85	90	
1640		6.99	17.74	1308	-4.5	1.52	0.00	20.86	90	
1645		6.97	18.30	1320	-4.0	1.45	0.25	20.90	80	
1650		6.95	18.97	1322	-0.6	1.27	0.00	20.93	80	
1655		6.96	19.72	1326	1.3	1.29	0.30	20.95	90	
1700		6.95	18.92	1324	-7.6	1.22	0.80	21.02	90	*YSI POWER OFF
1705		6.95	19.16	1326	-2.6	1.20	0.15	21.09	90	
1710		6.95	18.16	1323	-0.0	1.17	0.10	21.16	100	
1715		6.95	18.17	1322	5.7	1.18	0.20	21.22	80	
1720		6.93	18.17	1321	6.8	1.18	0.00	21.25	90	
1725		6.90	17.72	1322	16.2	1.19	0.25	21.30	80	
1730		6.85	18.15	1323	13.4	1.22	0.00	21.28	75	*YSI POWER OFF

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =
YSI 556 Multi-Parameter Probe Unit #
*Field Parameters Measured in Flow Through Cell
Pump Placement Depth =
Well Diameter (in.) = ~~4~~ 4"
Screen Interval (ft BTOC) =
Turbidity of Sample =
Notes:

2 of 2

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	~~MW-S13~~ (OFF-SITE) JAW 34 FIRING SITE
Date/Time Collected: 6/12/07	1740	Personnel	RDS/ RCE
Sampling Method: ~~Hurricane~~ WELL WIZARD		Sample Media	groundwater
Sample QA Split: ☐		Split Sample No.	
Sample QC Duplicate: ☐		Duplicate Sample No.	
MS/MSD Requested: ☐		MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
~~(2) 1 Liter Amber Glass~~	~~None, Cool to 4°C~~	~~Explosives (SW-846 8330)~~
(1) 1 LITER Poly	NONE	DISSOLVED URANIUM

WELL PURGING DATA

Date	6/12/07	Well Depth (ft BTOC)	
Time Started	1630	Depth to Water (ft BTOC)	20.30
Time Completed	1740	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.08
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	6

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1735		6.91	19.18	1326	13.8	1.19	0.25	21.36	80 ml/5/min
1740	6	6.92	19.91	1335	12.5	1.26	0.00	21.40	80 " "
1745									

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 4"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**EBP-MW2 (East Burn Pad)**
Date/Time Collected:	6/7/07 1623	Personnel:	MMS / AC
Sampling Method:	~~Hurricane~~ MON.	Sample Media:	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(1) 500 ml Poly	None, Cool to 4°C	Metals-Diss (Lab will filter and preserve)

WELL PURGING DATA

Date	6/7/07	Well Depth (ft BTOC)	150 Ft.
Time Started	1603	Depth to Water (ft BTOC)	~~45.38~~ 45.38 AC
Time Completed	1623	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	2 3/4 gal.

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1603		7.16	13.57	888	-108.0	0.16 ~~0.16~~	A1	45.53	425
1608	|	7.10	13.31	937	-133.2	0.15	A1	45.55	400
1613	|	7.13	13.35	956	-140.9	0.10	A1	45.56	400
1618	|	7.15	13.30	951	-144.7	0.05	A1	~~45.57~~ 45.57	400
1623	2 3/4	7.14	13.39	932	-145.5	0.05	A1	45.57	400
~~1628~~									
~~1633~~ AC									

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes: A1 - OPAQUE - too MUCKY TO READ.	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**EBP-MW3 (East Burn Pad)**
Date/Time Collected:	6/8/07	Personnel:	MMS / AC
Sampling Method:	Peristaltic Pump	Sample Media:	groundwater

Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☒	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/8/07	Well Depth (ft BTOC)	~27 Ft.
Time Started		Depth to Water (ft BTOC)	6.98 Ft.
Time Completed		Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	2.25 gal.

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate mL/min
823		7.90	11.92	560	25.3	3.68	7.80	7.90	550
828		7.02	11.46	596	-12.4	1.73	2.34	9.28	425
833		7.00	11.75	545	-28.9	1.36	0.00	9.15	200
838		7.00	11.92	541	-38.9	1.26	0.00	9.01	200
843		7.01	12.25	533	-45.5	1.30	0.00	8.95	200
848		7.02	12.19	527	-48.0	1.33	0.00	9.02	210
853	2 1/4 gal	6.98	12.20	524	-48.6	1.36	0.00	9.07	210
~~856~~									

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**	6/9/07	Well No.	**EBP-MW4 (East Burn Pad)**
Date/Time Collected:	6/8/07 1440	Personnel:	MMS / AC
Sampling Method:	~~Hurricane~~ MDP (AC)	Sample Media:	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/8/07	Well Depth (ft BTOC)	48 Ft.
Time Started	1007	Depth to Water (ft BTOC)	34.48 Ft.
Time Completed		Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1007	~~1.0~~ (AC)	7.10	14.86	680	-32.2	1.39	51.6	38.28	1.20
1012		7.09	15.87	686	-30.3	1.20	44.2	38.48	2.5
1017		7.10	17.07	691	-27.3	1.05	44.1	38.53	2.5
1022		7.11	18.25	694	-25.6	1.10	34.4	38.57	2.5
1027		7.19	19.92	701	-25.0	1.07	30.5	38.62	2.5
1032		7.15	20.65	705	-25.2	1.04	28.9	38.64	1.0
1037		7.15	21.52	711	-24.8	0.97	27.1	38.65	1.0
6/9/07 0935		7.10	14.40	836	-5.8	3.17	160	42.95	1.35
PAW DRY — WILL COME Back Later (AC)									

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**EBP-MW5 (East Burn Pad)**
Date/Time Collected:	6/8/07	Personnel:	MMS / [illegible]
Sampling Method:	MON.	Sample Media:	groundwater

Sample QA Split: ☐ Split Sample No. ______

Sample QC Duplicate: ☐ Duplicate Sample No. ______

MS/MSD Requested: ☐ MS/MSD Sample No. ______

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/8/07	Well Depth (ft BTOC)	47.8 Ft.
Time Started		Depth to Water (ft BTOC)	32.28
Time Completed		Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate mL/min
1323		7.09	13.19	687	-47.5	1.99	~~164~~	33.97	500
1328		7.00	13.32	676	-67.9	1.67	~~118~~	33.01	100
1333		7.00	~~14~~.30	677	-75.9	1.40	~~94~~	32.78	100
1338		7.01	14.53	681	-80.5	1.61	71.4	32.73	100
1343		7.01	14.52	684	-79.7	1.59	44.8	32.72	100
1348		7.01	14.45	683	-79.1	1.60	28.4	32.71	100
1353		6.98	14.57	682	-77.5	1.60	18.4	32.70	100
1358		7.02	14.68	677	-75.4	1.58	12.0	32.69	100
1403		7.04	14.69	675	-75.4	1.60	9.34	32.69	100
1408		7.03	14.70	670	-73.6	1.60	6.46	32.69	100
1413		7.03	14.93	668	-72.8	1.59	5.05	32.69	100
1418		7.03	15.07	664	-72.0	1.60	4.05	32.69	100
1423		7.03	14.89	660	-71.3	1.61	2.94	32.69	100

Turb. 164. 118 94

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell ✓	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron = YSI 556 Multi-Parameter Probe Unit # Field Parameters Measured in Flow Through Cell

Pump Placement Depth = Well Diameter (in.) = Screen Interval (ft BTOC) =

Turbidity of Sample = Notes:

GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name:	IAAAP	Project No.	T1622-2703
Location:	IOWA	Well No.	EBP-MW5 (EAST BORN PAD)
Date/Time Collected:	6/8/07	Personnel	MMS/ALE
Sampling Method:	MON.	Sample Media	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested

CONTINUED PAGE 2

WELL PURGING DATA

Date		Well Depth (ft BTOC)	
Time Started		Depth to Water (ft BTOC)	
Time Completed		Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1428	1	7.03	14.89	658	-70.6	1.61	2.20	32.69	100
1433		7.04	14.83	657	-69.5	1.62	2.65	32.69	100
1438	2								

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**EDA-02 (East Burn Pad)**
Date/Time Collected: 6/6/07 1630		Personnel: RDS / RCE	
Sampling Method: Well Wizard		Sample Media: groundwater	
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/6/07	Well Depth (ft BTOC)	
Time Started	1600	Depth to Water (ft BTOC)	20.10
Time Completed	1630	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.090
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	6

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1600		7.19	15.02	874	15.8	*	1.00	20.30	250 mL/min
1605		7.15	13.02	870	19.6		1.00	20.63	175
1610		7.15	14.07	874	16.5		0.60	20.83	190
1615		7.15	14.58	877	15.1		0.65	20.96	100
1620		7.15	16.46	881	14.0		0.75	21.02	90
1625		7.16	17.09	883	13.8		0.75	21.10	90
1630	6	7.15	17.04	885	15.0		0.70	21.18	90

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 4"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**EDA-03 (East Burn Pad)**
Date/Time Collected:	6/7/07 1137	Personnel:	AC / MMS
Sampling Method:	Well Wizard	Sample Media:	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/7/07	Well Depth (ft BTOC)	
Time Started	1102	Depth to Water (ft BTOC)	21.95
Time Completed	1137	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	3 gallons.

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1102		7.23	14.24	588	-73.9	2.43	0.00	22.73	225
1107		7.23	12.44	585	-54.3	1.69	0.00	22.58	360
1112		7.20	12.42	583	-56.4	1.55	0.00	22.65	360
1117								23.72	
1117		7.21	12.56	584	-58.6	1.49	0.00	22.75	350
1122		7.20	12.83	584	-59.0	1.42	0.00	22.79	350
1127		7.21	13.26	586	-60.5	1.35	0.00	22.81	250
1132		7.19	13.51	586	-60.9	1.34	0.00	22.79	200
1137	3 gal	7.20	13.95	588	-61.1	1.33	0.00	22.80	200

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	**EDA-04 (East Burn Pad)**
Date/Time Collected:	6/7/07 1435	Personnel:	RL/MRD
Sampling Method:	Well Wizard	Sample Media:	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/7/07	Well Depth (ft BTOC)	
Time Started	1355	Depth to Water (ft BTOC)	8.01 Ft
Time Completed	1435	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	2 3/4 gallons

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	mL/min Purge Rate
1355		7.15	14.16	652	-55.9	2.05	0.00	8.12	750
1400		7.14	12.14	654	-71.7	0.39	0.00	8.84	575
1409		7.11	13.74	872	-95.6	0.10	0.00	8.14	350
1410		7.19	13.29	862	-100.0	0.35	0.00	8.92	350
1415		7.13	13.52	859	-115.1	0.22	0.00	8.99	275
1420		7.14	14.58	860	-121.8	0.18	0.01	8.99	110
1425		7.16	16.31	871	-124.5	0.17	0.00	8.97	110
1430		7.16	16.61	874	-125.9	0.17	0.00	8.97	110
1435	2 3/4	7.18	16.17	879	-128.0	0.17	0.00	8.99	110

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**	Project No. **T14622.~~2608~~ ~~2703~~** At 6/7 2703
Location: **Middletown, Iowa**	Well No. JAW 627 NAA (NORTH BOON PAD)
Date/Time Collected: 6/7/7 0840	Personnel: ROJ/RCE
Sampling Method: ~~Low Flow with peristaltic pump~~	Sample Media: Groundwater
Sample QA Split: JAW ☐	Split Sample No.
Sample QC Duplicate: ☐	Duplicate Sample No.
MS/MSD Requested: ☐	MS/MSD Sample No.

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 LITER AMBER GLASS	NONE COOL TO 4°C	EXPLOSIVES (SW-846 8330)

WELL PURGING DATA

Date	6/7/7	Well Depth (ft BTOC)	
Time Started	810	Depth to Water (ft BTOC)	33.51
Time Completed	840	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.300
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	10 LITERS

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
810		7.17	14.41	872	51.4	~~5.14~~ *	1.00	33.79	250 ML/MIN
815		7.11	13.82	871	53.1	~~5.24~~	0.45	33.71	275
820		7.12	13.75	869	55.3	~~4.42~~	0.10	33.71	300
825		7.12	13.58	870	60.1	~~4.44~~	0.00	33.73	300
830		7.13	13.58	870	57.8	~~4.17~~	0.00	33.73	300
835		7.13	13.60	868	58.7	—	0.00	33.73	300
840	10	7.13	13.65	868	60.5	—	0.00	33.72	300

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Sulfide=	Well Diameter (in.) = 4"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes: * DO PROBE AND METER NOT FUNCTIONING	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	MW-117 (OFF-SITE)
Date/Time Collected: 6/12/07 1550		Personnel	M. Smith / M. McCoy - Sulentic
Sampling Method: Hurricane		Sample Media	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/12/07	Well Depth (ft BTOC)	61.71
Time Started	1458	Depth to Water (ft BTOC)	27.17
Time Completed	1615 ~~1500 hrs~~	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1500		6.75	15.30	672	-93.2	0.48	85.0	27.19	500
1505		6.99	15.77	626	-100.0	0.23	31.0	27.18	500
1510		7.18	15.96	575	-118.7	.20	2.5	27.18	500
1515		7.24	16.08	537	-122.1	.24	2.5	27.18	500
1520		7.27	16.19	518	-121.0	.39	1.1	27.18	500
1525	3.5	7.30	16.16	509	-116.9	.63	0.00	27.18	500
1530		7.32	16.07	508	-112.1	.89	0.00	27.18	500
1535		7.35	16.20	498	-106.4	1.15	0.00	27.18	500
1540		7.36	16.34	495	-102.5	1.20	0.00	27.18	500
1545		7.36	16.27	498	-101.6	1.22	0.00	27.18	500
~~1550~~									

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	MW-117D (OFF-SITE)
Date/Time Collected: 6/18/07	1800	Personnel	M. Smith / M. McCoy-Sulentic
Sampling Method: Hurricane		Sample Media	groundwater

Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/18/07	Well Depth (ft BTOC)	103.00
Time Started	1655	Depth to Water (ft BTOC)	27.20
Time Completed	1821	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1655		7.37	17.98	482	-59.9	1.51	39	27.80	500
1700		7.48	16.14	478	-71.1	.57	75	27.80	500
1705		7.48	16.07	478	-78.3	.34	80	27.79	450
1710		7.49	15.41	473	-85.2	.22	85	27.84	750
1715	3.5	7.51	15.16	472	-101.0	.13	75	27.84	750
1720		7.54	15.76	475	-113.9	.14	50	27.82	500
1725		7.55	15.80	475	-119.4	.10	32	27.81	500
1730		7.55	15.77	474	-120.1	.10	25	27.81	500
1735		7.55	15.67	474	-121.8	.09	20	27.81	500
1740		7.56	15.60	473	-124.8	.08	14	27.81	500
1745		7.56	15.63	474	-124.7	.08	10	27.81	500
1750	4.0	7.56	15.68	473	-125.5	.08	10	27.81	500
1755		7.56	15.66	475	-125.2	.07	6.5	27.81	500

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	MW-1178 (OFF-SITE)
Date/Time Collected:	6/12/07 1430	Personnel	M. Smith / M. Mag Sulentic
Sampling Method:	Hurricane	Sample Media	groundwater

Sample QA Split: ☐ Split Sample No. _____

Sample QC Duplicate: ☐ Duplicate Sample No. _____

MS/MSD Requested: ☐ MS/MSD Sample No. _____

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/12/07	Well Depth (ft BTOC)	37.55
Time Started	1330	Depth to Water (ft BTOC)	26.53
Time Completed	1440	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1335		5.32	16.53	430	-3.1	2.46	4.14	26.81	325
1340		7.74	15.79	430	-56.0	2.45	3.32	26.81	325
1345		8.53	15.88	431	-83.7	2.56	1.73	26.81	325
1350		9.00	15.75	433	-107.8	2.72	0.75	26.81	325
1355		9.22	15.80	432	-92.0	2.77	0.55	26.81	325
1400		9.85	15.67	430	-84.9	2.85	0.55	26.81	325
1405		7.43	15.78	427	-62.3	2.83	0.15	26.81	325
1410		7.27	15.73	426	-50.7	2.83	0.00	26.81	325
1415	3.5	7.03	15.82	424	-44.7	2.77	0.00	26.81	325
1420		7.03	15.71	422	-39.1	2.77	0.00	26.81	325
1425		7.00	15.73	421	-38.1	2.70	0.00	26.81	325

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	MW-121 (OFF-SITE)
Date/Time Collected: 6/10/07 / 1103		Personnel	M. Smith / M. McCoy - Sulentic
Sampling Method: Hurricane		Sample Media	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/10/07	Well Depth (ft BTOC)	44.23
Time Started	0951	Depth to Water (ft BTOC)	22
Time Completed	1140	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged [redacted] Gal	4.0

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
0951		6.99	13.41	743	32.3	2.25	628	22.08	300
0956		6.84	13.60	741	15.0	1.62	462	22.07	300
1001		6.81	13.65	736	-9.0	1.44	232	22.06	300
1006		6.83	13.60	735	-20.5	1.12	141	22.06	300
1011		6.85	13.64	733	-34.8	1.03	97.7	22.06	300
1016		6.89	13.42	732	-39.0	.95	62.6	22.07	400
1021	2.5gal	6.90	13.40	732	-51.2	.91	37.3	22.08	400
1026		6.85	13.42	730	-53.5	.89	26.8	22.08	400
1028	stop	due to Rain & Lightning & Thunder							
restart 1053		6.98	13.46	726	-40.6	1.57	46.3	22.01	500
1058		6.93	13.73	727	-42.4	1.00	21.6	22.09	500
1103		6.93	14.00	727	-49.7	.68	13.1	22.07	500
1108		6.94	14.06	727	-53.3	.58	9.77	22.07	500

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**	Project No. **T14622.** 2703
Location: **Middletown, Iowa**	Well No. MW-121 (off-site)
Date/Time Collected: 6/10/07	Personnel: M. Smith - M. McCoy - Scientific
Sampling Method: Hurricane	Sample Media groundwater
Sample QA Split: ☐	Split Sample No.
Sample QC Duplicate: ☐	Duplicate Sample No.
MS/MSD Requested: ☐	MS/MSD Sample No.

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber	None	Explosives (SW-846-8330)

WELL PURGING DATA

Date	6/10/07	Well Depth (ft BTOC)	44.23
Time Started	~~0951~~	Depth to Water (ft BTOC)	22.0
Time Completed	1140	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (~~liters~~) Gal	

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1113		6.95	14.42	727	253.6	1.55	9.40	22.07	500
1118	3.5	10.94	14.28	723	-50.9	.63	10.44	22.05	500

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Sulfide=	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	MW-123 (OFF-SITE)
Date/Time Collected: 6/11/07	1030	Personnel	M. Sabik / M. McCoy - Salentic
Sampling Method: Hurricane		Sample Media	groundwater
Sample QA Split: ☐		Split Sample No.	
Sample QC Duplicate: ☐		Duplicate Sample No.	
MS/MSD Requested: ☐		MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/11/07	Well Depth (ft BTOC)	52.99
Time Started	0950	Depth to Water (ft BTOC)	20.49
Time Completed	1053	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (~~liters~~) gal	4.5

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
					+27.8				
0955		7.02	14.81	692	+44	1.14	12.3	20.51	500
1000		7.08	14.66	700	+38.7	.36	10.12	20.50	500
1005		7.03	14.87	701	+43.5	.39	6.18	20.50	500
1010		7.02	14.93	703	+46.1	.33	2.70	20.50	500
1015	3.25	7.00	14.97	704	+49.2	.29	1.40	20.50	500
1020		6.97	14.97	705	+52.4	.27	0.55	20.50	500
1025	1.25	6.96	14.90	705	+53.7	.28	.08	20.50	500

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	MW-125 (OFF-SITE)
Date/Time Collected: 6/11/07 0900		Personnel	M. Smith / M. McCay - Salentic
Sampling Method: Hurricane		Sample Media	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/11/07	Well Depth (ft BTOC)	
Time Started	0815	Depth to Water (ft BTOC)	20.94
Time Completed	0925	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (~~liters~~) gal	4.5

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
0815	~~6.87~~	6.87	14.47	834	3.2	1.46	409	20.96	400
0820		6.89	14.51	833	2.3	1.68	279	20.96	500
0825		6.75	14.65	825	-0.3	1.85	101.4	20.96	500
0830		6.69	14.80	829	-2.9	2.02	32.9	20.96	500
0835		6.69	14.90	829	-5.2	1.96	13.7	20.96	500
0840		6.69	15.05	827	-6.4	1.95	7.46	20.96	500
0845	3.5	6.70	14.82	830	-7.3	2.02	4.45	20.96	500
0850		6.91	14.79	829	-7.8	2.10	2.83	20.96	500
0855	1.0	6.72	14.91	826	-8.3	2.09	1.47	20.96	500

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	MW-136 (OFF-SITE)
Date/Time Collected:	6/11/07 1615	Personnel	M. Sadle / M. McCoy - Sulentic
Sampling Method:	Hurricane	Sample Media	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/11/07	Well Depth (ft BTOC)	62.4
Time Started	1535	Depth to Water (ft BTOC)	5.99
Time Completed	1620	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (~~Liters~~)	4.5gal

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1535		7.57	14.54	674	-78.7	2.37	84.9	6.03	450
1540		7.52	15.25	665	-119.8	1.69	62.6	6.03	450
1545		7.53	15.02	662	-126.0	1.97	25.0	6.03	450
1550		7.52	15.12	662	-124.9	2.21	9.63	6.02	450
1555		7.52	15.21	663	-122.2	2.26	4.12	6.03	450
1600		7.52	15.18	665	-121.8	2.33	1.67	6.03	450
1605	4.0	7.54	15.14	664	-119.8	2.34	0.84	6.03	450
1610	.5	7.55	15.28	665	-118.9	2.38	0.24	6.03	450

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	MW-303 (OFF-SITE)
Date/Time Collected: 6/12/07	1100	Personnel	M Smith / M McCoy - Sulentic
Sampling Method: Hurricane		Sample Media	groundwater

Sample QA Split: ☐ Split Sample No. _____

Sample QC Duplicate: ☐ Duplicate Sample No. _____

MS/MSD Requested: ☐ MS/MSD Sample No. _____

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/12/07	Well Depth (ft BTOC)	55.60
Time Started	1020	Depth to Water (ft BTOC)	17.21
Time Completed	1125	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1025		7.77	15.43	439	-11.2	4.52	30.1	17.29	500
1030		7.87	15.52	440	-59.9	5.02	35.3	17.29	500
1035		7.87	15.56	445	-63.7	5.00	11.00	17.29	500
1040		7.88	15.61	444	-65.9	5.02	2.23	17.29	500
1045	3.25	7.89	15.78	444	-66.8	4.90	1.60	17.29	500
1050		7.89	15.72	444	-68.0	4.86	0.92	17.29	500
1055	1.0	7.89	15.87	444	-68.5	4.72	0.10	17.29	500

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	MW-304 (OFF-SITE)
Date/Time Collected: 6/12/07	0925	Personnel	M. Smith / M. McCoy - Sulantic
Sampling Method: Hurricane		Sample Media	groundwater
Sample QA Split: ☐		Split Sample No.	
Sample QC Duplicate: ☒		Duplicate Sample No.	MW 304 - FD
MS/MSD Requested: ☐		MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/12/07	Well Depth (ft BTOC)	70.61
Time Started	0825	Depth to Water (ft BTOC)	48.0
Time Completed	0954	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (~~liters~~)	7.0 gal

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
0835		7.62	13.63	516	4.3	5.36	<1000	10.23	~~<1000~~ 450
0840		7.32	13.87	549	-19.2	1.79	1018	10.22	450
0845		7.41	13.90	511	-43.0	2.44	138	10.22	650
0850		7.42	14.25	514	-48.6	2.19	74.6	10.22	350
0855	3.5	7.43	14.08	521	-55.8	1.91	28	10.22	500
0900		7.44	14.09	522	-58.2	1.95	17.4	10.22	500
0905		7.44	14.05	518	-60.7	2.00	11.2	10.23	500
0910		7.45	14.09	517	-62.3	2.04	8.16	10.23	500
0915		7.45	14.15	515	-63.1	2.05	5.69	10.22	500
0920	3.5	7.45	14.34	514	-64.1	7.04	4.05	10.22	500

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

2.26

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	MW-307 (OFF-SITE)
Date/Time Collected: 6/10/07 1535		Personnel	M. Smith / M. McCoy Salentine
Sampling Method: Hurricane		Sample Media	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/10/07	Well Depth (ft BTOC)	173.67
Time Started	1455	Depth to Water (ft BTOC)	27.34
Time Completed	1602	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (~~liters~~)	

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1455		7.41	14.10	525	+24.7	3.62	56.4	27.37	450
1500		7.42	14.31	527	+21.6	3.99	132	27.37	375
1505		7.33	14.18	529	+15.3	4.76	28.1	27.38	500
1510		7.36	13.84	530	+13.9	5.17	6.08	27.38	500
1515	3900	7.38	13.77	530	+12.1	5.34	1.54	27.38	520
1520		7.39	13.80	530	+10.5	5.20	0.16	27.37	400
1525		7.39	13.86	531	+9.2	5.25	0.00	27.37	500
1530		7.39	13.89	529	+8.4	5.34	0.00	27.36	500

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**	Project No. **T14622.** 2703
Location: **Middletown, Iowa**	Well No. MW 309
Date/Time Collected: 6/10/07 / 1400	Personnel: M. Sauda / M. McCoy - Salentic
Sampling Method: Hurricane	Sample Media
Sample QA Split: ☐	Split Sample No.
Sample QC Duplicate: ☐	Duplicate Sample No.
MS/MSD Requested: ☐	MS/MSD Sample No.

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber	None	Explosives

WELL PURGING DATA

Date	6/10/07	Well Depth (ft BTOC)	58.28
Time Started	1325	Depth to Water (ft BTOC)	22.52
Time Completed	1417	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged ~~(liters)~~ Gal	4 gal

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1325		7.69	14.37	511	-29.6	2.40	63.2	22.52	350
1330		7.54	14.86	510	41.2	3.47	44.9	25.53	400
1335		7.53	14.94	506	47.0	4.31	19.0	25.53	400
1340		7.53	14.39	498	55.0	4.97	7.33	25.53	500
1345	3 gal	7.52	14.62	496	53.8	5.18	2.03	25.92	450
1350		7.52	14.68	496	53.5	5.26	1.35	25.53	450
1355	1 gal	7.54	14.68	496	-53.1	525	0.00	25.53	450

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Sulfide=	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location:	**Middletown, Iowa**	Well No.	MW-407 (OFF-SITE)
Date/Time Collected:	6/10/07 1330	Personnel	RDS / RCE
Sampling Method:	Hurricane	Sample Media	groundwater

Sample QA Split: ☐ Split Sample No. _____

Sample QC Duplicate: ☐ Duplicate Sample No. _____

MS/MSD Requested: ☐ MS/MSD Sample No. _____

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/10/07	Well Depth (ft BTOC)	
Time Started	1255	Depth to Water (ft BTOC)	6.10
Time Completed	1330	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.560
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	24

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1255		7.67	14.44	549	62.6	7.42	45	6.12	>1000 mL/min
1300		7.46	12.90	573	5.8	0.32	23	6.12	>1000
1305		7.43	13.43	582	-15.6	0.37	12	6.11	500
1310		7.43	13.43	577	-22.6	0.37	5.4	6.11	500
1315	14	7.42	13.44	577	-31.8	0.26	2.2	6.11	500
1320		7.42	13.45	578	-37.0	0.27	1.5	6.11	500
1325		7.43	13.47	578	-37.3	0.44	0.93	6.11	500 & YSI OFF
1330	10	7.42	13.41	578	-38.0	0.29	0.30	6.11	500

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**	Project No. **T14622.** 2703
Location: **Middletown, Iowa**	Well No. MW408
Date/Time Collected: 12/4/07 1305	Personnel: M. Smith / M. McCoy - Salentic
Sampling Method:	Sample Media
Sample QA Split: ☐	Split Sample No.
Sample QC Duplicate: ☐	Duplicate Sample No.
MS/MSD Requested: ☐	MS/MSD Sample No.

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested

WELL PURGING DATA

Date	12/4/07	Well Depth (ft BTOC)	67.0
Time Started	1220	Depth to Water (ft BTOC)	5.58
Time Completed		Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1220		7.39	15.15	717	-64.5	1.76	8.51	5.59	500
1225		7.28	15.27	744	-100.6	.88	2.82	5.58	500
1230		7.24	15.33	749	-112.6	.78	83.1	5.59	425
1235		7.27	15.14	753	-122.0	.77	28.1	5.57	425
1240		7.29	15.41	755	-129.8	.75	12.6	5.57	425
1245	3.5	7.24	14.99	753	-132.0	.85	10.24	5.58	500
1250		7.28	14.95	754	-137.0	.73	3.57	5.58	450
1255		7.29	15.12	755	-142.2	.72	1.40	5.58	450
1300		7.30	15.09	756	-145.4	.71	0.70	5.58	450

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Sulfide=	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Through gate around along levee

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	MW-409 (OFF-SITE)
Date/Time Collected: 6/12/07 1345		Personnel	RDS / RCE
Sampling Method: Hurricane		Sample Media	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☒	MS/MSD Sample No.	MW409

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/12/07	Well Depth (ft BTOC)	
Time Started	1310	Depth to Water (ft BTOC)	20.42
Time Completed	1345	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.500
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	29

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1310		7.97	13.60	645	-98.0	0.70	170	20.50	71000 mL/min
1315		7.51	13.52	659	-87.6	0.21	80	20.50	71000
1320	14	7.45	13.47	640	-86.8	0.27	55	20.50	71000
1325		7.44	14.69	643	-81.9	0.25	31	20.49	500
1330		7.40	14.92	646	-71.6	0.12	5.8	20.49	500
1335		7.43	14.81	644	-70.0	0.07	1.1	20.49	500
1340		7.45	15.09	643	-70.2	0.07	0.25	20.49	500
1345	15	7.49	15.11	643	-72.1	0.06	0.70	20.49	500

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: IAAAP ET	Project No. T14622~~2600~~ 2709
Location: Middletown, Iowa 6/11/07	Well No. MW501 (OFFSITE)
Date/Time Collected: ~~10/4/07~~ 1405	Personnel: ROS/RCE
Sampling Method: ~~Low Flow with peristaltic pump~~	Sample Media: Groundwater
Sample QA Split: ☐ HURRICANE	Split Sample No.
Sample QC Duplicate: ☐	Duplicate Sample No.
MS/MSD Requested: ☐	MS/MSD Sample No.

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 LITER AMBER	NONE COOL TO 4°C	EXPLOSIVES (SW-846 8330)

WELL PURGING DATA

Date	~~10/4/07~~ 6/11/07 ET	Well Depth (ft BTOC)	
Time Started	1305	Depth to Water (ft BTOC)	18.49
Time Completed	1405	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.400
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	35

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1305		7.21	14.85	664	-27.3	6.60	13	18.53	>1000 mL/min
1310		7.38	14.07	671	-16.3	5.62	4.9	18.54	>1000
1315		7.27	14.95	644	0.8	4.57	2.5	18.52	500
1320		7.23	14.90	646	10.0	4.37	2.3	18.52	500
1325	14	7.21	14.93	646	14.0	4.41	1.0	18.52	500
1330		7.24	14.97	646	14.1	4.34	3.2	18.52	500
1335		7.24	15.00	647	18.0	4.48	1.2	18.52	500 * YSI POWER OFF
1340		7.24	14.96	646	14.6	4.55	1.6	18.52	500
1345		7.23	14.98	643	16.8	4.53	1.5	18.52	500
1350	14	7.24	15.08	640	16.9	4.43	1.3	18.52	500
1355		7.25	14.78	645	14.9	4.50	1.6	18.52	500
1400		7.23	15.14	643	12.0	4.49	1.3	18.52	500
1405	7	7.27	15.44	645	14.5	4.35	1.3	18.52	500

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Sulfide=	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

TtE

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location:	**Middletown, Iowa**	Well No.	MW-509 (OFF-SITE)
Date/Time Collected:	6/10/07 ~~09~~ 1000	Personnel	RDS/RCE
Sampling Method:	Hurricane	Sample Media	groundwater

Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/10/07	Well Depth (ft BTOC)	
Time Started	0930	Depth to Water (ft BTOC)	5.25
Time Completed	1000	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.500
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	20

FIELD MEASUREMENTS

Re/1040

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
0930		7.23	13.45	361	138.6	5.82	22	5.28	500 mil/min
0935		7.28	13.25	361	111.3	4.37	18	5.28	500
0940 ~~0840~~		7.29	13.21	361	95.7	4.23	10	5.28	500
0945 ~~0845~~		7.30	13.14	360	88.9	4.78	5.1	5.28	500
0955 ~~0820~~	14	7.31	13.08	360	84.6	4.84	1.6	5.28	500
0950 ~~0825~~		7.32	13.01	360	79.8	4.92	3.6	5.28	500
1000 ~~083~~	6	7.33	13.02	360	76.7	4.91	4.9	5.28	500
	Total of 20 Liters								

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	MW-509D (OFF-SITE)
Date/Time Collected: 6/10/07 1140		Personnel	RDK / RCE
Sampling Method: Hurricane		Sample Media	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/10/07	Well Depth (ft BTOC)	
Time Started	1105	Depth to Water (ft BTOC)	5.33
Time Completed	1140	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.500
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	17

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1105		7.58	14.66	523	116	5.52	1.5	5.42	500 mL/min
1110		7.49	13.81	528	81.3	1.21	4.0	5.38	500
1115		7.46	13.74	531	55.0	0.47	3.1	5.38	500
1120		7.46	13.61	533	33.0	0.23	2.3	5.38	500
1125		7.46	13.57	534	20.3	0.21	0.95	5.38	500
1130	14	7.46	13.51	533	15.5	0.28	1.80	5.38	500
1135		7.45	13.42	532	14.3	0.40	0.45	5.37	500
1140	3	7.45	13.43	530	14.0	0.39	1.11	5.37	500

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	MW-510 (OFF-SITE) *
Date/Time Collected: 6/10/07 1510		Personnel	ROS/RCE
Sampling Method: Hurricane		Sample Media	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/10/07	Well Depth (ft BTOC)	
Time Started	1435	Depth to Water (ft BTOC)	8.45
Time Completed	1510	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.500
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	25

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1435		7.42	13.11	542	78.0	0.52	18	8.46	>1000 ml/min
1440		7.40	12.59	573	-36.5	0.08	8.9	8.46	>1000
1445		7.42	13.01	579	-65.7	0.06	7.5	8.46	500
1450	12	7.42	13.17	574	-67.2	0.07	3.4	8.47	500
1455		7.43	13.13	577	-58.2	0.07	0.95	8.47	500
1500		7.43	13.15	577	-53.6	0.06	0.70	8.47	500
1505		7.43	13.22	576	-52.2	0.07	0.80	8.47	500 * YSI POWER OFF
1510	17	7.46	13.28	576	-51.6	0.07	0.60	8.47	500

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes: * WELL CAP OFF WELL UNLOCKED AND OPEN	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	MW-511 (OFF-SITE)
Date/Time Collected:	6/11/07 1605	Personnel	RDS/RCE
Sampling Method:	Hurricane	Sample Media	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/11/07	Well Depth (ft BTOC)	
Time Started	1505	Depth to Water (ft BTOC)	6.00
Time Completed	1605	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.350
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	32

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate	
1505		8.11	14.91	549	-73.0	9.70	>1000	6.30	>1000 mL/min	
1510		7.45	12.93	542	-73.9	1.38	600	6.03	>1000	
1515	14	7.36	14.05	545	-64.5	1.73	310	6.01	450	*
1520		7.30	14.09	548	-51.0	0.75	410	6.02	400	
1525		7.35	14.11	547	-57.1	0.48	60	6.02	400	
1530		7.44	14.17	545	-62.0	0.47	40	6.02	400	
1535		7.46	14.33	542	-62.3	0.48	31	6.02	400	151 Power Out
1540		7.46	14.19	542	-62.5	0.53	21	6.02	350	
1545		7.46	14.24	542	-61.0	0.55	18	6.02	350	
1550		7.48	14.35	542	-62.3	0.62	11	6.02	350	
1555	14	7.48	14.34	533	-60.2	0.62	7.8	6.02	350	
1600		7.48	14.19	530	-57.2	0.67	6.2	6.02	350	
1605	4	7.49	14.23	529	-57.0	0.64	5.2	6.02	350	

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes: * Water extremely dark brown (Fe) mud. Empty flow cell	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

SHT 1 OF 2

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	MW-513 (OFF-SITE)
Date/Time Collected: 6/12/07 1000		Personnel	ROS / RCE
Sampling Method: ~~Hurricane~~ LOW FLOW WITH PERISTALTIC PUMP		Sample Media	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/12/07	Well Depth (ft BTOC)	
Time Started	0830	Depth to Water (ft BTOC)	6.51
Time Completed	1000	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.400
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	27

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
0830		7.35	13.53	569	207.2	1.94	3.1	6.51	450 mL/min
0835		7.23	13.64	526	171.0	0.39	5.0	6.51	200
0840		7.27	13.82	519	147.5	0.38	3.0	6.51	200
0845		7.30	13.86	513	127.8	0.39	3.5	6.51	200
0850		7.33	13.89	509	107.5	0.40	3.4	6.51	200
0855		7.36	13.97	506	85.2	0.39	3.0	6.51	200
0900		7.40	14.03	505	65.1	0.38	3.0	6.51	200
0905		7.42	14.04	503	52.8	0.38	2.3	6.51	200
0910		7.44	14.03	503	37.4	0.38	—	6.51	200
0915		7.45	14.18	501	29.0	0.38	* —	6.51	200
0920	14	7.48	14.31	500	16.4	0.37	—	6.51	200
0925		7.48	14.40	499	8.6	0.37	-	6.51	200
0930		7.49	14.44	498	8.4	0.40	-	6.51	200

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes: * TURB INST OUT OF CAL. FIXED BACK ON LINE	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

SHT 2 OF 2

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	MW-513 (OFF-SITE)
Date/Time Collected: 6/12/07 1000		Personnel	RDI / RCE
Sampling Method: ~~Hurricane~~ LOW FLOW W/PERISTALTIC PUMP		Sample Media	groundwater
Sample QA Split: ☐		Split Sample No.	
Sample QC Duplicate: ☐		Duplicate Sample No.	
MS/MSD Requested: ☐		MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/12/07	Well Depth (ft BTOC)	
Time Started	0830	Depth to Water (ft BTOC)	6.51
Time Completed	1000	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.400
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	27

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
0935		7.49	14.74	497	2.6	0.39	~~1.80~~ 1.8	6.51	200 mL/min
0940		7.49	14.22	499	-1.3	0.38	~~8.00~~ 4.8	6.51	300
0945		7.49	14.18	494	-5.3	0.38	3.4	6.51	300
0950		7.48	13.90	497	-5.3	0.38	0.00	6.51	400
0955		7.47	13.98	496	-2.7	0.39	0.00	6.51	400
1000	13	7.49	13.91	494	-4.0	0.40	0.00	6.51	400 * YSI POWER FF

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 2	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

SPT 1 OF 2

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	MW-514 (OFF-SITE)
Date/Time Collected: 6/11/07	1125	Personnel	ROS/RCE
Sampling Method: Hurricane		Sample Media	groundwater
Sample QA Split: ☐		Split Sample No.	
Sample QC Duplicate: ☐		Duplicate Sample No.	
MS/MSD Requested: ☐		MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/11/07	Well Depth (ft BTOC)	
Time Started	1020	Depth to Water (ft BTOC)	5.65
Time Completed	1125	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.400
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	35

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1020		7.58	14.32	669	-110	1.78	300	5.69	71000 mL/MT
1025		7.23	13.51	666	-137.7	1.38	60	5.67	71000
1030		7.20	14.37	667	-140.4	1.63	45	5.66	400
1035	14	7.20	14.46	667	-140.0	1.85	11	5.66	400
1040		7.17	14.54	667	-138.0	2.35	22	5.66	400
1045		7.16	14.60	664	-136.8	2.04	513	5.66	400 * YSI Rowan OFF
1050		7.16	14.60	662	-136.7	2.07	75	5.67	400
1055		7.16	14.56	661	-137.0	1.44	13	5.67	400
1100		7.16	14.56	661	-136.1	1.25	11	5.67	400
1105		7.18	14.79	661	-135.0	1.10	7.1	5.67	400
1110	14	7.18	14.79	660	-133.0	1.01	5.3	5.67	400
1115		7.18	14.70	659	-131.0	0.91	6.7	5.67	400
1120		7.18	14.70	659	-131.8	0.91	4.4	5.67	400

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes: HINGE ON WELL COVER BROKEN	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

SHT 2 OF 2

Project Name: IAAAP	Project No. T14622.~~2608~~ 2703
Location: Middletown, Iowa 6/11/07 JT	Well No. MW 514 OFFSITE
Date/Time Collected: ~~10/11/07~~ 1125	Personnel: RDS/RCB
Sampling Method: ~~Low Flow with peristaltic pump~~	Sample Media: Groundwater
Sample QA Split: ☐ HARTLAND	Split Sample No.
Sample QC Duplicate: ☐	Duplicate Sample No.
MS/MSD Requested: ☐	MS/MSD Sample No.

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) WATER AMBER GLASS	None Cool to 4°C	EXPLOSIVES (SW-846 8330)

WELL PURGING DATA

Date	~~10/11/07~~ 6/11/07 JT	Well Depth (ft BTOC)	
Time Started	1120	Depth to Water (ft BTOC)	5.65
Time Completed	1125	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.400
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	35

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1125	7	7.24	14.90	658	-129.0	0.73	4.50	5.67	400

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Sulfide=	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

* RISER ON WELL CAP BROKEN

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	MW-515 (OFF-SITE)
Date/Time Collected: 6/12/07 1140		Personnel	RDS / RCE
Sampling Method: ~~Hurricane~~ PERISTALTIC pump		Sample Media	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/12/07	Well Depth (ft BTOC)	
Time Started	1110	Depth to Water (ft BTOC)	5.46
Time Completed	1140	Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.200
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	11

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
1110		7.68	13.60	590	-15.5	3.34	16	5.50	450 ml/min
1115		7.41	12.77	583	-100.0	1.88	9.2	5.50	450
1120		7.47	12.68	585	-138.9	0.53	4.3	5.50	450
1125		7.47	13.50	585	-140.7	0.31	2.5	5.50	450
1130		7.47	13.89	586	-141.0	0.24	2.4	5.48	200 ml/min
1135		7.47	14.04	585	-143.1	0.23	2.4	5.48	200
1140	11	7.47	14.14	585	-143.3	0.23	1.6	5.48	200 YSI Pump OFF

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	MW-516 (OFF-SITE)
Date/Time Collected:		Personnel	
Sampling Method:	Hurricane	Sample Media	groundwater

Sample QA Split: ☐ Split Sample No. _____

Sample QC Duplicate: ☐ Duplicate Sample No. _____

MS/MSD Requested: ☐ MS/MSD Sample No. _____

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date		Well Depth (ft BTOC)	
Time Started		Depth to Water (ft BTOC)	
Time Completed		Water Column Length	
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate

See Variance Report 6/11/07

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) =	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Figure 1
GROUNDWATER FIELD SAMPLING DATA SHEET

Project Name: **IAAAP**		Project No.	**T14622-2703**
Location: **Middletown, Iowa**		Well No.	MW-517 (OFF-SITE)
Date/Time Collected: 6/11/07 0900		Personnel	KDS/RCE
Sampling Method: Hurricane		Sample Media	groundwater
Sample QA Split:	☐	Split Sample No.	
Sample QC Duplicate:	☐	Duplicate Sample No.	
MS/MSD Requested:	☐	MS/MSD Sample No.	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
(2) 1 Liter Amber Glass	None, Cool to 4°C	Explosives (SW-846 8330)

WELL PURGING DATA

Date	6/11/07	Well Depth (ft BTOC)	
Time Started	0815	Depth to Water (ft BTOC)	
Time Completed	0900	Water Column Length	10.08
PID Measurements		Volume of Water in Well	
Background		Purge Rate (liters/min)	0.40
Breathing Zone		Level of Drawdown (ft BTOC)	
Well Head		Amount Purged (liters)	27

FIELD MEASUREMENTS

Time	Amount Purged (liters)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Water Elevation (ft)	Purge Rate
0815		7.40	13.93	607	118.7	4.66	130	10.11	1000 Mil/M X
0820		7.22	12.56	599	-90.1	0.73	110	10.12	1000
0825		7.21	13.33	601	-92.2	0.56	80	10.10	450
0830		7.31	13.45	597	-95.4	0.60	35	10.10	450
0835	14	7.31	13.42	596	-95.6	0.62	26	10.10	450
0840		7.31	13.60	593	-96.0	0.59	19	10.10	450
0845		7.35	13.68	591	-104.9	0.71	10	10.10	450 *455 Pump OFF
0850		7.33	13.60	592	-101.5	0.67	6.7	10.10	400
0855		7.34	13.58	590	-101.3	0.66	4.2	10.10	400
0900	13	7.35	13.60	590	-100.9	0.65	3.9	10.10	400

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Slope Indicator	Checked Against Calibrated Length
Water Quality Meter	YSI Model 556 with FT Cell	Twice Daily Calibration Verification also Calibrated Weekly

GENERAL COMMENTS

Ferrous Iron =	YSI 556 Multi-Parameter Probe Unit #	Field Parameters Measured in Flow Through Cell
Pump Placement Depth =	Well Diameter (in.) = 2"	Screen Interval (ft BTOC) =
Turbidity of Sample =	Notes:	

Surface Water and Sediment Sample Collection Log

Project Number: T1462 2-2703
Project Name: FAAP
Investigation Site: WEST BORN PAD
Sample Number:

Collection Date: 6/7/07
Collection Time: 1415
AR/COC Number:

Sample Name — SC 5

Water Samples

Type of Water Body: SURFACE
Sample QC: YES (NO)
Depth Below Water Surface (ft): 0-1 (GRAB)
Eh (mV): (ORP) 27.5
pH (SU): 8.27
Conductivity (mS/cm): 1.729 (uS) 6/7/07
Dissolved Oxygen (mg/L): 7.34
Temperature (C): 22.26
Turbidity (NTU): 30.0

Sample Analytical Parameter	Analytical Method
Explosives	
VOC's	

Sediment Samples

Height of Water above Sample (ft): NA
Sample Interval bgs (ft):

Sample Collected by: ROS/RCE
Logged by:
Reviewed by:

I Samples:

Sample Interval bgs (ft):
Headspace Reading (ppm):
Purpose: **Chemical** **Geotechnical**
Sample Composited after VOC Collection: **YES** **NO**

DESCRIPTION:

Sample Location Sketch/Comments:

Surface Water and Sediment Sample Collection Log

Project Number: T19622-2703
Project Name: LAAAP
Investigation Site: WEST BOON PAD
Sample Number:

Collection Date: 6/7/07
Collection Time: 1350
AR/COC Number:

Sample Name — SCT-2

Water Samples

Type of Water Body: SURFACE WATER
Sample QC: YES (NO)
Depth Below Water Surface (ft): 0-4" (GRAB)
Eh (mV): (ORP) -4.9
pH (SU): 7.62
Conductivity (mS/cm): 0.512
Dissolved Oxygen (mg/L): 5.13
Temperature (C): 21.92
Turbidity (NTU): 11

Sample Analytical Parameter	Analytical Method
EXPLOSIVES	
VOCs	

Sediment Samples

Height of Water above Sample (ft): NA
Sample Interval bgs (ft):

Sample Collected by: BOS/ACE
Logged by:
Reviewed by:

I Samples:

Sample Interval bgs (ft):
Headspace Reading (ppm):
Purpose: **Chemical** **Geotechnical**
Sample Composited after VOC Collection: **YES** **NO**

DESCRIPTION:

Sample Location Sketch/Comments:

Surface Water and Sediment Sample Collection Log

Project Number: T14622-2703
Project Name: IAAAP
Investigation Site: WEST BURN PAD
Sample Number:

Collection Date: 6/7/01
Collection Time: 1445
AR/COC Number:

Sample Name — SC 2

Water Samples

Type of Water Body: SURFACE
Sample QC: YES (NO)
Depth Below Water Surface (ft): 0-4" (GRAGE)
Eh (mV) (ORP) 103.4
pH (SU): 8.30
Conductivity (mS/cm): 1.719
Dissolved Oxygen (mg/L): 7.57
Temperature (C): 23.05
Turbidity (NTU): 33.0

Sample Analytical Parameter	Analytical Method
EXPLOSIVES	
VOC'S	

Sediment Samples

Height of Water above Sample (ft): N/A
Sample Interval bgs (ft):

Sample Collected by: ROI/RCE

Logged by:
Reviewed by:

I Samples:

Sample Interval bgs (ft):
Headspace Reading (ppm):
Purpose: **Chemical** **Geotechnical**
Sample Composited after VOC Collection: **YES** **NO**

DESCRIPTION:

Sample Location Sketch/Comments:

VARIANCE NO:

VARIANCE DATE(S): 6/8/07 (2 Dry Wells)

PROJECT NUMBER: T14622-2703

PROJECT NAME: FARAP

WORK PHASE: -2703

- VARIANCE REPORT -

I. SUMMARY OF CHANGE (by person identifying the change):

6/8/07 0800 Pesticide Pit (Sump) Dry Again

6/8/07 1020 JAW 18 - Dry Raw Well Wizards No Sample (48.5')

REPORTED BY: Ron Swaller

DATE: 6/8/07

II. APPLICABLE DOCUMENT / WORK PLAN:

DISTRIBUTION LIST

SIGNATURES

REQUESTED BY:

APPROVED BY:

PROJECT MANAGER APPROVAL:

QA APPROVAL:

APPENDIX B

CONCENTRATION TRENDS FOR SELECTED LOCATIONS AND PARAMETERS

Notes on the Preparation of Time/Concentration Graphs

Time/concentration graphs in this appendix have been prepared for selected groundwater data associated with the periodic groundwater monitoring program. Following is a brief explanation of the information that is contained in the appendix.

Data used for preparation of the graphs are presented to the left side of each graph. Data for the graphed wells include the date, concentration, "detection" column, and (where there was at least one non-detect) an "adjusted" column. Instances where a constituent was not detected on a given date are represented by an "N" in the detection column. In these cases, the "adjusted" column contains a value equal to one-half of the detection limit. Where a constituent was detected, there is no adjustment. Beneath the analytical data the PRG (i.e., the screening level that is described and used in the 2007 Groundwater Sampling Report) is provided.

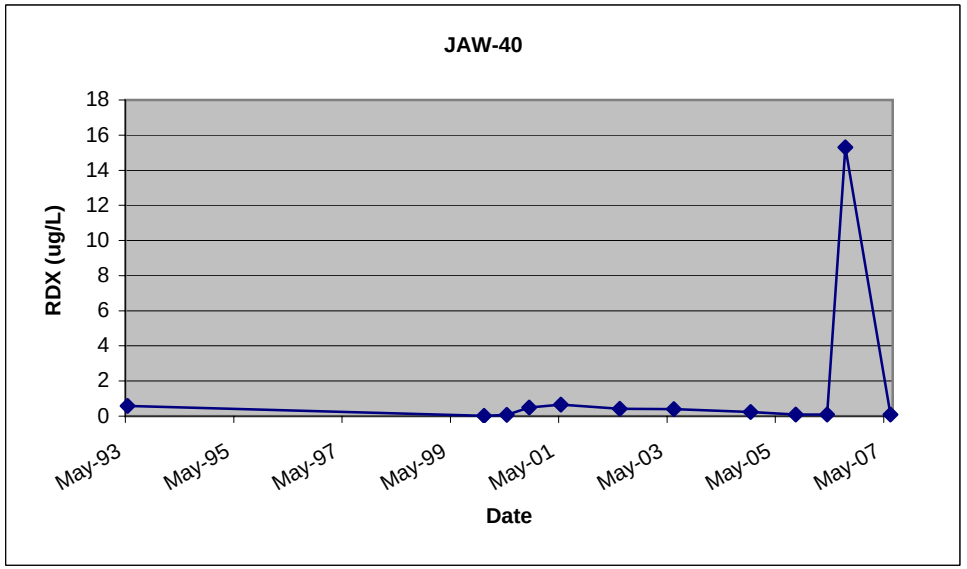
Graphs were created by plotting the date on the x axis and the "adjusted" concentration on the y axis. Linear "best-fit" trend lines were added to certain graphs to provide a visual representation of the approximate long-term trends in concentrations over time. Trend lines were not added to graphs where there were more than approximately 10 to 20% non-detects, in order to avoid an overemphasis on the variability in detection limits over time.

Concentration Trends for Selected Wells and Parameters
Line 1

JAW-40

Date	RDX (µg/L)	Detected	Adjusted RDX (µg/L)
5/12/1993	1.17	N	0.585
12/5/1999	0.05	N	0.025
5/5/2000	0.16	N	0.08
10/23/2000	1	N	0.5
5/31/2001	1.3	N	0.65
6/18/2002	0.82	N	0.41
6/3/2003	0.79	N	0.395
11/17/2004	0.48	N	0.24
9/29/2005	0.2	N	0.1
4/12/2006	0.2	N	0.1
8/31/2006	15.3	Y	15.3
6/5/2007	0.19	N	0.095

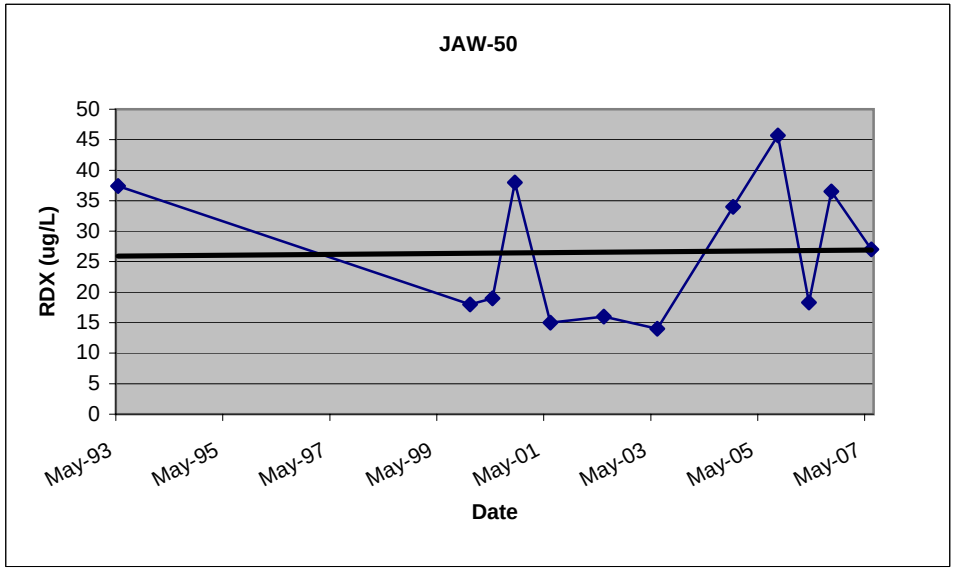
Screening Criteria = 2 ug/L



JAW-50

Date	RDX (µg/L)	Detected
5/14/1993	37.4	Y
12/4/1999	18	Y
5/5/2000	19	Y
10/22/2000	38	Y
6/4/2001	15	Y
6/11/2002	16	Y
6/2/2003	14	Y
11/10/2004	34	Y
9/29/2005	45.7	Y
4/12/2006	18.3	Y
9/5/2006	36.5	Y
6/5/2007	27	Y

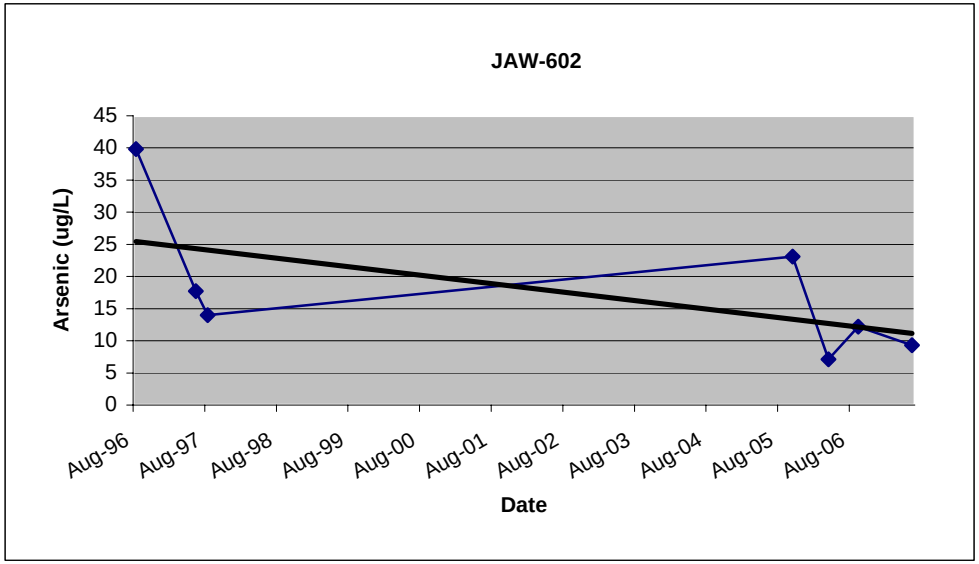
Screening Criteria = 2 ug/L



JAW-602

Date	Arsenic (µg/L)	Detected
8/24/1996	39.8	Y
6/28/1997	17.7	Y
8/28/1997	14	Y
10/11/2005	23.1	Y
4/12/2006	7.1	Y
9/7/2006	12.2	Y
6/5/2007	9.3	Y

Screening Criteria = 10 ug/L

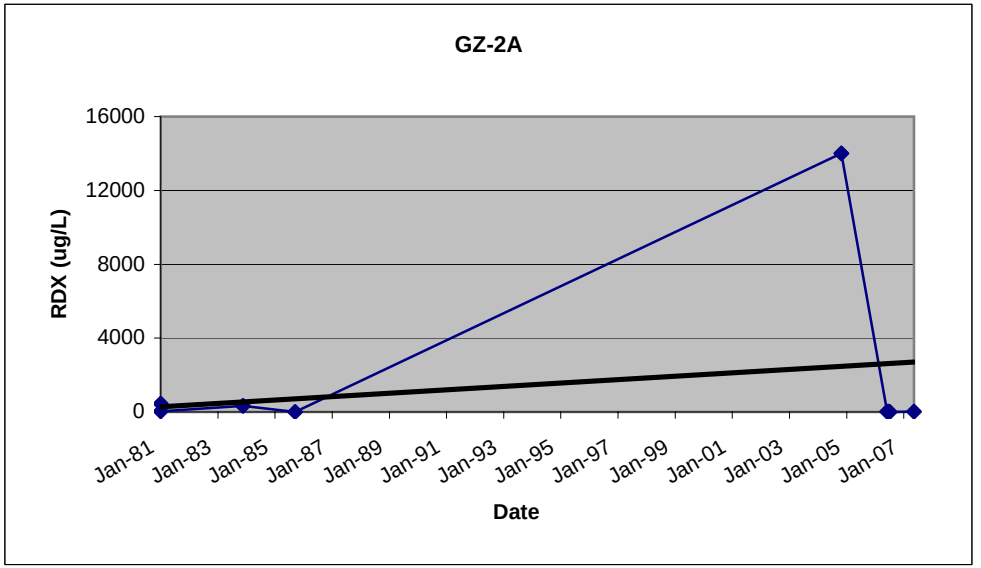


GZ-2A

Date	RDX (µg/L)	Detected	Adjusted RDX (µg/L)
1/27/1981	445	Y	445
1/28/1981	30	Y	30
12/12/1983	330	Y	330
10/11/1985	7	N	3.5
11/18/2004	14000	Y	14000
6/29/2006	10.2	Y	10.2
7/13/2006	10.6	Y	10.6
7/29/2006	3	Y	3
6/5/2007	22.9	Y	22.9

Screening Criteria = 2 ug/L

RDX increased since last sampling in 2006.

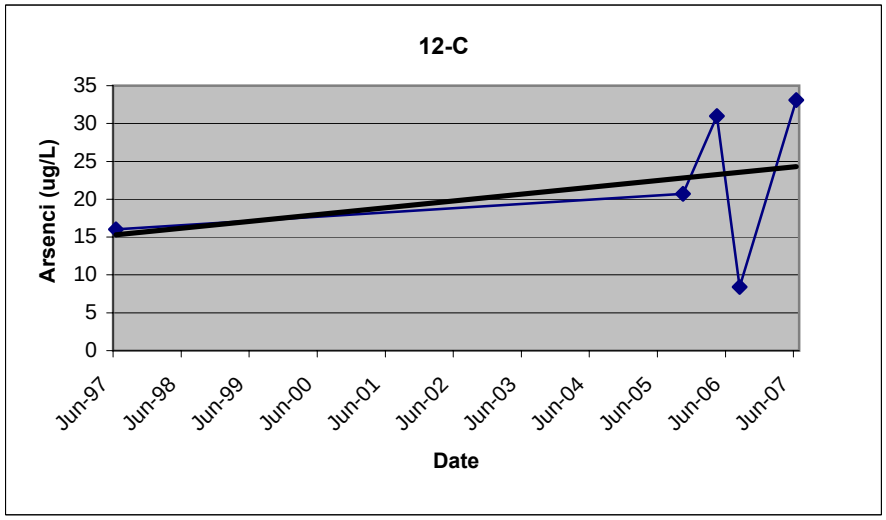


Concentration Trends for Selected Wells and Parameters
Line 2

12-C

Date	Dissolved Arsenic (µg/L)	Detect
6/11/1997	16	Y
10/5/2005	20.7	Y
4/12/2006	31	Y
8/31/2006	8.4	Y
6/5/2007	33.1	Y

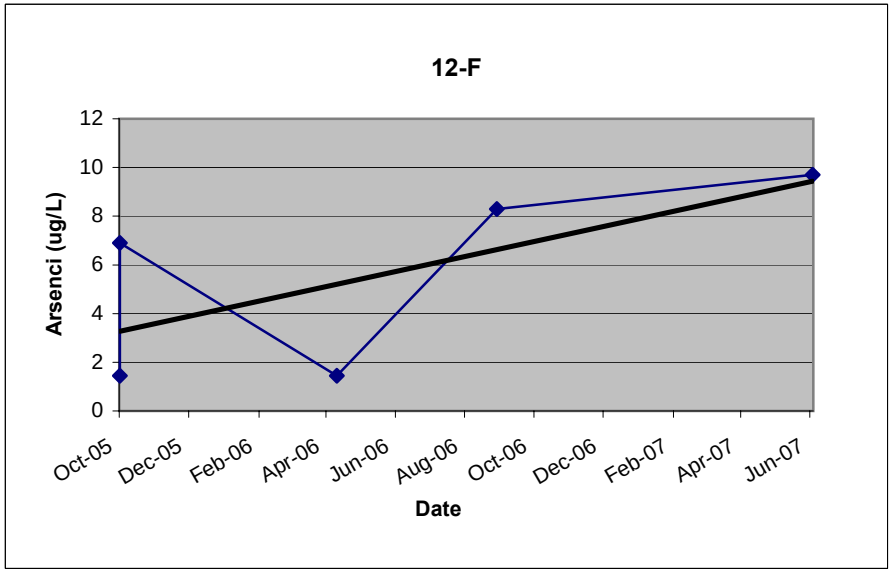
Screening Criteria = 10 ug/L



12-F

Date	Dissolved Arsenic (µg/L)	Detect	Adjusted Arsenic (µg/L)
10/3/2005	2.9	N	1.45
10/3/2005	6.9	Y	6.9
4/12/2006	2.9	N	1.45
8/31/2006	8.3	Y	8.3
6/5/2007	9.7	Y	9.7

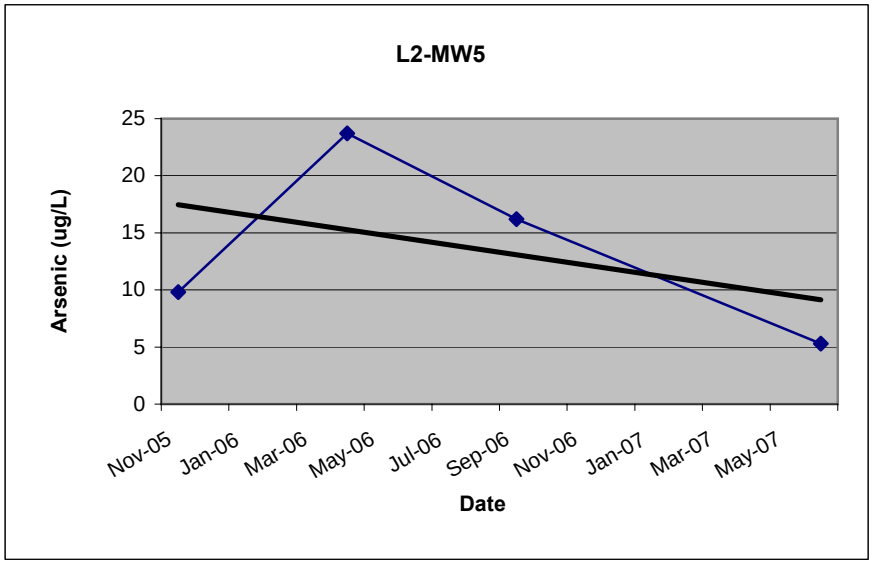
Screening Criteria = 10 ug/L



L2-MW5

Date	Dissolved Arsenic (µg/L)	Detect
11/18/2005	9.8	Y
4/14/2006	23.7	Y
9/5/2006	16.2	Y
6/5/2007	5.3	Y

Screening Criteria = 10 ug/L

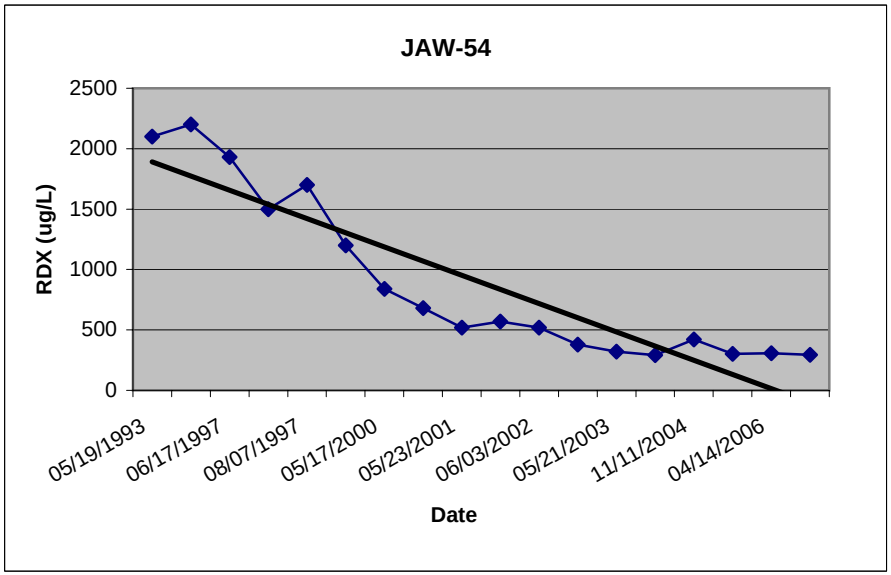


Concentration Trends for Selected Wells and Parameters
Line 3

JAW-54

Date	RDX (ug/L)	Detect
05/19/1993	2100	Y
08/13/1996	2200	Y
06/17/1997	1930	Y
06/24/1997	1500	Y
08/07/1997	1700	Y
12/30/1999	1200	Y
05/17/2000	840	Y
11/19/2000	680	Y
05/23/2001	520	Y
05/23/2001	570	Y
06/03/2002	520	Y
06/03/2002	380	Y
05/21/2003	320	Y
05/21/2003	290	Y
11/11/2004	420	Y
10/03/2005	302	Y
04/14/2006	307	Y
6/5/2007	295	Y

Screening Criteria = 2ug/L

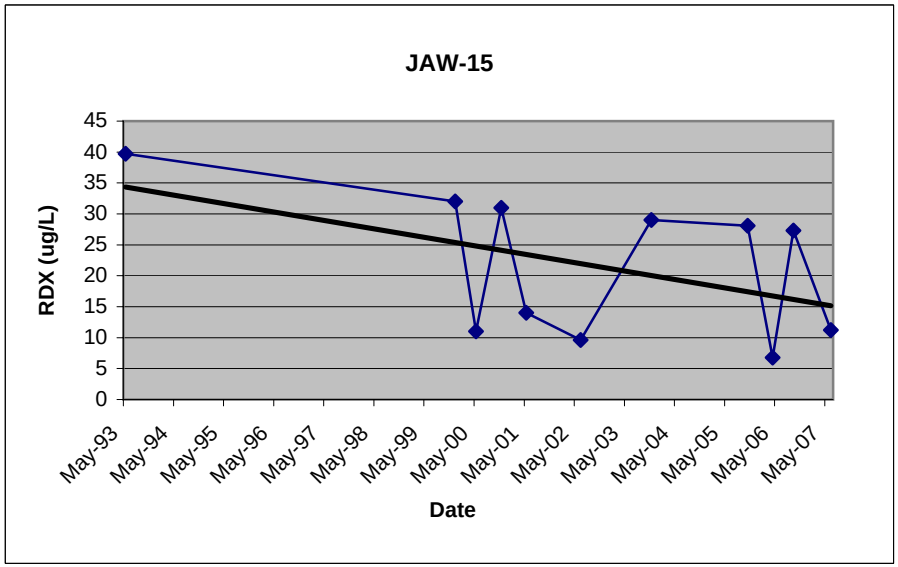


Concentration Trends for Selected Wells and Parameters
Line 3A

JAW-15

Date	RDX (ug/L)	Detect
5/14/1993	39.7	Y
12/19/1999	32	Y
5/15/2000	11	Y
11/15/2000	31	Y
5/21/2001	14	Y
6/15/2002	9.6	Y
11/18/2003	29	Y
10/3/2005	28.1	Y
4/24/2006	6.8	Y
9/8/2006	27.3	Y
6/7/2007	11.2	Y

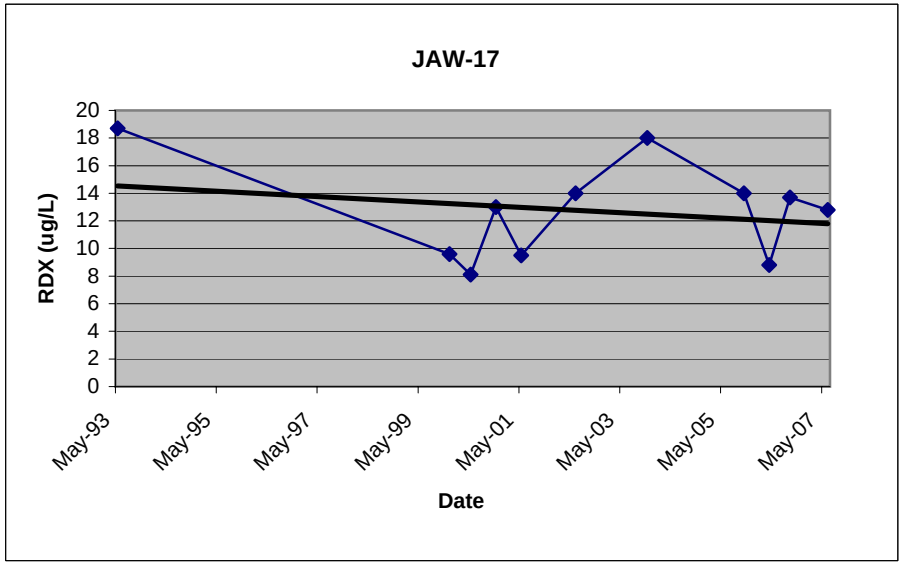
Screening Criteria = 2ug/L



JAW-17

Date	RDX (ug/L)	Detect
5/14/1993	18.7	Y
12/18/1999	9.6	Y
5/17/2000	8.1	Y
11/15/2000	13	Y
5/21/2001	9.5	Y
6/5/2002	14	Y
11/17/2003	18	Y
10/3/2005	14	Y
4/24/2006	8.8	Y
9/8/2006	13.7	Y
6/8/2007	12.8	Y

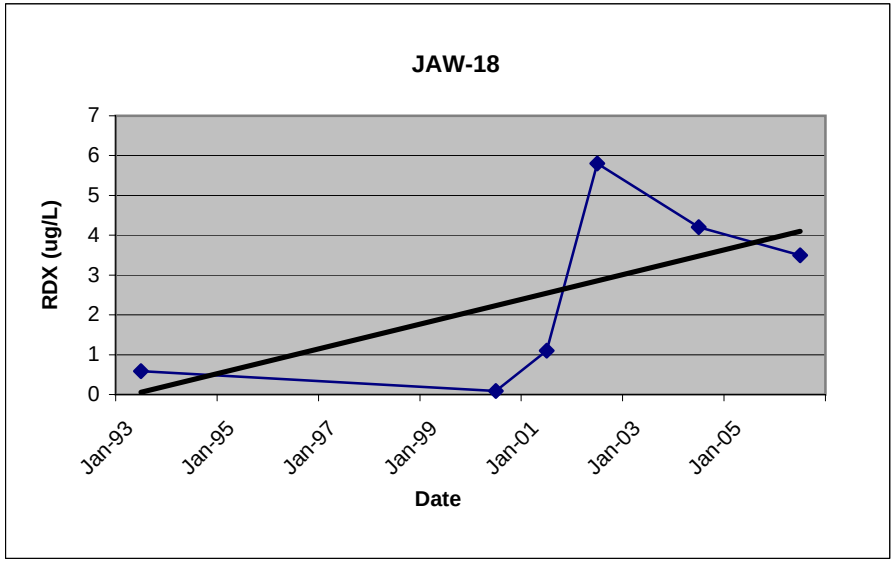
Screening Criteria = 2ug/L



JAW-18

Date	RDX (ug/L)	Detect	Adjusted RDX (ug/L)
5/14/1993	1.17	N	0.585
5/17/2000	0.17	N	0.085
5/21/2001	1.1	Y	1.1
6/5/2002	5.8	Y	5.8
6/16/2004	4.2	Y	4.2
4/24/2006	3.5	Y	3.5
6/8/2007	NS		

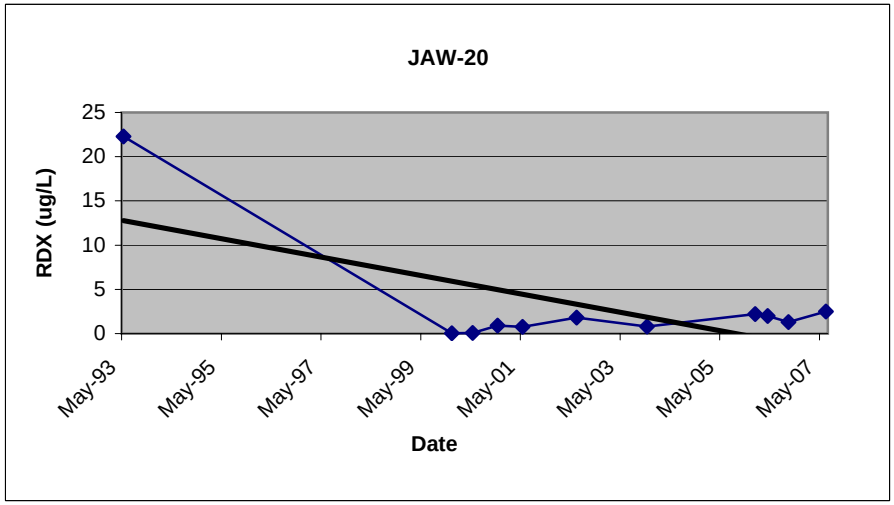
Screening Criteria = 2ug/L



JAW-20

Date	RDX (ug/L)	Detect	Adjusted RDX (ug/L)
5/14/1993	22.3	Y	22.3
12/19/1999	0.05	N	0.025
5/17/2000	0.16	N	0.08
11/19/2000	0.9	Y	0.9
5/24/2001	0.76	Y	0.76
6/15/2002	1.8	Y	1.8
11/17/2003	1.6	N	0.8
1/29/2006	2.2	Y	2.2
4/9/2006	2	Y	2
9/11/2006	1.3	Y	1.3
6/8/2007	2.5	Y	2.5

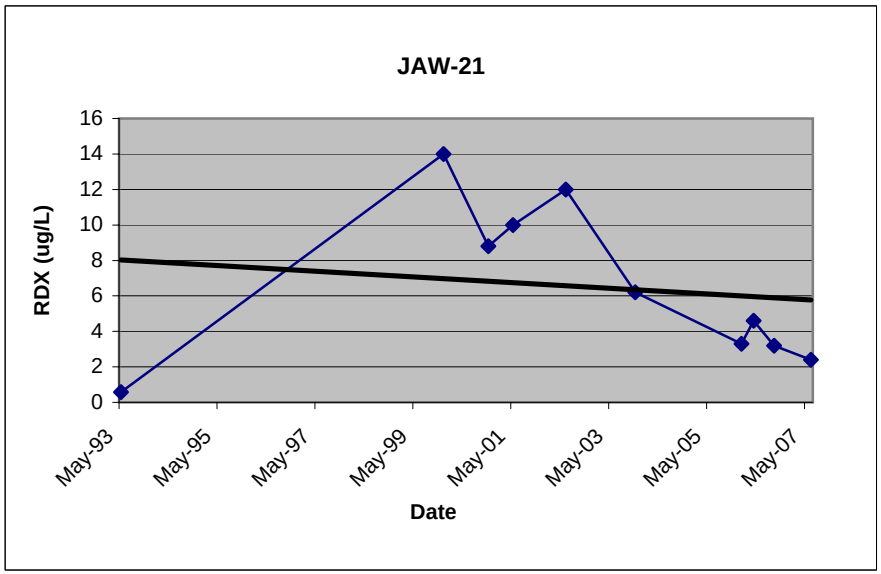
Screening Criteria = 2ug/L



JAW-21

Date	RDX (ug/L)	Detect	Adjusted RDX (ug/L)
5/14/1993	1.17	N	0.585
12/18/1999	14	Y	14
11/18/2000	8.8	Y	8.8
5/24/2001	10	Y	10
6/15/2002	12	Y	12
11/17/2003	6.2	Y	6.2
1/29/2006	3.3	Y	3.3
4/9/2006	4.6	Y	4.6
9/10/2006	3.2	Y	3.2
6/8/2007	2.4	Y	2.4

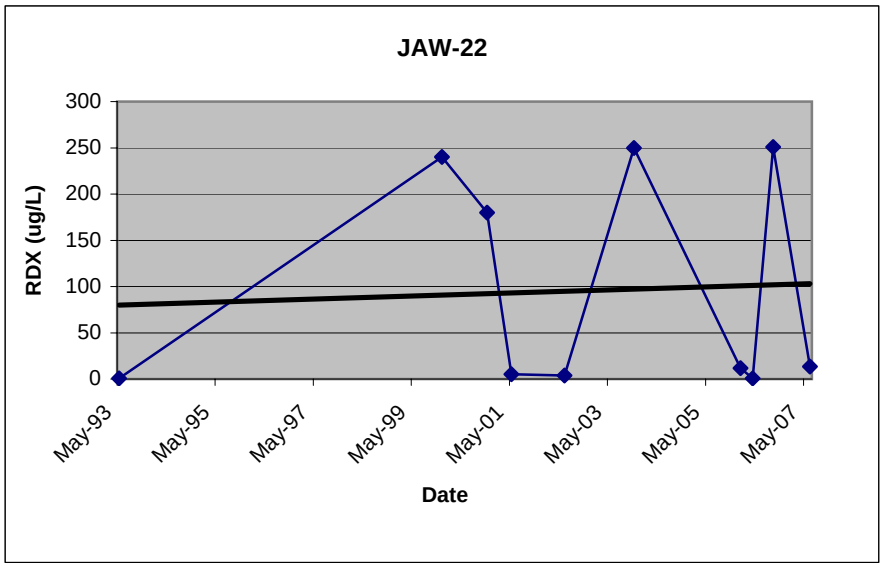
Screening Criteria = 2ug/L



JAW-22

Date	RDX (ug/L)	Detect	Adjusted RDX (ug/L)
5/14/1993	1.17	N	0.585
12/19/1999	240	Y	240
11/17/2000	180	Y	180
5/21/2001	5.1	Y	5.1
6/5/2002	3.7	Y	3.7
11/18/2003	250	Y	250
1/29/2006	11.6	Y	11.6
4/9/2006	0.78	Y	0.78
9/10/2006	251	Y	251
6/7/2007	13.5	Y	13.5

Screening Criteria = 2ug/L

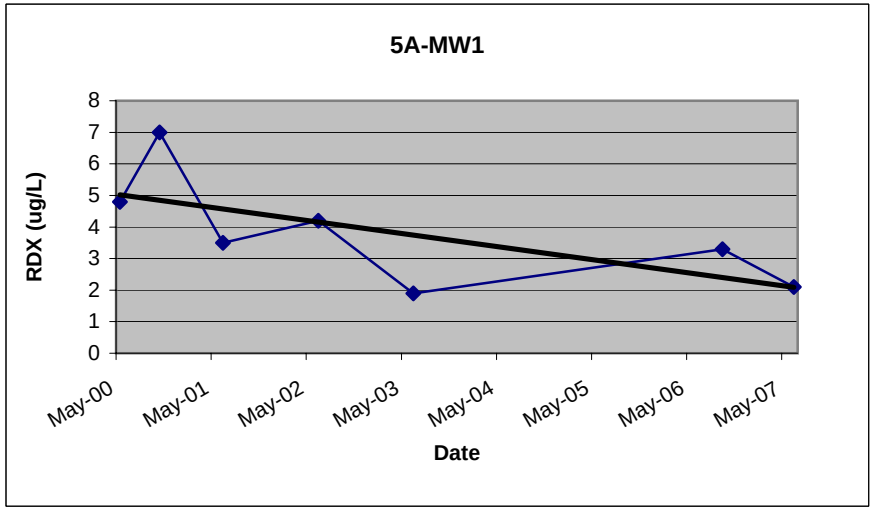


Concentration Trends for Selected Wells and Parameters
Line 5A-5B

5A-MW1

Date	RDX (ug/L)	Detect
5/22/2000	4.8	Y
10/20/2000	7	Y
6/3/2001	3.5	Y
6/16/2002	4.2	Y
6/1/2003	1.9	Y
9/13/2006	3.3	Y
6/5/2007	2.1	Y

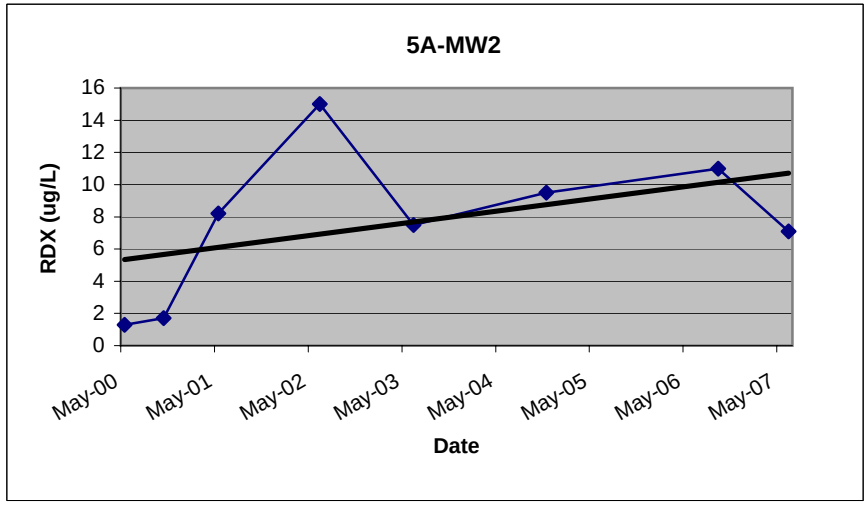
Screening Criteria = 2ug/L



5A-MW2

Date	RDX (ug/L)	Detect
5/22/2000	1.3	Y
10/20/2000	1.7	Y
5/18/2001	8.2	Y
6/16/2002	15	Y
6/1/2003	7.5	Y
11/16/2004	9.5	Y
9/12/2006	11	Y
6/6/2007	7.1	Y

Screening Criteria = 2ug/L

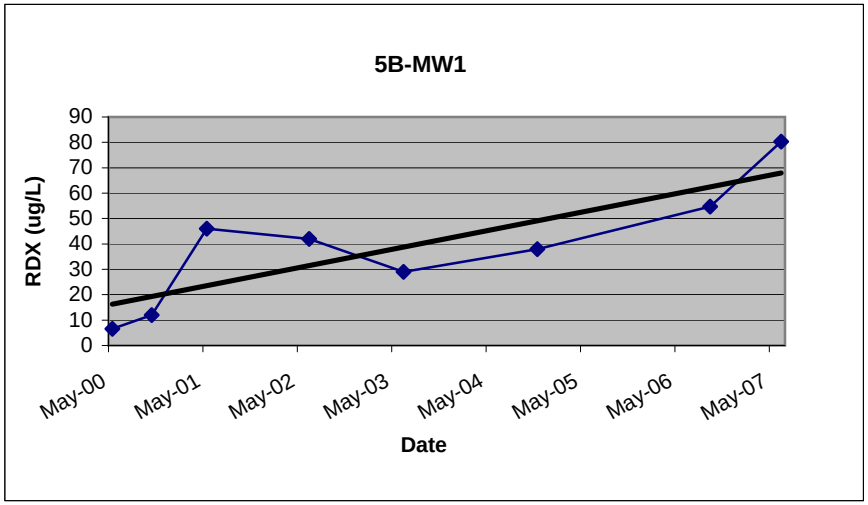


Concentration Trends for Selected Wells and Parameters
Line 5A-5B

5B-MW1

Date	RDX (ug/L)	Detect
5/22/2000	6.6	Y
10/22/2000	12	Y
5/18/2001	46	Y
6/16/2002	42	Y
6/1/2003	29	Y
11/17/2004	38	Y
9/12/2006	54.7	Y
6/6/2007	80.3	Y

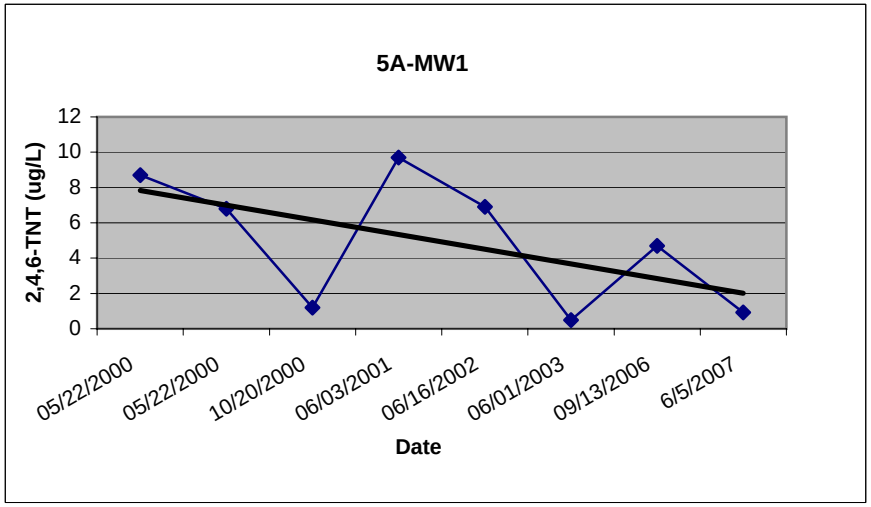
Screening Criteria = 2ug/L



5A-MW1

Date	TNT (ug/L)	Detect	Adjusted TNT (ug/L)
05/22/2000	8.7	Y	8.7
05/22/2000	6.8	Y	6.8
10/20/2000	1.2	Y	1.2
06/03/2001	9.7	Y	9.7
06/16/2002	6.9	Y	6.9
06/01/2003	0.99	N	0.495
09/13/2006	4.7	Y	4.7
6/5/2007	0.92		0.92

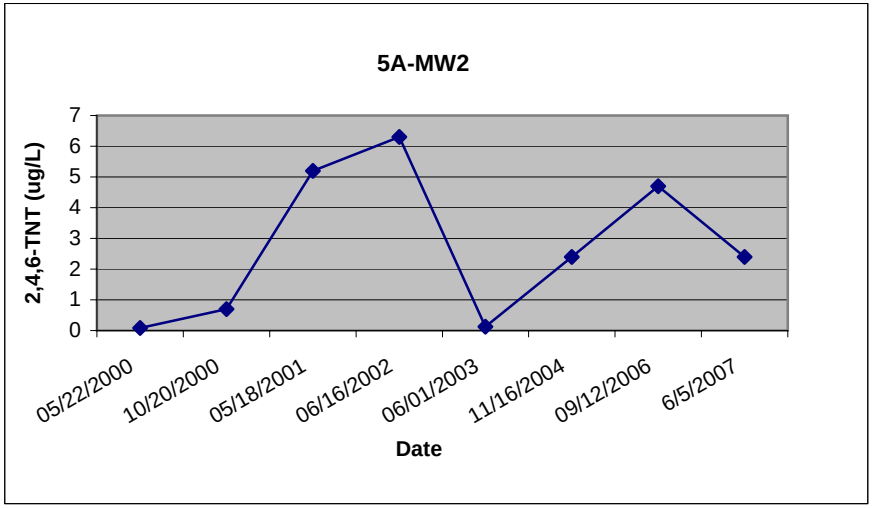
Screening Criteria = 2ug/L



5A-MW2

Date	TNT (ug/L)	Detect	Adjusted TNT (ug/L)
05/22/2000	0.16	N	0.08
10/20/2000	1.4	N	0.7
05/18/2001	5.2	Y	5.2
06/16/2002	6.3	Y	6.3
06/01/2003	0.25	N	0.125
11/16/2004	2.4	Y	2.4
09/12/2006	4.7	Y	4.7
6/5/2007	2.4		2.4

Screening Criteria = 2ug/L

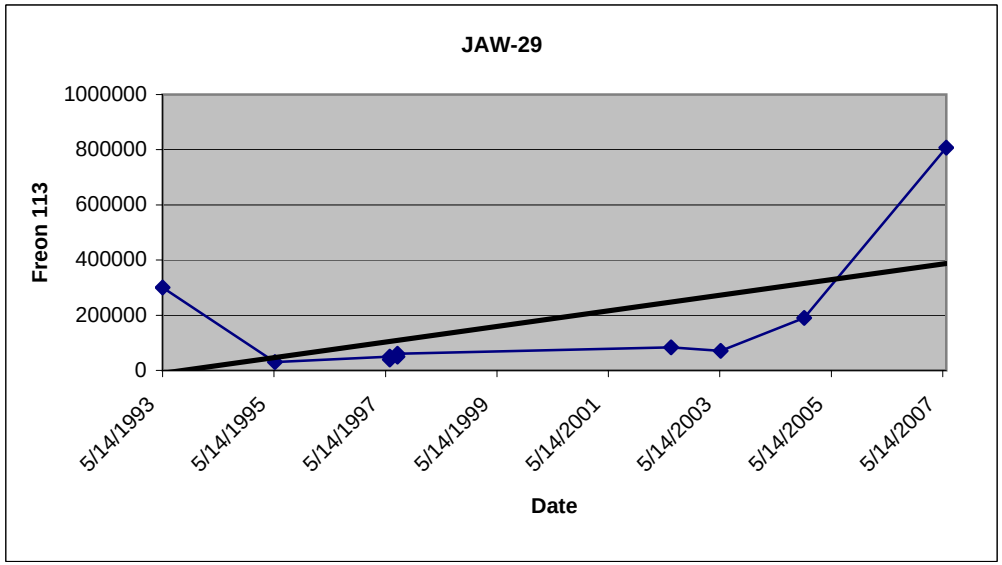


Concentration Trends for Selected Wells and Parameters
Line 9

JAW-29

Date	Freon 113 ug/L	Det.
5/14/1993	300000	Y
5/19/1995	30000	Y
6/10/1997	50000	Y
6/10/1997	40000	Y
7/31/1997	50000	Y
7/31/1997	60000	Y
6/28/2002	83000	Y
5/20/2003	71000	Y
11/17/2004	190000	Y
6/6/2007	808000	Y

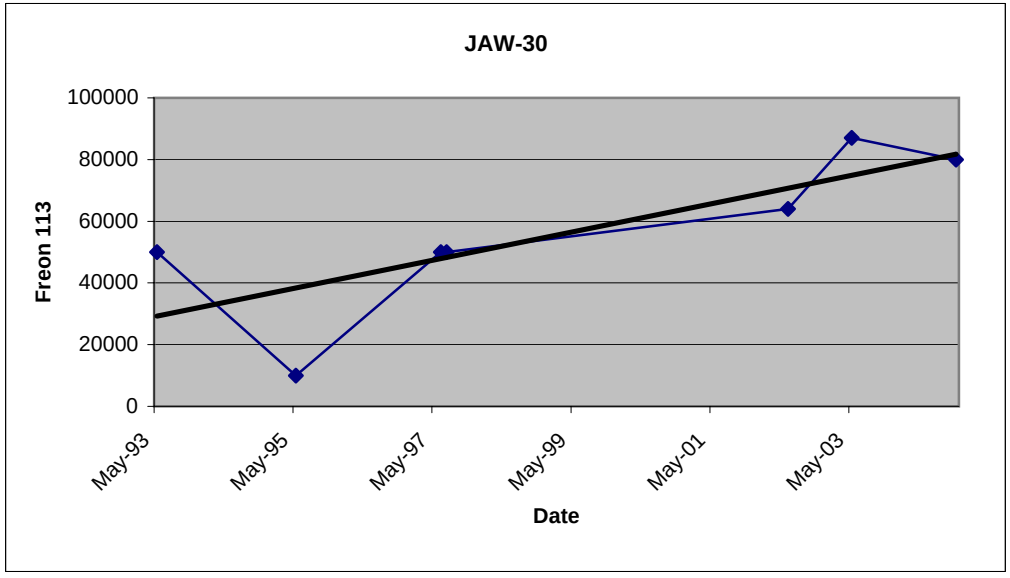
Screening Criteria = 59,000 ug/L



JAW-30

Date	Freon 113 ug/L	Det.
5/14/1993	50000	Y
5/17/1995	10000	Y
6/10/1997	50000	Y
7/31/1997	50000	Y
6/27/2002	64000	Y
5/19/2003	87000	Y
11/17/2004	80000	Y
6/7/2007	77200	Y

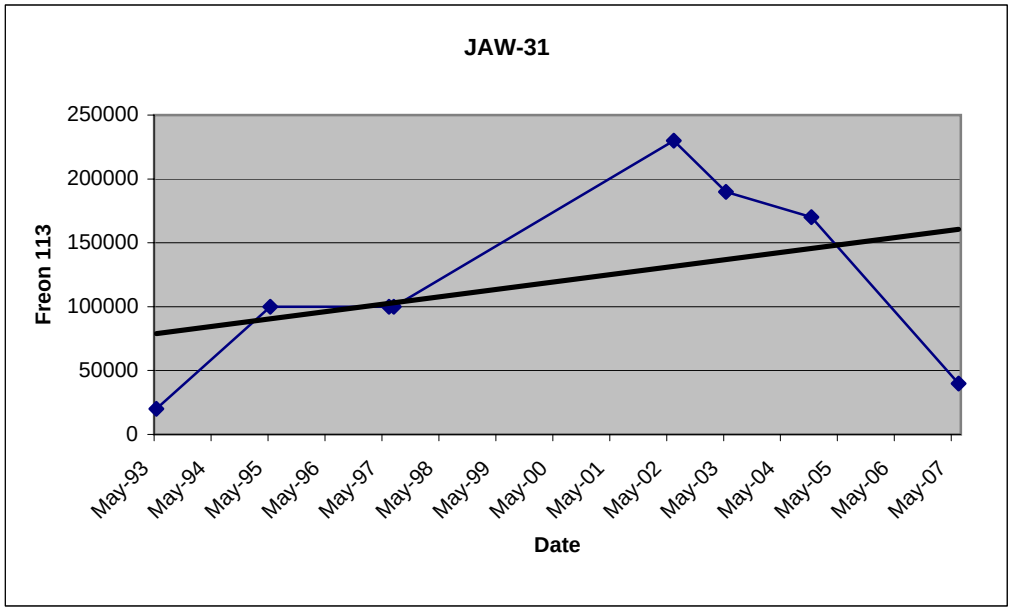
Screening Criteria = 59,000 ug/L



JAW-31

Date	Freon 113 ug/L	Det.
5/14/1993	20000	Y
5/19/1995	100000	Y
6/10/1997	100000	Y
7/31/1997	100000	Y
6/27/2002	230000	Y
5/19/2003	190000	Y
11/17/2004	170000	Y
6/6/2007	39900	Y

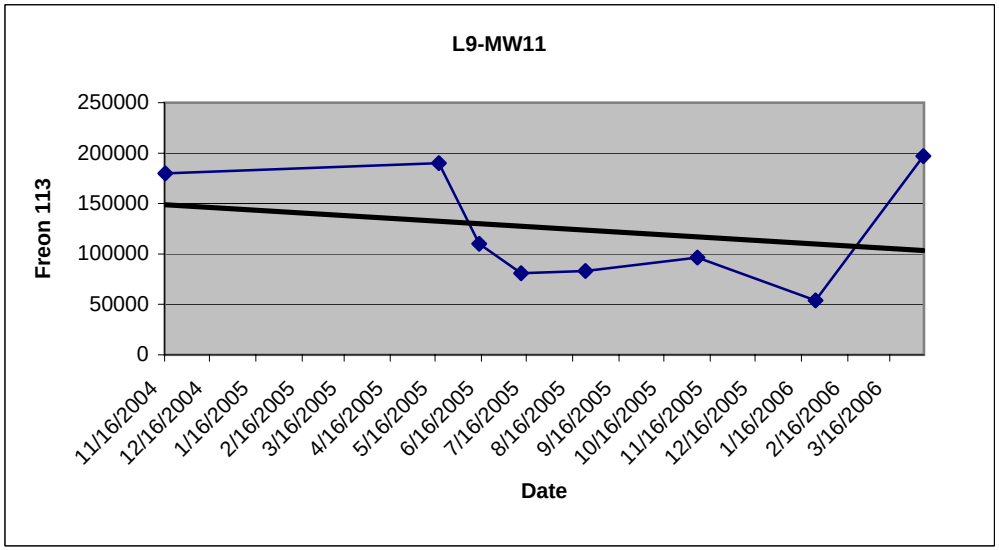
Screening Criteria = 59,000 ug/L



L9-MW11

Date	Freon 113 ug/L	Det
5/18/2005	190000	Y
7/12/2005	81000	Y
6/14/2005	110000	Y
11/7/2005	96400	Y
4/7/2006	197000	Y
11/16/2004	180000	Y
8/24/2005	83200	Y
1/25/2006	53900	Y
6/7/2007	312000	Y

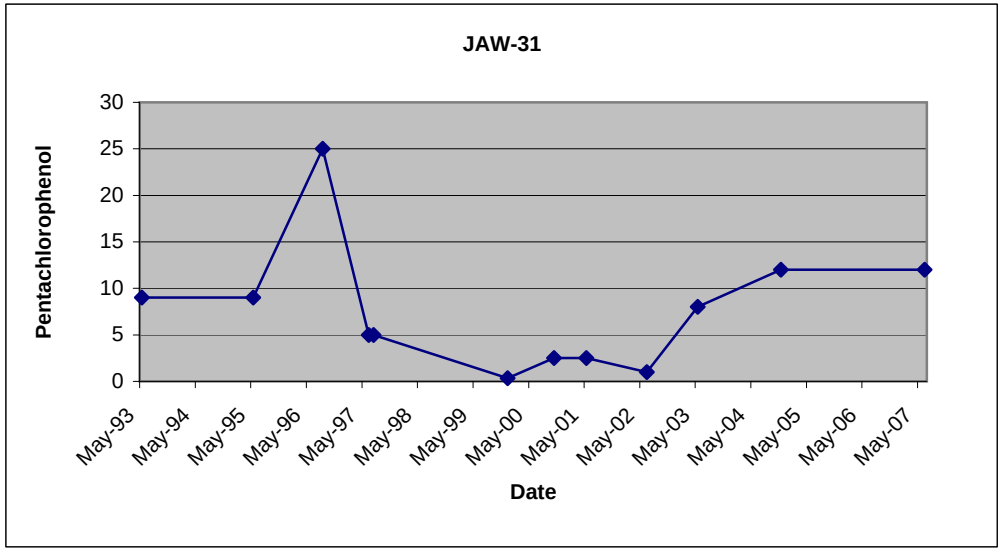
Screening Criteria = 59,000 ug/L



JAW-31

Date	Pentachloro-phenol	Det	adjust
5/14/1993	18	N	9
5/19/1995	18	N	9
8/20/1996	50	N	25
6/10/1997	10	N	5
7/31/1997	10	N	5
12/21/1999	0.69	N	0.345
10/25/2000	5	N	2.5
5/30/2001	5	N	2.5
6/27/2002	1	Y	1
5/19/2003	8	Y	8
11/17/2004	12	Y	12
6/6/2007	24	N	12

Screening Criteria = 1 ug/L

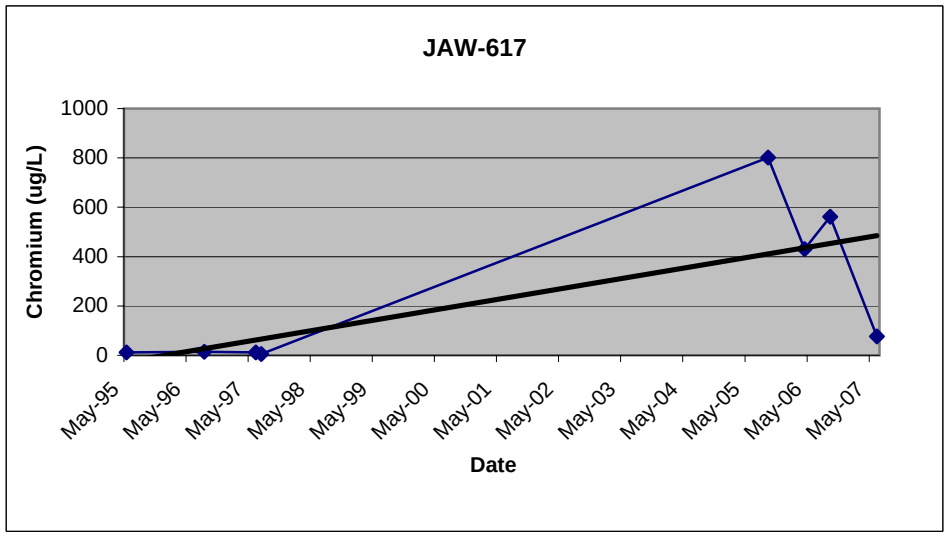


Concentration Trends for Selected Wells and Parameters
Pesticide Pit

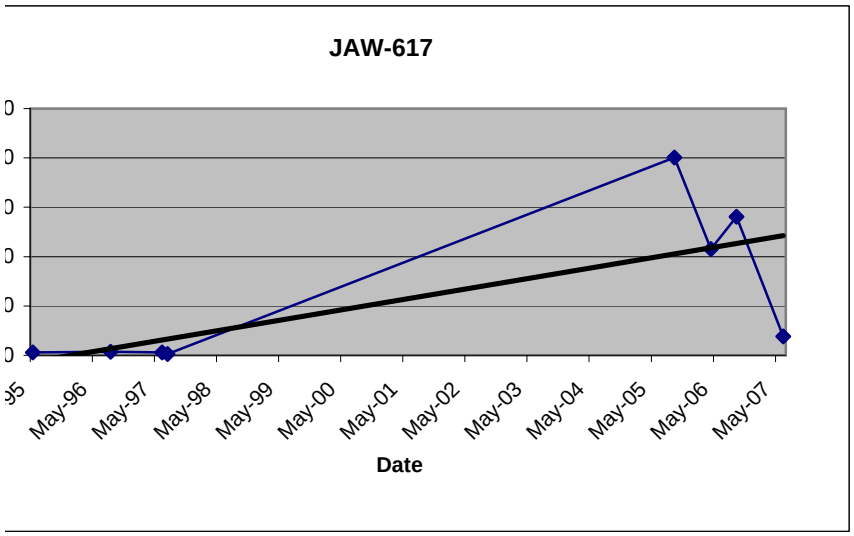
JAW-617

Date	Dissolved Chromium (ug/L)	Detect	Adjusted Chromium (ug/L)
5/8/1995	12.2	Y	12.2
8/22/1996	14.5	Y	14.5
6/6/1997	23	N	11.5
7/28/1997	5.2	Y	5.2
9/29/2005	801	Y	801
4/17/2006	430	Y	430
9/5/2006	562	Y	562
6/6/2007	76.1	Y	76.1

Screening Criteria = 100 ug/L



Concentration Trends for Selected Wells and Parameters
Pesticide Pit

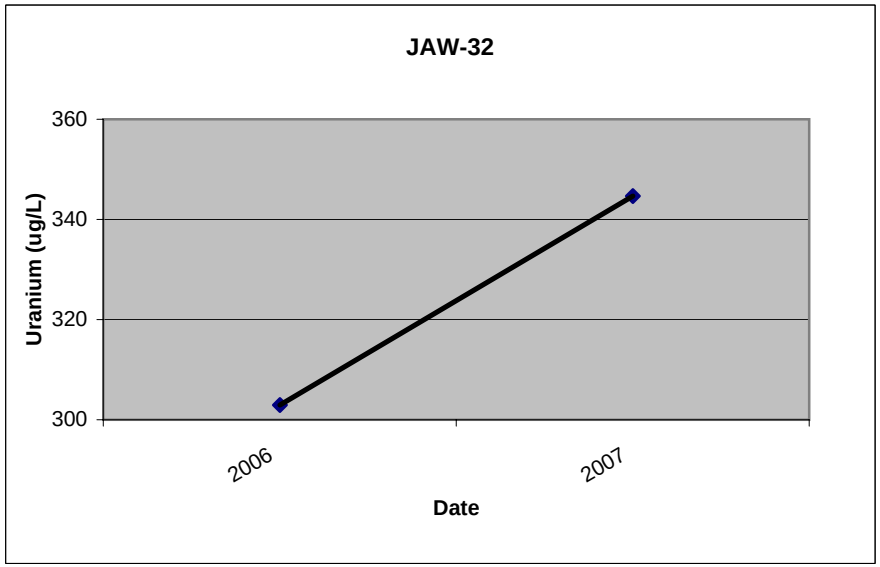


Concentration Trends for Selected Wells and Parameters
Firing Site

JAW-32

Date	Uranium (ug/L)	Detect
4/17/2006	302.94	Y
6/12/2007	344.68	Y

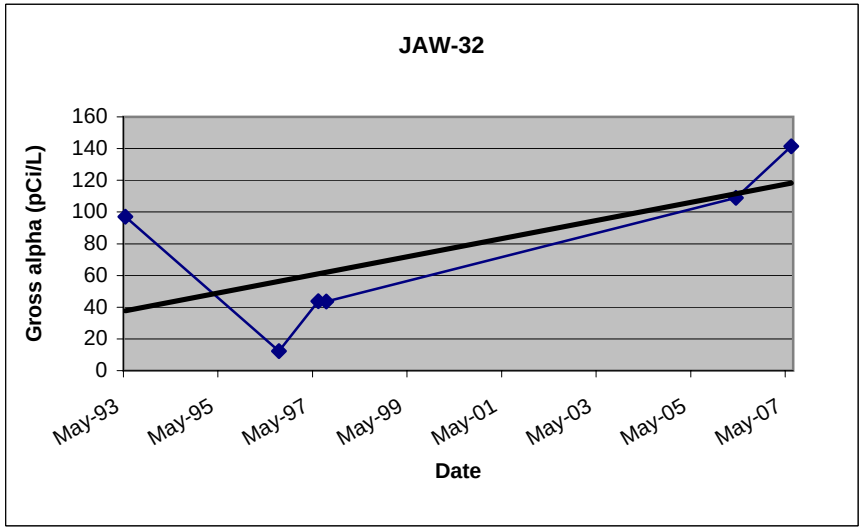
Screening Criteria = 30 ug/L



JAW-32

Date	Gross alpha (pCi/L)	Detect
5/25/1993	97	Y
8/25/1996	12.3	Y
6/14/1997	43.7	Y
8/12/1997	43.5	Y
4/17/2006	109	Y
6/12/2007	141.49	Y

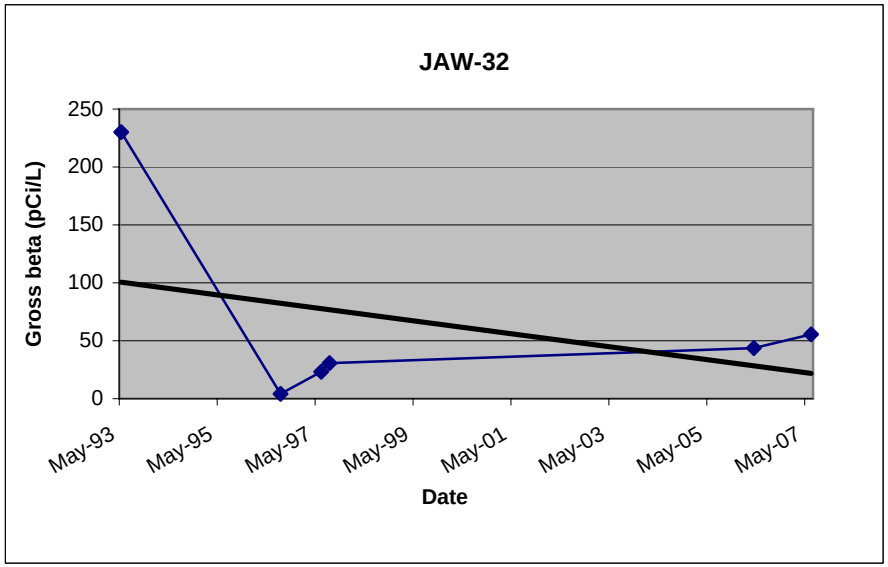
Screening Criteria = 15 pCi/L



JAW-32

Date	Gross beta (pCi/L)	Detect
5/25/1993	230	Y
8/25/1996	4.18	Y
6/14/1997	23.3	Y
8/12/1997	30.7	Y
4/17/2006	43.7	Y
6/12/2007	55.59	Y

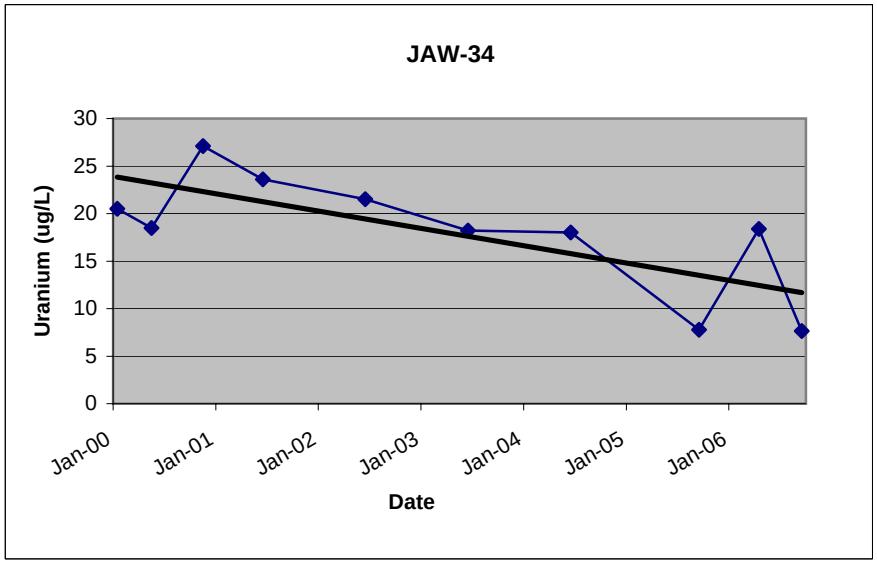
Screening Criteria = 4 pCi/L



JAW-34

Date	Uranium (ug/L)	Detect
1/3/2000	20.5	Y
5/15/2000	18.5	Y
11/7/2000	27.1	Y
6/19/2001	23.6	Y
6/28/2002	21.5	Y
6/3/2003	18.2	Y
6/8/2004	18.00	Y
9/29/2005	7.79	Y
4/17/2006	18.38	Y
9/13/2006	7.65	Y
6/12/2007	17.23	Y

Screening Criteria = 30 ug/L

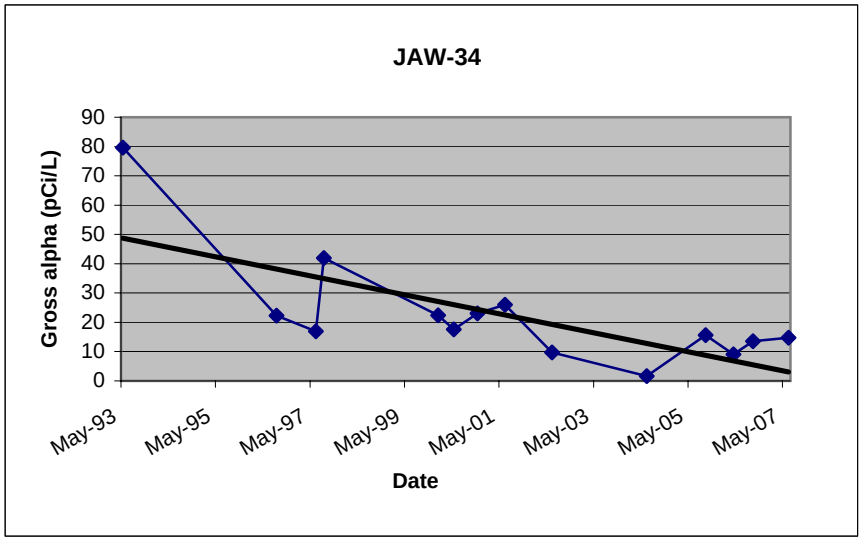


Concentration Trends for Selected Wells and Parameters
Firing Site

JAW-34

Date	Gross alpha (pCi/L)	Detect	Adjusted Gross alpha
5/25/1993	79.6	Y	79.6
8/24/1996	22.3	Y	22.3
6/14/1997	16.9	Y	16.9
8/12/1997	41.9	Y	41.9
1/3/2000	22.4	Y	22.4
5/15/2000	17.6	Y	17.6
11/7/2000	23	Y	23
6/19/2001	26	Y	26
6/28/2002	9.7	Y	9.7
6/8/2004	3.32	N	1.66
9/29/2005	15.6	Y	15.6
4/17/2006	9.1	Y	9.1
9/13/2006	13.5	Y	13.5
6/12/2007	14.72	Y	14.72

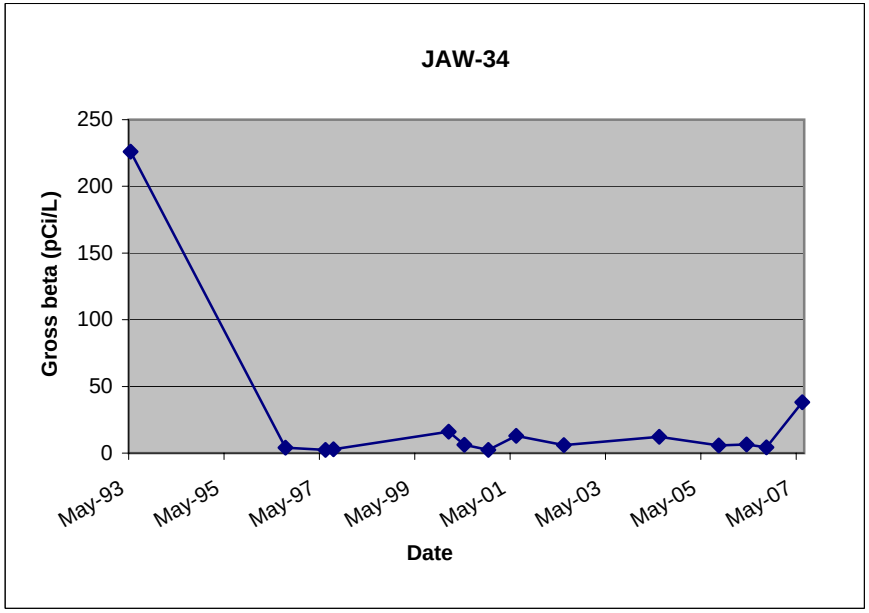
Screening Criteria = 15 pCi/L



JAW-34

Date	Gross beta (pCi/L)	Detect	Adjusted Gross beta
5/25/1993	226	Y	226
8/24/1996	4.1	Y	4.1
6/14/1997	4.75	N	2.375
8/12/1997	5.87	N	2.935
1/3/2000	16.1	Y	16.1
5/15/2000	6.3	Y	6.3
11/7/2000	4.6	N	2.3
6/19/2001	13	Y	13
6/28/2002	6.1	Y	6.1
6/8/2004	12.2	Y	12.2
9/29/2005	5.7	Y	5.7
4/17/2006	6.4	Y	6.4
9/13/2006	4.3	Y	4.3
6/12/2007	38.26	Y	38.26

Screening Criteria = 4 pCi/L

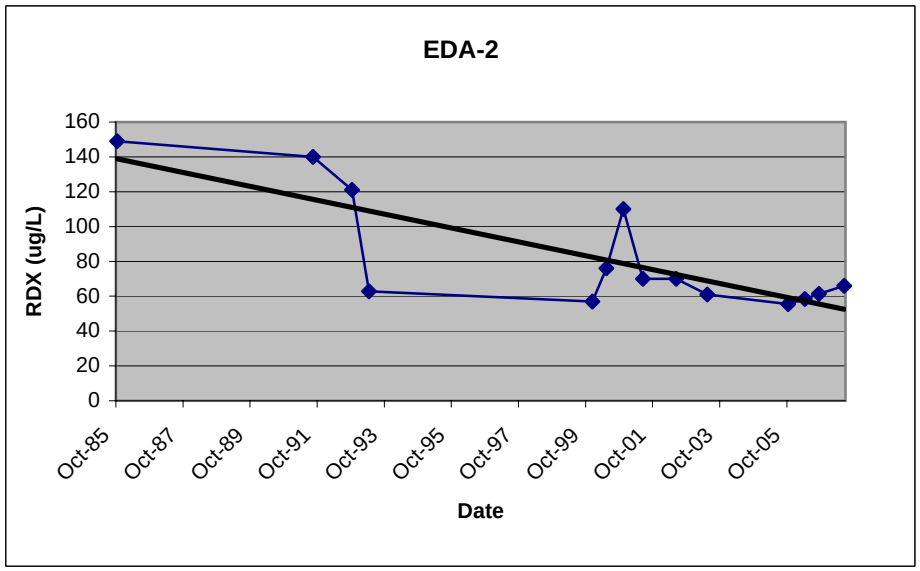


Concentration Trends for Selected Wells and Parameters
East Burn Pads

EDA-2

Date	RDX (ug/L)	Detect
10/8/1985	149	Y
8/23/1991	140	Y
10/21/1992	121	Y
4/19/1993	62.9	Y
12/8/1999	57	Y
5/4/2000	76	Y
11/1/2000	110	Y
6/13/2001	70	Y
6/26/2002	70	Y
5/30/2003	61	Y
10/3/2005	55.5	Y
4/18/2006	58.4	Y
9/11/2006	61.4	Y
6/6/2007	66	Y

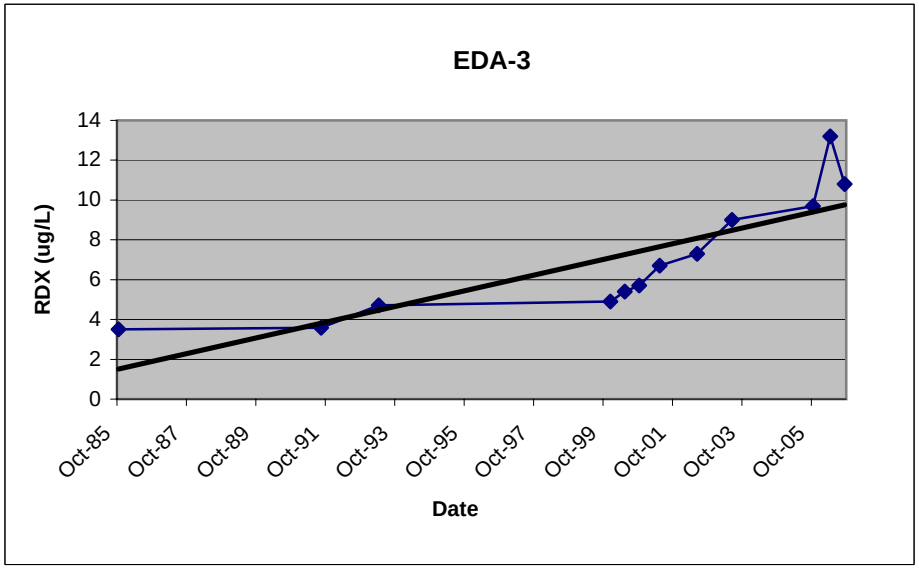
Screening Criteria = 2 ug/L



EDA-3

Date	RDX (ug/L)	Detect	Adjusted RDX (ug/L)
10/8/1985	7	N	3.5
8/22/1991	3.59	Y	3.59
4/16/1993	4.71	Y	4.71
12/6/1999	4.9	Y	4.9
5/3/2000	5.4	Y	5.4
10/31/2000	5.7	Y	5.7
5/30/2001	6.7	Y	6.7
6/25/2002	7.3	Y	7.3
6/1/2003	9	Y	9
10/3/2005	9.7	Y	9.7
4/18/2006	13.2	Y	13.2
9/11/2006	10.8	Y	10.8
6/7/2007	15.1	Y	15.1

Screening Criteria = 2 ug/L

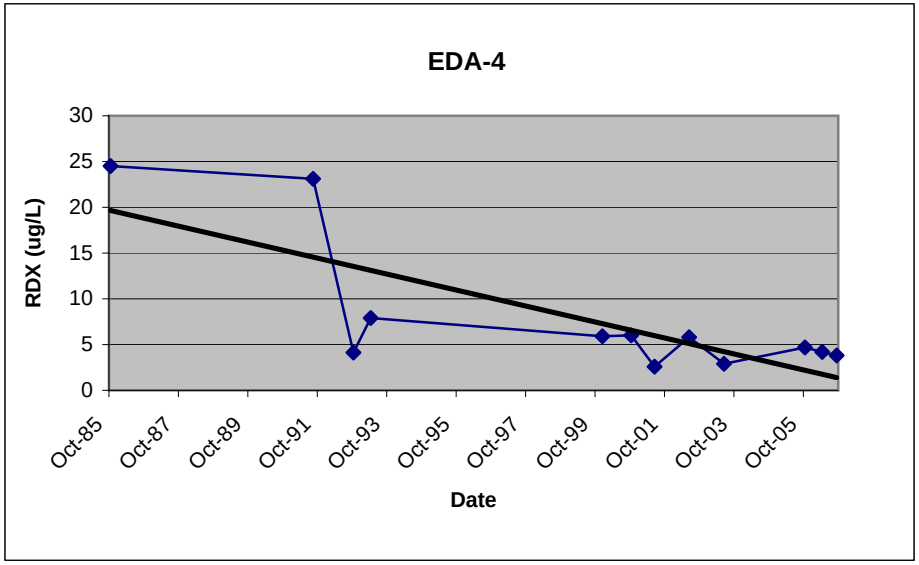


Concentration Trends for Selected Wells and Parameters
East Burn Pads

EDA-4

Date	RDX (ug/L)	Detect
10/8/1985	24.5	Y
8/22/1991	23.1	Y
10/20/1992	4.12	Y
4/16/1993	7.9	Y
12/7/1999	5.9	Y
10/31/2000	6	Y
6/13/2001	2.6	Y
6/25/2002	5.8	Y
6/1/2003	2.9	Y
10/3/2005	4.7	Y
4/18/2006	4.2	Y
9/11/2006	3.8	Y
6/7/2007	3.7	Y

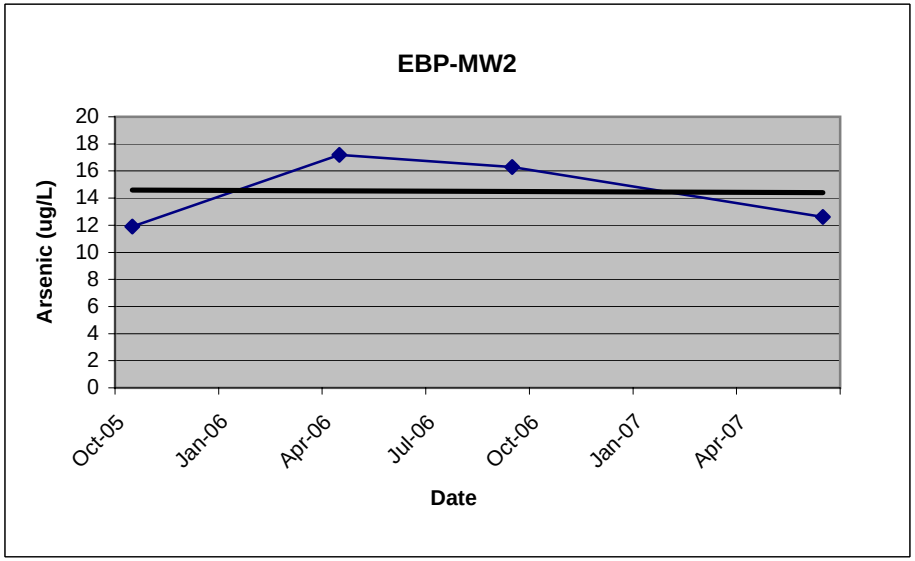
Screening Criteria = 2 ug/L



EBP-MW2

Date	Dissolved Arsenic (ug/L)	Detect
10/10/2005	11.9	Y
4/19/2006	17.2	Y
9/12/2006	16.3	Y
6/7/2007	12.6	Y

Screening Criteria = 10 ug/L

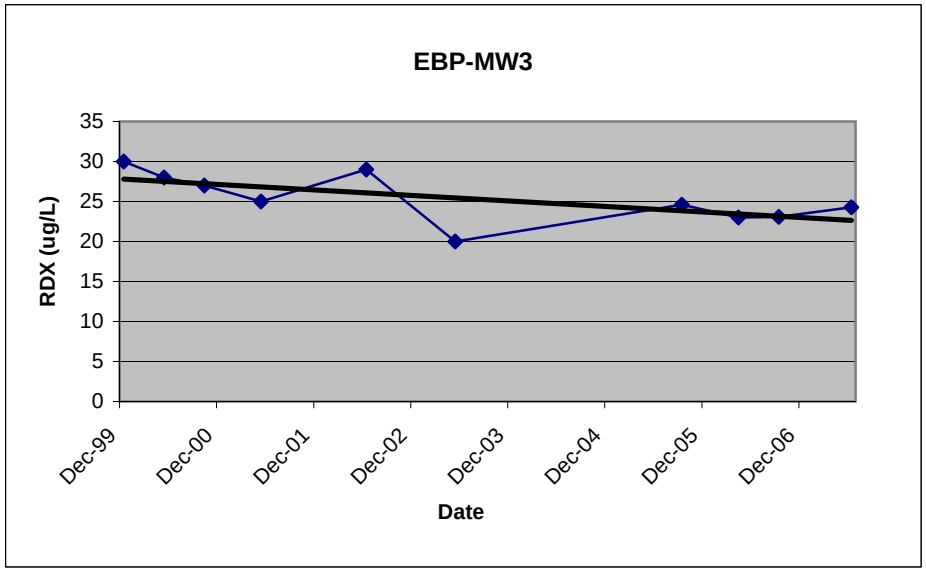


Concentration Trends for Selected Wells and Parameters
East Burn Pads

EBP-MW3

Date	RDX (ug/L)	Detect
12/9/1999	30	Y
5/2/2000	28	Y
10/31/2000	27	Y
5/24/2001	25	Y
6/10/2002	29	Y
5/21/2003	20	Y
9/30/2005	24.6	Y
4/19/2006	23	Y
9/12/2006	23.1	Y
6/8/2007	24.3	Y

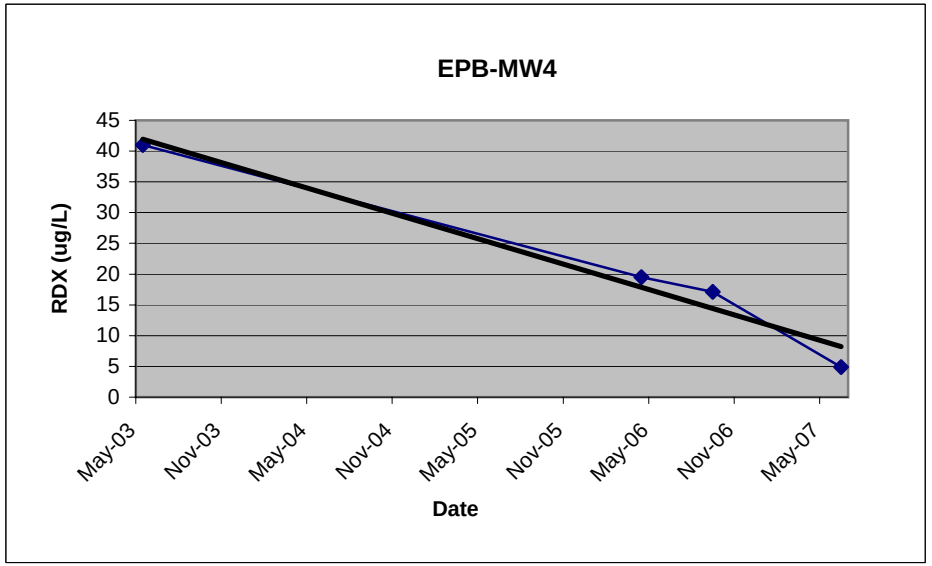
Screening Criteria = 2 ug/L



EBP-MW4

Date	RDX (ug/L)	Detect
5/12/2003	41	Y
4/19/2006	19.5	Y
9/12/2006	17.1	Y
6/8/2007	4.9	Y

Screening Criteria = 2 ug/L

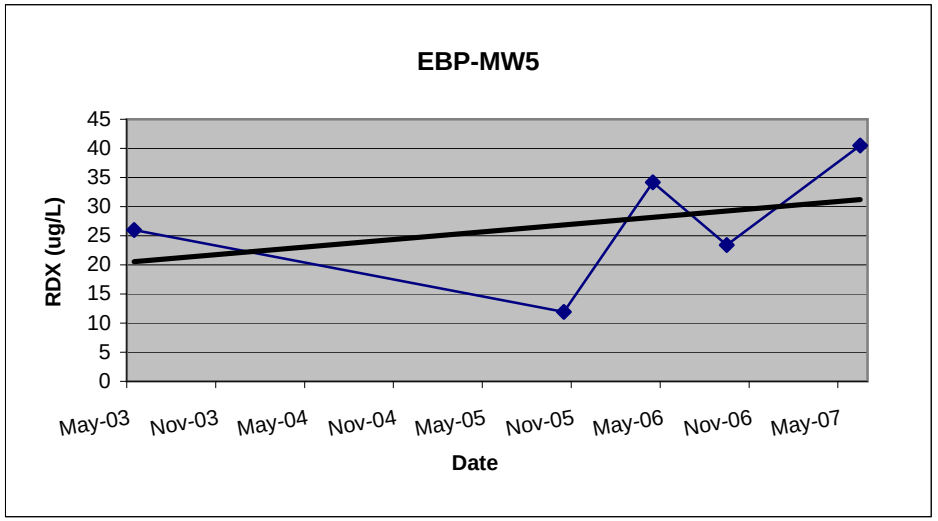


Concentration Trends for Selected Wells and Parameters
East Burn Pads

EBP-MW5

Date	RDX (ug/L)	Detect
5/12/2003	26	Y
10/6/2005	11.9	Y
4/19/2006	34.2	Y
9/12/2006	23.4	Y
6/8/2007	40.5	Y

Screening Criteria = 2 ug/L

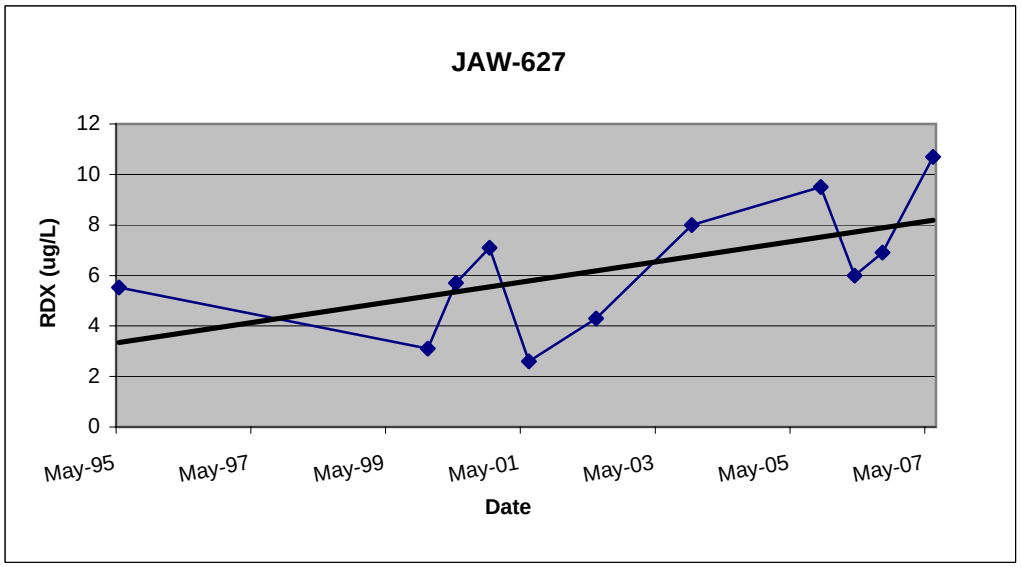


Concentration Trends for Selected Wells and Parameters
North Burn Pads

JAW-627

Date	RDX (ug/L)	Detect
5/8/1995	5.53	Y
12/7/1999	3.1	Y
5/4/2000	5.7	Y
11/3/2000	7.1	Y
6/2/2001	2.6	Y
6/14/2002	4.3	Y
11/19/2003	8	Y
10/4/2005	9.5	Y
4/20/2006	6	Y
9/13/2006	6.9	Y
6/7/2007	10.7	Y

Screening Criteria = 2 ug/L

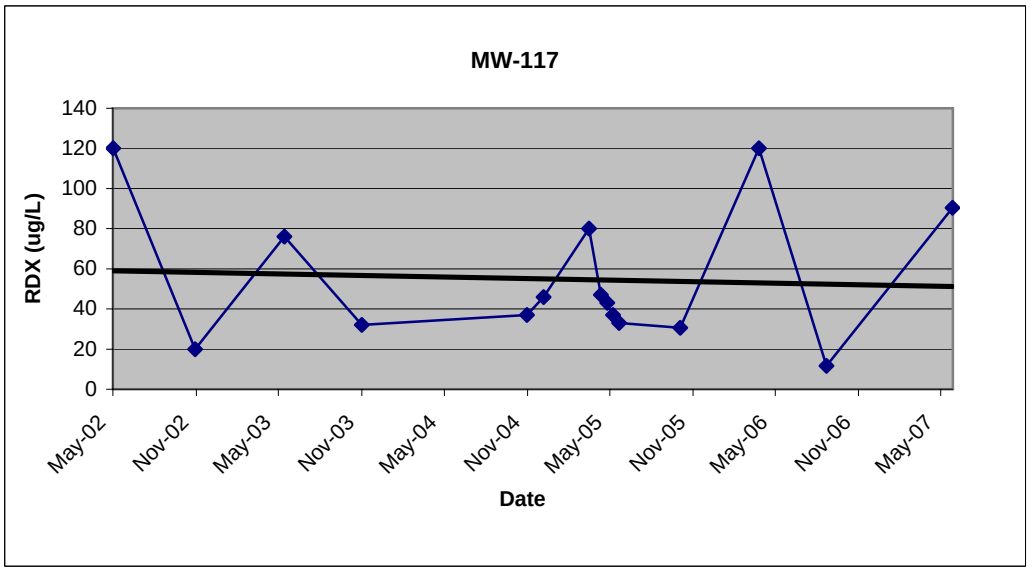


Concentration Trends for Selected Wells and Parameters
Off site

MW-117

Date	RDX (ug/L)	Detect
5/17/2002	120	Y
11/14/2002	20	Y
5/30/2003	76	Y
11/17/2003	32	Y
11/15/2004	37	Y
12/22/2004	46	Y
4/1/2005	80	Y
4/27/2005	47	Y
5/11/2005	43	Y
5/24/2005	37	Y
6/6/2005	33	Y
10/19/2005	30.6	Y
4/11/2006	120	Y
9/7/2006	11.7	Y
6/12/2007	90.4	Y

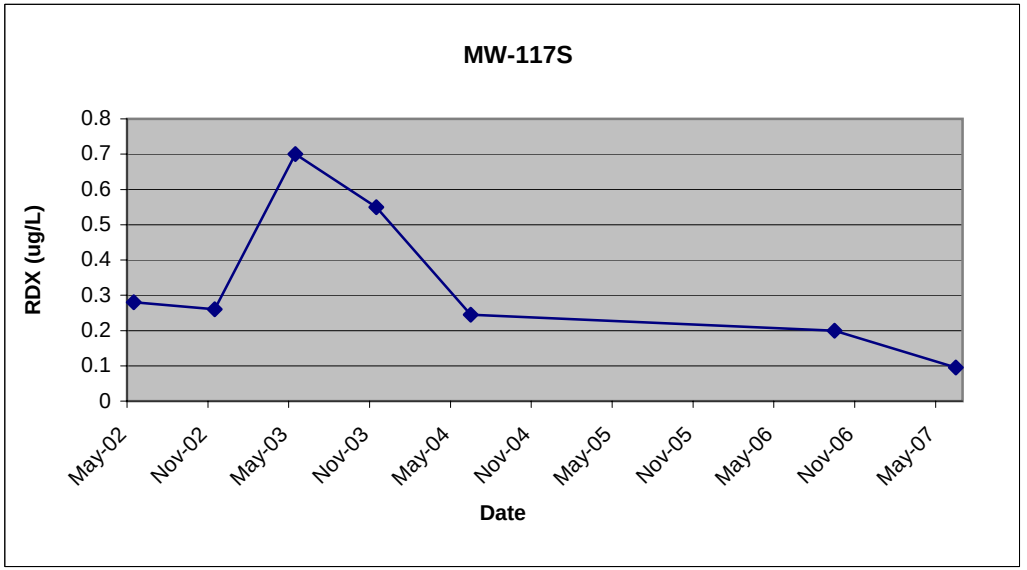
Screening Criteria = 2 ug/L



MW-117-S

Date	RDX (ug/L)	Detect	Adjusted RDX (ug/L)
5/17/2002	0.56	N	0.28
11/14/2002	0.52	N	0.26
5/30/2003	1.4	N	0.7
11/18/2003	1.1	N	0.55
6/19/2004	0.49	N	0.245
9/7/2006	0.2	Y	0.2
6/12/2007	0.19	N	0.095

Screening Criteria = 2 ug/L

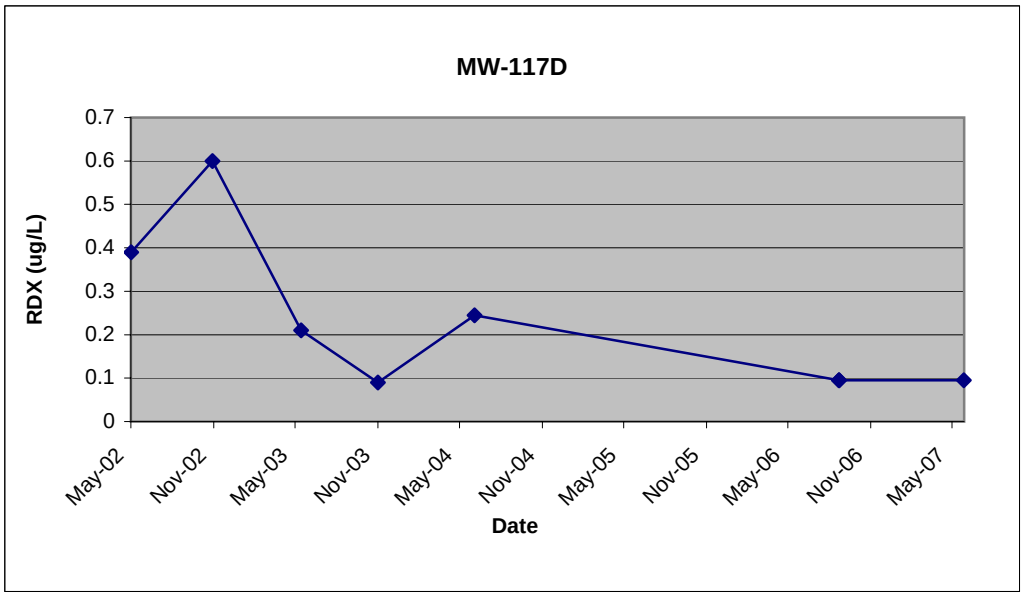


Concentration Trends for Selected Wells and Parameters
Off site

MW-117-D

Date	RDX (ug/L)	Detect	Adjusted RDX (ug/L)
5/17/2002	0.78	N	0.39
11/14/2002	1.2	N	0.6
5/30/2003	0.42	N	0.21
11/17/2003	0.18	N	0.09
6/19/2004	0.49	N	0.245
9/7/2006	0.19	N	0.095
9/7/2006	0.19	N	0.095
6/12/2007	0.19	N	0.095

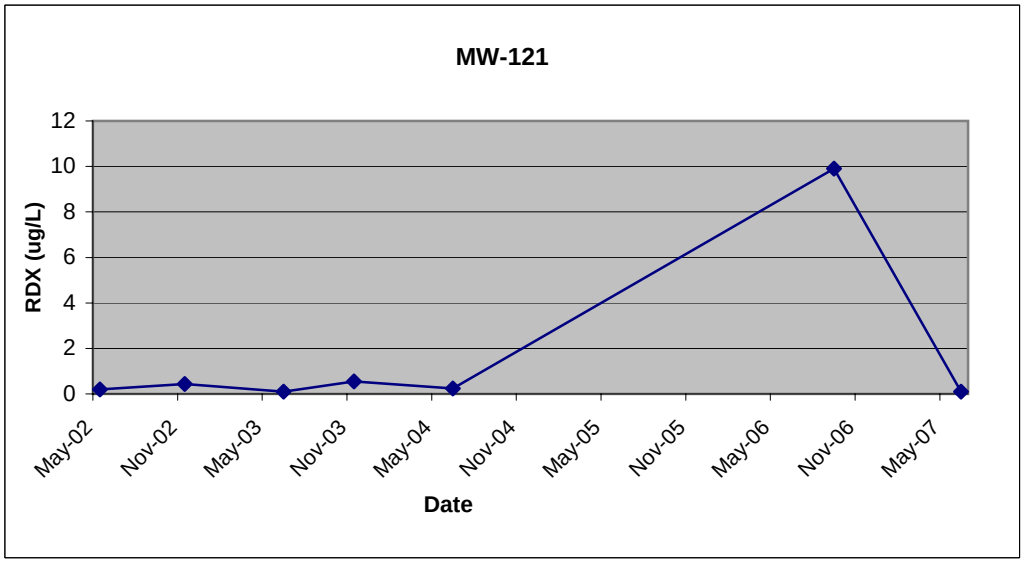
Screening Criteria = 2 ug/L



MW-121

Date	RDX (ug/L)	Detect	Adjusted RDX (ug/L)
5/17/2002	0.4	N	0.2
11/14/2002	0.87	N	0.435
6/4/2003	0.21	N	0.105
11/17/2003	1.1	N	0.55
6/18/2004	0.49	N	0.245
9/6/2006	9.9	Y	9.9
6/10/2007	0.19	N	0.095

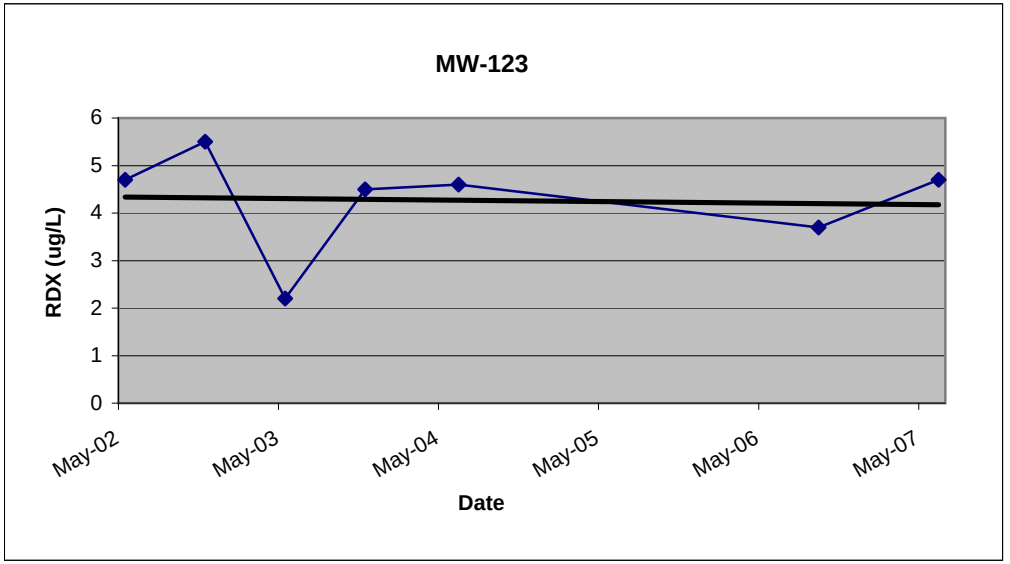
Screening Criteria = 2 ug/L



MW-123

Date	RDX (ug/L)	Detect
5/17/2002	4.7	Y
11/14/2002	5.5	Y
5/30/2003	2.2	Y
11/18/2003	4.5	Y
6/10/2004	4.6	Y
9/1/2006	3.7	Y
6/11/2007	4.7	Y

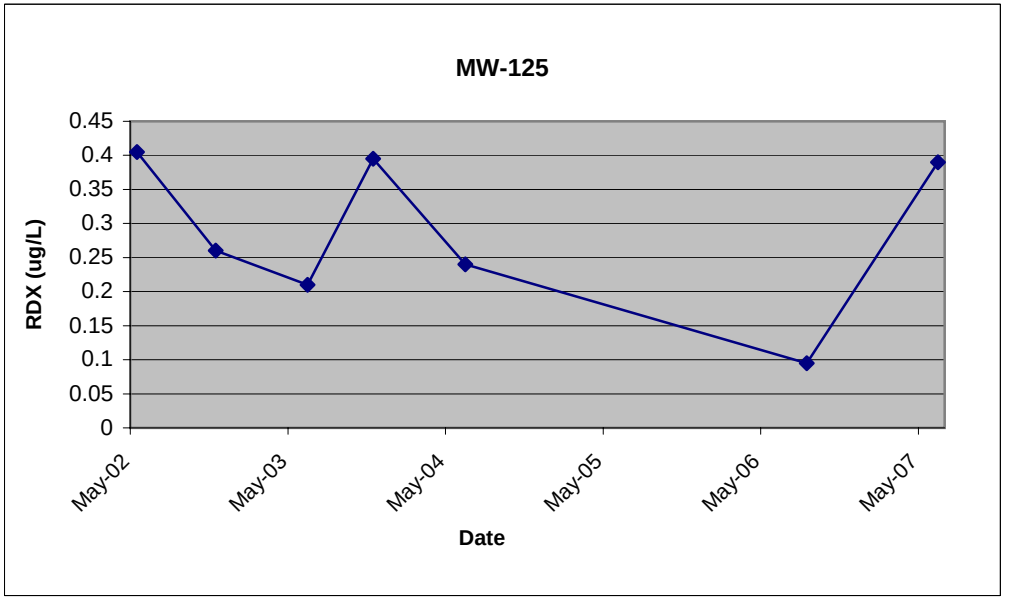
Screening Criteria = 2 ug/L



MW-125

Date	RDX (ug/L)	Detect	Adjusted RDX (ug/L)
5/16/2002	0.81	N	0.405
11/14/2002	0.52	N	0.26
6/4/2003	0.21	Y	0.21
11/18/2003	0.79	N	0.395
6/10/2004	0.48	N	0.24
8/29/2006	0.19	N	0.095
6/11/2007	0.39	Y	0.39

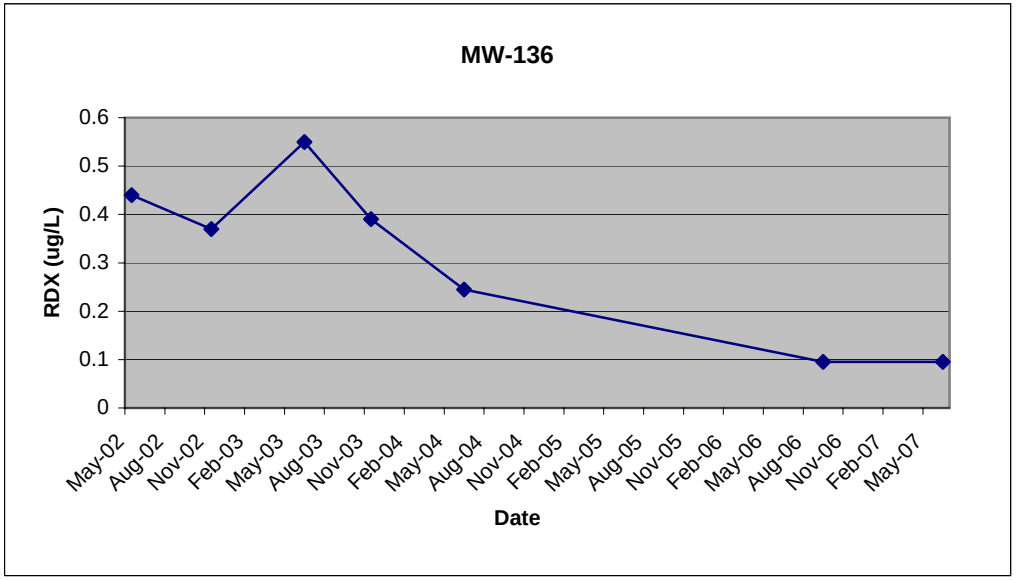
Screening Criteria = 2 ug/L



MW-136

Date	RDX (ug/L)	Detect	Adjusted RDX (ug/L)
5/19/2002	0.88	N	0.44
11/13/2002	0.74	N	0.37
6/4/2003	1.1	N	0.55
11/16/2003	0.78	N	0.39
6/15/2004	0.49	N	0.245
9/6/2006	0.19	N	0.095
6/11/2007	0.19	N	0.095

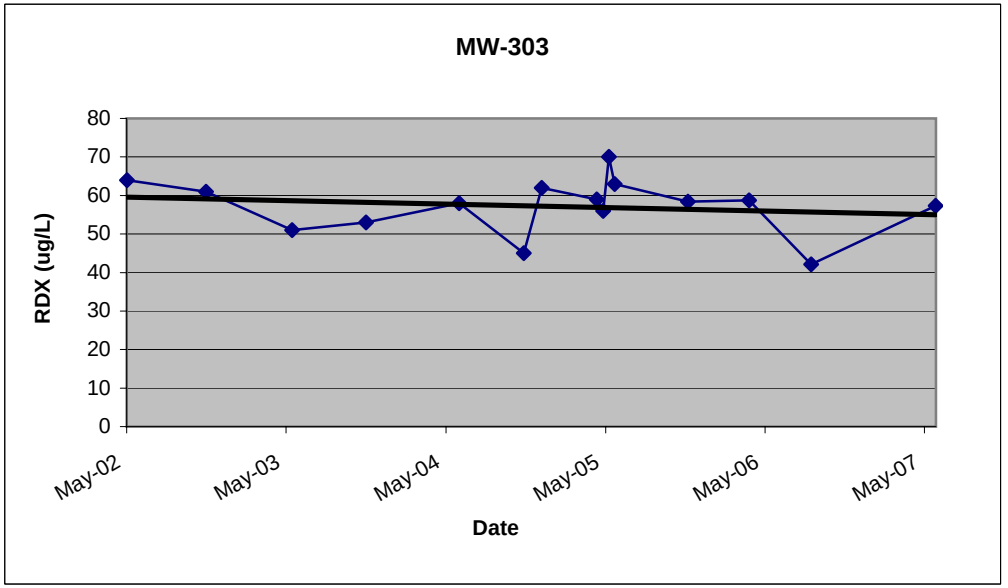
Screening Criteria = 2 ug/L



MW-303

Date	RDX (ug/L)	Detect
5/18/2002	64	Y
11/15/2002	61	Y
5/31/2003	51	Y
11/16/2003	53	Y
6/16/2004	58	Y
11/11/2004	45	Y
12/22/2004	62	Y
4/27/2005	59	Y
5/12/2005	56	Y
5/25/2005	70	Y
6/7/2005	63	Y
11/22/2005	58.4	Y
4/11/2006	58.7	Y
8/31/2006	42.1	Y
6/12/2007	57.3	Y

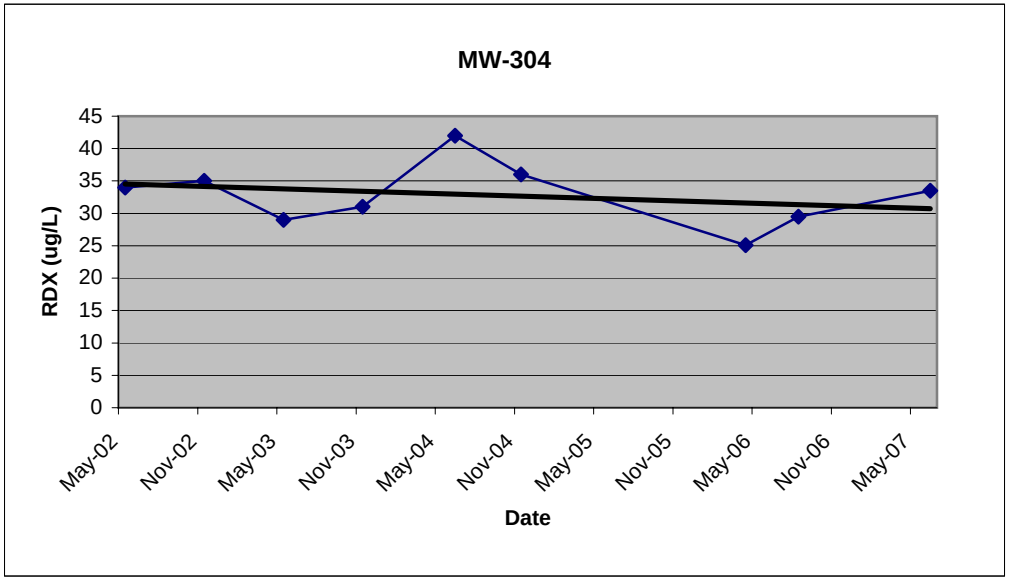
Screening Criteria = 2 ug/L



MW-304

Date	RDX (ug/L)	Detect
5/19/2002	34	Y
11/13/2002	35	Y
5/31/2003	29	Y
11/15/2003	31	Y
6/16/2004	42	Y
11/11/2004	36	Y
4/11/2006	25.1	Y
8/31/2006	29.5	Y
6/12/2007	33.5	Y

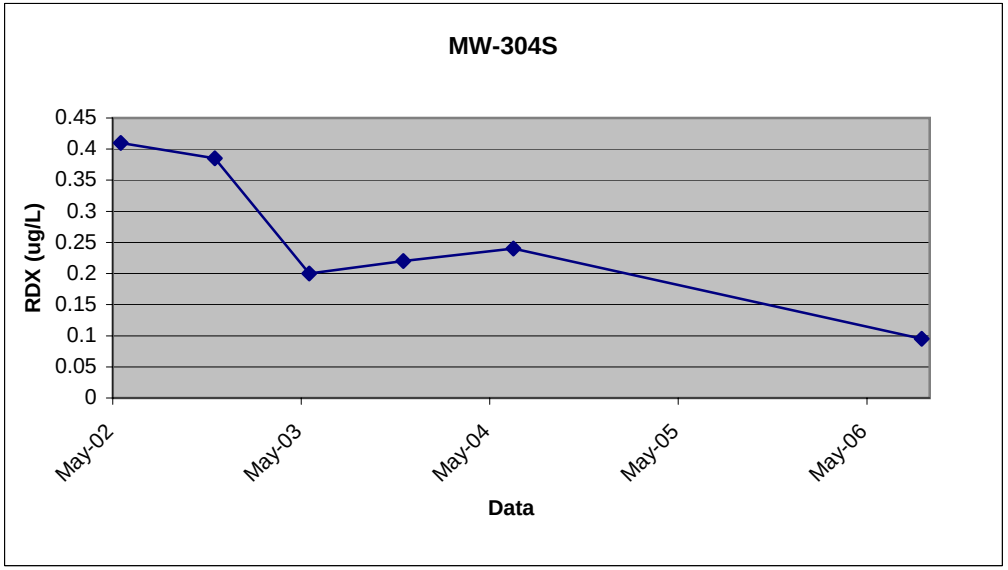
Screening Criteria = 2 ug/L



MW-304-S

Date	RDX (ug/L)	Detect	Adjusted RDX (ug/L)
5/19/2002	0.82	N	0.41
11/13/2002	0.77	N	0.385
5/31/2003	0.4	N	0.2
11/16/2003	0.44	N	0.22
6/16/2004	0.48	N	0.24
8/31/2006	0.19	N	0.095

Screening Criteria = 2 ug/L

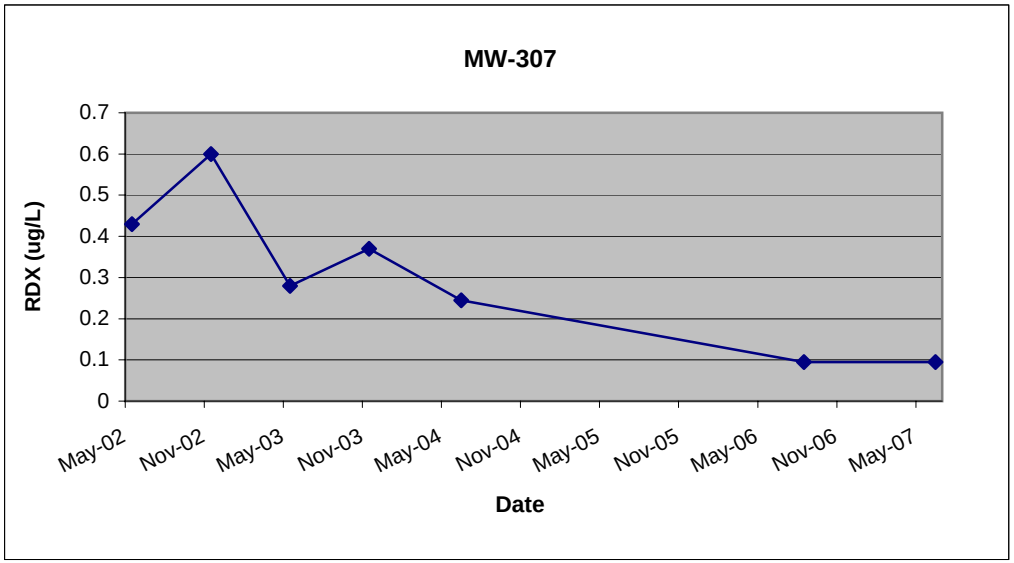


Concentration Trends for Selected Wells and Parameters
Off site

MW-307

Date	RDX (ug/L)	Detect	Adjusted RDX (ug/L)
5/17/2002	0.86	N	0.43
11/14/2002	1.2	N	0.6
5/30/2003	0.56	N	0.28
11/16/2003	0.74	N	0.37
6/19/2004	0.49	N	0.245
8/29/2006	0.19	N	0.095
6/10/2007	0.19	N	0.095

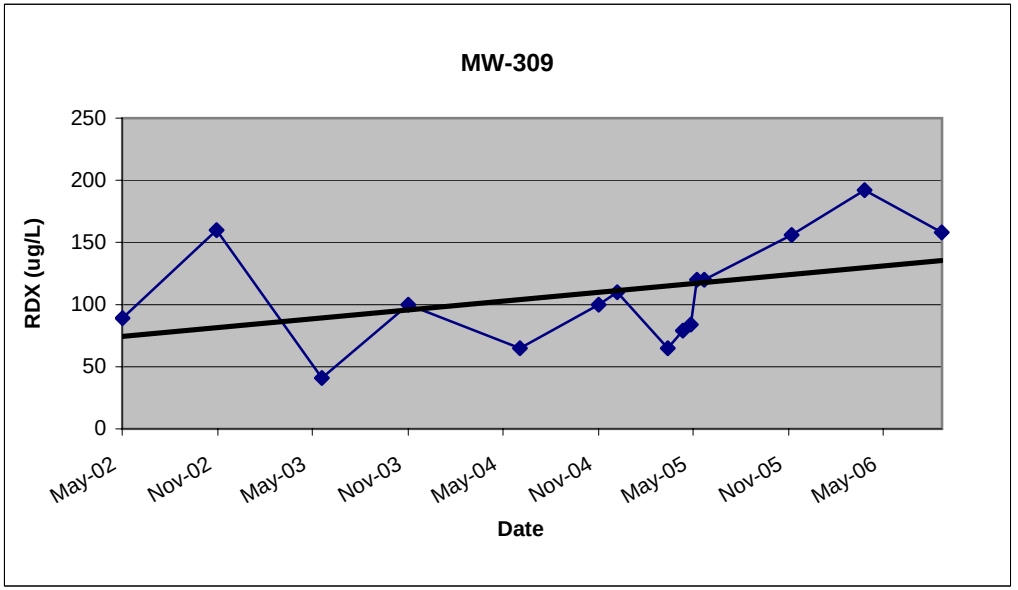
Screening Criteria = 2 ug/L



MW-309

Date	RDX (ug/L)	Detect
5/17/2002	89	Y
11/14/2002	160	Y
6/4/2003	41	Y
11/17/2003	100	Y
6/18/2004	65	Y
11/16/2004	100	Y
12/22/2004	110	Y
3/29/2005	65	Y
4/27/2005	79	Y
5/12/2005	84	Y
5/24/2005	120	Y
6/7/2005	120	Y
11/22/2005	156	Y
4/11/2006	192	Y
9/6/2006	158	Y
6/10/2007	128	Y

Screening Criteria = 2 ug/L

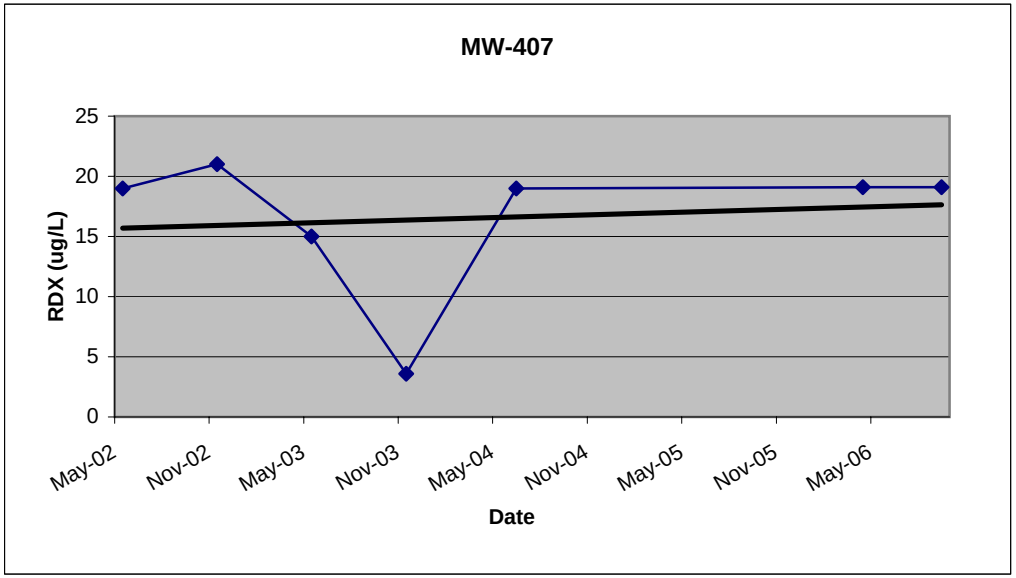


Concentration Trends for Selected Wells and Parameters
Off site

MW-407

Date	RDX (ug/L)	Detect
5/19/2002	19	Y
11/15/2002	21	Y
5/31/2003	15	Y
11/16/2003	3.6	Y
6/16/2004	19	Y
4/13/2006	19.1	Y
9/1/2006	19.1	Y
6/10/2007	19.3	Y

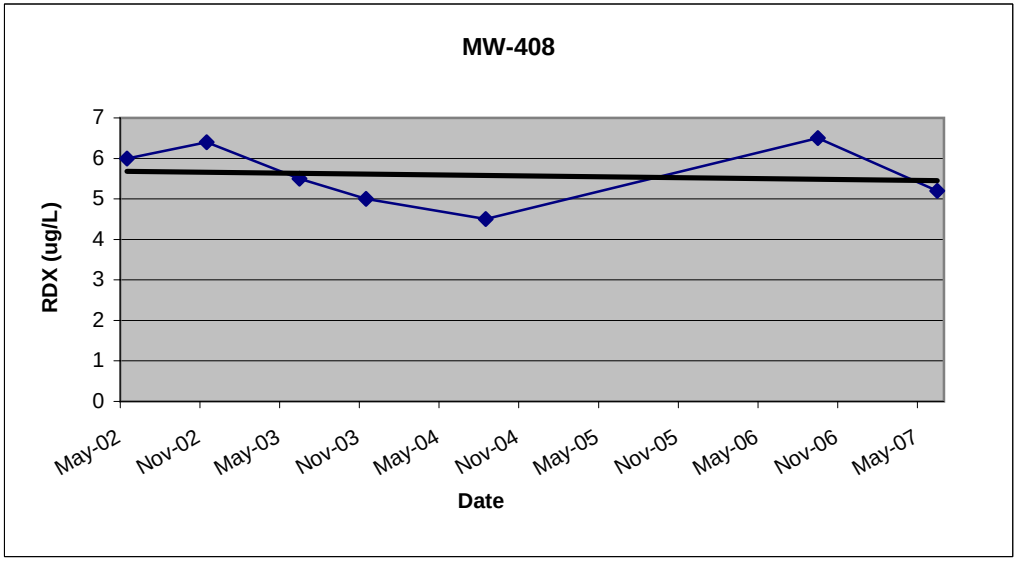
Screening Criteria = 2 ug/L



MW-408

Date	RDX (ug/L)	Detect
5/21/2002	6	Y
11/13/2002	6.4	Y
6/4/2003	5.5	Y
11/16/2003	5	Y
8/11/2004	4.5	Y
9/6/2006	6.5	Y
6/11/2007	5.2	Y

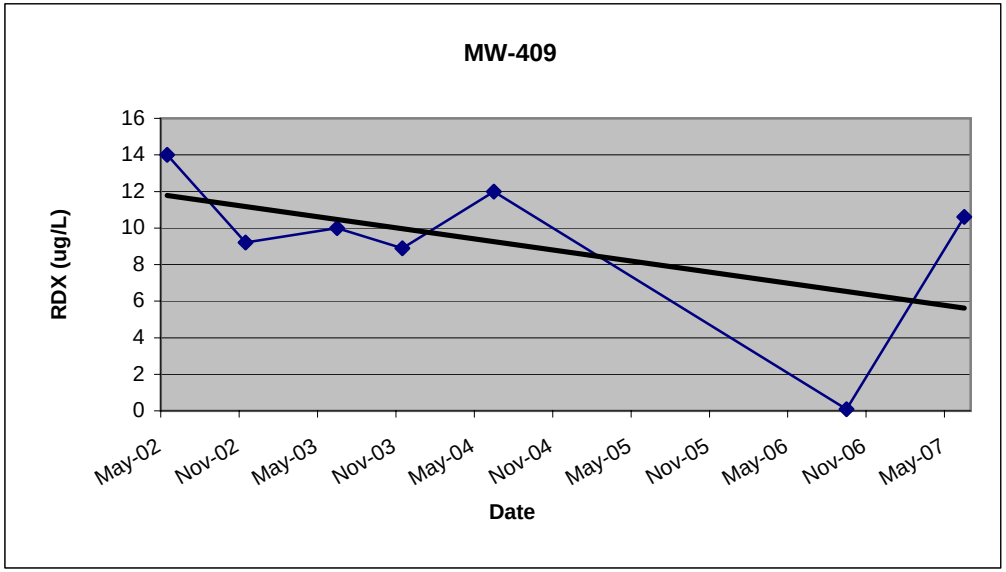
Screening Criteria = 2 ug/L



MW-409

Date	RDX (ug/L)	Detect	Adjusted RDX (ug/L)
5/18/2002	14	Y	14
11/15/2002	9.2	Y	9.2
6/4/2003	10	Y	10
11/16/2003	8.9	Y	8.9
6/15/2004	12	Y	12
9/6/2006	0.19	N	0.095
6/12/2007	10.6	Y	10.6

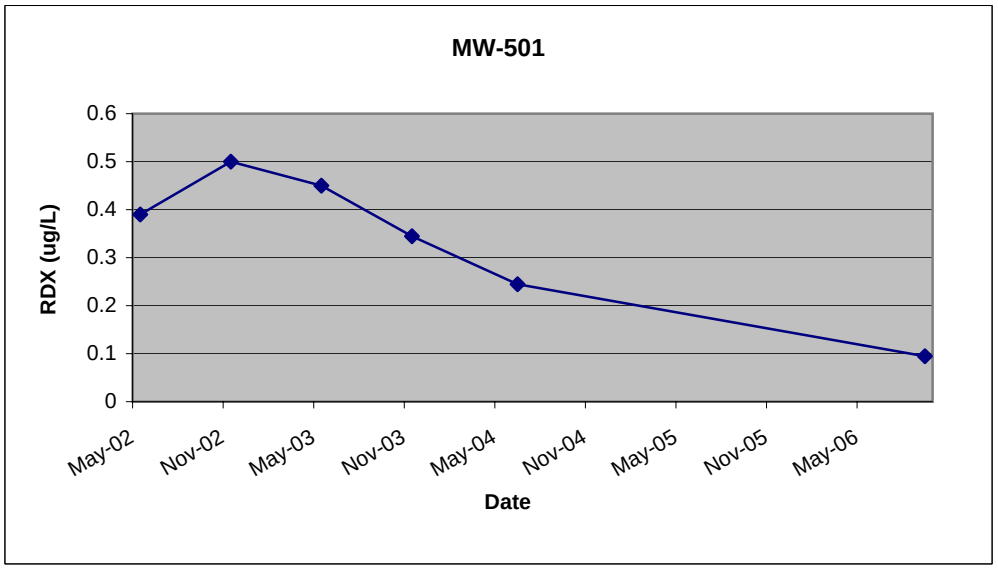
Screening Criteria = 2 ug/L



MW-501

Date	RDX (ug/L)	Detect	Adjusted RDX (ug/L)
5/18/2002	0.78	N	0.39
11/15/2002	1	N	0.5
5/31/2003	0.9	N	0.45
11/15/2003	0.69	N	0.345
6/16/2004	0.49	N	0.245
9/1/2006	0.19	N	0.095
6/11/2007	0.074	Y	0.074

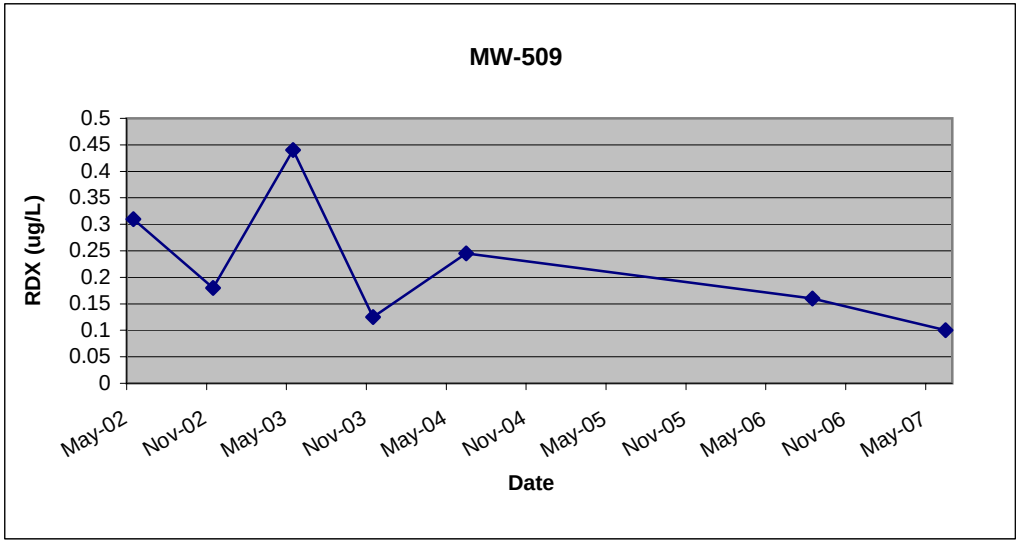
Screening Criteria = 2 ug/L



MW-509

Date	RDX (ug/L)	Detect	Adjusted RDX (ug/L)
5/19/2002	0.62	N	0.31
11/14/2002	0.36	N	0.18
5/31/2003	0.88	N	0.44
11/16/2003	0.25	N	0.125
6/16/2004	0.49	N	0.245
8/31/2006	0.16	Y	0.16
6/10/2007	0.2	N	0.1

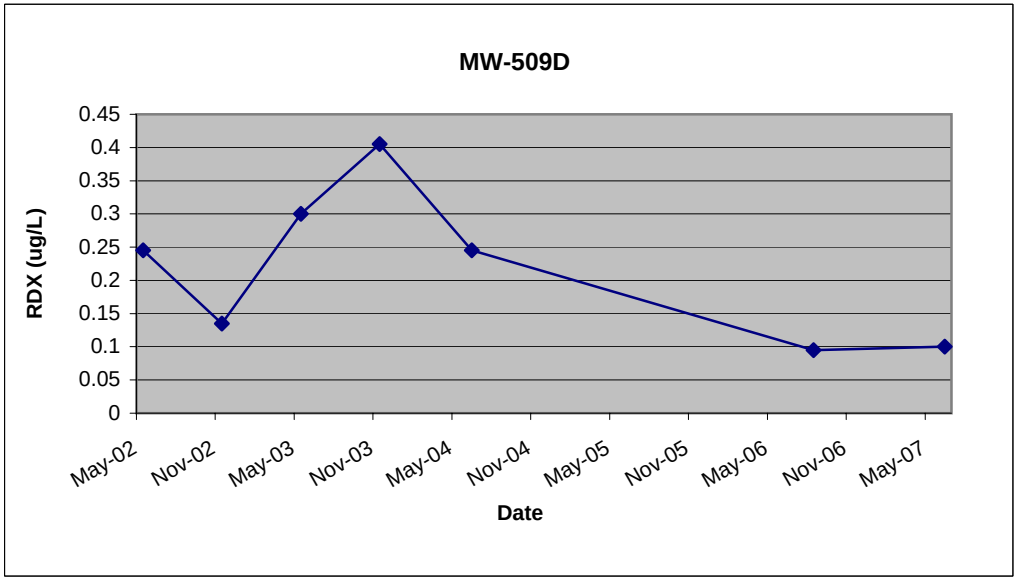
Screening Criteria = 2 ug/L



MW-509D

Date	RDX (ug/L)	Detect	Adjusted RDX (ug/L)
5/19/2002	0.49	N	0.245
11/14/2002	0.27	N	0.135
5/31/2003	0.6	N	0.3
11/16/2003	0.81	N	0.405
6/16/2004	0.49	N	0.245
8/31/2006	0.19	N	0.095
6/10/2007	0.2	N	0.1

Screening Criteria = 2 ug/L

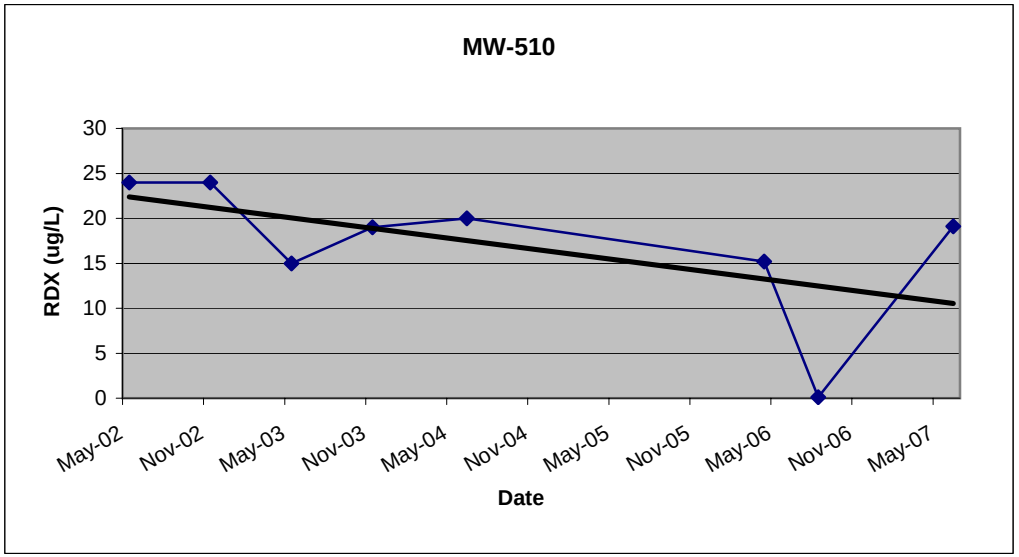


Concentration Trends for Selected Wells and Parameters
Off site

MW-510

Date	RDX (ug/L)	Detect	Adjusted RDX (ug/L)
5/19/2002	24	Y	24
11/15/2002	24	Y	24
5/29/2003	15	Y	15
11/15/2003	19	Y	19
6/17/2004	20	Y	20
4/13/2006	15.2	Y	15.2
8/31/2006	0.19	N	0.095
6/10/2007	19.1	Y	19.1

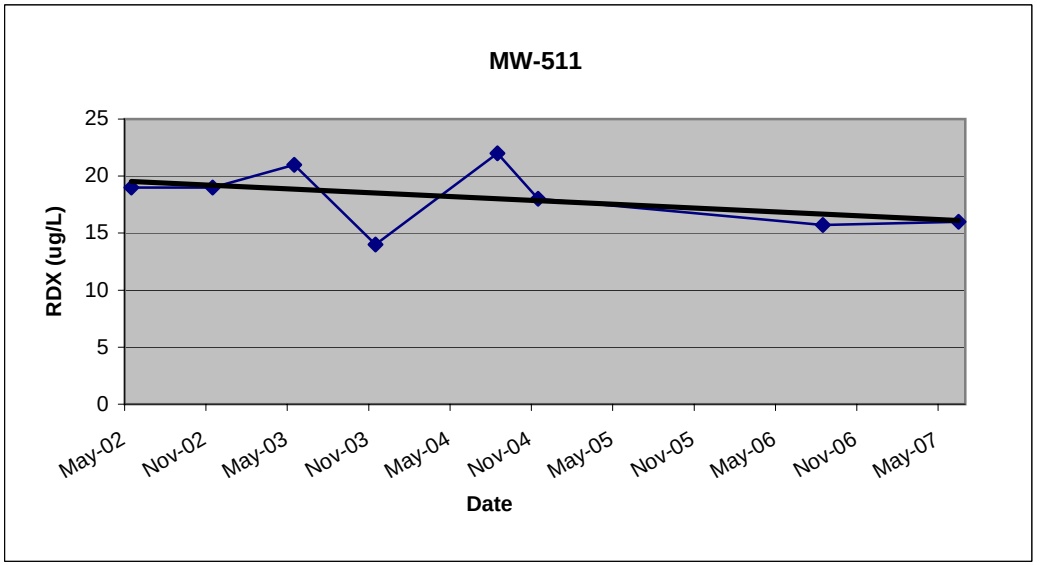
Screening Criteria = 2 ug/L



MW-511

Date	RDX (ug/L)	Detect
5/19/2002	19	Y
11/15/2002	19	Y
5/29/2003	21	Y
11/15/2003	14	Y
8/11/2004	22	Y
11/16/2004	18	Y
8/31/2006	15.7	Y
6/11/2007	16	Y

Screening Criteria = 2 ug/L

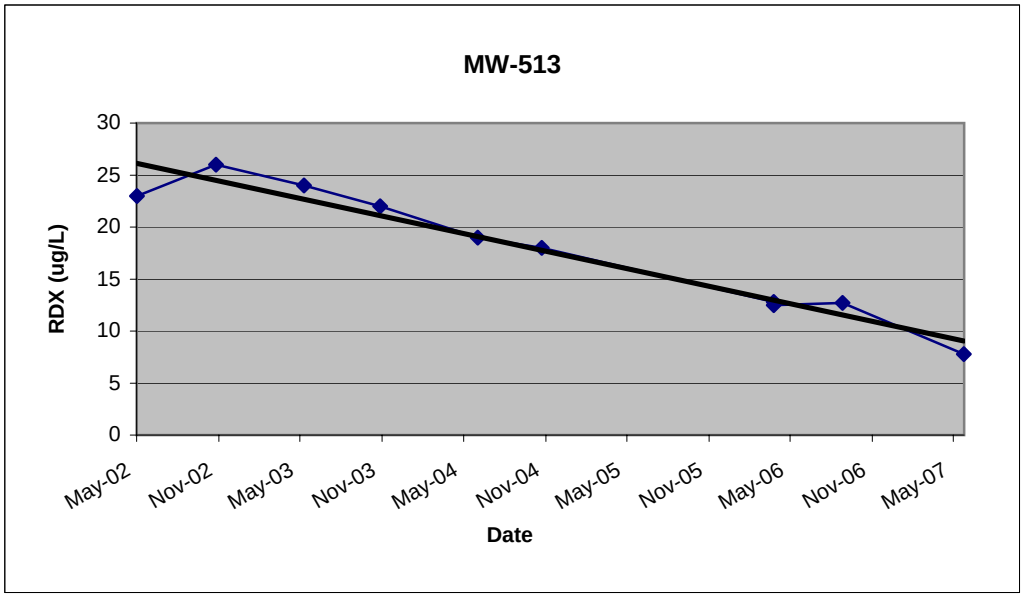


Concentration Trends for Selected Wells and Parameters
Off site

MW-513

Date	RDX (ug/L)	Detect
5/20/2002	23	Y
11/13/2002	26	Y
5/29/2003	24	Y
11/15/2003	22	Y
6/20/2004	19	Y
11/10/2004	18	Y
4/13/2006	12.8	Y
4/13/2006	12.5	Y
9/14/2006	12.7	Y
6/12/2007	7.8	Y

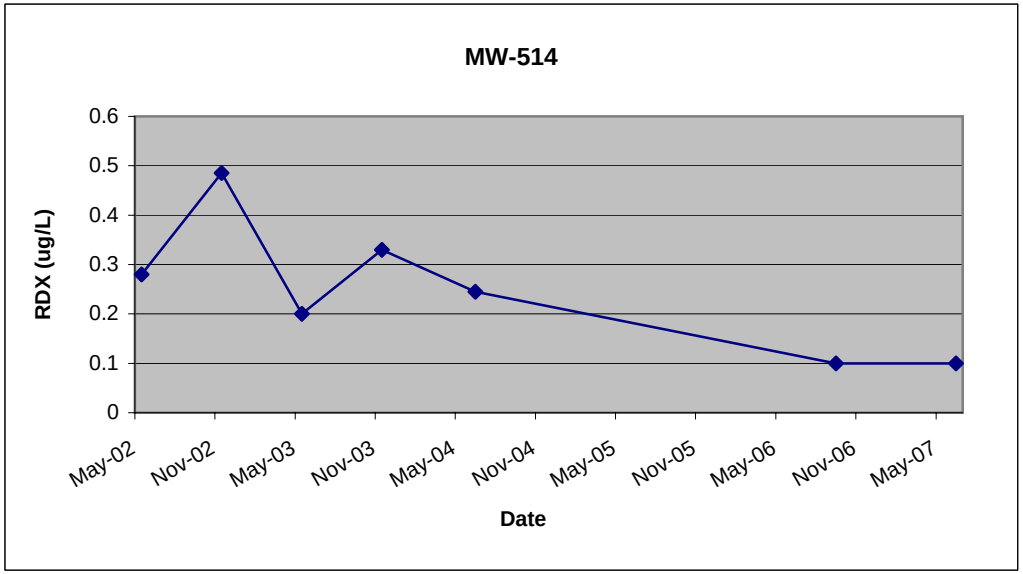
Screening Criteria = 2 ug/L



MW-514

Date	RDX (ug/L)	Detect	Adjusted RDX (ug/L)
5/21/2002	0.56	N	0.28
11/13/2002	0.97	N	0.485
5/30/2003	0.4	N	0.2
11/16/2003	0.66	N	0.33
6/19/2004	0.49	N	0.245
9/7/2006	0.2	N	0.1
6/11/2007	0.2	N	0.1

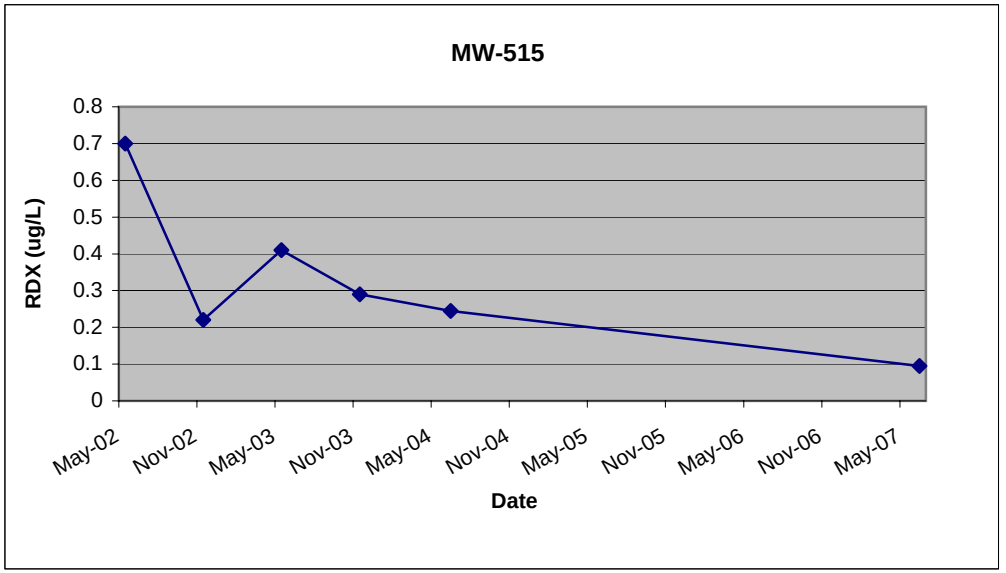
Screening Criteria = 2 ug/L



MW-515

Date	RDX (ug/L)	Detect	Adjusted RDX (ug/L)
5/20/2002	1.4	N	0.7
11/13/2002	0.44	N	0.22
5/29/2003	0.82	N	0.41
11/15/2003	0.58	N	0.29
6/20/2004	0.49	N	0.245
6/12/2007	0.19	N	0.095

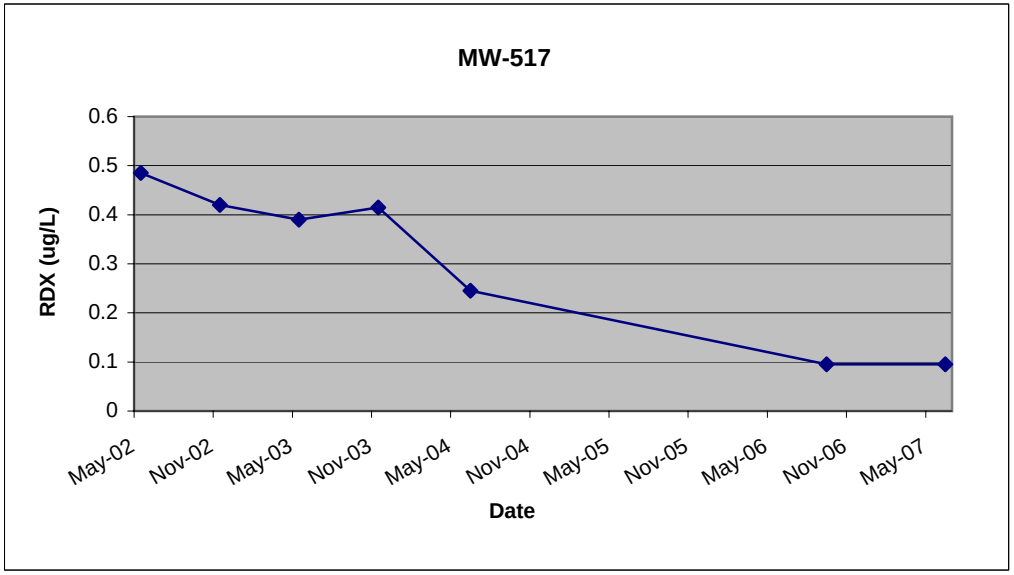
Screening Criteria = 2 ug/L



MW-517

Date	RDX (ug/L)	Detect	Adjusted RDX (ug/L)
5/21/2002	0.97	N	0.485
11/13/2002	0.84	N	0.42
5/29/2003	0.78	N	0.39
11/15/2003	0.83	N	0.415
6/18/2004	0.49	N	0.245
9/1/2006	0.19	N	0.095
6/11/2007	0.19	N	0.095

Screening Criteria = 2 ug/L

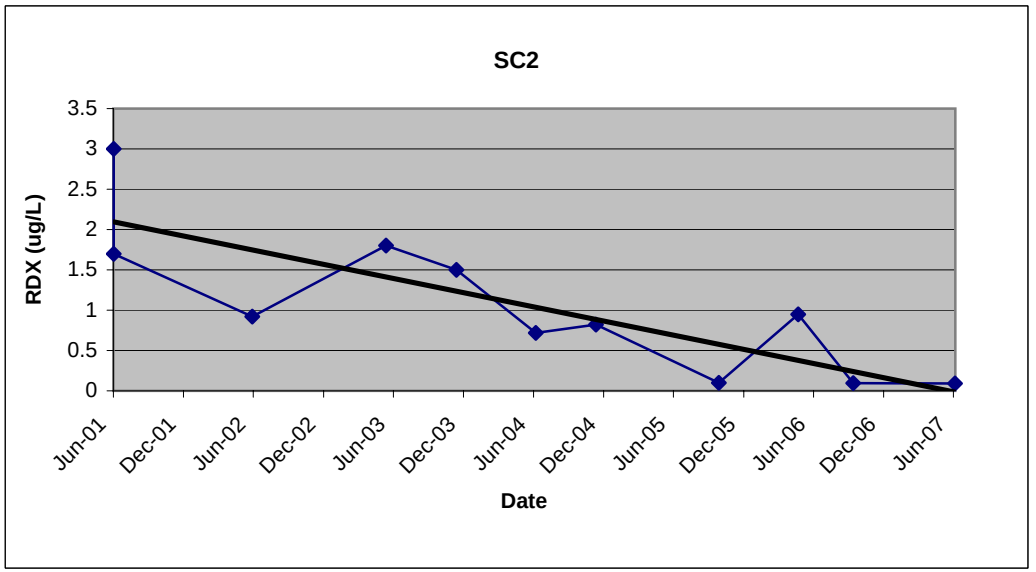


Concentration Trends for Selected Wells and Parameters
Surface Water

SC2

Date	RDX (ug/L)	Detect	Adjusted RDX (ug/L)
6/3/2001	3	Y	3
6/3/2001	1.7	Y	1.7
5/31/2002	0.92	Y	0.92
5/15/2003	1.8	Y	1.8
11/14/2003	1.5	Y	1.5
6/8/2004	0.72	Y	0.72
11/12/2004	0.82	Y	0.82
9/29/2005	0.2	N	0.1
4/24/2006	0.95	Y	0.95
9/14/2006	0.19	N	0.095
6/7/2007	0.093	Y	0.093

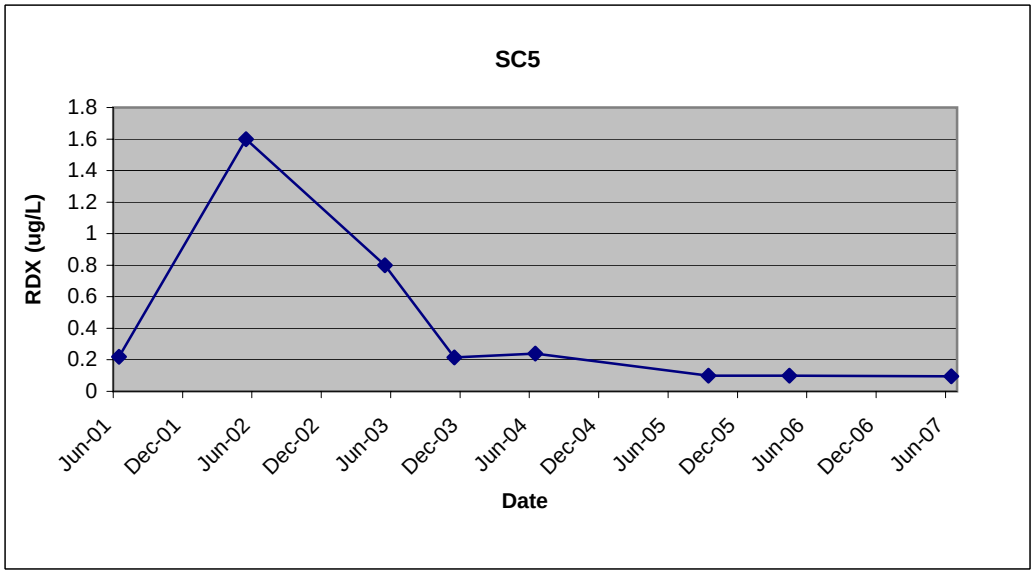
Screening Criteria = 2 ug/L



SC5

Date	RDX (ug/L)	Detect	Adjusted RDX (ug/L)
6/3/2001	0.44	N	0.22
5/31/2002	1.6	Y	1.6
5/15/2003	1.6	N	0.8
11/14/2003	0.43	N	0.215
6/9/2004	0.48	N	0.24
9/29/2005	0.2	N	0.1
4/24/2006	0.2	N	0.1
6/7/2007	0.19	N	0.095

Screening Criteria = 2 ug/L



Concentration Trends for Selected Wells and Parameters
Surface Water

SCT2

Date	RDX (ug/L)	Detect	Adjusted RDX (ug/L)
6/3/2001	16	Y	16
5/15/2003	110	Y	110
11/14/2003	13	Y	13
6/9/2004	42	Y	42
11/12/2004	17	Y	17
4/24/2006	21	Y	21
9/14/2006	0.19	N	0.095
6/7/2007	5.1	Y	5.1

Screening Criteria = 2 ug/L