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Transmitted by Email
sgarrison@madisoncountync.org and
jhuff@madisoncountync.org

April 14, 2010

Ms. Jaclynne Drummond
Compliance Hydrogeologist
NC Department of Environment and Natural Resources
Division of Waste Management – Solid Waste Section
1646 Mail Service Center
Raleigh, NC 27699-1646

Subject: PCE Investigation Summary Report
Mr. Joel Edwards Property
79 Longbranch Road, Madison County North Carolina

Dear Ms. Drummond,

On behalf of Madison County and the Madison County Solid Waste Department, please find attached a letter report that describes the above referenced investigation. The most recent portion of the investigation was performed in response to your letter from the North Carolina Department of Environment and Natural Resources-(DENR) Solid Waste Section (SWS) addressed to Madison County (DENR, January 7, 2010).

We greatly appreciate your time and consideration on this project. Please feel free to contact me with any questions, concerns, or comments related to the report.

Sincerely,

ALTAMONT ENVIRONMENTAL, INC.

Joel D. Lenk, P.G.

Enclosures: PCE Investigation Summary Report

Cc: Mr. Steve Garrison, Madison County Manager
Mr. Jim Huff, Director Madison County Solid Waste Department
Mr. Ward Scott, Madison County Attorney

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April 14, 2010

Mr. Jim Huff
Director
Solid Waste Department
Madison County
271 Craig Rudisill Road
Marshall, NC 28753

Mr. Steve Garrison
County Manager
Madison County
P.O. Box 579
Marshall, NC 28753

Subject: PCE Investigation Summary Report
Mr. Joel Edwards Property
79 Longbranch Road, Madison County North Carolina

Dear Messrs. Huff and Garrison:

On behalf of Madison County, Altamont Environmental, Inc. (Altamont) recently conducted an investigation at the Joel Edwards property. This investigation was conducted to evaluate the existence of tetrachloroethene (PCE) and other volatile organic compounds (VOCs) in the soils, shallow groundwater, and mulch at the property. The investigation was performed in response to a letter from the North Carolina Department of Environment and Natural Resources-(DENR) Solid Waste Section (SWS) addressed to Madison County (DENR, January 7, 2010).

Specifically, the investigation was competed in an effort to evaluate the following conditions:

1. Whether the Edwards's property contains a potential source of PCE that has impacted the domestic water supply well (DW-02) for the Edwards home
2. Whether PCE exists in shallow groundwater observed to be leaking past the surface casing of the well

In this letter, we are referring to the water entering the well from near the surface casing as groundwater, even though this water may not be part of a saturated zone (aquifer). As noted in *Groundwater and Wells*, "...strictly speaking, all water in the ground could be called groundwater" (Driscoll, 1986).

The following section of this report summarizes activities, results, and conclusions of this investigation. The remainder of this letter includes detail regarding the work (including investigative activities that have taken place at the Edwards's property since April 2009 when PCE was first detected in the well), methodologies, and results of the PCE investigation, and incorporates conclusions based on those activities.

SUMMARY

The locations of Joel Edwards parcel and the Madison County parcel that contains a closed landfill are indicated on Figure 1. Field activities associated with the most recent phase of the PCE investigation were conducted on February 12, 2010. Other data referenced in this letter have been collected since April 2009. The February 12, 2010 activities included the following tasks:

- Collecting one discrete shallow groundwater sample from within the DW-02 well from approximately 10 feet below the surface casing (above the static water level for the well).
- Collecting five subsurface soil samples using a Geoprobe® direct-push drill rig from five borings designated as SB-1, SB-2, SB-3, SB-4, and SB-5. SB-1 was advanced near the septic field for the residence. The remaining soil borings were advanced along the centerline of a drainage swale that extends along the front of the Edwards's house and that directs stormwater over the wellhead for water supply well.
- Collecting a composite sample of wood-based landscape mulch from the area immediately surrounding the supply well.
- Collecting strike and dip measurements from apparently dominant fracture surfaces on bedrock exposed by the excavation of the Edwards house seat.

Approximate sample locations are shown on Figures 2 and 3. Select groundwater and soil samples were delivered to Pace Analytical Services, Inc. (Pace), a North Carolina certified laboratory located In Asheville, North Carolina for analysis. All samples delivered to the lab were analyzed for VOCs using US Environmental Protection Agency (EPA) Methods 8260 (water) and 8260/5035A (soil). Analytical results are summarized on attached Tables 1 and 2. Analytical results for soil were compared to the Soil to Groundwater Maximum Soil Contaminant Concentration (MSCC) found in DENR's UST Guidelines for the Investigation and Remediation of Contamination from Non-UST Petroleum Releases Standards (DENR, July 1, 2007). For comparative purposes, analytical results from the mulch sample were also evaluated against the MSCCs. Analytical results for groundwater were compared to the North Carolina 2L Standards, as promulgated in 15A North Carolina Administrative Code (NCAC) 2L.0202 (2L Standards), and North Carolina Division of Waste Management, Solid Waste Section Limits.

Analytical results from samples collected during this investigation indicate that the mulch surrounding the DW-02 well head contained VOCs at concentrations both above and below the referenced standards. The groundwater sample exhibited two VOCs at concentrations below the associated 2L Standards and one compound (PCE) at its 2L Standard. Soil samples showed detections of VOCs, however all concentrations were below the MSCCs.

Bedrock, exposed by the excavation of the Edwards house seat was observed, and the orientations of apparently dominant fracture surfaces were measured. The exposed bedrock surface is located between the closed landfill and the water supply well DW-02. Figure 3 indicates the locations where strike and dip measurements were collected, the direction of strike, the direction of dip, and dip angle of the dominant fracture sets. Based the observations and measurements two dominant fracture orientations were identified. One fracture set appears to strike generally north/south and dips nearly vertically. The

other fracture set appears to strikes northeast/southwest and dips 60 to 75 degrees to the northwest. The fractures set that strikes north/south and that dips vertically would be expected to convey shallow groundwater in bedrock above the water table vertically in a downward direction. The fracture set that strikes in a northeast/southwest direction was noted to mimic the alignment of the drainages situated east and west of the Edwards parcel. The northeast/southwest striking fracture set would be expected to convey shallow groundwater above the water table in bedrock from the southeast to the northwest. The orientation of the two dominant fracture sets observed and measured as part of this investigation do not appear to indicate that that they would readily convey groundwater in bedrock from the landfill toward the Edwards well.

The results of this investigation and investigative activities conducted in 2009 (described below) indicate that VOCs are present in the subsurface soil at the Edwards property, that the surface casing for well DW-02 is compromised, and that PCE is present in the sample of shallow groundwater collected from the well approximately 10 feet below the surface casing (above the static water level) at similar concentrations to those detected in groundwater samples collected from deeper in the well, below the static water level.

BACKGROUND

Mr. Joel Edwards's property is located adjacent to and south of a closed municipal solid waste landfill (SWS Permit #58-02), in the vicinity of the intersection of Longbranch Road and US Highway 25/70 in Madison County, North Carolina. The landfill was operated, closed, and is now monitored and maintained by Madison County and the SWS. The landfill was officially closed on December 21, 1995 as documented in a letter from Mr. James Coffey of the Solid Waste Section (SWS). Altamont has been supporting Madison County with required semiannual groundwater quality monitoring since 1997. In 2006 and 2007, Mr. Joel Edwards built a house on the property owned by his father adjacent to the southern border of the landfill. On October 30, 2006, a water supply well was drilled on the Edwards's property approximately 200 feet south of the property line that separates the Edwards's property and the property owned by Madison County, which contains the closed landfill. Madison County was not made aware of the well's existence until early 2007; at that time the county made a decision to begin sampling Joel Edwards's well semiannually and reporting the results of that sampling to the SWS with the semiannual water quality monitoring reports for the closed landfill. The voluntary decision to sample and report results from the well was made in an effort to protect the health and safety of the Edwards's and to protect the county's liability.

During the spring 2009 groundwater sampling event (conducted on April 15, 2009), PCE was detected for the first time in the groundwater sample collected from DW-02 at a concentration of 15.5 micrograms per liter (µg/L). No other compounds were detected in the referenced sample. Initially, the detection of PCE was suspected to be a laboratory artifact. The well was re-sampled on June 15, 2009 and again on July 15, 2009 to confirm the previous PCE detection. The Edwards have been drinking bottled water since the detection of PCE was confirmed. Only PCE was detected in the confirmation samples, at 5.0 µg/L and 4.8 µg/L, respectively. During the July 15, 2009 sampling event, 120 gallons (versus the normal 30 gallons) were purged from the Joel Edwards well prior to sampling. The decision to purge a greater volume from the well was made because the concentration of PCE in the June confirmation sample (5.0 µg/L) was less than the concentration detected in the groundwater sample collected on April 15, when PCE was initially detected. The reduction in the concentration of PCE and the fact that only one VOC was detected in the groundwater sample raised the following questions:

- Why was only one VOC (PCE) being detected in groundwater, and why were other commonly associated breakdown compounds (for example, trichloroethene, 1, 2, dichloroethene, and vinyl chloride) not being detected?
- Why did the concentration of PCE appear to be decreasing rather than increasing, with time and when a larger volume of water was purged prior to sampling?
- What was the source(s) of the PCE detected in the groundwater samples collected from the Joel Edwards well?

Since July 2009, in an effort to protect the Edwards family and their water supply, and in an attempt to better understand these questions, Madison County has confirmed that the Edwards family is drinking bottled water and increased the frequency of groundwater sampling at the Joel Edwards well from semiannual, to monthly, and then to weekly during the summer of 2009. Since October 2008, 14 groundwater samples have been collected from below the static water level in the well on the following dates. PCE was detected in the samples at the concentrations indicated below:

Date	PCE (µg/L)
October 15, 2008	Non detect (ND) at a method reporting limit of 1.0 µg/L
April 17, 2009	15.5 µg/L
June 15, 2009	5.0 µg/L
July 15, 2009	4.8 µg/L
August 4, 2009	3.0 µg/L (1,2-DCE at 0.26 µg)/L)
August 12, 2009-morning	ND, day long over-pumping event described below
August 12, 2009-midday	ND, day long over-pumping event described below
August 12, 2009-evening	ND, day long over-pumping event described below
August 20, 2009	ND
August 27, 2009	2.4 µg/L
September 14, 2009	ND
September 21, 2009	1.1 µg/L
October 30, 2009	2.7 µg/L
February 23, 2010	0.8 µg/L (Collected by Madison County Health Department)

In August 2009, Altamont, on behalf of Madison County, conducted an over-pumping event of the Edwards's well.

- The well was pumped at an average flow rate of approximately 17.5 gallons per minute (gpm) for eight hours. Approximately 8,400 gallons of water was pumped from the well.
- Groundwater samples were collected from the well in the morning before the pumping event began, at midday halfway through the pumping event, and in the evening at the conclusion of the pumping event.
- PCE was not detected above the laboratory method detection limits in any of the three samples.

Madison County also employed Altamont to oversee a downhole video of the well. The following statements summarize Altamont's observations of the downhole video of the well:

- The six-inch inside diameter (ID) polyvinyl chloride (PVC) surface casing extends downward from approximately 0.7 feet above ground surface to approximately 49 feet below ground surface. The downhole camera was calibrated to measure its depth from the top of casing (TOC). Therefore, all depths referenced below are measured from the top of casing, not ground surface.
- The surface casing appeared to be flush-coupled at 10 and 30 feet below TOC. Some PVC glue appears to exist on the inside of the pipe below the couplings.
- Except for the bottom of the casing (described in the next bullet), the casing appears to maintain its integrity. No cracks or breaks were observed that may allow formation material or shallow-water groundwater to enter the well. Scratches were observed on the inside of the lower part of the casing (below 40 feet). The scratches did not appear to affect the casing's integrity.
- The bottom of the surface casing was identified at 50 feet below TOC. Water was observed to be dripping into the well from behind the casing. The bottom edge of the casing was observed to be damaged. The edge appeared to be broken off, possibly from pushing the casing during its installation. In this letter, we are referring to this water coming into the well from around the surface casing as groundwater, even though the water may not be part of a saturated zone (aquifer). As noted in *Groundwater and Wells*, "...strictly speaking, all water in the ground could be called groundwater" (Driscoll, 1986).
- At approximately 53 feet below TOC, about three feet below the bottom of the surface casing, water was observed to be flowing into the open borehole from behind the well casing and from a small fracture observed at this depth (estimated flow rate 0.5 to 1 gpm). As the camera continued to be lowered to the water table (approximately 104 feet below TOC), water was observed to be continuously running down the sides of the open borehole. It was unclear as to whether all of this water came from behind the surface casing and the minor fracture at 53 feet below TOC or if other minor water bearing fractures were present lower in the borehole.
- The water table (under non-pumping conditions) was observed at 104 feet below TOC.
- Below the surface casing, the well is an open bedrock borehole, approximately six inches in diameter. Bedrock, below the bottom of the casing to the total depth of the downhole camera work (approximately 293 feet below TOC), appears to be competent. No dominant water-bearing fractures were observed within this interval.
- While the downhole camera work was taking place, water was entering the well from around the bottom of the surface casing and from depths below the surface casing but above the water table. This observation suggests that groundwater percolating or moving downward in the area of Joel Edwards well may be entering the well at depths near the bottom of the surface casing.

- According to information on the well tag at the Joel Edwards well, the total depth of the well is 380 feet below ground surface (bgs) and the pump is set at 360 feet bgs. According to a Residential Well Construction Record provided to Mr. Landon Davidson of the DENR Aquifer Protection Section (APS) by Clearwater Drilling Company, the total depth of the well is 385 feet, unconsolidated material exists from zero to 50 feet bgs and rock exists from 50 feet to 385 bgs. The well construction record indicates that a socket was not drilled into bedrock before installing the surface casing, and that grout was installed from one foot bgs to 20 feet bgs. The conditions noted in well construction record could allow surface water and or shallow groundwater to enter the well through unconsolidated material surrounding the bottom of the surface casing.
- Joel Edwards has indicated, and the referenced record for the well corroborates, that a large water-bearing fracture was encountered during drilling and exists just above the total depth of the well at an interval between 360 and 362 feet bgs.
- Madison County provided a copy of the video to the DENR Water Quality Division on November 2, 2009.

METHODS

On February 12, 2010, Altamont and Soils and Minerals Drilling Services (SMD), a licensed North Carolina well driller based in Birmingham, Alabama, mobilized to the site and performed the field work for the PCE Investigation.

Altamont conducted the following tasks while planning and conducting the investigation at the site.

Wood-based Landscape Mulch Sample Collection

Altamont collected a composite sample (Mulch-1) of the mulch that surrounds the wellhead at DW-02. The mulch was transferred into a laboratory-supplied sample container by a technician wearing a new pair of nitrile gloves. The container was immediately placed in a cooler on ice to await delivery to the laboratory. After completing the field activities, Altamont delivered the mulch sample to Pace Analytical Services, Inc. (Pace) located in Asheville, North Carolina.

The mulch sample was analyzed for VOC using EPA Method 8260/5035A. The laboratory analytical report and chain-of-custody form are attached.

Shallow Groundwater/Surface Water Sample Collection

A packer and pump system provided by SMD was used to isolate the water observed to be flowing into the well boring from behind the surface casing and from the minor fracture at 53 feet below TOC and to collect a shallow groundwater sample from this zone. In order to collect the sample, the existing well pump, discharge piping, and wiring were removed from the well, placed on sawhorses, and decontaminated. Subsequently, the decontaminated inflatable packer assembly was lowered to 60-feet below TOC (approximately 10 feet below the bottom of the surface casing). The packer assembly consisted of one four-inch inflatable packer, coupled to one-inch PVC piping, and

polyethylene tubing. Compressed nitrogen gas was connected to the packer via the tubing from the well head.

Once set in place the packer was inflated with nitrogen to seal the borehole and allow the shallow groundwater coming from behind the surface casing and from the fracture at 53 feet below TOC to accumulate above the packer. Using a water level meter and a stopwatch, the water level was recorded as it accumulated above the packer; it was calculated that groundwater was entering this zone at approximately 0.5 gpm. Approximately 60-gallons of this water was purged from the well using a decontaminated purge pump (Wahl® pump). The zone above the packer was purged dry and allowed to recharge before the water sample was obtained.

The water sample was transferred into a laboratory-supplied sample container by a technician wearing a new pair of nitrile gloves. The container was immediately placed in a cooler on ice to await delivery to the laboratory. After completing the field activities, Altamont delivered the water sample to Pace Analytical Services, Inc. (Pace) located in Asheville, North Carolina.

The water sample was analyzed for volatile organic compounds (VOCs) by EPA Method 8260. The laboratory analytical report and chain-of-custody form are attached.

Once the groundwater sample was obtained, SMD re-installed the well pump, piping, and wiring in the well. At the request of the well owner, the pump was hung at a depth of 340 ft-bgs, to reduce the intake of sediment that has accumulated in the bottom of the well. The well was appropriately disinfected after this work was completed.

Soil Boring Advancement

Altamont oversaw the advancement of five soil borings (SB-1 through SB-5). SMD utilized a track mounted Geoprobe® 7720D direct-push sampling rig to install the borings (Figure 2). Soil boring SB-1 was advanced in a downslope area of the Edwards's septic field. The remaining soil boring locations were chosen in an effort to sample soils beneath a surface drainage swale that extends along the front of the Edwards yard south of the house and directly over the wellhead. The following procedures were used to inspect the soil samples and evaluate which soil samples to submit for laboratory analyses.

All soil borings were advanced until refusal was met. These depths of refusal ranged from 11 feet bgs to 18 feet bgs. Refusal was met in all borings above the water table. Geoprobe® refusal may have been caused by boulders that were placed as part of the fill, or soils transitioning to weathered bedrock of variable competency. Each continuous soil sample was removed from the borings as an undisturbed core. The soil cores were collected in clear cylindrical PVC sleeves. Altamont placed each PVC sleeve on a clean plastic sheet and opened each sleeve in order to inspect each soil samples.

The soils were observed to be brown to light brown, sandy silt and silty sands placed as fill for the Edwards house seat. Soils observed from soil boring SB-1 below five feet were observed to be greenish grey, dry, stiff, silty weathered rock.

Altamont visually observed each soil core, mixed and then split each one-foot interval of soil. Each split soil sample was placed into a new low-density polyethylene bag (sandwich bag) which was then sealed. One bag of the split sample was allowed to volatilize in a warm environment for at least ten minutes, while the other split sample was placed on ice in a cooler. Altamont screened the headspace in each bag that was allowed to warm and

volatilize using a Mini-RAE 2000® Organic Vapor Analyzer (OVA) with Photo Ionization Detection (PID) for indications of volatilized organic compounds.

Soil Samples for Selected for Laboratory Analysis Collection

Soil samples selected for laboratory analysis were collected at the depth of refusal, with the exception of sample SB-2-4-5, which was collected between four ft-bgs and five ft-bgs, due to a chemical-like odor that was noted in the soil from that interval. Sample SB-1-10-11 was collected from beneath the septic field. The remainder of the soil samples were collected from beneath the stormwater path that flows over the Edwards well head. As noted above, groundwater was not encountered in any of the soil borings.

Altamont transferred the selected soil samples to laboratory-supplied sample containers. The containers were immediately placed in a cooler on ice to await delivery to the laboratory. After completing the field activities, Altamont delivered the soil samples to Pace.

The soil samples were analyzed for volatile organic compounds (VOCs) by EPA Method 8260/5035A. The laboratory analytical report and chain-of-custody form are attached.

Strike and Dip Measurements

Bedrock, exposed by the excavation of the Edwards house seat was observed by Altamont, and the orientations of apparent dominant fracture sets were measured using a Brunton® pocket transit. Strike and dip measurements were then plotted on a rose diagram in order to compare the measurements. Figure 3 indicates the locations where strike and dip measurements, associated with the observed dominant fracture sets, were collected. Figure 3 indicates the direction of strike, the direction of dip, and the dip angle of the observed fracture sets.

Fractures sets, classified as dominant, were classified as such because fractures of similar and parallel orientation were observed throughout the bedrock exposure.

FINDINGS

The laboratory analytical results for mulch, soil, and groundwater samples are summarized below and on Tables 1 and 2. Analytical results are compared to DENR's Soil to Groundwater Maximum Soil Contaminant Concentrations (MSCC) and the 2L Standards.

- Mulch-1: A composite sample of wood-based landscape mulch was collected from the area immediately adjacent to the DW-02 well head. Analytical results indicated detections of chloroform, methylene chloride, and naphthalene over laboratory method detection limits in the mulch sample. Chloroform was detected at an estimated concentration of 6.1 micrograms per kilogram (µg/Kg). Methylene chloride was detected at an estimated concentration of 20.7 µg/Kg, which exceeds the MSCCs. Naphthalene was detected at an estimated concentration of 10.4 µg/Kg.
- SB-1-10-11: A soil sample was collected between 10 and 11 ft-bgs near the Edwards septic field. Analytical results indicated detections of 2-butanone (MEK) and naphthalene over the laboratory method detection limits. MEK was detected at

an estimated concentration of 6.1 µg/Kg. Naphthalene was detected at an estimated concentration of 1.2 µg/Kg.

- SB-2-4-5: A soil sample was collected between four ft-bgs and five ft-bgs beneath the surface swale. Analytical results indicated detections of MEK, p-isopropyltoluene, and toluene over the laboratory method detection limits. MEK was detected at an estimated concentration of 12.9 µg/Kg. P-Isopropyltoluene was detected at an estimated concentration of 3.2 µg/Kg. Toluene was detected at an estimated concentration of 2.3 µg/Kg.
- SB-3-17-18: A soil sample was collected between 17 ft-bgs and 18 ft-bgs beneath the surface water swale. Analytical results indicated no detections over the laboratory method detection limits.
- SB-4-16-17.5: A soil sample was collected between 16 ft-bgs and 17.5 ft-bgs beneath the surface water swale. Analytical results indicated no detections over the laboratory method detection limits.
- SB-5-17-18: A soil sample was collected between 17 ft-bgs and 18 ft-bgs beneath the surface water swale near the water supply well. Analytical results indicated a detection of MEK at an estimated concentration of 19.9 µg/Kg.
- DW-02: A shallow groundwater/surface water sample was collected from 60 ft-below the wellhead TOC (approximately 10 feet below the bottom of the surface casing). This groundwater sample represents the water coming into the borehole from around the bottom of the surface casing and from the fracture identified at 53 feet TOC. The samples contained detections of chloroform, chloromethane, and PCE over the laboratory method detection limits. Chloroform was detected at an estimated concentration of 0.18 µg/L. Chloromethane was detected at an estimated concentration of 0.38 µg/L. PCE was detected at an estimated concentration of 0.70 µg/L, which is equal to the compound's 2L Standard.
- Bedrock, exposed by the excavation of the Edwards house seat was observed by Altamont, and the orientations of apparent dominant fracture sets were measured using a Brunton® pocket transit. One dominant fracture set appears to strike generally north/south and dips nearly vertically. Strike and dip measurements associated with the orientation of this fracture set were:
  - Strike = north 10° west, Dip = 84° east
  - Strike =north 12° east, Dip = 89° west

  Another dominant fracture set appears to strike northeast/southwest and dips 60 to 75 degrees to the northwest. Strike and dip measurements associated with the orientation of this fracture set were:
  - Strike = north 42° east, Dip = 60° west
  - Strike = north 40° east, Dip = 75° west

CONCLUSIONS

Based on the investigation that was performed on February 12, 2010 and associated analytical results, investigative activities that have taken place in 2009, the following bullets summarize the conclusions and reasonable assumptions:

- The soil sample analytical data suggest that VOCs are present in soil on the Edwards property.
- The Edwards water supply well appears to be poorly constructed, within 500 feet of buried landfill waste, in a filled area of approximately 25 feet in thickness.
- A downhole video of the Edwards well, a well construction record submitted by the well driller, and the presence of a surface water swale running directly over the supply well head suggest that the surface casing for the well may be allowing shallow groundwater and surface water to enter the well and mix with the water from the primary water-bearing fracture for the well (located between 360 and 362 feet bgs).
- Methylene chloride was detected in the Mulch sample at a concentration above the respective MSCC.
- Chloromethane was detected in the shallow groundwater/surface water sample (DW-02). Chloromethane has been shown to be a breakdown product of Methylene Chloride under anaerobic conditions (McCarty and Semprini, 1994). It is not unreasonable to consider that the methylene chloride in the mulch could break down into its daughter compound, chloromethane, while being conveyed via stormwater/groundwater into the well. Interestingly, chloroform, a parent compound of both methylene chloride and chloromethane (McCarty and Semprini, 1994), was also detected in the water sample collected form DW-02.
- During the over-pumping and sampling event conducted on the Edwards well (DW-02) during which approximately 8,000 gallons of water was pumped from the well, groundwater samples collected during the event did not contain detections of PCE. This suggests that PCE contamination is not impacting the primary water-bearing fracture (360-362 feet bgs) in the well.
- PCE was detected in the shallow groundwater sample at the 2L standard. The detection suggests that PCE has impacted the shallow groundwater aquifer or surface water in the vicinity of the well and could potentially be leaking past the surface casing.
- Based on findings and analytical results from the over-pumping event and sampling conducted since April 2009 on well DW-02, shallow groundwater or surface water is a likely source of the PCE that is impacting the well.
- Bedrock, exposed by the excavation of the Edwards house seat was observed, and the orientations of apparently dominant fracture surfaces were measured. The exposed bedrock surface is located between the closed landfill and the water supply well DW-02. Figure 3 indicates the locations where strike and dip measurements were collected on apparent dominant fracture orientations. Strike and dip symbols on Figure 3 indicate the direction of strike, the direction of dip, and dip angle of the dominant fracture orientations. Based the observations and measurements two

dominant fracture orientations were identified. One fracture set appears to strike generally north/south and dips nearly vertically. The other fracture set appears to strikes northeast/southwest and dips 60 to 75 degrees to the northwest. The fractures set that strikes north/south and that dips vertically would be expected to convey shallow groundwater in bedrock above the water table vertically in a downward direction. The fracture set that strikes in a northeast/southwest direction was noted to mimic the alignment of the drainages situated east and west of the Edwards parcel. The northeast/southwest striking fracture set would be expected to convey shallow groundwater above the water table in bedrock from the southeast to the northwest. The orientation of the two dominant fracture sets observed and measured as part of this investigation do not appear to indicate that that either fracture set would readily convey groundwater in bedrock from the landfill toward the Edwards well.

Mr. Huff, Altamont appreciates the opportunity to provide this report. If you have any questions or would like additional information, please contact me.

Sincerely,

Joel D. Lenk, P.G.

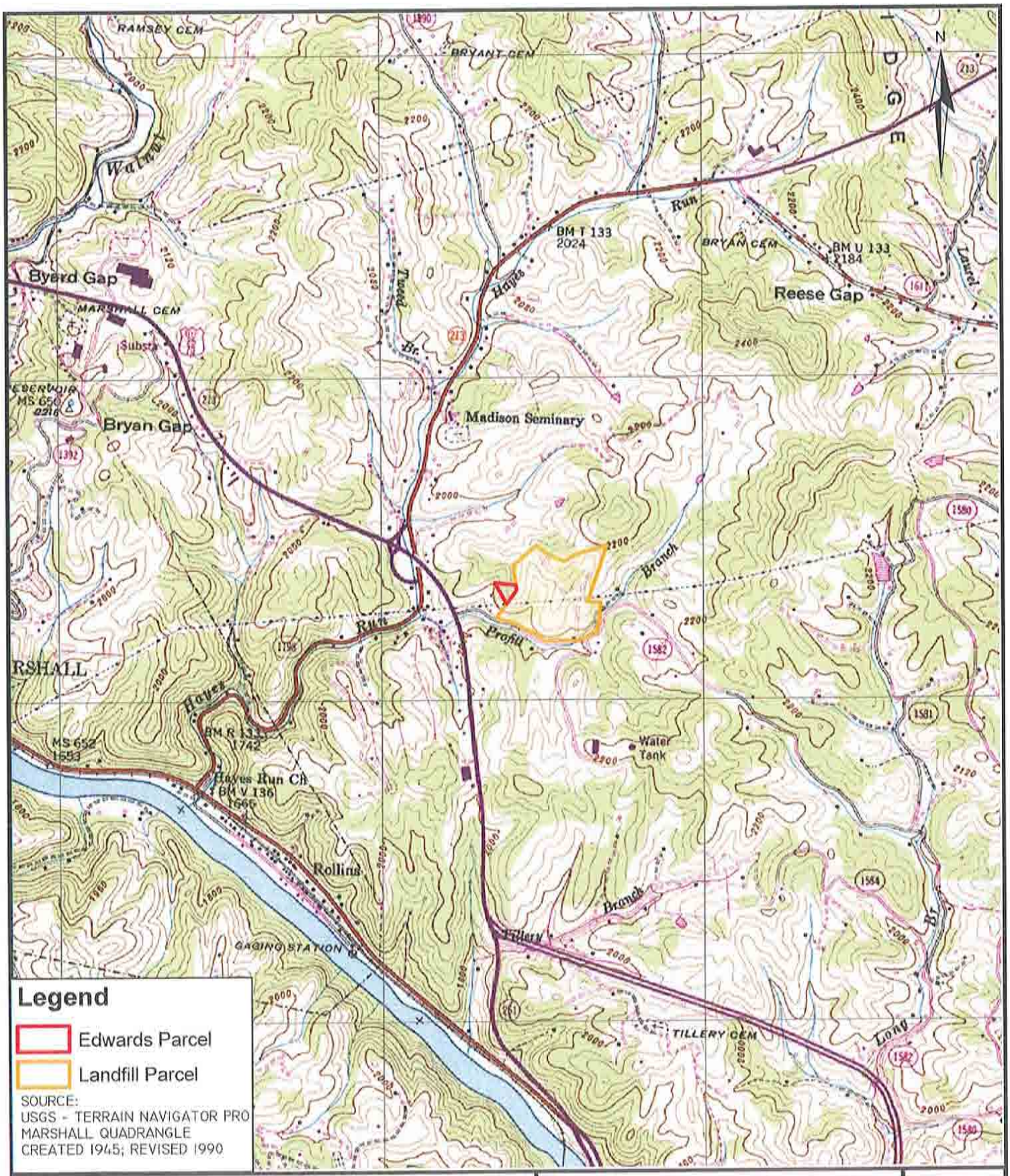
attachments: References
Figure 1—Site Location Map
Figure 2—Groundwater Sample Location Map
Figure 3—PCE Investigation Sample Location Map
Table 1—PCE Investigation Soil Sample Analytical Results
Table 2—PCE Investigation Groundwater Sample Analytical Results
Laboratory Analytical Reports and Chain-of-Custody Forms

REFERENCES

Department of Environment and Natural Resources, Letter from Jaclynne Drummond to Steve Garrison, *Re: Tetrachloroethene (PCE) Exceedence Beyond the Facility Boundary*, January 7, 2010.

Driscoll, F.G., *Groundwater and Wells*, 2nd Edition, Johnson Filtration Systems, Inc., St. Paul, Minnesota, 1986.

McCarty, P.L. and Semprini, L., Ground-water Treatment for Chlorinated Solvents, In *Handbook of Bioremediation*, Norris, R.D. and others, Eds., 1994.



Legend

- Edwards Parcel
- Landfill Parcel

SOURCE:
USGS - TERRAIN NAVIGATOR PRO
MARSHALL QUADRANGLE
CREATED 1945; REVISED 1990

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SITE LOCATION MAP
MADISON COUNTY
CLOSED MSW LANDFILL

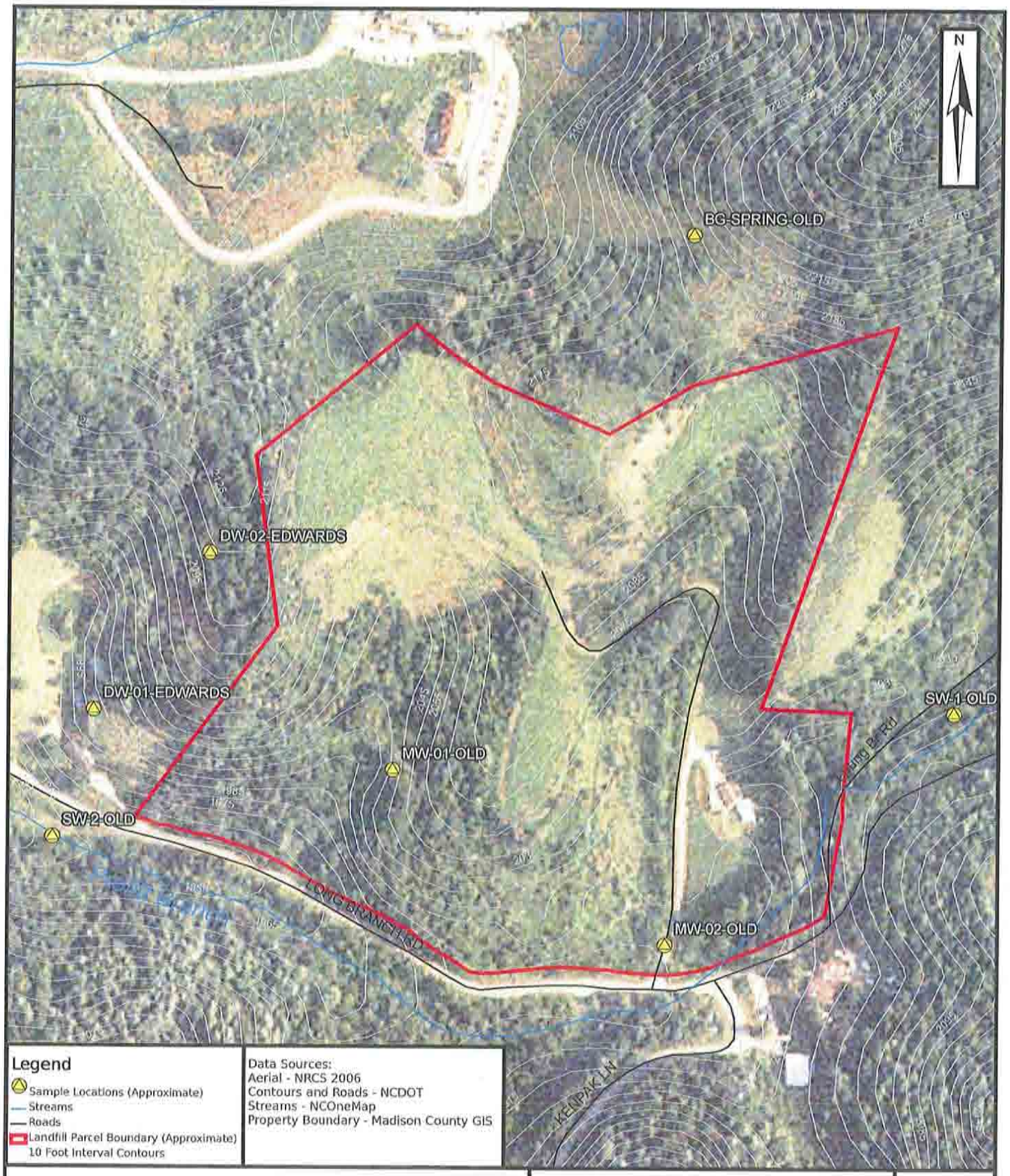
389 LONG BRANCH ROAD
MARSHALL, NC 28753
MADISON COUNTY, NORTH CAROLINA

FIGURE 1

DRAWN BY: EVAN YURKOVICH
PROJECT MANAGER: JOEL LENK
CLIENT: MADISON COUNTY
DATE: 3/26/2010

SCALE
0 500 1,000 2,000 Feet

P:\Madison County\Figures\GIS\GIS User\MXDs\5802-Figure 1-Site_Location_Madison Closed LF.mxd



Legend

- Sample Locations (Approximate)
- Streams
- Roads
- Landfill Parcel Boundary (Approximate)
- 10 Foot Interval Contours

Data Sources:
Aerial - NRCS 2006
Contours and Roads - NCDOT
Streams - NCOneMap
Property Boundary - Madison County GIS

ALTAMONT ENVIRONMENTAL, INC.
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SAMPLE LOCATION MAP

Madison County Closed MSW Landfill
389 Long Branch Road
Marshall, North Carolina 28753

FIGURE 2

Drawn By: Anna Saylor
Project Manager: Joel Lenk
Client: Madison County
Date: 02/10/2010

Scale
0 80 160 320 Feet

P:\Madison County\Figures\GIS\GIS User\MXDs\5802-Figure 2-Sample Location Map_Closed.mxd

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SAMPLE LOCATION MAP

Joel Edward's Property
Madison County Closed MSW Landfill
389 Long Branch Road
Marshall, North Carolina 28753

FIGURE 3

Drawn By: Anna Saylor
Project Manager: Joel Lenk
Client: Madison County
Date: 04/01/2010

Scale
0 25 50 100 Feet

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Table 1
PCE Investigation
Analytical Results for Soil and Mulch

Joel Edward's Property
Madison County, North Carolina

Sample Identification	Sample Collection Date	Sample Depth (ft-bgs)	Volatile Organic Compounds (VOCs)					
			2-Butanone (MEK) (µg/kg)	Chloroform (µg/kg)	p-Isopropyltoluene (µg/kg)	Methylene Chloride (µg/kg)	Naphthalene (µg/kg)	Toluene (µg/kg)
SB-1-10-11	02/12/2010	10-11	**6.1 J**	<1.4	<1.5	<2.6	**1.2 J**	<1.6
SB-2-4-5	02/12/2010	4-5	**12.9 J**	<1.5	**3.2 J**	<2.8	<1.1	**2.3 J**
SB-3-17-18	02/12/2010	17-18	<2.4	<1.3	<1.4	<2.5	<1.0	<1.5
SB-4-16-17.5	02/12/2010	16-17.5	<2.6	<1.4	<1.5	<2.7	<1.1	<1.6
SB-5-17-18	02/12/2010	17-18	**19.9 J**	<1.5	<1.6	<2.8	<1.1	<1.7
Mulch-1	02/12/2010	Surface	<8.4	**6.1 J**	<4.9	**20.7 J**	**10.4 J**	<5.2
Soil to Groundwater MSCC (µg/kg)			17,000	370	NE	20	580	7,300

Notes:

1. ft-bgs - feet below ground surface
2. µg/kg - micrograms per kilogram
3. VOCs analyzed by US EPA Method 8260
4. The Soil to Groundwater MSCC is the Maximum Soil Contaminant Concentration listed on Table 3 of the UST Section Guidelines for the Investigation and Remediation of Contamination from Non-UST Petroleum. Releases, North Carolina Underground Storage Tank Section, updated July 1, 2007.
5. Qualifiers are laboratory data qualifiers or "flags". "J" is used for estimated concentration above the adjusted method detection limit and below the adjusted reporting limit (PQL).
6. NE - standard not established
7. Detected Concentrations are bold.
8. A detection of Acetone was reported for SB-5-17-18 and is qualified as a common laboratory contaminant.

Table 2
PCE Investigation
Groundwater Sample Analytical Results

Joel Edward's Property
Madison County, North Carolina

Sample Identification	Sample Collection Date	Sample Depth (ft-bgs)	Volatile Organic Compounds (VOCs)		
			Chloroform (µg/L)	Chloromethane (µg/L)	Tetrachloroethene (µg/L)
DW-02	02/12/2010	60	0.18 J	0.38 J	**0.70 J**
	02/23/2010	340	< 0.5	< 0.5	**0.80 J**
2L Standard			70	2.6	0.70
Soild Waste Section Limit			5	1	1

Notes:

1. ft-bgs - feet below ground surface
2. µg/L - micrograms per liter
3. VOCs analyzed according to US EPA Method 8260
4. Qualifiers are laboratory data qualifiers or "flags". "J" is used for estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
5. 2L Standard is from "North Carolina Administrative Code, Title 15A: Department of Environment and Natural Resources, Subschapter 2L - Groundwater Classifications and Standards," DENR (last amended on January 1, 2010).
6. NE - standard not established
7. Detected Concentrations are bold.

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(704)875-9092

February 22, 2010

Mr. Joel Lenk
Altamont Environmental
50 College Street
Asheville, NC 28801

RE: Project: Madison Co-Edwards Well
Pace Project No.: 9263251

Dear Mr. Lenk:
Enclosed are the analytical results for sample(s) received by the laboratory on February 12, 2010. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Inorganic Wet Chemistry and Metals analyses were performed at our Pace Asheville laboratory and Organic testing was performed at our Pace Huntersville laboratory unless otherwise footnoted. All Microbiological analyses were performed at the laboratory where the samples were received.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Lorri Patton

Lorri Patton

lorri.patton@pacelabs.com
Project Manager

Enclosures

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SAMPLE SUMMARY

Project: Madison Co-Edwards Well
Pace Project No.: 9263251

Lab ID	Sample ID	Matrix	Date Collected	Date Received
9263251001	**SB-1-10-11**	Solid	02/12/10 12:30	02/12/10 16:55
9263251002	**SB-2-4-5**	Solid	02/12/10 15:20	02/12/10 16:55
9263251003	**SB-3-17-18**	Solid	02/12/10 15:30	02/12/10 16:55
9263251004	**SB-4-16-17.5**	Solid	02/12/10 15:40	02/12/10 16:55
9263251005	**SB-5-17-18**	Solid	02/12/10 15:50	02/12/10 16:55
9263251006	**Mulch-1**	Solid	02/12/10 09:58	02/12/10 16:55
9263251007	**DW-02**	Water	02/12/10 14:30	02/12/10 16:55
9263251008	**Trip Blank Lab**	Water	02/12/10 00:00	02/12/10 16:55

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ANALYTICAL RESULTS

Project: Madison Co-Edwards Well
Pace Project No.: 9263251

Sample: SB-1-10-11 **Lab ID: 9263251001** Collected: 02/12/10 12:30 Received: 02/12/10 16:55 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Acetone	**59.2J**	ug/kg	86.8	8.7	1		02/17/10 19:52	67-64-1	
Benzene	ND	ug/kg	4.3	1.4	1		02/17/10 19:52	71-43-2	
Bromobenzene	ND	ug/kg	4.3	1.7	1		02/17/10 19:52	108-86-1	
Bromochloromethane	ND	ug/kg	4.3	1.5	1		02/17/10 19:52	74-97-5	
Bromodichloromethane	ND	ug/kg	4.3	1.6	1		02/17/10 19:52	75-27-4	
Bromoform	ND	ug/kg	4.3	2.0	1		02/17/10 19:52	75-25-2	
Bromomethane	ND	ug/kg	8.7	2.2	1		02/17/10 19:52	74-83-9	
2-Butanone (MEK)	**6.1J**	ug/kg	86.8	2.5	1		02/17/10 19:52	78-93-3	
n-Butylbenzene	ND	ug/kg	4.3	1.6	1		02/17/10 19:52	104-51-8	
sec-Butylbenzene	ND	ug/kg	4.3	1.4	1		02/17/10 19:52	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.3	1.7	1		02/17/10 19:52	98-06-6	
Carbon tetrachloride	ND	ug/kg	4.3	2.3	1		02/17/10 19:52	56-23-5	
Chlorobenzene	ND	ug/kg	4.3	1.6	1		02/17/10 19:52	108-90-7	
Chloroethane	ND	ug/kg	8.7	2.1	1		02/17/10 19:52	75-00-3	
Chloroform	ND	ug/kg	4.3	1.4	1		02/17/10 19:52	67-66-3	
Chloromethane	ND	ug/kg	8.7	2.1	1		02/17/10 19:52	74-87-3	
2-Chlorotoluene	ND	ug/kg	4.3	1.5	1		02/17/10 19:52	95-49-8	
4-Chlorotoluene	ND	ug/kg	4.3	1.6	1		02/17/10 19:52	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4.3	3.1	1		02/17/10 19:52	96-12-8	
Dibromochloromethane	ND	ug/kg	4.3	1.6	1		02/17/10 19:52	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.3	1.6	1		02/17/10 19:52	106-93-4	
Dibromomethane	ND	ug/kg	4.3	2.2	1		02/17/10 19:52	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	4.3	1.6	1		02/17/10 19:52	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4.3	1.7	1		02/17/10 19:52	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4.3	1.5	1		02/17/10 19:52	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	8.7	3.1	1		02/17/10 19:52	75-71-8	
1,1-Dichloroethane	ND	ug/kg	4.3	1.3	1		02/17/10 19:52	75-34-3	
1,2-Dichloroethane	ND	ug/kg	4.3	1.9	1		02/17/10 19:52	107-06-2	
1,1-Dichloroethene	ND	ug/kg	4.3	1.6	1		02/17/10 19:52	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	4.3	1.2	1		02/17/10 19:52	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	4.3	1.6	1		02/17/10 19:52	156-60-5	
1,2-Dichloropropane	ND	ug/kg	4.3	1.5	1		02/17/10 19:52	78-87-5	
1,3-Dichloropropane	ND	ug/kg	4.3	1.6	1		02/17/10 19:52	142-28-9	
2,2-Dichloropropane	ND	ug/kg	4.3	1.5	1		02/17/10 19:52	594-20-7	
1,1-Dichloropropene	ND	ug/kg	4.3	1.3	1		02/17/10 19:52	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	4.3	1.6	1		02/17/10 19:52	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	4.3	1.3	1		02/17/10 19:52	10061-02-6	
Diisopropyl ether	ND	ug/kg	4.3	1.5	1		02/17/10 19:52	108-20-3	
Ethylbenzene	ND	ug/kg	4.3	1.6	1		02/17/10 19:52	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	4.3	1.7	1		02/17/10 19:52	87-68-3	
2-Hexanone	ND	ug/kg	43.4	3.4	1		02/17/10 19:52	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	4.3	1.6	1		02/17/10 19:52	98-82-8	
p-Isopropyltoluene	ND	ug/kg	4.3	1.5	1		02/17/10 19:52	99-87-6	
Methylene Chloride	ND	ug/kg	17.4	2.6	1		02/17/10 19:52	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	43.4	3.2	1		02/17/10 19:52	108-10-1	

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ANALYTICAL RESULTS

Project: Madison Co-Edwards Well
Pace Project No.: 9263251

Sample: SB-2-4-5 **Lab ID: 9263251002** Collected: 02/12/10 15:20 Received: 02/12/10 16:55 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Acetone	**73.1J**	ug/kg	92.7	9.3	1		02/19/10 19:46	67-64-1	
Benzene	ND	ug/kg	4.6	1.5	1		02/19/10 19:46	71-43-2	
Bromobenzene	ND	ug/kg	4.6	1.9	1		02/19/10 19:46	108-86-1	
Bromochloromethane	ND	ug/kg	4.6	1.6	1		02/19/10 19:46	74-97-5	
Bromodichloromethane	ND	ug/kg	4.6	1.8	1		02/19/10 19:46	75-27-4	
Bromoform	ND	ug/kg	4.6	2.1	1		02/19/10 19:46	75-25-2	
Bromomethane	ND	ug/kg	9.3	2.3	1		02/19/10 19:46	74-83-9	
2-Butanone (MEK)	**12.9J**	ug/kg	92.7	2.7	1		02/19/10 19:46	78-93-3	
n-Butylbenzene	ND	ug/kg	4.6	1.7	1		02/19/10 19:46	104-51-8	
sec-Butylbenzene	ND	ug/kg	4.6	1.5	1		02/19/10 19:46	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.6	1.9	1		02/19/10 19:46	98-06-6	
Carbon tetrachloride	ND	ug/kg	4.6	2.4	1		02/19/10 19:46	56-23-5	
Chlorobenzene	ND	ug/kg	4.6	1.8	1		02/19/10 19:46	108-90-7	
Chloroethane	ND	ug/kg	9.3	2.2	1		02/19/10 19:46	75-00-3	
Chloroform	ND	ug/kg	4.6	1.5	1		02/19/10 19:46	67-66-3	
Chloromethane	ND	ug/kg	9.3	2.2	1		02/19/10 19:46	74-87-3	
2-Chlorotoluene	ND	ug/kg	4.6	1.6	1		02/19/10 19:46	95-49-8	
4-Chlorotoluene	ND	ug/kg	4.6	1.7	1		02/19/10 19:46	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4.6	3.3	1		02/19/10 19:46	96-12-8	
Dibromochloromethane	ND	ug/kg	4.6	1.7	1		02/19/10 19:46	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.6	1.7	1		02/19/10 19:46	106-93-4	
Dibromomethane	ND	ug/kg	4.6	2.3	1		02/19/10 19:46	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	4.6	1.8	1		02/19/10 19:46	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4.6	1.9	1		02/19/10 19:46	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4.6	1.6	1		02/19/10 19:46	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	9.3	3.3	1		02/19/10 19:46	75-71-8	
1,1-Dichloroethane	ND	ug/kg	4.6	1.4	1		02/19/10 19:46	75-34-3	
1,2-Dichloroethane	ND	ug/kg	4.6	2.0	1		02/19/10 19:46	107-06-2	
1,1-Dichloroethene	ND	ug/kg	4.6	1.7	1		02/19/10 19:46	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	4.6	1.3	1		02/19/10 19:46	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	4.6	1.8	1		02/19/10 19:46	156-60-5	
1,2-Dichloropropane	ND	ug/kg	4.6	1.6	1		02/19/10 19:46	78-87-5	
1,3-Dichloropropane	ND	ug/kg	4.6	1.8	1		02/19/10 19:46	142-28-9	
2,2-Dichloropropane	ND	ug/kg	4.6	1.6	1		02/19/10 19:46	594-20-7	
1,1-Dichloropropene	ND	ug/kg	4.6	1.4	1		02/19/10 19:46	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	4.6	1.7	1		02/19/10 19:46	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	4.6	1.4	1		02/19/10 19:46	10061-02-6	
Diisopropyl ether	ND	ug/kg	4.6	1.6	1		02/19/10 19:46	108-20-3	
Ethylbenzene	ND	ug/kg	4.6	1.7	1		02/19/10 19:46	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	4.6	1.9	1		02/19/10 19:46	87-68-3	
2-Hexanone	ND	ug/kg	46.3	3.6	1		02/19/10 19:46	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	4.6	1.8	1		02/19/10 19:46	98-82-8	
p-Isopropyltoluene	**3.2J**	ug/kg	4.6	1.6	1		02/19/10 19:46	99-87-6	
Methylene Chloride	ND	ug/kg	18.5	2.8	1		02/19/10 19:46	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	46.3	3.4	1		02/19/10 19:46	108-10-1	

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ANALYTICAL RESULTS

Project: Madison Co-Edwards Well
Pace Project No.: 9263251

Sample: SB-3-17-18 **Lab ID: 9263251003** Collected: 02/12/10 15:30 Received: 02/12/10 16:55 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Acetone	ND	ug/kg	83.6	8.4	1		02/19/10 19:28	67-64-1	
Benzene	ND	ug/kg	4.2	1.3	1		02/19/10 19:28	71-43-2	
Bromobenzene	ND	ug/kg	4.2	1.7	1		02/19/10 19:28	108-86-1	
Bromochloromethane	ND	ug/kg	4.2	1.4	1		02/19/10 19:28	74-97-5	
Bromodichloromethane	ND	ug/kg	4.2	1.6	1		02/19/10 19:28	75-27-4	
Bromoform	ND	ug/kg	4.2	1.9	1		02/19/10 19:28	75-25-2	
Bromomethane	ND	ug/kg	8.4	2.1	1		02/19/10 19:28	74-83-9	
2-Butanone (MEK)	ND	ug/kg	83.6	2.4	1		02/19/10 19:28	78-93-3	
n-Butylbenzene	ND	ug/kg	4.2	1.5	1		02/19/10 19:28	104-51-8	
sec-Butylbenzene	ND	ug/kg	4.2	1.3	1		02/19/10 19:28	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.2	1.7	1		02/19/10 19:28	98-06-6	
Carbon tetrachloride	ND	ug/kg	4.2	2.2	1		02/19/10 19:28	56-23-5	
Chlorobenzene	ND	ug/kg	4.2	1.6	1		02/19/10 19:28	108-90-7	
Chloroethane	ND	ug/kg	8.4	2.0	1		02/19/10 19:28	75-00-3	
Chloroform	ND	ug/kg	4.2	1.3	1		02/19/10 19:28	67-66-3	
Chloromethane	ND	ug/kg	8.4	2.0	1		02/19/10 19:28	74-87-3	
2-Chlorotoluene	ND	ug/kg	4.2	1.4	1		02/19/10 19:28	95-49-8	
4-Chlorotoluene	ND	ug/kg	4.2	1.5	1		02/19/10 19:28	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4.2	3.0	1		02/19/10 19:28	96-12-8	
Dibromochloromethane	ND	ug/kg	4.2	1.5	1		02/19/10 19:28	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.2	1.5	1		02/19/10 19:28	106-93-4	
Dibromomethane	ND	ug/kg	4.2	2.1	1		02/19/10 19:28	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	4.2	1.6	1		02/19/10 19:28	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4.2	1.7	1		02/19/10 19:28	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4.2	1.4	1		02/19/10 19:28	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	8.4	3.0	1		02/19/10 19:28	75-71-8	
1,1-Dichloroethane	ND	ug/kg	4.2	1.3	1		02/19/10 19:28	75-34-3	
1,2-Dichloroethane	ND	ug/kg	4.2	1.8	1		02/19/10 19:28	107-06-2	
1,1-Dichloroethene	ND	ug/kg	4.2	1.5	1		02/19/10 19:28	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	4.2	1.2	1		02/19/10 19:28	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	4.2	1.6	1		02/19/10 19:28	156-60-5	
1,2-Dichloropropane	ND	ug/kg	4.2	1.4	1		02/19/10 19:28	78-87-5	
1,3-Dichloropropane	ND	ug/kg	4.2	1.6	1		02/19/10 19:28	142-28-9	
2,2-Dichloropropane	ND	ug/kg	4.2	1.4	1		02/19/10 19:28	594-20-7	
1,1-Dichloropropene	ND	ug/kg	4.2	1.3	1		02/19/10 19:28	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	4.2	1.5	1		02/19/10 19:28	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	4.2	1.3	1		02/19/10 19:28	10061-02-6	
Diisopropyl ether	ND	ug/kg	4.2	1.4	1		02/19/10 19:28	108-20-3	
Ethylbenzene	ND	ug/kg	4.2	1.5	1		02/19/10 19:28	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	4.2	1.7	1		02/19/10 19:28	87-68-3	
2-Hexanone	ND	ug/kg	41.8	3.3	1		02/19/10 19:28	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	4.2	1.6	1		02/19/10 19:28	98-82-8	
p-Isopropyltoluene	ND	ug/kg	4.2	1.4	1		02/19/10 19:28	99-87-6	
Methylene Chloride	ND	ug/kg	16.7	2.5	1		02/19/10 19:28	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	41.8	3.1	1		02/19/10 19:28	108-10-1	

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ANALYTICAL RESULTS

Project: Madison Co-Edwards Well
Pace Project No.: 9263251

Sample: SB-4-16-17.5 **Lab ID: 9263251004** Collected: 02/12/10 15:40 Received: 02/12/10 16:55 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Acetone	**11.3J**	ug/kg	89.5	9.0	1		02/17/10 17:43	67-64-1	
Benzene	ND	ug/kg	4.5	1.4	1		02/17/10 17:43	71-43-2	
Bromobenzene	ND	ug/kg	4.5	1.8	1		02/17/10 17:43	108-86-1	
Bromochloromethane	ND	ug/kg	4.5	1.5	1		02/17/10 17:43	74-97-5	
Bromodichloromethane	ND	ug/kg	4.5	1.7	1		02/17/10 17:43	75-27-4	
Bromoform	ND	ug/kg	4.5	2.1	1		02/17/10 17:43	75-25-2	
Bromomethane	ND	ug/kg	9.0	2.2	1		02/17/10 17:43	74-83-9	
2-Butanone (MEK)	ND	ug/kg	89.5	2.6	1		02/17/10 17:43	78-93-3	
n-Butylbenzene	ND	ug/kg	4.5	1.6	1		02/17/10 17:43	104-51-8	
sec-Butylbenzene	ND	ug/kg	4.5	1.4	1		02/17/10 17:43	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.5	1.8	1		02/17/10 17:43	98-06-6	
Carbon tetrachloride	ND	ug/kg	4.5	2.3	1		02/17/10 17:43	56-23-5	
Chlorobenzene	ND	ug/kg	4.5	1.7	1		02/17/10 17:43	108-90-7	
Chloroethane	ND	ug/kg	9.0	2.1	1		02/17/10 17:43	75-00-3	
Chloroform	ND	ug/kg	4.5	1.4	1		02/17/10 17:43	67-66-3	
Chloromethane	ND	ug/kg	9.0	2.1	1		02/17/10 17:43	74-87-3	
2-Chlorotoluene	ND	ug/kg	4.5	1.5	1		02/17/10 17:43	95-49-8	
4-Chlorotoluene	ND	ug/kg	4.5	1.6	1		02/17/10 17:43	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4.5	3.2	1		02/17/10 17:43	96-12-8	
Dibromochloromethane	ND	ug/kg	4.5	1.6	1		02/17/10 17:43	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.5	1.6	1		02/17/10 17:43	106-93-4	
Dibromomethane	ND	ug/kg	4.5	2.2	1		02/17/10 17:43	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	4.5	1.7	1		02/17/10 17:43	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4.5	1.8	1		02/17/10 17:43	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4.5	1.5	1		02/17/10 17:43	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	9.0	3.2	1		02/17/10 17:43	75-71-8	
1,1-Dichloroethane	ND	ug/kg	4.5	1.3	1		02/17/10 17:43	75-34-3	
1,2-Dichloroethane	ND	ug/kg	4.5	2.0	1		02/17/10 17:43	107-06-2	
1,1-Dichloroethene	ND	ug/kg	4.5	1.6	1		02/17/10 17:43	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	4.5	1.3	1		02/17/10 17:43	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	4.5	1.7	1		02/17/10 17:43	156-60-5	
1,2-Dichloropropane	ND	ug/kg	4.5	1.5	1		02/17/10 17:43	78-87-5	
1,3-Dichloropropane	ND	ug/kg	4.5	1.7	1		02/17/10 17:43	142-28-9	
2,2-Dichloropropane	ND	ug/kg	4.5	1.5	1		02/17/10 17:43	594-20-7	
1,1-Dichloropropene	ND	ug/kg	4.5	1.3	1		02/17/10 17:43	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	4.5	1.6	1		02/17/10 17:43	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	4.5	1.3	1		02/17/10 17:43	10061-02-6	
Diisopropyl ether	ND	ug/kg	4.5	1.5	1		02/17/10 17:43	108-20-3	
Ethylbenzene	ND	ug/kg	4.5	1.6	1		02/17/10 17:43	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	4.5	1.8	1		02/17/10 17:43	87-68-3	
2-Hexanone	ND	ug/kg	44.8	3.5	1		02/17/10 17:43	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	4.5	1.7	1		02/17/10 17:43	98-82-8	
p-Isopropyltoluene	ND	ug/kg	4.5	1.5	1		02/17/10 17:43	99-87-6	
Methylene Chloride	ND	ug/kg	17.9	2.7	1		02/17/10 17:43	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	44.8	3.3	1		02/17/10 17:43	108-10-1	

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ANALYTICAL RESULTS

Project: Madison Co-Edwards Well
Pace Project No.: 9263251

Sample: SB-5-17-18 **Lab ID: 9263251005** Collected: 02/12/10 15:50 Received: 02/12/10 16:55 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Acetone	**110**	ug/kg	94.3	9.4	1		02/17/10 18:02	67-64-1	C9
Benzene	ND	ug/kg	4.7	1.5	1		02/17/10 18:02	71-43-2	
Bromobenzene	ND	ug/kg	4.7	1.9	1		02/17/10 18:02	108-86-1	
Bromochloromethane	ND	ug/kg	4.7	1.6	1		02/17/10 18:02	74-97-5	
Bromodichloromethane	ND	ug/kg	4.7	1.8	1		02/17/10 18:02	75-27-4	
Bromoform	ND	ug/kg	4.7	2.2	1		02/17/10 18:02	75-25-2	
Bromomethane	ND	ug/kg	9.4	2.4	1		02/17/10 18:02	74-83-9	
2-Butanone (MEK)	**19.9J**	ug/kg	94.3	2.7	1		02/17/10 18:02	78-93-3	
n-Butylbenzene	ND	ug/kg	4.7	1.7	1		02/17/10 18:02	104-51-8	
sec-Butylbenzene	ND	ug/kg	4.7	1.5	1		02/17/10 18:02	135-98-8	
tert-Butylbenzene	ND	ug/kg	4.7	1.9	1		02/17/10 18:02	98-06-6	
Carbon tetrachloride	ND	ug/kg	4.7	2.5	1		02/17/10 18:02	56-23-5	
Chlorobenzene	ND	ug/kg	4.7	1.8	1		02/17/10 18:02	108-90-7	
Chloroethane	ND	ug/kg	9.4	2.3	1		02/17/10 18:02	75-00-3	
Chloroform	ND	ug/kg	4.7	1.5	1		02/17/10 18:02	67-66-3	
Chloromethane	ND	ug/kg	9.4	2.3	1		02/17/10 18:02	74-87-3	
2-Chlorotoluene	ND	ug/kg	4.7	1.6	1		02/17/10 18:02	95-49-8	
4-Chlorotoluene	ND	ug/kg	4.7	1.7	1		02/17/10 18:02	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	4.7	3.4	1		02/17/10 18:02	96-12-8	
Dibromochloromethane	ND	ug/kg	4.7	1.7	1		02/17/10 18:02	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	4.7	1.7	1		02/17/10 18:02	106-93-4	
Dibromomethane	ND	ug/kg	4.7	2.4	1		02/17/10 18:02	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	4.7	1.8	1		02/17/10 18:02	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4.7	1.9	1		02/17/10 18:02	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4.7	1.6	1		02/17/10 18:02	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	9.4	3.4	1		02/17/10 18:02	75-71-8	
1,1-Dichloroethane	ND	ug/kg	4.7	1.4	1		02/17/10 18:02	75-34-3	
1,2-Dichloroethane	ND	ug/kg	4.7	2.1	1		02/17/10 18:02	107-06-2	
1,1-Dichloroethene	ND	ug/kg	4.7	1.7	1		02/17/10 18:02	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	4.7	1.3	1		02/17/10 18:02	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	4.7	1.8	1		02/17/10 18:02	156-60-5	
1,2-Dichloropropane	ND	ug/kg	4.7	1.6	1		02/17/10 18:02	78-87-5	
1,3-Dichloropropane	ND	ug/kg	4.7	1.8	1		02/17/10 18:02	142-28-9	
2,2-Dichloropropane	ND	ug/kg	4.7	1.6	1		02/17/10 18:02	594-20-7	
1,1-Dichloropropene	ND	ug/kg	4.7	1.4	1		02/17/10 18:02	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	4.7	1.7	1		02/17/10 18:02	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	4.7	1.4	1		02/17/10 18:02	10061-02-6	
Diisopropyl ether	ND	ug/kg	4.7	1.6	1		02/17/10 18:02	108-20-3	
Ethylbenzene	ND	ug/kg	4.7	1.7	1		02/17/10 18:02	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	4.7	1.9	1		02/17/10 18:02	87-68-3	
2-Hexanone	ND	ug/kg	47.2	3.7	1		02/17/10 18:02	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	4.7	1.8	1		02/17/10 18:02	98-82-8	
p-Isopropyltoluene	ND	ug/kg	4.7	1.6	1		02/17/10 18:02	99-87-6	
Methylene Chloride	ND	ug/kg	18.9	2.8	1		02/17/10 18:02	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	47.2	3.5	1		02/17/10 18:02	108-10-1	

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ANALYTICAL RESULTS

Project: Madison Co-Edwards Well
Pace Project No.: 9263251

Sample: Mulch-1 **Lab ID: 9263251006** Collected: 02/12/10 09:58 Received: 02/12/10 16:55 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5030 Low Level	Analytical Method: EPA 8260								
Acetone	**48.7J**	ug/kg	288	28.8	1		02/17/10 10:52	67-64-1	
Benzene	ND	ug/kg	14.4	4.6	1		02/17/10 10:52	71-43-2	
Bromobenzene	ND	ug/kg	14.4	5.8	1		02/17/10 10:52	108-86-1	
Bromochloromethane	ND	ug/kg	14.4	4.9	1		02/17/10 10:52	74-97-5	
Bromodichloromethane	ND	ug/kg	14.4	5.5	1		02/17/10 10:52	75-27-4	
Bromoform	ND	ug/kg	14.4	6.6	1		02/17/10 10:52	75-25-2	
Bromomethane	ND	ug/kg	28.8	7.2	1		02/17/10 10:52	74-83-9	
2-Butanone (MEK)	ND	ug/kg	288	8.4	1		02/17/10 10:52	78-93-3	
n-Butylbenzene	ND	ug/kg	14.4	5.2	1		02/17/10 10:52	104-51-8	
sec-Butylbenzene	ND	ug/kg	14.4	4.6	1		02/17/10 10:52	135-98-8	
tert-Butylbenzene	ND	ug/kg	14.4	5.8	1		02/17/10 10:52	98-06-6	
Carbon tetrachloride	ND	ug/kg	14.4	7.5	1		02/17/10 10:52	56-23-5	
Chlorobenzene	ND	ug/kg	14.4	5.5	1		02/17/10 10:52	108-90-7	
Chloroethane	ND	ug/kg	28.8	6.9	1		02/17/10 10:52	75-00-3	
Chloroform	**6.1J**	ug/kg	14.4	4.6	1		02/17/10 10:52	67-66-3	
Chloromethane	ND	ug/kg	28.8	6.9	1		02/17/10 10:52	74-87-3	
2-Chlorotoluene	ND	ug/kg	14.4	4.9	1		02/17/10 10:52	95-49-8	
4-Chlorotoluene	ND	ug/kg	14.4	5.2	1		02/17/10 10:52	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	14.4	10.4	1		02/17/10 10:52	96-12-8	
Dibromochloromethane	ND	ug/kg	14.4	5.2	1		02/17/10 10:52	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	14.4	5.2	1		02/17/10 10:52	106-93-4	
Dibromomethane	ND	ug/kg	14.4	7.2	1		02/17/10 10:52	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	14.4	5.5	1		02/17/10 10:52	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	14.4	5.8	1		02/17/10 10:52	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	14.4	4.9	1		02/17/10 10:52	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	28.8	10.4	1		02/17/10 10:52	75-71-8	
1,1-Dichloroethane	ND	ug/kg	14.4	4.3	1		02/17/10 10:52	75-34-3	
1,2-Dichloroethane	ND	ug/kg	14.4	6.3	1		02/17/10 10:52	107-06-2	
1,1-Dichloroethene	ND	ug/kg	14.4	5.2	1		02/17/10 10:52	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	14.4	4.0	1		02/17/10 10:52	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	14.4	5.5	1		02/17/10 10:52	156-60-5	
1,2-Dichloropropane	ND	ug/kg	14.4	4.9	1		02/17/10 10:52	78-87-5	
1,3-Dichloropropane	ND	ug/kg	14.4	5.5	1		02/17/10 10:52	142-28-9	
2,2-Dichloropropane	ND	ug/kg	14.4	4.9	1		02/17/10 10:52	594-20-7	
1,1-Dichloropropene	ND	ug/kg	14.4	4.3	1		02/17/10 10:52	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	14.4	5.2	1		02/17/10 10:52	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	14.4	4.3	1		02/17/10 10:52	10061-02-6	
Diisopropyl ether	ND	ug/kg	14.4	4.9	1		02/17/10 10:52	108-20-3	
Ethylbenzene	ND	ug/kg	14.4	5.2	1		02/17/10 10:52	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	14.4	5.8	1		02/17/10 10:52	87-68-3	
2-Hexanone	ND	ug/kg	144	11.2	1		02/17/10 10:52	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	14.4	5.5	1		02/17/10 10:52	98-82-8	
p-Isopropyltoluene	ND	ug/kg	14.4	4.9	1		02/17/10 10:52	99-87-6	
Methylene Chloride	**20.7J**	ug/kg	57.6	8.6	1		02/17/10 10:52	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	144	10.7	1		02/17/10 10:52	108-10-1	

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ANALYTICAL RESULTS

Project: Madison Co-Edwards Well
Pace Project No.: 9263251

Sample: DW-02 **Lab ID: 9263251007** Collected: 02/12/10 14:30 Received: 02/12/10 16:55 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Acetone	**11.3J**	ug/L	25.0	2.2	1		02/18/10 21:21	67-64-1	
Acrylonitrile	ND	ug/L	10.0	1.9	1		02/18/10 21:21	107-13-1	
Benzene	ND	ug/L	1.0	0.25	1		02/18/10 21:21	71-43-2	
Bromochloromethane	ND	ug/L	1.0	0.17	1		02/18/10 21:21	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	0.18	1		02/18/10 21:21	75-27-4	
Bromoform	ND	ug/L	1.0	0.26	1		02/18/10 21:21	75-25-2	
Bromomethane	ND	ug/L	5.0	0.29	1		02/18/10 21:21	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	0.96	1		02/18/10 21:21	78-93-3	
Carbon disulfide	ND	ug/L	2.0	1.2	1		02/18/10 21:21	75-15-0	
Carbon tetrachloride	ND	ug/L	1.0	0.25	1		02/18/10 21:21	56-23-5	
Chlorobenzene	ND	ug/L	1.0	0.23	1		02/18/10 21:21	108-90-7	
Chloroethane	ND	ug/L	1.0	0.54	1		02/18/10 21:21	75-00-3	
Chloroform	**0.18J**	ug/L	1.0	0.14	1		02/18/10 21:21	67-66-3	
Chloromethane	**0.38J**	ug/L	1.0	0.11	1		02/18/10 21:21	74-87-3	
1,2-Dibromo-3-chloropropane	ND	ug/L	3.0	2.5	1		02/18/10 21:21	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	0.21	1		02/18/10 21:21	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	0.27	1		02/18/10 21:21	106-93-4	
Dibromomethane	ND	ug/L	1.0	0.21	1		02/18/10 21:21	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	0.30	1		02/18/10 21:21	95-50-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	0.33	1		02/18/10 21:21	106-46-7	
trans-1,4-Dichloro-2-butene	ND	ug/L	1.0	1.0	1		02/18/10 21:21	110-57-6	
1,1-Dichloroethane	ND	ug/L	1.0	0.32	1		02/18/10 21:21	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	0.12	1		02/18/10 21:21	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	0.56	1		02/18/10 21:21	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.19	1		02/18/10 21:21	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.49	1		02/18/10 21:21	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	0.27	1		02/18/10 21:21	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	1.0	0.13	1		02/18/10 21:21	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	0.26	1		02/18/10 21:21	10061-02-6	
Ethylbenzene	ND	ug/L	1.0	0.30	1		02/18/10 21:21	100-41-4	
2-Hexanone	ND	ug/L	5.0	0.46	1		02/18/10 21:21	591-78-6	
Iodomethane	ND	ug/L	5.0	0.32	1		02/18/10 21:21	74-88-4	
Methylene Chloride	ND	ug/L	2.0	0.97	1		02/18/10 21:21	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	0.33	1		02/18/10 21:21	108-10-1	
Styrene	ND	ug/L	1.0	0.26	1		02/18/10 21:21	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	0.33	1		02/18/10 21:21	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	0.40	1		02/18/10 21:21	79-34-5	
Tetrachloroethene	**0.70J**	ug/L	1.0	0.46	1		02/18/10 21:21	127-18-4	
Toluene	ND	ug/L	1.0	0.26	1		02/18/10 21:21	108-88-3	
1,1,1-Trichloroethane	ND	ug/L	1.0	0.48	1		02/18/10 21:21	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	0.29	1		02/18/10 21:21	79-00-5	
Trichloroethene	ND	ug/L	1.0	0.47	1		02/18/10 21:21	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.20	1		02/18/10 21:21	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	0.41	1		02/18/10 21:21	96-18-4	
Vinyl acetate	ND	ug/L	2.0	0.35	1		02/18/10 21:21	108-05-4	
Vinyl chloride	ND	ug/L	1.0	0.62	1		02/18/10 21:21	75-01-4	

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ANALYTICAL RESULTS

Project: Madison Co-Edwards Well
Pace Project No.: 9263251

Sample: Trip Blank Lab **Lab ID: 9263251008** Collected: 02/12/10 00:00 Received: 02/12/10 16:55 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Acetone	ND	ug/L	25.0	2.2	1		02/18/10 20:57	67-64-1	
Acrylonitrile	ND	ug/L	10.0	1.9	1		02/18/10 20:57	107-13-1	
Benzene	ND	ug/L	1.0	0.25	1		02/18/10 20:57	71-43-2	
Bromochloromethane	ND	ug/L	1.0	0.17	1		02/18/10 20:57	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	0.18	1		02/18/10 20:57	75-27-4	
Bromoform	ND	ug/L	1.0	0.26	1		02/18/10 20:57	75-25-2	
Bromomethane	ND	ug/L	5.0	0.29	1		02/18/10 20:57	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	0.96	1		02/18/10 20:57	78-93-3	
Carbon disulfide	ND	ug/L	2.0	1.2	1		02/18/10 20:57	75-15-0	
Carbon tetrachloride	ND	ug/L	1.0	0.25	1		02/18/10 20:57	56-23-5	
Chlorobenzene	ND	ug/L	1.0	0.23	1		02/18/10 20:57	108-90-7	
Chloroethane	ND	ug/L	1.0	0.54	1		02/18/10 20:57	75-00-3	
Chloroform	ND	ug/L	1.0	0.14	1		02/18/10 20:57	67-66-3	
Chloromethane	ND	ug/L	1.0	0.11	1		02/18/10 20:57	74-87-3	
1,2-Dibromo-3-chloropropane	ND	ug/L	3.0	2.5	1		02/18/10 20:57	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	0.21	1		02/18/10 20:57	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	0.27	1		02/18/10 20:57	106-93-4	
Dibromomethane	ND	ug/L	1.0	0.21	1		02/18/10 20:57	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	0.30	1		02/18/10 20:57	95-50-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	0.33	1		02/18/10 20:57	106-46-7	
trans-1,4-Dichloro-2-butene	ND	ug/L	1.0	1.0	1		02/18/10 20:57	110-57-6	
1,1-Dichloroethane	ND	ug/L	1.0	0.32	1		02/18/10 20:57	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	0.12	1		02/18/10 20:57	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	0.56	1		02/18/10 20:57	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.19	1		02/18/10 20:57	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.49	1		02/18/10 20:57	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	0.27	1		02/18/10 20:57	78-87-5	
cis-1,3-Dichloropropene	ND	ug/L	1.0	0.13	1		02/18/10 20:57	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	0.26	1		02/18/10 20:57	10061-02-6	
Ethylbenzene	ND	ug/L	1.0	0.30	1		02/18/10 20:57	100-41-4	
2-Hexanone	ND	ug/L	5.0	0.46	1		02/18/10 20:57	591-78-6	
Iodomethane	ND	ug/L	5.0	0.32	1		02/18/10 20:57	74-88-4	
Methylene Chloride	ND	ug/L	2.0	0.97	1		02/18/10 20:57	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	0.33	1		02/18/10 20:57	108-10-1	
Styrene	ND	ug/L	1.0	0.26	1		02/18/10 20:57	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	0.33	1		02/18/10 20:57	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	0.40	1		02/18/10 20:57	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	0.46	1		02/18/10 20:57	127-18-4	
Toluene	ND	ug/L	1.0	0.26	1		02/18/10 20:57	108-88-3	
1,1,1-Trichloroethane	ND	ug/L	1.0	0.48	1		02/18/10 20:57	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	0.29	1		02/18/10 20:57	79-00-5	
Trichloroethene	ND	ug/L	1.0	0.47	1		02/18/10 20:57	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.20	1		02/18/10 20:57	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	0.41	1		02/18/10 20:57	96-18-4	
Vinyl acetate	ND	ug/L	2.0	0.35	1		02/18/10 20:57	108-05-4	
Vinyl chloride	ND	ug/L	1.0	0.62	1		02/18/10 20:57	75-01-4	

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QUALITY CONTROL DATA

Project: Madison Co-Edwards Well
Pace Project No.: 9263251

QC Batch: MSV/9920
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV 5030 Low
Associated Lab Samples: 9263251006

METHOD BLANK: 401835
Matrix: Solid
Associated Lab Samples: 9263251006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	5.0	02/17/10 09:57	
1,1,1-Trichloroethane	ug/kg	ND	5.0	02/17/10 09:57	
1,1,2,2-Tetrachloroethane	ug/kg	ND	5.0	02/17/10 09:57	
1,1,2-Trichloroethane	ug/kg	ND	5.0	02/17/10 09:57	
1,1-Dichloroethane	ug/kg	ND	5.0	02/17/10 09:57	
1,1-Dichloroethene	ug/kg	ND	5.0	02/17/10 09:57	
1,1-Dichloropropene	ug/kg	ND	5.0	02/17/10 09:57	
1,2,3-Trichlorobenzene	ug/kg	ND	5.0	02/17/10 09:57	
1,2,3-Trichloropropane	ug/kg	ND	5.0	02/17/10 09:57	
1,2,4-Trichlorobenzene	ug/kg	ND	5.0	02/17/10 09:57	
1,2,4-Trimethylbenzene	ug/kg	ND	5.0	02/17/10 09:57	
1,2-Dibromo-3-chloropropane	ug/kg	ND	5.0	02/17/10 09:57	
1,2-Dibromoethane (EDB)	ug/kg	ND	5.0	02/17/10 09:57	
1,2-Dichlorobenzene	ug/kg	ND	5.0	02/17/10 09:57	
1,2-Dichloroethane	ug/kg	ND	5.0	02/17/10 09:57	
1,2-Dichloropropane	ug/kg	ND	5.0	02/17/10 09:57	
1,3,5-Trimethylbenzene	ug/kg	ND	5.0	02/17/10 09:57	
1,3-Dichlorobenzene	ug/kg	ND	5.0	02/17/10 09:57	
1,3-Dichloropropane	ug/kg	ND	5.0	02/17/10 09:57	
1,4-Dichlorobenzene	ug/kg	ND	5.0	02/17/10 09:57	
2,2-Dichloropropane	ug/kg	ND	5.0	02/17/10 09:57	
2-Butanone (MEK)	ug/kg	ND	100	02/17/10 09:57	
2-Chlorotoluene	ug/kg	ND	5.0	02/17/10 09:57	
2-Hexanone	ug/kg	ND	50.0	02/17/10 09:57	
4-Chlorotoluene	ug/kg	ND	5.0	02/17/10 09:57	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	50.0	02/17/10 09:57	
Acetone	ug/kg	ND	100	02/17/10 09:57	
Benzene	ug/kg	ND	5.0	02/17/10 09:57	
Bromobenzene	ug/kg	ND	5.0	02/17/10 09:57	
Bromochloromethane	ug/kg	ND	5.0	02/17/10 09:57	
Bromodichloromethane	ug/kg	ND	5.0	02/17/10 09:57	
Bromoform	ug/kg	ND	5.0	02/17/10 09:57	
Bromomethane	ug/kg	ND	10.0	02/17/10 09:57	
Carbon tetrachloride	ug/kg	ND	5.0	02/17/10 09:57	
Chlorobenzene	ug/kg	ND	5.0	02/17/10 09:57	
Chloroethane	ug/kg	ND	10.0	02/17/10 09:57	
Chloroform	ug/kg	ND	5.0	02/17/10 09:57	
Chloromethane	ug/kg	ND	10.0	02/17/10 09:57	
cis-1,2-Dichloroethene	ug/kg	ND	5.0	02/17/10 09:57	
cis-1,3-Dichloropropene	ug/kg	ND	5.0	02/17/10 09:57	
Dibromochloromethane	ug/kg	ND	5.0	02/17/10 09:57	
Dibromomethane	ug/kg	ND	5.0	02/17/10 09:57	
Dichlorodifluoromethane	ug/kg	ND	10.0	02/17/10 09:57	

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QUALITY CONTROL DATA

Project: Madison Co-Edwards Well
Pace Project No.: 9263251

LABORATORY CONTROL SAMPLE: 401836

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/kg	50	61.8	124	75-141	
1,2-Dichloroethane	ug/kg	50	60.6	121	74-134	
1,2-Dichloropropane	ug/kg	50	63.8	128	77-138	
1,3,5-Trimethylbenzene	ug/kg	50	66.4	133	65-128	L0
1,3-Dichlorobenzene	ug/kg	50	63.0	126	76-133	
1,3-Dichloropropane	ug/kg	50	59.5	119	79-132	
1,4-Dichlorobenzene	ug/kg	50	60.4	121	75-137	
2,2-Dichloropropane	ug/kg	50	64.6	129	73-137	
2-Butanone (MEK)	ug/kg	100	142	142	61-138	L0
2-Chlorotoluene	ug/kg	50	65.1	130	73-138	
2-Hexanone	ug/kg	100	138	138	58-159	
4-Chlorotoluene	ug/kg	50	67.3	135	75-136	
4-Methyl-2-pentanone (MIBK)	ug/kg	100	142	142	74-139	L0
Acetone	ug/kg	100	140	140	58-150	
Benzene	ug/kg	50	61.7	123	71-140	
Bromobenzene	ug/kg	50	66.7	133	72-144	
Bromochloromethane	ug/kg	50	60.8	122	78-133	
Bromodichloromethane	ug/kg	50	59.1	118	78-133	
Bromoform	ug/kg	50	57.5	115	74-132	
Bromomethane	ug/kg	50	54.5	109	63-184	
Carbon tetrachloride	ug/kg	50	64.9	130	73-143	
Chlorobenzene	ug/kg	50	59.9	120	77-137	
Chloroethane	ug/kg	50	55.0	110	68-146	
Chloroform	ug/kg	50	57.6	115	75-137	
Chloromethane	ug/kg	50	50.4	101	54-143	
cis-1,2-Dichloroethene	ug/kg	50	64.3	129	71-143	
cis-1,3-Dichloropropene	ug/kg	50	65.0	130	76-133	
Dibromochloromethane	ug/kg	50	57.7	115	77-131	
Dibromomethane	ug/kg	50	60.5	121	63-184	
Dichlorodifluoromethane	ug/kg	50	39.1	78	36-173	
Diisopropyl ether	ug/kg	50	66.0	132	68-144	
Ethylbenzene	ug/kg	50	62.1	124	69-141	
Hexachloro-1,3-butadiene	ug/kg	50	62.3	125	70-152	
Isopropylbenzene (Cumene)	ug/kg	50	64.8	130	77-143	
m&p-Xylene	ug/kg	100	127	127	72-138	
Methyl-tert-butyl ether	ug/kg	50	66.2	132	2-138	
Methylene Chloride	ug/kg	50	58.1	116	69-136	
n-Butylbenzene	ug/kg	50	68.1	136	65-128	L0
n-Propylbenzene	ug/kg	50	68.3	137	72-139	
Naphthalene	ug/kg	50	65.8	132	61-138	
o-Xylene	ug/kg	50	65.4	131	74-137	
p-Isopropyltoluene	ug/kg	50	67.1	134	66-128	L0
sec-Butylbenzene	ug/kg	50	67.4	135	72-140	
Styrene	ug/kg	50	63.4	127	76-137	
tert-Butylbenzene	ug/kg	50	67.8	136	68-141	
Tetrachloroethene	ug/kg	50	57.9	116	72-136	
Toluene	ug/kg	50	61.7	123	69-139	
trans-1,2-Dichloroethene	ug/kg	50	62.0	124	72-144	

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QUALITY CONTROL DATA

Project: Madison Co-Edwards Well
Pace Project No.: 9263251

QC Batch: MSV/9979
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 9263251007, 9263251008

METHOD BLANK: 403574
Matrix: Water
Associated Lab Samples: 9263251007, 9263251008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	02/18/10 20:33	
1,1,1-Trichloroethane	ug/L	ND	1.0	02/18/10 20:33	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	02/18/10 20:33	
1,1,2-Trichloroethane	ug/L	ND	1.0	02/18/10 20:33	
1,1-Dichloroethane	ug/L	ND	1.0	02/18/10 20:33	
1,1-Dichloroethene	ug/L	ND	1.0	02/18/10 20:33	
1,2,3-Trichloropropane	ug/L	ND	1.0	02/18/10 20:33	
1,2-Dibromo-3-chloropropane	ug/L	ND	3.0	02/18/10 20:33	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	02/18/10 20:33	
1,2-Dichlorobenzene	ug/L	ND	1.0	02/18/10 20:33	
1,2-Dichloroethane	ug/L	ND	1.0	02/18/10 20:33	
1,2-Dichloropropane	ug/L	ND	1.0	02/18/10 20:33	
1,4-Dichlorobenzene	ug/L	ND	1.0	02/18/10 20:33	
2-Butanone (MEK)	ug/L	ND	5.0	02/18/10 20:33	
2-Hexanone	ug/L	ND	5.0	02/18/10 20:33	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	02/18/10 20:33	
Acetone	ug/L	ND	25.0	02/18/10 20:33	
Acrylonitrile	ug/L	ND	10.0	02/18/10 20:33	
Benzene	ug/L	ND	1.0	02/18/10 20:33	
Bromochloromethane	ug/L	ND	1.0	02/18/10 20:33	
Bromodichloromethane	ug/L	ND	1.0	02/18/10 20:33	
Bromoform	ug/L	ND	1.0	02/18/10 20:33	
Bromomethane	ug/L	ND	5.0	02/18/10 20:33	
Carbon disulfide	ug/L	ND	2.0	02/18/10 20:33	
Carbon tetrachloride	ug/L	ND	1.0	02/18/10 20:33	
Chlorobenzene	ug/L	ND	1.0	02/18/10 20:33	
Chloroethane	ug/L	ND	1.0	02/18/10 20:33	
Chloroform	ug/L	0.46J	1.0	02/18/10 20:33	
Chloromethane	ug/L	ND	1.0	02/18/10 20:33	
cis-1,2-Dichloroethene	ug/L	ND	1.0	02/18/10 20:33	
cis-1,3-Dichloropropene	ug/L	ND	1.0	02/18/10 20:33	
Dibromochloromethane	ug/L	ND	1.0	02/18/10 20:33	
Dibromomethane	ug/L	ND	1.0	02/18/10 20:33	
Ethylbenzene	ug/L	ND	1.0	02/18/10 20:33	
Iodomethane	ug/L	ND	5.0	02/18/10 20:33	
m&p-Xylene	ug/L	ND	2.0	02/18/10 20:33	
Methylene Chloride	ug/L	ND	2.0	02/18/10 20:33	
o-Xylene	ug/L	ND	1.0	02/18/10 20:33	
Styrene	ug/L	ND	1.0	02/18/10 20:33	
Tetrachloroethene	ug/L	ND	1.0	02/18/10 20:33	
Toluene	ug/L	ND	1.0	02/18/10 20:33	
trans-1,2-Dichloroethene	ug/L	ND	1.0	02/18/10 20:33	
trans-1,3-Dichloropropene	ug/L	ND	1.0	02/18/10 20:33	

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QUALITY CONTROL DATA

Project: Madison Co-Edwards Well
Pace Project No.: 9263251

LABORATORY CONTROL SAMPLE: 403575

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Dibromochloromethane	ug/L	50	53.9	108	77-125	
Dibromomethane	ug/L	50	57.9	116	77-125	
Ethylbenzene	ug/L	50	57.2	114	80-127	
Iodomethane	ug/L	100	181	181	65-172	L3
m&p-Xylene	ug/L	100	119	119	82-127	
Methylene Chloride	ug/L	50	51.0	102	67-133	
o-Xylene	ug/L	50	58.5	117	83-124	
Styrene	ug/L	50	58.4	117	80-130	
Tetrachloroethene	ug/L	50	56.2	112	78-128	
Toluene	ug/L	50	55.3	111	76-126	
trans-1,2-Dichloroethene	ug/L	50	55.0	110	78-134	
trans-1,3-Dichloropropene	ug/L	50	56.0	112	75-125	
trans-1,4-Dichloro-2-butene	ug/L	50	59.2	118	51-140	
Trichloroethene	ug/L	50	56.2	112	79-127	
Trichlorofluoromethane	ug/L	50	51.3	103	76-148	
Vinyl acetate	ug/L	100	115	115	50-150	
Vinyl chloride	ug/L	50	53.0	106	67-143	
Xylene (Total)	ug/L	150	178	118	83-125	
1,2-Dichloroethane-d4 (S)	%			97	79-120	
4-Bromofluorobenzene (S)	%			102	87-109	
Dibromofluoromethane (S)	%			99	85-115	
Toluene-d8 (S)	%			100	70-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 404412 404413

Parameter	Units	9263403009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1-Dichloroethene	ug/L	ND	50	50	63.3	60.9	127	122	60-150	4	30	
Benzene	ug/L	ND	50	50	63.0	62.0	126	124	74-136	2	30	
Chlorobenzene	ug/L	ND	50	50	64.1	63.0	128	126	79-135	2	30	
Toluene	ug/L	ND	50	50	63.4	62.7	126	125	73-131	1	30	
Trichloroethene	ug/L	ND	50	50	63.2	62.0	126	124	73-131	2	30	
1,2-Dichloroethane-d4 (S)	%						105	106	79-120			
4-Bromofluorobenzene (S)	%						100	99	87-109			
Dibromofluoromethane (S)	%						101	102	85-115			
Toluene-d8 (S)	%						99	98	70-120			

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QUALITY CONTROL DATA

Project: Madison Co-Edwards Well
Pace Project No.: 9263251

METHOD BLANK: 403057 Matrix: Solid

Associated Lab Samples: 9263251001, 9263251004, 9263251005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/kg	ND	5.0	02/17/10 10:16	
Ethylbenzene	ug/kg	ND	5.0	02/17/10 10:16	
Hexachloro-1,3-butadiene	ug/kg	ND	5.0	02/17/10 10:16	
Isopropylbenzene (Cumene)	ug/kg	ND	5.0	02/17/10 10:16	
m&p-Xylene	ug/kg	ND	10.0	02/17/10 10:16	
Methyl-tert-butyl ether	ug/kg	ND	5.0	02/17/10 10:16	
Methylene Chloride	ug/kg	ND	20.0	02/17/10 10:16	
n-Butylbenzene	ug/kg	ND	5.0	02/17/10 10:16	
n-Propylbenzene	ug/kg	ND	5.0	02/17/10 10:16	
Naphthalene	ug/kg	ND	5.0	02/17/10 10:16	
o-Xylene	ug/kg	ND	5.0	02/17/10 10:16	
p-Isopropyltoluene	ug/kg	ND	5.0	02/17/10 10:16	
sec-Butylbenzene	ug/kg	ND	5.0	02/17/10 10:16	
Styrene	ug/kg	ND	5.0	02/17/10 10:16	
tert-Butylbenzene	ug/kg	ND	5.0	02/17/10 10:16	
Tetrachloroethene	ug/kg	ND	5.0	02/17/10 10:16	
Toluene	ug/kg	ND	5.0	02/17/10 10:16	
trans-1,2-Dichloroethene	ug/kg	ND	5.0	02/17/10 10:16	
trans-1,3-Dichloropropene	ug/kg	ND	5.0	02/17/10 10:16	
Trichloroethene	ug/kg	ND	5.0	02/17/10 10:16	
Trichlorofluoromethane	ug/kg	ND	5.0	02/17/10 10:16	
Vinyl acetate	ug/kg	ND	50.0	02/17/10 10:16	
Vinyl chloride	ug/kg	ND	10.0	02/17/10 10:16	
Xylene (Total)	ug/kg	ND	10.0	02/17/10 10:16	
1,2-Dichloroethane-d4 (S)	%	104	69-121	02/17/10 10:16	
4-Bromofluorobenzene (S)	%	92	74-115	02/17/10 10:16	
Dibromofluoromethane (S)	%	102	79-116	02/17/10 10:16	
Toluene-d8 (S)	%	102	88-110	02/17/10 10:16	

LABORATORY CONTROL SAMPLE: 403058

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	50	57.6	115	75-137	
1,1,1-Trichloroethane	ug/kg	50	63.1	126	70-140	
1,1,2,2-Tetrachloroethane	ug/kg	50	52.3	105	74-133	
1,1,2-Trichloroethane	ug/kg	50	59.3	119	79-129	
1,1-Dichloroethane	ug/kg	50	64.9	130	72-139	
1,1-Dichloroethene	ug/kg	50	62.7	125	69-154	
1,1-Dichloropropene	ug/kg	50	63.1	126	74-138	
1,2,3-Trichlorobenzene	ug/kg	50	61.0	122	71-150	
1,2,3-Trichloropropane	ug/kg	50	54.8	110	74-135	
1,2,4-Trichlorobenzene	ug/kg	50	64.5	129	68-150	
1,2,4-Trimethylbenzene	ug/kg	50	67.6	135	70-130	L0
1,2-Dibromo-3-chloropropane	ug/kg	50	64.1	128	65-146	
1,2-Dibromoethane (EDB)	ug/kg	50	57.1	114	77-136	

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QUALITY CONTROL DATA

Project: Madison Co-Edwards Well
Pace Project No.: 9263251

LABORATORY CONTROL SAMPLE: 403058

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
trans-1,3-Dichloropropene	ug/kg	50	62.9	126	73-135	
Trichloroethene	ug/kg	50	60.3	121	75-136	
Trichlorofluoromethane	ug/kg	50	51.7	103	69-144	
Vinyl acetate	ug/kg	100	149	149	50-150	
Vinyl chloride	ug/kg	50	52.1	104	61-145	
Xylene (Total)	ug/kg	150	192	128	73-138	
1,2-Dichloroethane-d4 (S)	%			101	69-121	
4-Bromofluorobenzene (S)	%			96	74-115	
Dibromofluoromethane (S)	%			102	79-116	
Toluene-d8 (S)	%			101	88-110	

MATRIX SPIKE SAMPLE: 403951

Parameter	Units	9263270001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	ug/kg	ND	59	72.2	122	33-158	
Benzene	ug/kg	ND	59	73.6	125	46-143	
Chlorobenzene	ug/kg	ND	59	69.7	118	29-159	
Toluene	ug/kg	ND	59	78.4	128	38-145	
Trichloroethene	ug/kg	ND	59	70.4	119	70-130	
1,2-Dichloroethane-d4 (S)	%				103	69-121	
4-Bromofluorobenzene (S)	%				92	74-115	
Dibromofluoromethane (S)	%				98	79-116	
Toluene-d8 (S)	%				100	88-110	

SAMPLE DUPLICATE: 403952

Parameter	Units	9263272001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,1-Trichloroethane	ug/kg	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,2-Trichloroethane	ug/kg	ND	ND		30	
1,1-Dichloroethane	ug/kg	ND	ND		30	
1,1-Dichloroethene	ug/kg	ND	ND		30	
1,1-Dichloropropene	ug/kg	ND	ND		30	
1,2,3-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,3-Trichloropropane	ug/kg	ND	ND		30	
1,2,4-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,4-Trimethylbenzene	ug/kg	ND	2.4J		30	
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/kg	ND	ND		30	
1,2-Dichlorobenzene	ug/kg	ND	ND		30	
1,2-Dichloroethane	ug/kg	ND	ND		30	
1,2-Dichloropropane	ug/kg	ND	ND		30	
1,3,5-Trimethylbenzene	ug/kg	ND	ND		30	
1,3-Dichlorobenzene	ug/kg	ND	ND		30	

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QUALITY CONTROL DATA

Project: Madison Co-Edwards Well
Pace Project No.: 9263251

SAMPLE DUPLICATE: 403952

Parameter	Units	9263272001 Result	Dup Result	RPD	Max RPD	Qualifiers
Xylene (Total)	ug/kg	ND	9.5J		30	
1,2-Dichloroethane-d4 (S)	%	106	104	1		
4-Bromofluorobenzene (S)	%	92	94	2		
Dibromofluoromethane (S)	%	101	97	3		
Toluene-d8 (S)	%	101	102	1		

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QUALITY CONTROL DATA

Project: Madison Co-Edwards Well
Pace Project No.: 9263251

METHOD BLANK: 404904 Matrix: Solid

Associated Lab Samples: 9263251002, 9263251003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/kg	ND	5.0	02/19/10 13:03	
Ethylbenzene	ug/kg	ND	5.0	02/19/10 13:03	
Hexachloro-1,3-butadiene	ug/kg	ND	5.0	02/19/10 13:03	
Isopropylbenzene (Cumene)	ug/kg	ND	5.0	02/19/10 13:03	
m&p-Xylene	ug/kg	ND	10.0	02/19/10 13:03	
Methyl-tert-butyl ether	ug/kg	ND	5.0	02/19/10 13:03	
Methylene Chloride	ug/kg	ND	20.0	02/19/10 13:03	
n-Butylbenzene	ug/kg	ND	5.0	02/19/10 13:03	
n-Propylbenzene	ug/kg	ND	5.0	02/19/10 13:03	
Naphthalene	ug/kg	ND	5.0	02/19/10 13:03	
o-Xylene	ug/kg	ND	5.0	02/19/10 13:03	
p-Isopropyltoluene	ug/kg	ND	5.0	02/19/10 13:03	
sec-Butylbenzene	ug/kg	ND	5.0	02/19/10 13:03	
Styrene	ug/kg	ND	5.0	02/19/10 13:03	
tert-Butylbenzene	ug/kg	ND	5.0	02/19/10 13:03	
Tetrachloroethene	ug/kg	ND	5.0	02/19/10 13:03	
Toluene	ug/kg	ND	5.0	02/19/10 13:03	
trans-1,2-Dichloroethene	ug/kg	ND	5.0	02/19/10 13:03	
trans-1,3-Dichloropropene	ug/kg	ND	5.0	02/19/10 13:03	
Trichloroethene	ug/kg	ND	5.0	02/19/10 13:03	
Trichlorofluoromethane	ug/kg	ND	5.0	02/19/10 13:03	
Vinyl acetate	ug/kg	ND	50.0	02/19/10 13:03	
Vinyl chloride	ug/kg	ND	10.0	02/19/10 13:03	
Xylene (Total)	ug/kg	ND	10.0	02/19/10 13:03	
1,2-Dichloroethane-d4 (S)	%	99	69-121	02/19/10 13:03	
4-Bromofluorobenzene (S)	%	98	74-115	02/19/10 13:03	
Dibromofluoromethane (S)	%	98	79-116	02/19/10 13:03	
Toluene-d8 (S)	%	102	88-110	02/19/10 13:03	

LABORATORY CONTROL SAMPLE: 404905

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	50	57.1	114	75-137	
1,1,1-Trichloroethane	ug/kg	50	56.8	114	70-140	
1,1,2,2-Tetrachloroethane	ug/kg	50	53.5	107	74-133	
1,1,2-Trichloroethane	ug/kg	50	56.3	113	79-129	
1,1-Dichloroethane	ug/kg	50	59.7	119	72-139	
1,1-Dichloroethene	ug/kg	50	57.3	115	69-154	
1,1-Dichloropropene	ug/kg	50	55.9	112	74-138	
1,2,3-Trichlorobenzene	ug/kg	50	69.4	139	71-150	
1,2,3-Trichloropropane	ug/kg	50	54.5	109	74-135	
1,2,4-Trichlorobenzene	ug/kg	50	78.4	157	68-150	L0
1,2,4-Trimethylbenzene	ug/kg	50	64.6	129	70-130	
1,2-Dibromo-3-chloropropane	ug/kg	50	53.7	107	65-146	
1,2-Dibromoethane (EDB)	ug/kg	50	54.6	109	77-136	

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QUALITY CONTROL DATA

Project: Madison Co-Edwards Well
Pace Project No.: 9263251

LABORATORY CONTROL SAMPLE: 404905

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
trans-1,3-Dichloropropene	ug/kg	50	57.9	116	73-135	
Trichloroethene	ug/kg	50	60.1	120	75-136	
Trichlorofluoromethane	ug/kg	50	54.6	109	69-144	
Vinyl acetate	ug/kg	100	317	317	50-150	L0
Vinyl chloride	ug/kg	50	53.2	106	61-145	
Xylene (Total)	ug/kg	150	186	124	73-138	
1,2-Dichloroethane-d4 (S)	%			97	69-121	
4-Bromofluorobenzene (S)	%			103	74-115	
Dibromofluoromethane (S)	%			97	79-116	
Toluene-d8 (S)	%			100	88-110	

MATRIX SPIKE SAMPLE: 405284

Parameter	Units	9263251003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	ug/kg	ND	44.7	50.6	113	33-158	
Benzene	ug/kg	ND	44.7	50.9	114	46-143	
Chlorobenzene	ug/kg	ND	44.7	53.9	120	29-159	
Toluene	ug/kg	ND	44.7	52.8	118	38-145	
Trichloroethene	ug/kg	ND	44.7	53.7	120	70-130	
1,2-Dichloroethane-d4 (S)	%				104	69-121	
4-Bromofluorobenzene (S)	%				99	74-115	
Dibromofluoromethane (S)	%				100	79-116	
Toluene-d8 (S)	%				100	88-110	

SAMPLE DUPLICATE: 405285

Parameter	Units	9263270005 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,1-Trichloroethane	ug/kg	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND		30	
1,1,2-Trichloroethane	ug/kg	ND	ND		30	
1,1-Dichloroethane	ug/kg	ND	ND		30	
1,1-Dichloroethene	ug/kg	ND	ND		30	
1,1-Dichloropropene	ug/kg	ND	ND		30	
1,2,3-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,3-Trichloropropane	ug/kg	ND	ND		30	
1,2,4-Trichlorobenzene	ug/kg	ND	ND		30	
1,2,4-Trimethylbenzene	ug/kg	ND	2.0J		30	
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/kg	ND	ND		30	
1,2-Dichlorobenzene	ug/kg	ND	ND		30	
1,2-Dichloroethane	ug/kg	ND	ND		30	
1,2-Dichloropropane	ug/kg	ND	ND		30	
1,3,5-Trimethylbenzene	ug/kg	ND	ND		30	
1,3-Dichlorobenzene	ug/kg	ND	ND		30	

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QUALITY CONTROL DATA

Project: Madison Co-Edwards Well
Pace Project No.: 9263251

SAMPLE DUPLICATE: 405285

Parameter	Units	9263270005 Result	Dup Result	RPD	Max RPD	Qualifiers
Xylene (Total)	ug/kg	ND	7.6J		30	
1,2-Dichloroethane-d4 (S)	%	104	101	2		
4-Bromofluorobenzene (S)	%	99	99	5		
Dibromofluoromethane (S)	%	109	100	4		
Toluene-d8 (S)	%	102	100	4		

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QUALIFIERS

Project: Madison Co-Edwards Well
Pace Project No.: 9263251

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

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U - Indicates the compound was analyzed for, but not detected.

LABORATORIES

PASI-C	Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

C9	Common Laboratory Contaminant.
L0	Analyte recovery in the laboratory control sample (LCS) was outside QC limits.
L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples. Results unaffected by high bias.
S2	Surrogate recovery outside laboratory control limits due to matrix interferences (confirmed by similar results from sample re-analysis).

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

1351774

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Altamont Environmental	Report To: Joel Lenk	Attention: Sue Brewer
Address: 231 Haywood Street	Copy To:	Company Name: Altamont
Asheville NC 28801		Address: Same
Email To: JLENK@altamontenvironmental.com	Purchase Order No.:	Pace Quote Reference:
Phone: 828-281-3350 Fax: 828-281-3357	Project Name: Madison Co. - Edward's Well	Pace Project Manager: Lorri Pollon
Requested Due Date/TAT: Standard	Project Number: 2313.16	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☑ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: NC

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	VOCs 8260/5035E	VOCs 8260	VOCs 8260/5030L	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 9263251
1	SB-1-10-11	SL	G			2/12/10	1230	NA	4						X	X			X				-001
2	SB-2-4-5	SL	G			2/12/10	1520	NA	4						X	X			X				-002
3	SB-3-17-18	SL	G			2/12/10	1530	NA	4						X	X			X				-003
4	SB-4-16-17.5	SL	G			2/12/10	1540	NA	4						X	X			X				-004
5	SB-5-17-18	SL	G			2/12/10	1550	NA	4						X	X			X	(±)			-005
6	MULCH-1	SL	G			2/12/10	958	NA	1	X										~~X~~	X		-006
7	DW-02 @ 60	WT	G			2/12/10	1430	NA	3				X							X			-007
8	TRIP BLANK LAB →							NA	2				X							X			-008
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Evan Yurkovich / Altamont	2/12/10	16:55	[signature]	2/12/10	16:55	2.5	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Evan Yurkovich

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM/DD/YY): 2/12/10

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

Evan Yurkovich

From: Lorri Patton [Lorri.Patton@pacelabs.com]
Sent: Friday, March 19, 2010 10:11 AM
To: Evan Yurkovich; Joel Lenk
Subject: Re: 9263251 Concerns
Attachments: DI contam. 1-2020.doc; Acetone Production as a Result of Sodium Bisulfate Preservatio.doc

Good Morning,

We have had three people including the QM in Charlotte go over the 9263521 project to check for any contamination and carryover issues. They came to basically the same findings that I had sent to your earlier. The acetone hits above the J-values are footnoted as lab contamination. Acetone and Methylene Chloride are both common contaminants, but if the data is J-flagged, then they don't receive a footnote due to their being estimated values. They also checked to make sure that the samples analyzed before yours were not highly contaminated, and were able to confirm that there was no carryover of MEK, toluenes, or napthalenes. Cheryl did send me two items this morning to include for your information, though she has no proof that the DI contamination that they experienced during the time frame that your samples were being analyzed had any bearing on your J-flagged items.

Please let me know if you have any questions.

Thank you,
Lorri

>>> Lorri Patton 3/5/2010 4:04 PM >>>
Good Afternoon,

Here is a summary of what was found on the voc hits on project 9263521:

1) Acetone and Chloroform are laboratory contaminants. There were no additional flags on the acetone and chloroform J values, because these hits were all below our detection limits. The one sample that was flagged for acetone showed a hit above the detection limit.

2) All other hits shown are real, I will ask Cheryl on Monday about the one chloromethane hit in the water sample. We have seen hits for this due to degradation in the HCl preservative, but the trip blank was from the same lot of containers, and there was not a hit there.

3) We will have a letter for you on Monday about the contamination issues.

Thank you,
Lorri

The email and documents accompanying this transmission contain confidential information belonging to the sender who is legally privileged. The information is intended only for the use of the individual(s) or entity(ies) named herein. If you are not the intended recipient, you are hereby notified that any disclosure, copying distribution or the taking of any action in reliance on the contents of this information is strictly prohibited. If you have received this in error, please immediately notify us by telephone (1.888.990.PACE) to arrange for return of the original documents.

Pace Analytical Services, Inc.
9800 Kincey Avenue, Suite 100
Huntersville, NC 28078
Phone: 704.875.9092
Fax: 704.875.9091

March 9, 2010

This letter is in regard to contamination hits in trip blanks and other QC samples for analysis by EPA Method 8260, 624 and Standard Methods 6200B.

Low level hits for Trihalomethane Disinfectant by Product compounds were found in trip blanks and other QC samples using water from the laboratory organic free water system. The carbon filters were changed by the water system vendor and an ineffective carbon bed allowed breakthrough of the Trihalomethane compounds, such as Chloroform, from the tap water. A second system in the laboratory was determined to have 1,2-dichloroethane contamination. These contaminants have been qualified as laboratory contamination in trip blanks and method blanks run during the time period that the contamination occurred in late January and early February. Samples run during this time would not be effected unless a dilution was performed using the contaminated water. Specific instances of contamination in samples due to dilution will be qualified.

The vendor replaced the carbon and DI filters throughout the system to correct the problem. This incident has been logged into the laboratory's corrective action system for documentation and tracking.

If you have any further questions or need additional information, please contact the laboratory or myself at 704-875-9092.

Sincerely,

Cheryl Johnson
Quality Manager

Acetone Production as a Result of Sodium Bisulfate Preservation Using EPA Method 5035

Jay L. Clausen, M. Hoyt[1], L. Wessling, Ogden Environmental and Energy Services, B. Stearns, B. Ramirez, Severn Trent Laboratories.

The National Guard Bureau is conducting an investigation at the Massachusetts Military Reservation to characterize the nature and extent of possible soil contamination and its potential impact on groundwater. Soil samples are being collected and analyzed for volatile organic compounds (VOCs) with over 500 samples collected. Upon the switch from the standard VOC sample preparation Method 5030 to Method 5035 using sodium bisulfate preservation, acetone has been frequently detected at significant levels, i.e. greater than 1,000 ug/kg without dilution. Studies conducted indicate acetone levels increase with increasing contact time between the soil matrix and the sodium bisulfate. Placement of soil samples in deionized water also resulted in production of acetone but at significantly lower levels. A comprehensive set of preservative options is being investigated to determine whether an alternate approach will provide better data quality.

VOA VIALS CONTAIN 1:1 HCL
DO NOT RINSE

LEASE READ INSTRUCTION SHEET

N.C. Department of Health and Human Services
Division of Public Health
State Laboratory of Public Health
P.O. Box 28047, 306 N. Wilmington St., Raleigh, NC 27611-8047

VOC

Environmental Sciences Analysis Report

Name of Owner, Patient Or Supply: Joel Edwards
Telephone # ( )
Address: 79 Long Branch Rd.
Marshall Zip: 28753
County: Madison

Report to: Douglas McVey
Telephone # (828) 649-9598
Address: 5707 Hwy 25-70 Suite E Room 20
Marshall, NC 28753

Collected By: Douglas McVey
Telephone # (828) 649-9598
Date Collected: 02/23/10
Analysis Desired: VOC

Laboratory Number	Sample #	Sample Description or Remarks	Results In
100228		2-40 ml Vials 5.0°C	
ES022410-0001001 100228 02/23/2010 VOA 524.2 (47)		SEE ATTACHED SHEET(S)	
ES022410-0001002 100229 11/30/2009 VOA 524.2 (47)		SEE ATTACHED SHEET(S)	
100229		[redacted] BLANK (DATE: 11-30-09)	

Date Received: FEB 24 2010 KM
Date Extracted:

Date Reported: MAR 05 2010
Date Analyzed: 3-4-10
Reported By: Nancy J. Jones

DHHS Form 2364
Laboratory (Rev.06/99)
F_anlrpt

North Carolina State Laboratory of Public Health
Environmental Sciences
Organic Chemistry
P.O. Box 28047
306 N. Wilmington St.
Raleigh, NC 27611-8047
http://slph.state.nc.us
Phone: 919-733-7834
Fax: 919-733-8695

Certificate of Analysis

Sample Group: **ES022410-0001**

Report To:

MADISON CO ENVIRONMENTAL HEALTH

5707 HWY 25/70 UNIT E - ROOM 20

MARSHALL, NC 28753

Attn:

County: MADISON

Name of System:

EDWARDS, JOEL
79 LONG BRANCH RD.

MARSHALL, NC 28753

Well Permit #:

Sample #: **ES022410-0001001** Collected: 02/23/2010 DOUGLAS MCVEY
Received: 02/24/2010 08:37 MNICHOLSON

Sample Type: **Water** Sampling Point: Client Sample #: **100228**
Sample Source: Temp. at Receipt: 6.0 DEG C GPS #:

Sample Description:
Comment: ISOPROPYL ALCOHOL TENTATIVELY IDENTIFIED BY GC/MS.

Organic Chem - VOCs **Method:** EPA 524.2

VOA 524.2 (47)

Analyte	Result	RL	Units	Qualifier(s)
Chloromethane	Not Detected	0.5	ug/L	
Vinyl chloride	Not Detected	0.5	ug/L	
Bromomethane	Not Detected	0.5	ug/L	
Chloroethane	Not Detected	0.5	ug/L	
Trichlorofluoromethane	Not Detected	0.5	ug/L	
1,1-Dichloroethene	Not Detected	0.5	ug/L	
Acetone	Not Detected	2.0	ug/L	
Iodomethane	Not Detected	0.5	ug/L	
Carbon Disulfide	Not Detected	0.5	ug/L	
Methylene chloride	Not Detected	0.5	ug/L	
Acrylonitrile	Not Detected	0.5	ug/L	
trans-1,2-Dichloroethene	Not Detected	0.5	ug/L	
MTBE	Not Detected	0.5	ug/L	
1,1-Dichloroethane	Not Detected	0.5	ug/L	
Isopropyl Ether	Not Detected	0.5	ug/L	
cis-1,2-Dichloroethene	Not Detected	0.5	ug/L	
2-Butanone (MEK)	Not Detected	2.0	ug/L	
Tetrahydrofuran	Not Detected	2.0	ug/L	
Chloroform (T)	Not Detected	0.5	ug/L	
1,1,1-Trichloroethane	Not Detected	0.5	ug/L	
Carbon Tetrachloride	Not Detected	0.5	ug/L	

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Fax: 919-733-8695

Certificate of Analysis

Sample Group: **ES022410-0001**

Benzene	Not Detected	0.5	ug/L	
1,2-Dichloroethane	Not Detected	0.5	ug/L	
Trichloroethene	Not Detected	0.5	ug/L	
1,2-Dichloropropane	Not Detected	0.5	ug/L	
Dibromomethane	Not Detected	0.5	ug/L	
Bromodichloromethane (T)	Not Detected	0.5	ug/L	
cis-1,3-Dichloropropene	Not Detected	0.5	ug/L	
4-Methyl-2-pentanone	Not Detected	0.5	ug/L	
Toluene	Not Detected	0.5	ug/L	
trans-1,3-Dichloropropene	Not Detected	0.5	ug/L	
1,1,2-Trichloroethane	Not Detected	0.5	ug/L	
Tetrachloroethene	0.8	0.5	ug/L	J
2-Hexanone	Not Detected	0.5	ug/L	
Dibromochloromethane (T)	Not Detected	0.5	ug/L	
1,2-Dibromoethane(EDB)	Not Detected	0.5	ug/L	
Chlorobenzene	Not Detected	0.5	ug/L	
1,1,1,2-Tetrachloroethane	Not Detected	0.5	ug/L	
Ethylbenzene	Not Detected	0.5	ug/L	
Total Xylenes	Not Detected	0.5	ug/L	
Styrene	Not Detected	0.5	ug/L	
Bromoform (T)	Not Detected	0.5	ug/L	
1,1,2,2-Tetrachloroethane	Not Detected	0.5	ug/L	
1,4-Dichlorobenzene	Not Detected	0.5	ug/L	
1,2-Dichlorobenzene	Not Detected	0.5	ug/L	
1,2-Dibromo-3-chloropropane (DBCP)	Not Detected	2.0	ug/L	
1,2,3-Trichloropropane	Not Detected	0.5	ug/L	

Report Date: 3/5/2010 **Reported By:** *Nancy Jones*

North Carolina State Laboratory of Public Health
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Fax: 919-733-8695

Certificate of Analysis

Sample Group: **ES022410-0001**

Report To:

MADISON CO ENVIRONMENTAL HEALTH

5707 HWY 25/70 UNIT E - ROOM 20

MARSHALL, NC 28753

Attn:

County: MADISON

Name of System:

EDWARDS, JOEL
79 LONG BRANCH RD.

MARSHALL, NC 28753

Well Permit #:

Sample #: **ES022410-0001002** Collected: 11/30/2009 KMN
Received: 02/24/2010 08:37 MNICHOLSON

Sample Type: **Water** Sampling Point: Client Sample #: **100229**
Sample Source: Temp. at Receipt: 6.0 DEG C GPS #:

Sample Description: TRIP BLANK
Comment:

Organic Chem - VOCs **Method:** EPA 524.2

VOA 524.2 (47)

Analyte	Result	RL	Units	Qualifier(s)
Chloromethane	Not Detected	0.5	ug/L	
Vinyl chloride	Not Detected	0.5	ug/L	
Bromomethane	Not Detected	0.5	ug/L	
Chloroethane	Not Detected	0.5	ug/L	
Trichlorofluoromethane	Not Detected	0.5	ug/L	
1,1-Dichloroethene	Not Detected	0.5	ug/L	
Acetone	Not Detected	2.0	ug/L	
Iodomethane	Not Detected	0.5	ug/L	
Carbon Disulfide	Not Detected	0.5	ug/L	
Methylene chloride	Not Detected	0.5	ug/L	
Acrylonitrile	Not Detected	0.5	ug/L	
trans-1,2-Dichloroethene	Not Detected	0.5	ug/L	
MTBE	Not Detected	0.5	ug/L	
1,1-Dichloroethane	Not Detected	0.5	ug/L	
Isopropyl Ether	Not Detected	0.5	ug/L	
cis-1.2-Dichloroethene	Not Detected	0.5	ug/L	
2-Butanone (MEK)	Not Detected	2.0	ug/L	
Tetrahydrofuran	Not Detected	2.0	ug/L	
Chloroform (T)	Not Detected	0.5	ug/L	
1,1,1-Trichloroethane	Not Detected	0.5	ug/L	
Carbon Tetrachloride	Not Detected	0.5	ug/L	

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Sample Group: **ES022410-0001**

Benzene	Not Detected	0.5	ug/L
1,2-Dichloroethane	Not Detected	0.5	ug/L
Trichloroethene	Not Detected	0.5	ug/L
1,2-Dichloropropane	Not Detected	0.5	ug/L
Dibromomethane	Not Detected	0.5	ug/L
Bromodichloromethane (T)	Not Detected	0.5	ug/L
cis-1,3-Dichloropropene	Not Detected	0.5	ug/L
4-Methyl-2-pentanone	Not Detected	0.5	ug/L
Toluene	Not Detected	0.5	ug/L
trans-1,3-Dichloropropene	Not Detected	0.5	ug/L
1,1,2-Trichloroethane	Not Detected	0.5	ug/L
Tetrachloroethene	Not Detected	0.5	ug/L
2-Hexanone	Not Detected	0.5	ug/L
Dibromochloromethane (T)	Not Detected	0.5	ug/L
1,2-Dibromoethane(EDB)	Not Detected	0.5	ug/L
Chlorobenzene	Not Detected	0.5	ug/L
1,1,1,2-Tetrachloroethane	Not Detected	0.5	ug/L
Ethylbenzene	Not Detected	0.5	ug/L
Total Xylenes	Not Detected	0.5	ug/L
Styrene	TRACE	0.5	ug/L
Bromoform (T)	Not Detected	0.5	ug/L
1,1,2,2-Tetrachloroethane	Not Detected	0.5	ug/L
1,4-Dichlorobenzene	Not Detected	0.5	ug/L
1,2-Dichlorobenzene	Not Detected	0.5	ug/L
1,2-Dibromo-3-chloropropane (DBCP)	Not Detected	2.0	ug/L
1,2,3-Trichloropropane	Not Detected	0.5	ug/L

Report Date: 3/5/2010 **Reported By:** *Nancy Jones*

North Carolina State Laboratory of Public Health
Environmental Sciences
Organic Chemistry
Certificate of Analysis

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Raleigh, NC 27611-8047
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Phone: 919-733-7834
Fax: 919-733-8695

Sample Group: **ES022410-0001**

Environmental Qualifier Descriptions

Code	Description
*	Result exceeds MCL
;	
>ht	Entered past holding exp
A	User choice 1
Ach	Above ULC
Amt	Non-default amount used
B	Blank over RL
C	Possible Lab Contamination
Cg	Confluent Growth
D	User choice 3
Eh	Exceeded Holding Time
Haz	Hazard Level Exceeded
Hirec	High recovery
J	Estimated Value
Lorec	Low recovery
Ofe	Over 48 hours
Sp	Sample processing problem
Susp	Suspect result
T	Trihalomethane
Tc	Turbid Culture
Temp	Temperature Range Exceeded
Ti	Tentative Identification
Tntc	Too numerous to count
U	Beneath MDL
V	User choice 4

FAX COVER SHEET

Madison County Solid Waste Department
James L. Huff, Director
271 Craig Ruckstill Road
Marshall, NC 28753

828-649-2311
828-649-0324 - fax

SEND TO	
Company name: Altamont Environmental	From: Jim Huff
Attention: Joel Lenk	Date: 3/25/10
Office location:	Office location:
Fax number: 828-281-3351	Phone number: 828-649-2311

☐ Urgent ☐ Reply ASAP ☐ Please comment ☐ Please review ☑ For your information

Total pages, including cover: 7

COMMENTS

Joel Lenk

From: Joel Lenk
Sent: Monday, March 15, 2010 11:24 AM
To: 'Jim Huff'
Attachments: 9263251 Concerns; tbl-Edwards-Soil-GW wo Ace&Chl-_2-12-10.pdf; 5802-Figure 2-Sample Location Map_Closed.pdf

Jim,

I received your voicemail and appreciate the reminder.

I have still not received the official letter from the VOC specialists at Pace. Frustrating, but for now we are operating based on Lorri's attached email.

Additionally, Alec and I took some time to discuss the detections found in the soil and water samples that were collected as part of the PCE investigation. An updated table and figure are attached for you reference. Our analysis of the soil and groundwater data as it applies to the Edwards well is below.

Soil

- All soil samples were collected at the depth of refusal, with the exception of SB-2 4-5 which was collected from an interval that had a chemical like odor. Sample SB-1 10-11 was collected from beneath the septic field. The remainder of the soil samples were collected from beneath the stormwater path that flows over the Edwards well head. Groundwater was not encountered in any of the soil borings.
- Soil samples contained one or more of the following contaminants: 2-Butanone (MEK), p-Isopropyltoluene, Methylene Chloride, Naphthalene, Toluene

Mulch

- A sample of mulch was collected from the area immediately surrounding the well head.
- The mulch sample showed detections of Methylene Chloride and Naphthalene.

Shallow Groundwater

- A sample of shallow groundwater was collected from the Edwards well from just below the surface casing using a inflatable packer and electric pump.
- The water sample showed detections of Chloromethane and Tetrachloroethene (PCE)

Data Interpretation Related to Conditions Known About the Edwards Well

- The soil sample analytical data suggests that minor contamination exists in soil on the Edwards property.
- A down hole video of the Edwards well and a boring log submitted by the well driller strongly suggest that the surface casing for the well is incompetent and is allowing shallow groundwater to enter the well and comingle with the water from the primary water bearing fracture for the well.
- Methylene Chloride was detected in the Mulch Sample at a concentration above the Maximum Soil Contaminant Concentration. It is not unreasonable to assume that Methylene Chloride at this concentration could break down into its daughter compound and be conveyed via stormwater/groundwater into the well.
- Chloromethane, a daughter compound of Methylene Chloride was detected in the shallow groundwater sample collected from the well just below the surface casing.
- An over-pumping sampling event was conducted on the Edwards well during which approximately 8,000 gallons of water was pumped from the well. Groundwater samples collected during the event did not contain detections of PCE. This suggests that PCE contamination in not impacting the primary water bearing fracture for the well.
- PCE was detected in the shallow groundwater sample collected from just below the surface casing at the 2L standard. The detection suggests that PCE has impacted the shallow groundwater aquifer or surface water in the vicinity of the well and could potentially be leaking past the surface casing.