SCREENING SITE INSPECTION REPORT
FOR
HADER GROUNDWATER CONTAMINATION
HADER, MINNESOTA

U.S. EPA ID: MND981961873

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EXECUTIVE SUMMARY

On March 29, 1988, the Minnesota Pollution Control Agency (MPCA) staff conducted a Screening Site Investigation (SSI) at the Hader Ground Water Contamination Site (Site), Goodhue County, Minnesota. The purpose of the SSI was to determine if high amounts of lead, nickel, sulfate, and iron in the ground water could be attributed to a contaminant source.

Ten residential wells were sampled in August 1987, and three were found to exceed the Recommended Allowable Limits (RALs) established by the Minnesota Department of Health (MDH) for lead and nickel and U.S. Environmental Protection Agency (EPA) Secondary Drinking Water Standards for iron and sulfate. Upon receipt of these results the MPCA began supplying these households with bottled drinking water.

After further screening of households that had reported poor quality water, seven households were chosen and sampled in April 1988 for volatile organic aromatics (VOAs), Acid Base Neutrals (ABNs) compounds, pesticides, polychlorinated biphenyls (PCBs), dissolved metals, nitrates, nitrites, sulfates, and chlorides. These compounds and analytes are on the U.S. EPA Target Compound List (TCL) and Target Analyte List (TAL). Organic compounds were all below the detection limits of laboratory equipment. Elevated levels of inorganics included iron, zinc, sulfate and nickel. Three of the seven households sampled had concentrations of nickel above RALs.

1.0 INTRODUCTION

The MPCA, working under a Cooperative Agreement with the U.S. Environmental Protection Agency (EPA), has conducted a SSI at the Hader Ground Water Contamination Site, Minneola Township, Goodhue County.

The Site was initially discovered as a result of a residential complaint of extremely poor quality ground water, i.e., cloudy, poor taste, and high iron content.

The Site was placed on the U.S. EPA's Comprehensive Environmental Response, Compensation, and Liability Information Systems (CERCLIS) list inventory on July 30, 1987. A Preliminary Assessment (PA) of the Site was conducted by MPCA staff and submitted to U.S. EPA on September 30, 1987. The MPCA staff prepared and submitted an SSI workplan for review by the U.S. EPA Region V staff. The MPCA staff received approval from U.S. EPA for the SSI workplan in January 1988.

The objectives of an SSI are stated in a directive from U.S. EPA which outlines Pre-remedial Strategies under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). The directive states:

> All sites will receive an SSI in an effort to; 1) collect additional data beyond the scope of the PA to enable a more refined preliminary Hazardous Ranking System (HRS) score, 2) establish priorities among sites most likely to qualify for the National Priorities List (NPL), and 3) identify the data requirements for a Listing Site Investigation (LSI).

> An SSI will not have rigorous data quality objectives (DOQs). Based on the refined preliminary HRS score and other technical judgement factors, the site will then either be designated as NFRAP [no further remedial action planned], or carried forward as an NPL listing candidate. A listing SI will not automatically be done on these sites, however. First, they will go through a management evaluation to determine whether they can be addressed by another authority such as, RCRA [Resource Conservation and Recovery Act] . . . Sites that are designated NFRAP or deferred to other statutes are not candidates for a listing SI.
>
> The listing SI will address all the data requirements of the revised HRS using field screening and NPL level DOQs. It may also provide needed data in a format to support remedial investigation workplan development. Only sites that appear to score high enough for listing and that have not been deferred to another authority will receive a listing SI (9).

U.S. EPA Region V has also instructed the MPCA to identify sites during the SSI that may require prompt removal action to remediate an immediate human health and/or environmental threat.

2.0 SITE INFORMATION

2.1 Site Description

The Site is located in a sparsely populated rural agricultural area of southeastern Minnesota, in which dairy farming is the predominant industry. The boundaries of the Site are non-distinct and cover a general area of

HADER GROUNDWATER CONTAMINATION

HADER, MN

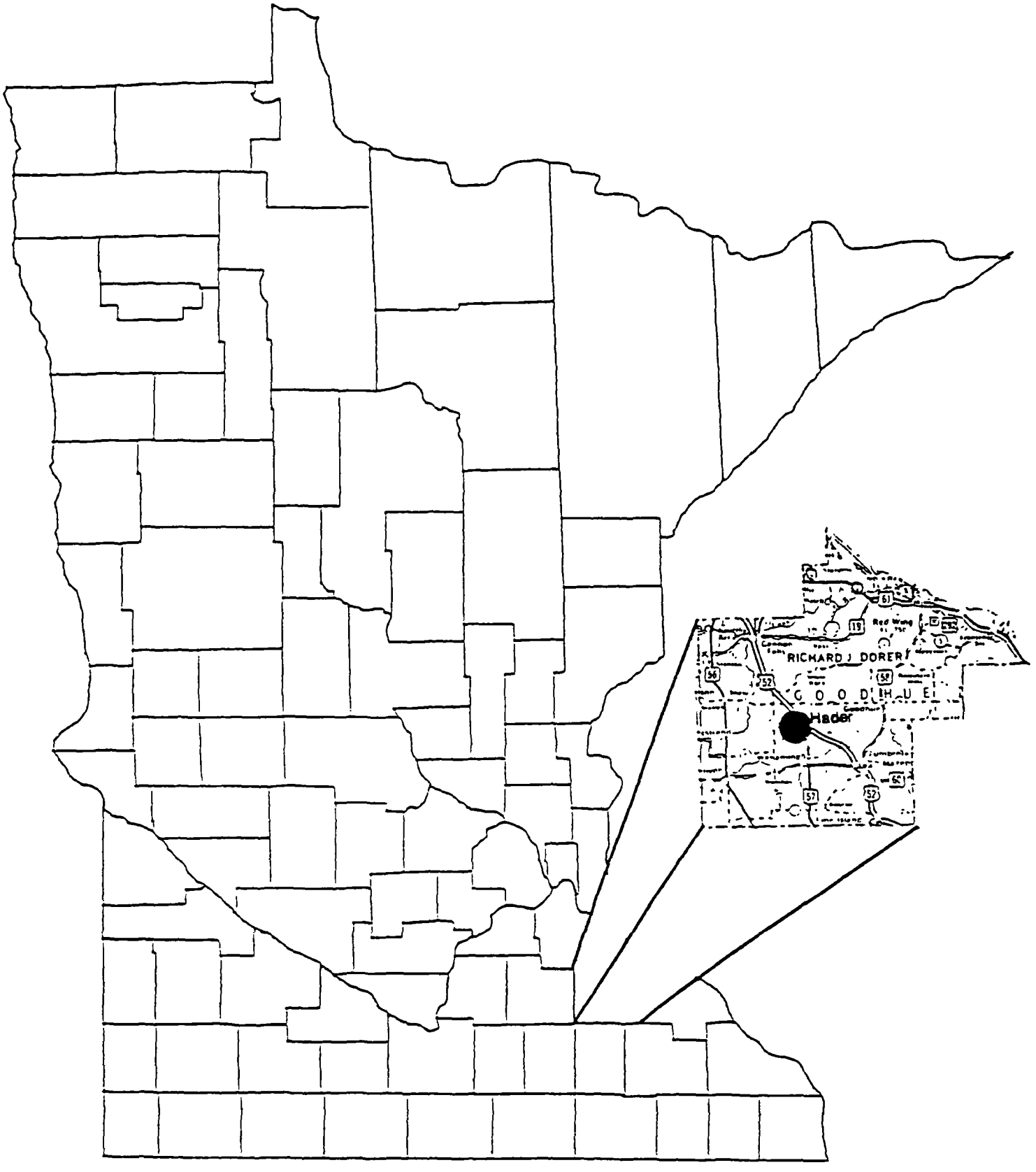

Figure I

SITE LOCATION MAP

approximately 24 square miles (Figure I and Appendix A). Belle Creek and Minneaola townships comprise the majority of the study area. The nearest population center is Zumbrota, approximately 8 miles southeast of the Site.

2.2 History

The area was first brought to the attention of the MPCA through a complaint filed by a resident in the area. The complaintant reported cloudy residues and high iron content in the drinking water, which readily formed a film or stain upon contact with piping, containers, human skin, and clothing. Both human and livestock health problems were reported if the water was used for any length of time for drinking purposes. Further interviews with other residents in the area resulted in similar reports of poor quality drinking water, and health problems. Although no medical evidence confirms that the ground water at the Site is a cause of health problems, there appears to be a relationship between ground water consumption and poor health of some of the residents and their livestock.

In August 1987, MPCA staff conducted water sampling at ten homes in the area, including that of the complaintant. A limited number of metals, volatile hydrocarbons, and pesticides were analyzed for by the Minnesota Department of Health (MDH) laboratories in Minneapolis, Minnesota. Of the ten samples, three were found to exceed MDH RALs for lead and nickel and U.S. EPA Secondary Drinking Water Standards for iron and sulfate. MPCA staff also noted that wells, in which elevated levels of metals were measured, also had extremely low pH levels. Difficulty was encountered in stabilizing the well prior to sampling, as pH would often continue to drop after numerous well volumes were extracted. A pH as low as 4.8 was recorded at the complaintants well [pH

levels of this magnitude do not usually occur in ground water under natural conditions].

Upon receipt of these results, the MPCA notified the residents and MDH of the poor quality of their drinking water and began supplying bottled water to the three homes which exceeded drinking water standards.

3.0 SSI OBJECTIVES

The principal objective of the SSI was to determine if the elevated levels of inorganic compounds detected in domestic wells in the vicinity of Minneola and Belle Creek Townships, Minnesota are attributable to a contaminant source or sources. If a contaminant source was identified, and an observed release to the ground or surface water was documented, further investigation would be warranted. If a contaminant source was not identified, the Site would receive a "No Further Remedial Action Planned" (NFRAP) priority.

4.0 GEOLOGY

4.1 Physical and Hydrogeologic Properties

The Site is underlain by Cambrian, Ordovician, Cretaceous bedrock, and Quaternary glacial and surficial deposits (Figure II). The regional bedrock slopes toward the southeast, while the regional ground water flow is to the north, toward the Cannon River (10).

The oldest geologic formation underlying the Site is the Pre - Cambrian bedrock system of igneous and sedimentary rocks (Figure II). The oldest

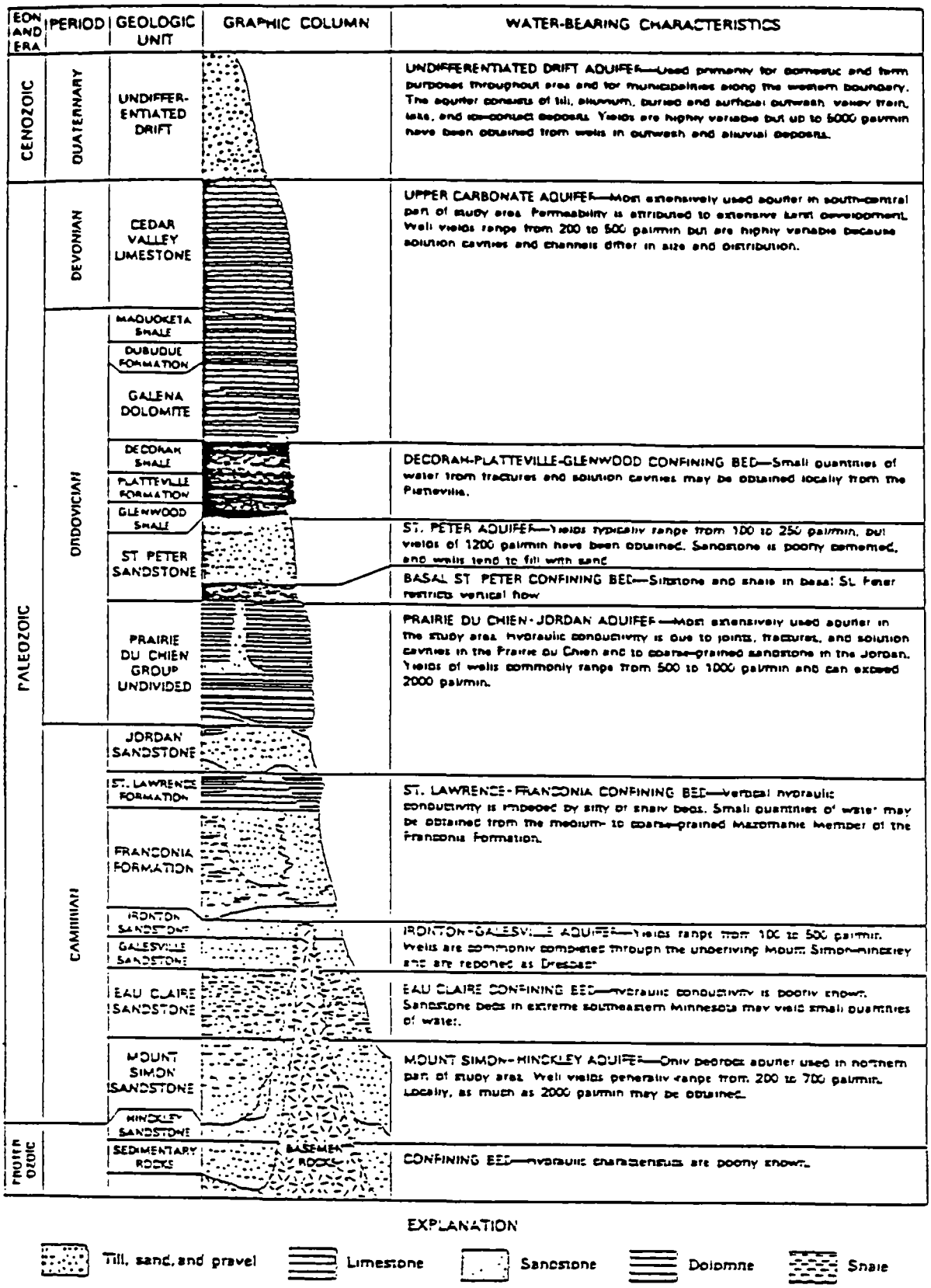

Figure 11

AQUIFER UNITS AND PRODUCTIVITY

sedimentary bedrock is the Fond du Lac formation composed of well cemented, fine-grained arkosic sand to siltstone with interbedded shales. Tertiary igneous intrusions extend vertically through Pre-Cambrian sedimentary basement rocks into the Ironton formation. The Fond du Lac and areas of igneous intrusions are not utilized for ground water supplies in southeastern Minnesota.

The deepest primary water bearing units are the Hinkley and Mt. Simon formations (Figure II). The Hinkley formation is a medium to coarse grained arkosic sandstone which grades into the overlying Mt. Simon formation. The Mt. Simon formation is a fine to coarse grained quartzose with thin shale beds in the upper portion. Due to the absence of a confining layer between the Mt. Simon and Hinkley formations, they are considered to be one hydrologic unit. Water yields are moderate to high depending upon placement of wells. Hydraulic conductivity varies from 2 to 23 feet/day (5).

The overlying Eau Claire formation acts as a confining layer between the Mt. Simon-Hinkley aquifer and the Galesville-Ironton formations (Figure II). As with the Mt. Simon-Hinkley formations, there is the absence of a confining layer between the Galesville and Ironton formations. The lack of a confining layer allows the two sandstones to act as one hydraulic unit. The Ironton-Galesville Group is a medium to fine-grained sandstone. Average yields range from 4 to 33 feet/day (5).

The Franconia formation is a fine-grained sandstone with shale layers interspersed in some areas (Figure II). Due to the interfingering of the shale layers, the hydraulic potential of the Franconia sandstone is limited to the upper Reno unit which has less shale. Over all the formation acts as a

confining unit (5).

The St. Lawrence formation is a dolomitic shale with areas of sandstone and greensand (Figure II). The St. Lawrence is approximately five feet thick, and with the Franconia formation acts as a confining layer between the underlying Franconia and the overlying Jordan sandstone (5).

The Jordan sandstone is massive with numerous areas of cross bedding and an average thickness of 100 feet (Figure II). Pyrite stringers are interspersed throughout the formation and hematite cementing is common. Due to the absence of a confining layer, the Jordan acts as a primary aquifer with the interconnected Prairie du Chien formation, providing large yields of acceptable quality drinking water in the upland regions (7).

The Prairie du Chien formation of Ordovician age is comprised of two units, the Oneata and Shakopee dolomites (Figure II). The Oneata unit averages 150 feet in thickness where it outcrops along the Cannon River, north of the Site (10). The Oneata dolomite has limited hydraulic potential yields along joints and bedding planes, whereas the overlying Shakopee dolomite has a higher potential yield due to interspersed sandy layers.

As previously stated, there is no confining unit between the Prairie du Chien aquifer and the Jordan aquifer, therefore ground water mixing between the two formations is possible. Of the two units (Prairie du Chien and Jordan), the Jordan sandstone has greater porosity but the Prairie du Chien Group has a higher fracture permeability and therefore greater yields. The average hydraulic conductivity for the Prairie du Chien - Jordan aquifer is 5 to 67 feet/day (5).

The St. Peter formation of Ordovician age thins in the western margin of Goodhue County, relative to the eastern margin. The average thickness of the St. Peter underlying the Site is 75 feet. The St. Peter formation is a well sorted, clean sandstone with pyrite stringers often interspersed (Figure II). Water resources are adequate for domestic use, with average hydraulic conductivity of 3 to 33 feet/day, but yields are restricted in areas where the formation has been eroded to a thickness as little as 10 feet (5).

The Glenwood formation is thin (3 feet) to non-existent in the vicinity of the Site. The formation is a fissile shale and when present acts as a confining layer between the underlying St. Peter sandstone and the overlying Platteville limestone (5).

Unlike the Glenwood formation, the Platteville formation is laterally extensive across the Site with an average thickness of 25 feet. Fractures and joints in the dolomitic limestone provide adequate porosity and permeability for limited domestic and livestock yields (7).

Overlying the Platteville formation is the Decorah shale (Figure II). The Decorah formation is thin (less than 5 feet) to non-existent at the Site. When present, the shale is greenish-gray in color and ranges from fissile to blocky and acts as a confining layer between the underlying Platteville limestone and the Galena dolomite. When absent, there is direct hydraulic connection between the Platteville formation and the Galena dolomite. Due to the interfingering of shales within the Platteville formation, the Decorah - Platteville - Glenwood formations are often viewed as a confining layer on a regional scale (5).

The Galena formation overlies the Decorah Shale at the Site, unless removed by surface erosion (Figure II). The Galena formation is a dolomite exhibiting karst characteristics throughout southeastern Minnesota. Solution tunnels, caves, and hummocky topography are primary indicators for the presence of the Galena dolomite. The Galena dolomite has been quarried throughout Goodhue County for use in concrete and other building purposes. Several abandoned quarries in the Galena dolomite are within the 24 squares miles established as the Site. The Galena formation is not widely utilized for domestic ground water in the area due to its unreliability for ground water yields in the absence of overlying formations. The solutioned nature of the Galena also makes the formation susceptible to ground water contamination (5 and 7).

Glacial deposits overlie the bedrock throughout the Site, unless absent due to erosion. The composition varies from sand and gravel outwash to clay tills. Ground water yields are adequate for domestic yields (<50 gal/day) with water quality somewhat variable. Due to recharge from precipitation, the water table is susceptible to seasonal variations (9).

4.2 Residential Wells

Residential wells at the Site range in depth from 45 feet to 390 feet, therefore several aquifers were sampled (Appendix H). The glacial drift aquifer is the least used ground water source due to its susceptibility to fluctuating water table levels and contamination from pesticides and fertilizers. The Platteville limestone is used to a limited extent by households at the Site, but wells set in the Platteville aquifer have not reported any problems with the quality of the ground water.

The majority of the wells at the Site draw ground water from the lower part of the Prairie du Chien formation or the Shakopee limestone. One well is set at a greater depth in the Jordan sandstone (Appendix H). The Jordan aquifer is the deepest aquifer used by residents at the Site. The deeper Mt. Simon-Hinkley and Ironton-Galesville sandstone aquifers are not used at the Site. The towns of Wanamingo and Zumbrota, south of the Site, utilize the Mt. Simon-Hinkley formation for municipal ground water supplies (1).

All wells at the Site were constructed without the installation of a screen and often without grouting (this is a common practice for older water supply wells). Therefore, the water drawn from a well may be derived from a combination of aquifer sources, not solely from the aquifer in which the casing is terminated. This creates difficulty in determining the unit(s) from which a ground water sample was taken.

4.3 Water Quality

The ground water in the vicinity of the Site is classified as a "calcium-magnesium bicarbonate type" (9). As a result, the most common non-contaminant related complaint concerns the hardness of the water. Some residents at the Site have corrected hardness problems with the installation of water softening devices.

A second common problem associated with ground water at the Site has been relatively high amounts of dissolved iron, as well as iron bacteria. The maximum recorded ambient iron level for the Prairie du Chien aquifer in Goodhue County is 620 ug/l (1 and Appendix D). The Jordan sandstone aquifer

is often plagued by high dissolved iron contents which range from 0.2 to .68 mg/l (5 and 9). When elevated levels of iron are reached, the ground water is often unusable from an aesthetic point due to poor taste and the water's tendency to stain clothing and plumbing. Iron bacteria may also induce staining and odor problems, as well.

5.0 SURFACE WATER

The Site is located within the Cannon River Watershed District. Belle Creek, the predominant surface water body, flows north through the Site to the Cannon River (9). In turn, local intermittent streams flow into Belle Creek. These intermittent streams are primarily used for livestock. Recreational use is limited due to the small size of the streams. Farm ponds are spread throughout the Site area and are used for watering livestock, recreational fishing, and swimming.

6.0 FIELD PROCEDURE

6.1 On-Site Interviews

Numerous interviews were taken with residents at the Site throughout the on-going SSI (MPCA files). Most residents could provide no evidence for suspected releases of hazardous substances to the environment in the immediate vicinity. An unpermitted dump in an abandoned quarry had been operating from the early 1970s through 1980, approximately 1 and a half miles to the northwest of the area established as the Site. The dump is being addressed under a separate SSI entitled "Hader Dump".

Some area residents observed the quality of their water also decreased when blasting began at a second separate quarry in the area. On days following a great deal of blasting, residents noticed cloudy residues and an increase in the amount of iron in their drinking water. Blasting has ceased at the second quarry.

It is also a common practice for residents without water treatment systems to chlorinate their wells in an effort to control iron bacteria, both which degrade the quality of the drinking water. The added shock of chlorine may also contribute to adverse health effects (3).

6.2 Sampling Procedure

Due to the large area established as the Site (approximately 24 square miles) and no direct evidence indicating possible contaminant sources, monitoring wells and soil borings were deemed inappropriate. Residential wells were selected on the basis of residential complaints and low pH levels.

Using a low pH as a criteria for selecting wells for sampling was justified by the correlation between low pH and high metal levels detected in previous non-contract lab testing performed in August 1987, by MPCA staff, through the MDH Environmental Laboratory in Minneapolis, Minnesota (Appendix C).
On April 29 through 31, 1988, seven residential wells were sampled for U.S. EPA TAL and TCL analytes and compounds including; VOAs, ABNs, pesticides/PCBs, metals, sulfates, chloride and nitrate/nitrite (Table I, Table II, Appendix C and Figure III). The original complaintant has since moved from the area, therefore no sample was obtained due to restricted access to the well head. Special Analytical Services (SAS), as detailed in the Quality Assurance

non responsive

TABLE I

HADER GROUND WATER CONTAMINATION

RESIDENTIAL WELLS SAMPLED

SAMPLE NUMBER	NAME AND ADDRESS
S01	non responsive [redacted]
S02	
S03	
S04	
S05, D05	
S06	
S07	
S08	

Table II

Summary of
Chemical Analysis for

Hader Ground Water Contamination

Sample Collection Information and Detected Parameters	Sample Number						
	S01	S02	S03	S04	S05	D05	S06
Date	3-30-88	3-30-88	3-29-88	3-29-88	3-31-88	3-31-88	3-31-88
Time	12:31	10:33	11:53	14:49	11:36	11:56	15:50
Inorganic Traffic Report Number	MEW615	MEW616	MEW617	MEW618	MEW619	MEW620	MEW621
Compound Detected (ug/l ppb unless indicated)							
Aluminum	633	----	25.9	1660	34.0	34.3B	32100
Arsenic	1.7	----	----	----	----	----	8.4
Barium	34.4	88.2	72.6	91.5	----	28.8B	55.1
Calcium	167000	150000	74300	80000	111000	113000	92200
Chromium	----	----	----	----	----	----	11.0
Cobalt	16.8	9.0	----	47.6	----	----	113
Copper	27.4	----	----	----	----	----	22.0
Iron	78800	5790	1560	83200	9780	9700	236000
Lead	5.5	3.4	3.8	9.5	2.0	3.4	19.9
Magnesium	47400	40200	23200	20700	40600	41000	24400
Manganese	570	181	68.8	655	621	574	1670
Nickel	86.2	42.5	----	197	-----	----	434

Table II

Summary of Chemical Analysis for
Hader Ground Water Contamination

Sample Collection Information and Detected Parameters	Sample Number S01	S02	S03	S04	S05	D05	S06
Date:	3-30-88	3-30-88	3-29-88	3-29-88	3-31-88	3-31-88	3-31-88
Time:	12:31	10:33	11:53	14:49	11:36	11:56	15:50
Inorganic Traffic Report Number	MEW615	MEW616	MEW617	MEW618	MEW619	MEW620	MEW621
Compound Detected (ug/L)							
Potassium	1320	1300	1030	833	1780B	1780B	2170
Sodium	3570	2290	3420	1800	3230	2890	2810
Vanadium	----	----	----	----	----	----	25.8
Zinc	1340	908	39.1	1470	32.3	28.5	4120
Sulfate (mg/l ppm)	605	310	19.0	315	136	139	890

Table II

Summary of Chemical Analysis for
Hader Ground Water Contamination

Sample Collection Information and Detected Parameters	Sample Number						
	S07	S08					
Date:	3-31-88	3-31-88					
Time:	14:30	15:53					
Inorganic Traffic Report Number	MEW622	MEW623					
Compound Detected (ug/L)							
Aluminum	----	216					
Arsenic	3.6	5.0					
Barium	85.1	90.6					
Calcium	84000	85500					
Chromium	----	----					
Cobalt	----	120					
Copper	----	----					
Iron	3560	76800					
Lead	----	----					
Magnesium	28500	27000					
Manganese	69.8	517					

Table II

Summary of Chemical Analysis for
Hader Ground Water Contamination

Sample Collection Information and Detected Parameters	Sample Number						
	S07	S08					
Date:	3-31-88	3-31-88					
Time:	14:30	15:53					
Inorganic Traffic Report Number	MEW622	MEW623					
Compound Detected (ug/L)							
Nickel	----	342					
Potassium	5660	1160					
Sodium	6680	3600					
Vanadium	----	----					
Zinc	2720	477					
Sulfate (mg/l ppm)	24	314					

Project Plan (QAPP), were used to gain lower detection limits, given the samples were taken from drinking water wells (8). Photographs were taken to document each sampling point (Appendix B).

7.0 ANALYTICAL RESULTS

Results for the organic compounds showed no contaminants present above detection limits for all seven households sampled. Inorganic results showed the water to be a calcium-magnesium bicarbonate type, as defined by ambient data, that is extremely hard (Table I and Appendix E). High levels of iron were detected but these were not above the Secondary Drinking Water Standard of 500 ug/l. Sulfate levels were elevated at 15 households, but as with iron, they did not exceed the Secondary Drinking Water Standard of 300 ug/l. Lead was also detected, but was within the MDH RALs of 20 ug/l. Zinc exceeded EPAs Secondary Drinking Water Standard of 500 ug/l in 5 of the wells sampled. Nickel was found to be above the RAL of 150 ug/l at three of the households sampled at concentrations of 197, 434 and 342 ug/l.

Holding times were exceeded for extractions from semi-volatile and pesticide/PCBs fractions for all samples, therefore these results have been flagged as estimated (J=Positive, U=Negative) (Appendix C). Common laboratory contaminants were found in the laboratory blanks, but were all within acceptable limits. Further explanation of the data qualifiers preceeds the U.S. EPA Contract Laboratory Program (CLP) data in Appendix C.

8.0 CONCLUSIONS

Based on the data collected prior to and during the initiation of the SSI,

there appears that no hazardous substances have entered into the ground water system at the Site. Several natural explanations may account for the anomolously low pH and high metal levels.

The high amounts of iron may be attributed to three sources, pyrite deposits and interstitial hematite cement within the Prairie du Chien - Jordan aquifer and/or iron-precipitating bacteria multiplying within the well casing and the aquifer in which the well is located.

Hematite cement is a fairly common cement in sandstone and dissolves fairly easily, thus contributing to dissolved iron in the ground water. Pyrite deposits have been found in limited areas throughout the sedimentary rocks in southeastern Minnesota. The physical and chemical characteristics of the ground water in the vicinity of the Site may encourage the dissolution of pyrite, thus creating an increase in dissolved iron and sulfate in the ground water.

The third possible source of iron in the ground water is iron-precipitating bacteria. Iron-precipitating bacteria can cause a number of problems in water wells. The primary problem is water degradation through an increase of iron in the ground water (3). A secondary problem is encrustation and corrosion by the bacteria, resulting in poor well yields and degradation of the casing and pump (2). Some iron-precipitating bacteria can also lower the pH of the water in the well and surrounding aquifer (3). A low pH can result in the leaching of metals from well casings, pumps, the column pipe from the pump to the surface, and plumbing.

The MPCA staff feels that iron-precipitating bacteria may be contributing to

the conditions at the Site, allowing elevated metal levels to be detected. It is known that many residents at the Site and in the surrounding area experience iron-precipitating bacteria problems. Should the type of bacteria in the wells and aquifers lend itself to lowering the pH of the ground water, the leaching process may be extracting metals from various parts of the well system.

Specifically, lead may be extracted from lead plumbing pipes and spigots, while nickel can be leached from the brass fittings on submersible pumps. The coating applied to galvanized steel pump column pipes could be a source of zinc. Iron may be generated by the bacteria, which initiated the problem.

Blasting at the quarry may have created sufficient subsurface disturbance to cloud area ground water. Increased dissolved oxygen could be attributable to aeration and facilitate the growth of iron bacteria, as well.

Although no bacteria cultures were taken from the wells, the MPCA staff feels iron bacteria is the most probable cause of the poor quality of ground water at the Hader Ground Water Contamination Site, as opposed to a contaminant source.

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4

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CRL :
SAMPLER :
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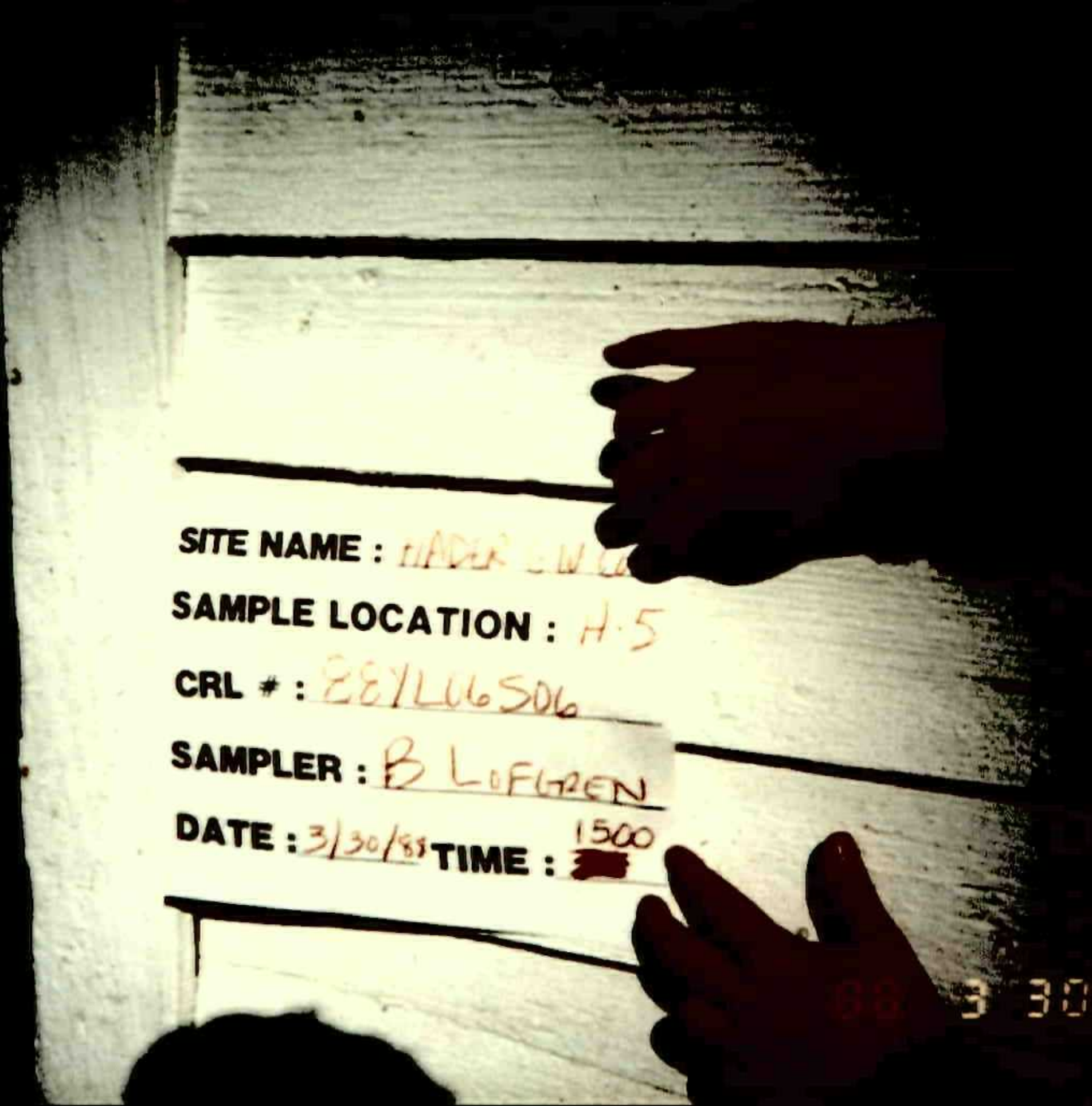
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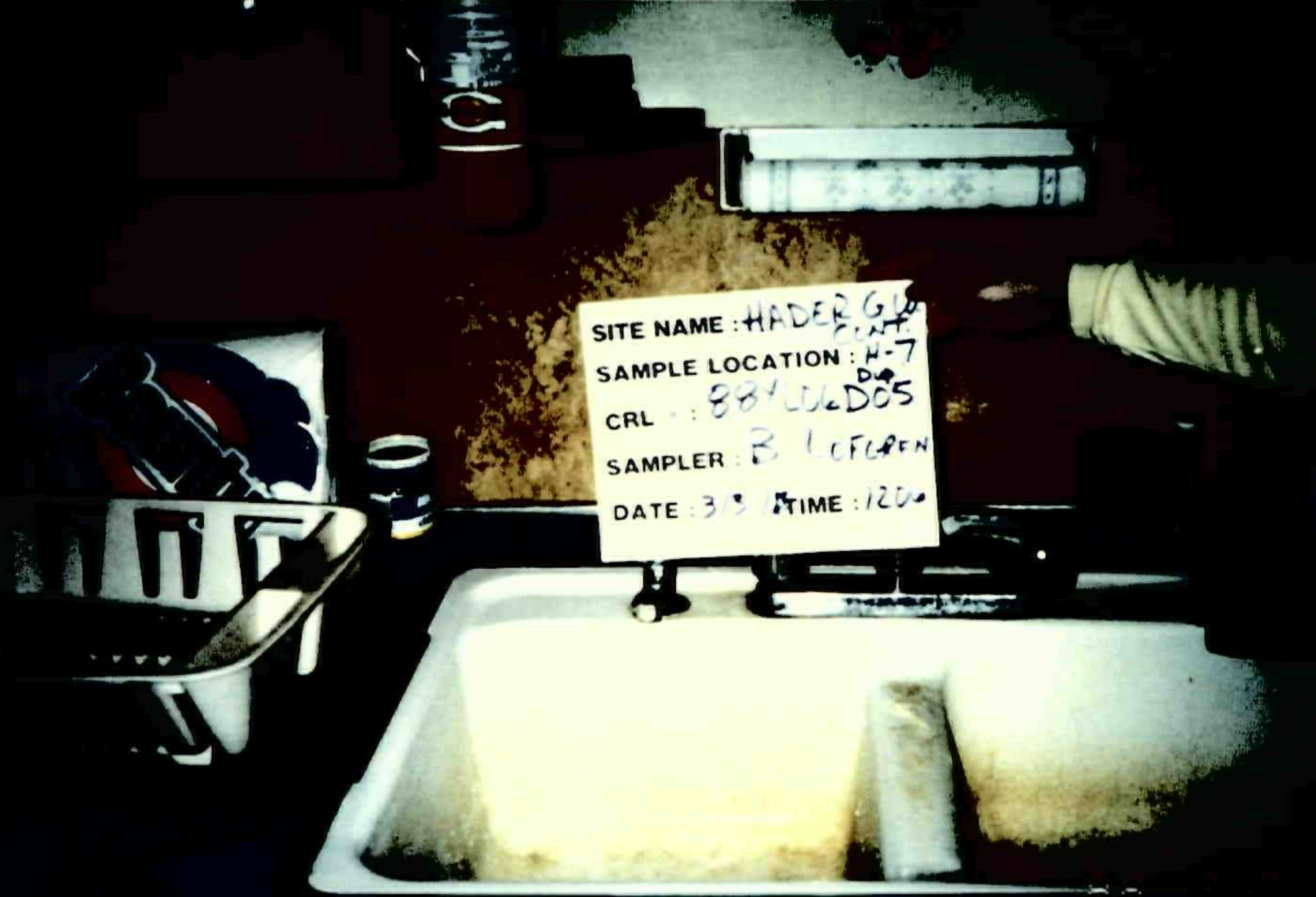
TIME : 1500
88 3 30

SITE NAME :
SAMPLE LOCATION :
CRL :
SAMPLER :
DATE :
TIME :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DATE : 3/3
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TIME

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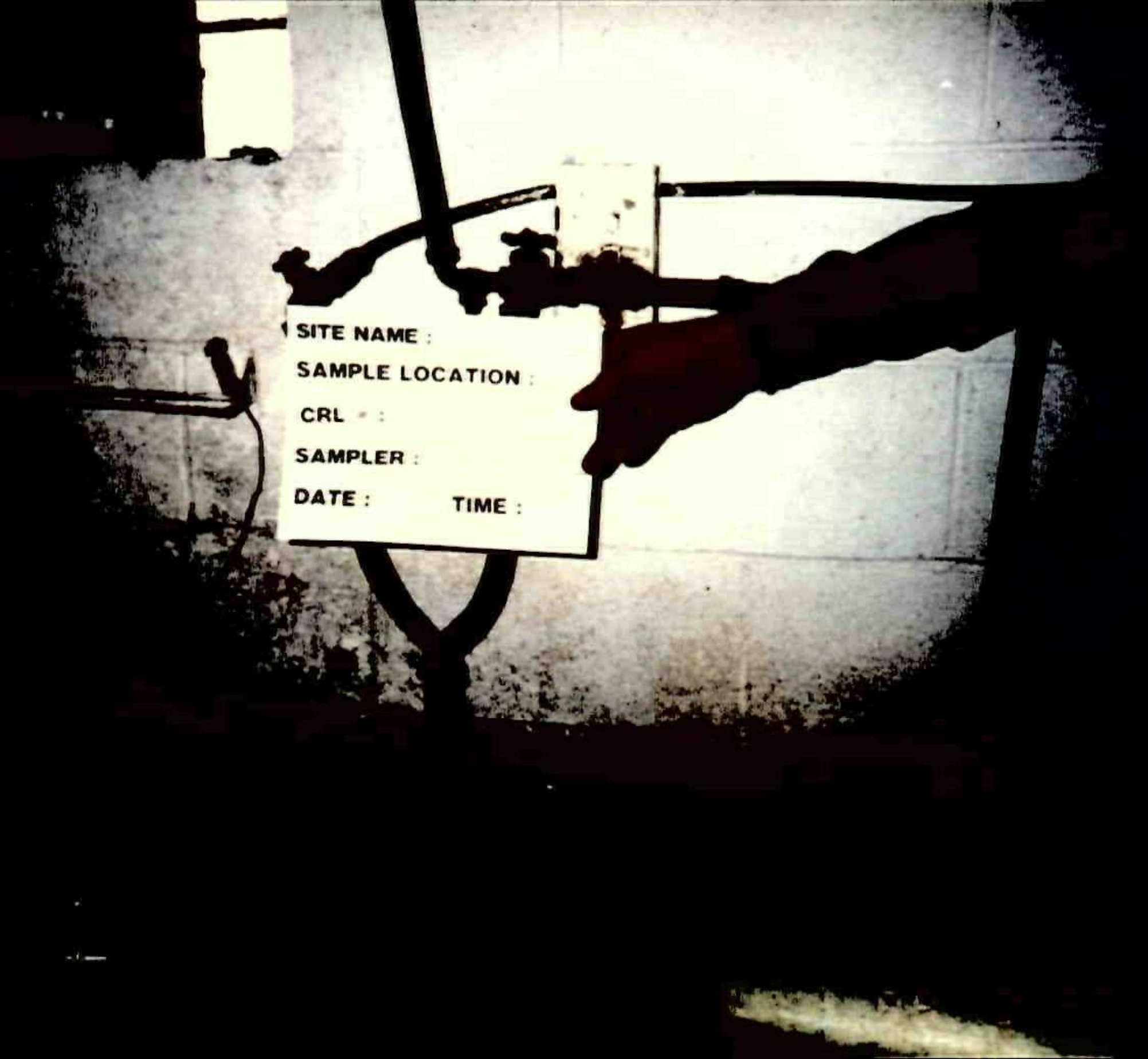
SAMPLE LOCATION : H3
CRL # :
SAMPLER :
DATE :
TIME : 1030
88 3 30

88 3 30


SITE NAME :
SAMPLE LOCATION :
CRL :
SAMPLER :
DATE :
TIME :

88 3 30

SITE NAME
SAMPLE LOCATION

Site Hader Groundwater Contamination

EPA # MND981961873

Date March 30, 1988

Time 12:56 a.m. p.m.

Direction Northwest

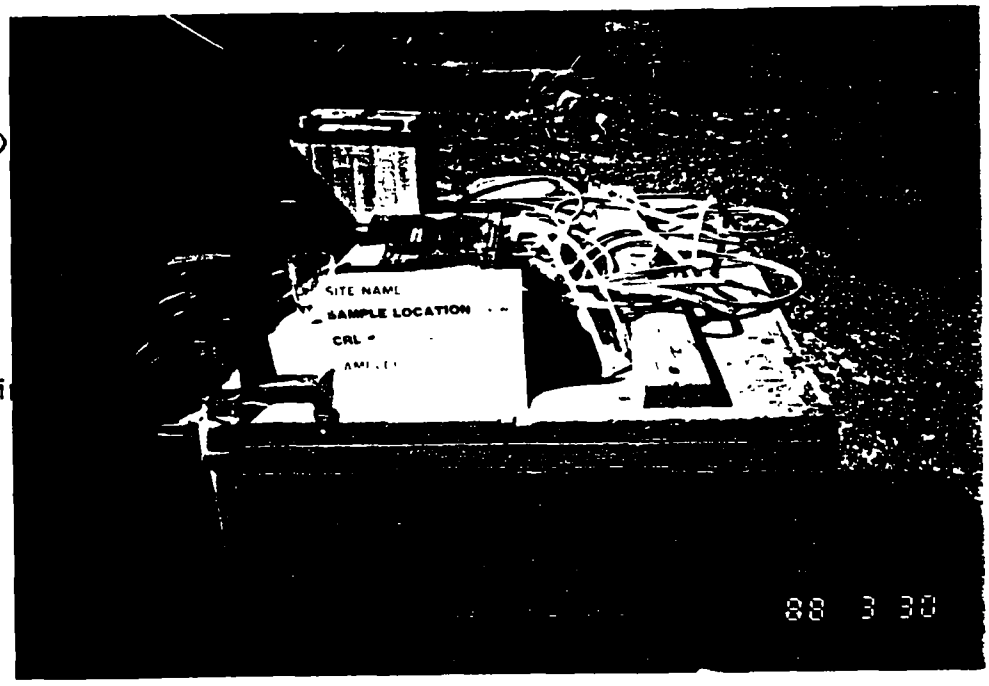
Weather Clear

Photographed by: Shawn Ruotsi

Sample ID # 88YL06S01

Description Well Head

Sample for S01



Site Hader Groundwater Contamination

EPA # MND981961873

Date March 30, 1988

Time 12:56 a.m. p.m.

Direction Northwest

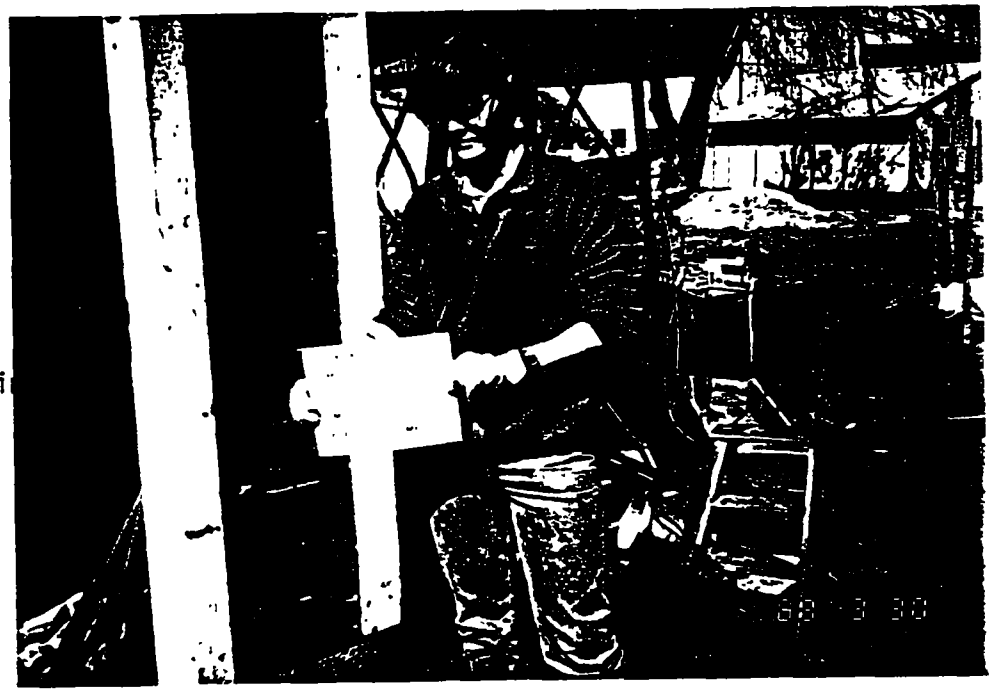
Weather Clear

Photographed by: Shawn Ruotsi

Sample ID# 88YL06S01

Description Distance

Photo of S01



Site Hader GW Contamination

EPA # MND981961873

Date March 31, 1988

Time 10:30 a.m. p.m.

Direction Northwest

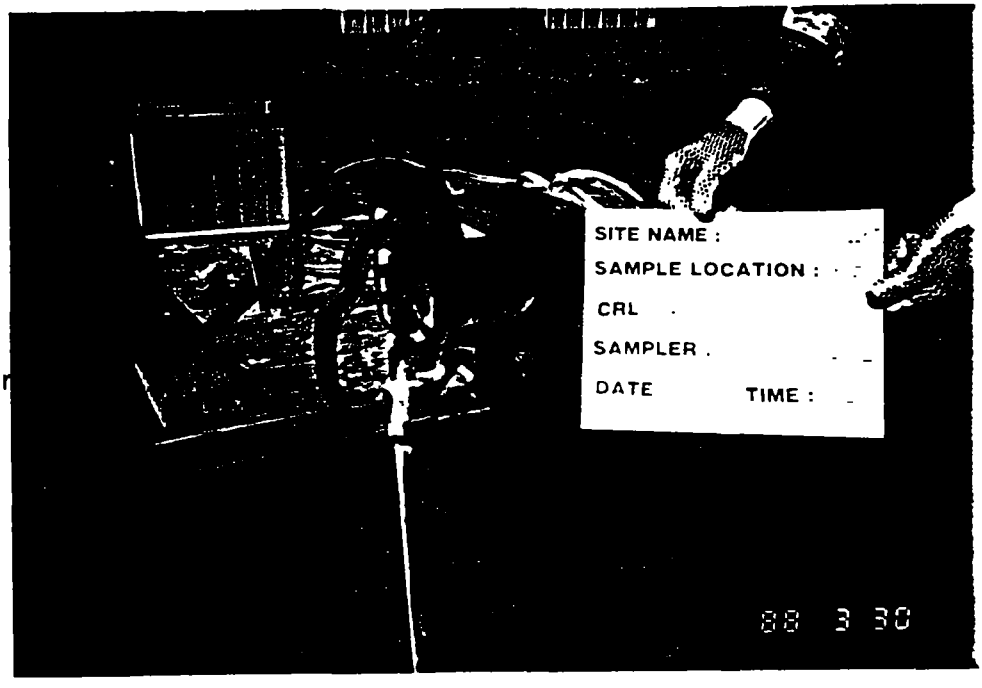
Weather Clear

Photographed by: Shawn Ruotsi

Sample ID # 88YL06S02

Description Wellhead

Sample of S02



Site Hader GW Contamination

EPA # MND98161873

Date March 31, 1988

Time 10:30 a.m. p.m.

Direction Northwest

Weather Clear

Photographed by: Shawn Ruotsi

Sample ID# 88YL06S02

Description Distance Photo

of sample S02

Site Hader GW Contamination

EPA # MND981961873

Date March 31, 1988

Time 10:55 a.m. p.m.

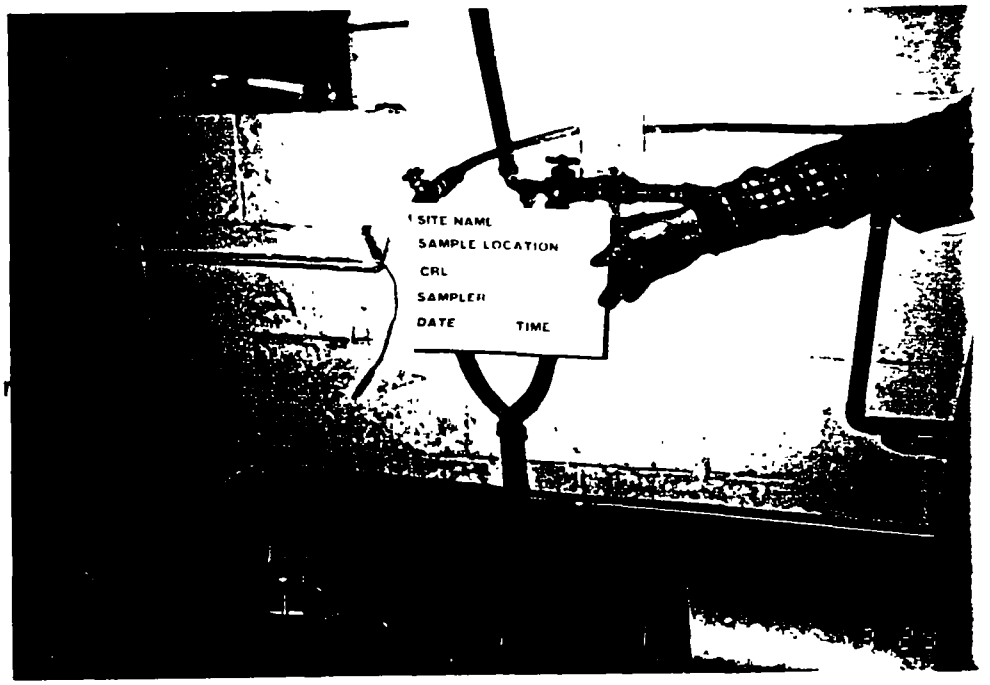
Direction Northwest

Weather Clear

Photographed by: Shawn Ruotsi

Sample ID # 88YL06S03

Description Sample taken from faucet in milk barn



Site Hader GW Contamination

EPA # MND981961873

Date March 31, 1988

Time 10:55 a.m. p.m.

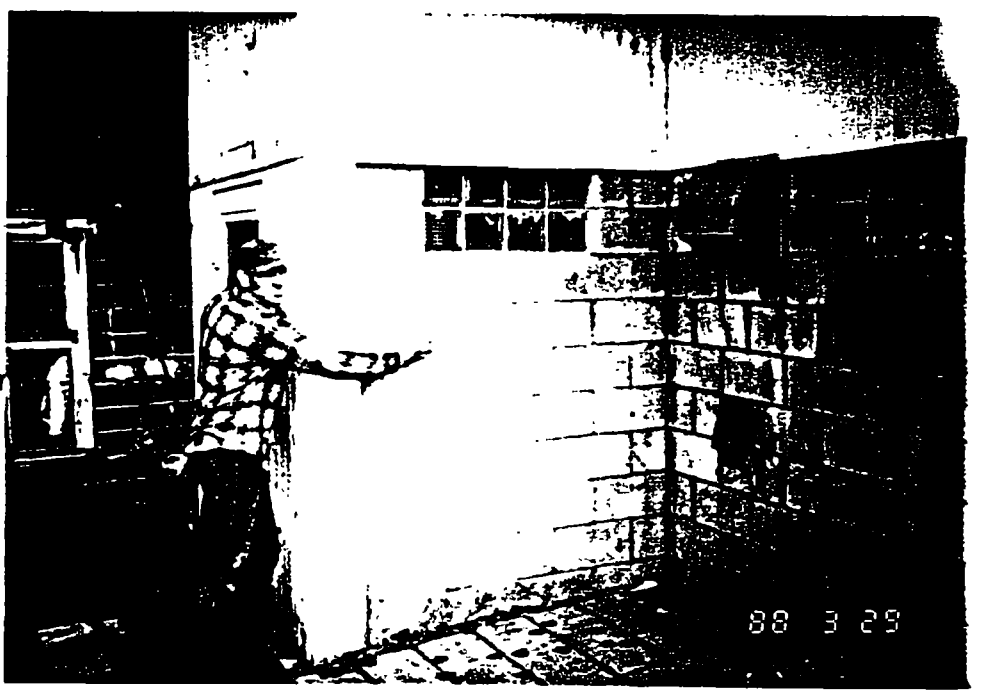
Direction Northwest

Weather Clear

Photographed by: Shawn Ruotsi

Sample ID# 88YL06S03

Description Distance photo of sample S03 at milk barn



Site Hader GW Contamination

EPA # MND981961873

Date March 29, 1988

Time 2:05 a.m. p.m.

Direction Northwest

Weather Clear

Photographed by: Shawn Ruotsi

Sample ID # 88YL06S04

Description Sample S04 taken at kitchen faucet

Site Hader GW Contamination

EPA # MND981961873

Date March 29, 1988

Time 2:05 a.m. p.m.

Direction Northwest

Weather Clear

Photographed by: Shawn Ruotsi

Sample ID# 88YL06S04

Description Distance photo of sample S04 house

Site Hader GW Contamination

EPA # MND981961873

Date March 31, 1988

Time 10:52 a.m. p.m.

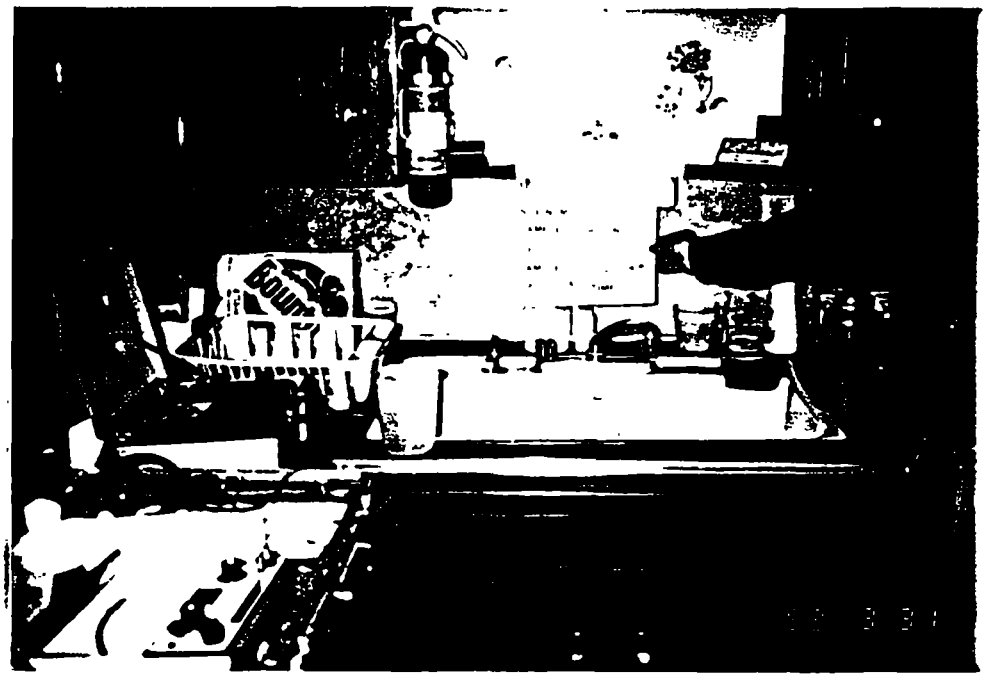
Direction Northwest

Weather Clear

Photographed by: Susan Price

Sample ID # 88YL06S05

Description Kitchen faucet sample S05



Site Hader GW Contamination

EPA # MND981961873

Date March 31, 1988

Time 10:52 a.m. p.m.

Direction Northwest

Weather Clear

Photographed by: Susan Price

Sample ID# 88YL06S05

Description Distance photo of rear door at sample S05

Site Hader GW Contamination

EPA # MND981961873

Date March 31, 1988

Time 12:06 a.m. p.m.

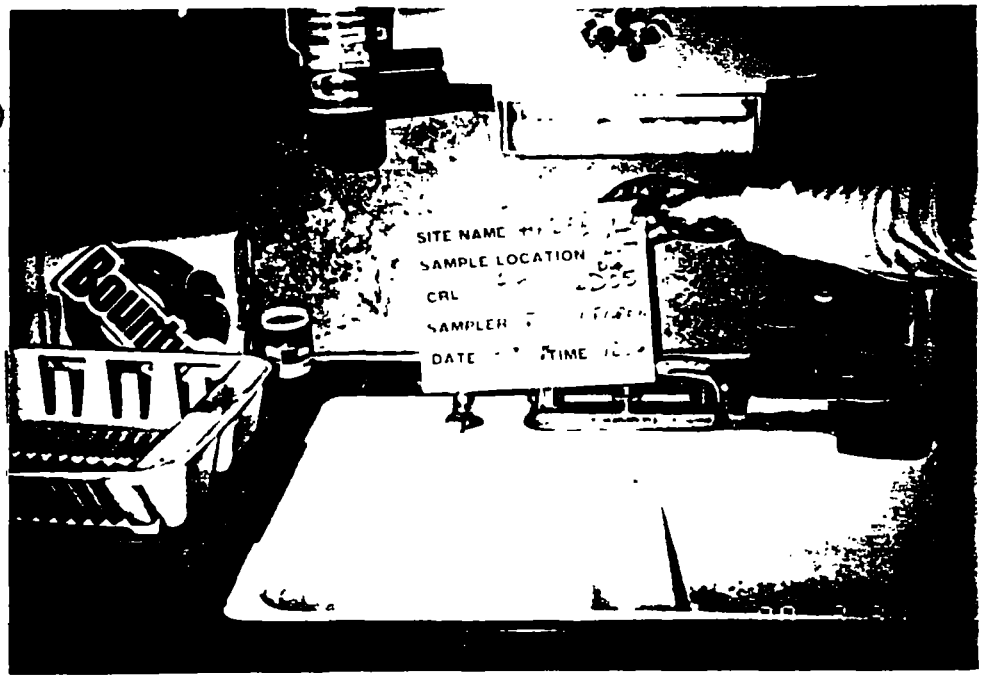
Direction Northwest

Weather Clear

Photographed by: Susan Price

Sample ID # 88YL06D05

Description Duplicate of S04 at kitchen sink, D05



Site Hader GW Contamination

EPA # MND981961873

Date March 31, 1988

Time 12:06 a.m. p.m.

Direction Northwest

Weather Clear

Photographed by: Susan Price

Sample ID# 88YL06D05

Description Distance Photo of D04, duplicate of S04

Site Hader GW Contamination

EPA # MND9819661873

Date March 30, 1988

Time 3:00 a.m. p.m.

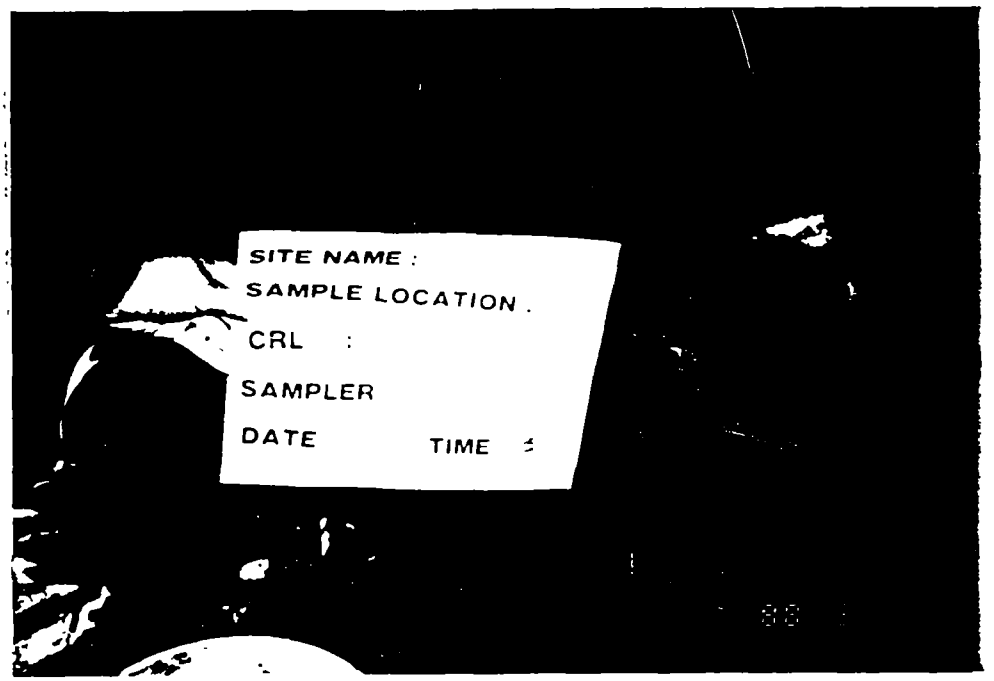
Direction Northwest

Weather Clear

Photographed by: Susan Price

Sample ID # 88YL06S06

Description Well head of sample S06



Site Hader GW Contamination

EPA # MND981961873

Date March 30, 1988

Time 3:00 a.m. p.m.

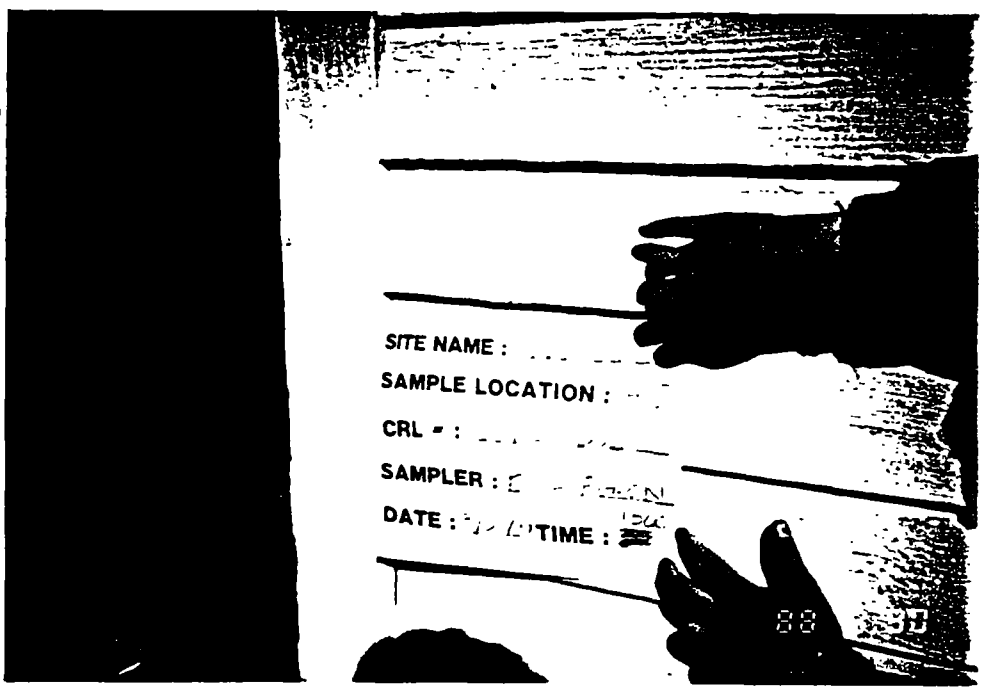
Direction Northwest

Weather Clear

Photographed by: Susan Price

Sample ID# 88YL06S06

Description Distance photo of sample S06 entrance of well house



Site Hader GW Contamination

EPA # MND981961873

Date March 31, 1988

Time 2:05 a.m. p.m.

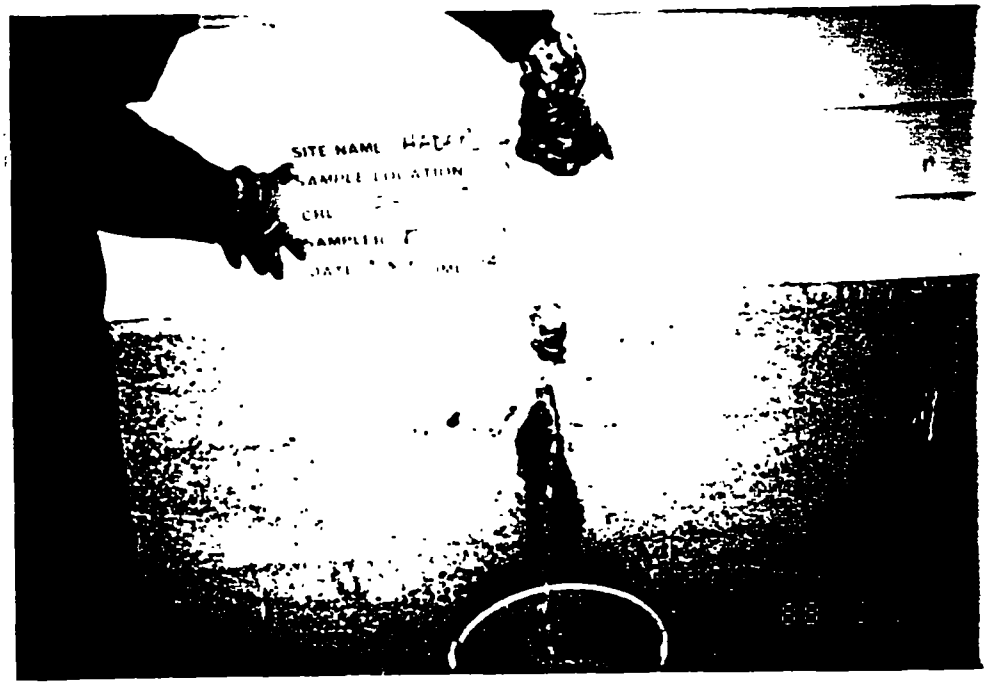
Direction North-Northwest

Weather Clear

Photographed by: Susan Price

Sample ID # 88YL06S07

Description Outdoor faucet for sample S07



Site Hader GW Contamination

EPA # MND981961873

Date March 31, 1988

Time 2:05 a.m. p.m.

Direction North-Northwest

Weather Clear

Photographed by: Becky Lofgre

Sample ID# 88YL06S07

Description Distance photo for sample S07

Site Hader GW Contamination

EPA # MND981961873

Date March 31, 1988

Time 3:05 a.m. p.m.

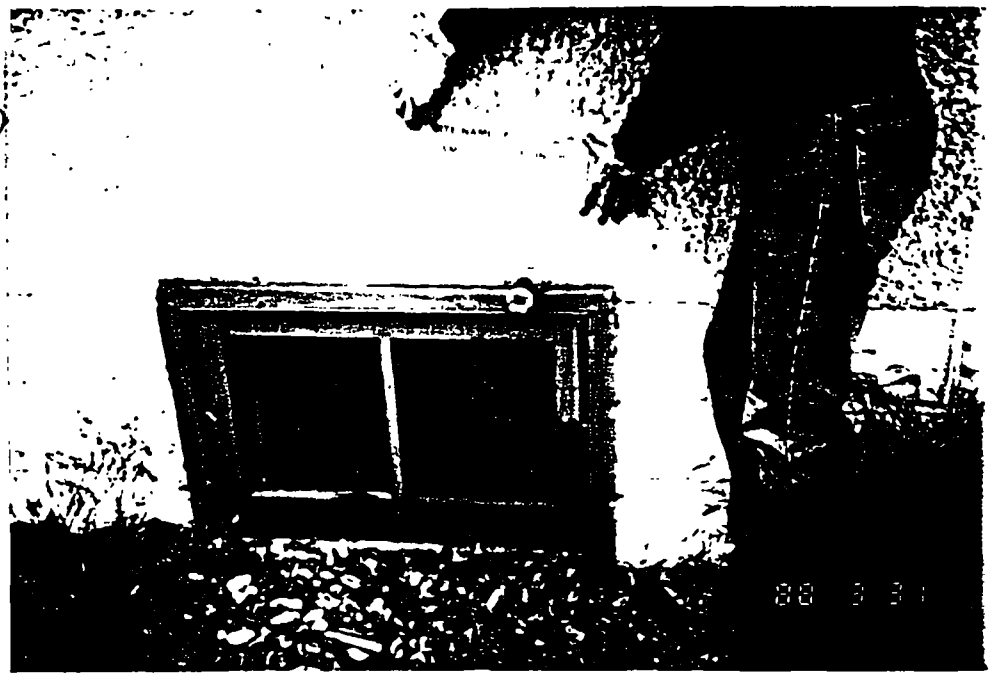
Direction North-Northwest

Weather Clear

Photographed by: Susan Price

Sample ID # 88YL06S08

Description Outdoor faucet for sample S08



Site Hader GW Contamination

EPA # MND981961873

Date March 31, 1988

Time 3:05 a.m. p.m.

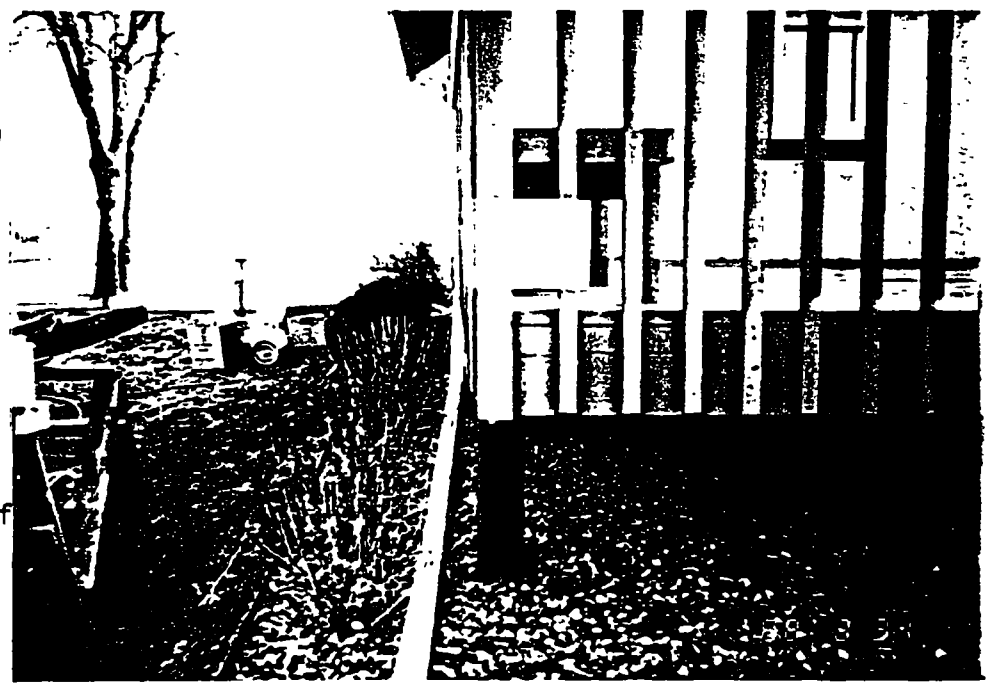
Direction North-Northwest

Weather Clear

Photographed by: Susan Price

Sample ID# 88YL06S08

Description Distance photo of sample S08



Contract Laboratory Program
Target Compound List
Quantitation Limits

COMPOUND	CAS #	WATER	SOIL SEDIMENT SLUDGE
Chloromethane	74-87-3	10 ug/L	10 ug/Kg
Bromomethane	74-83-9	10	10
Vinyl chloride	75-01-4	10	10
Chloroethane	75-00-3	10	10
Methylene chloride	75-09-2	5	5
Acetone	67-64-1	10	5
Carbon disulfide	75-15-0	5	5
1,1-dichloroethene	75-35-4	5	5
1,1-dichloroethane	75-34-3	5	5
1,2-dichloroethene (total)	540-59-0	5	5
Chloroform	67-66-3	5	5
1,2-dichloroethane	107-06-2	5	5
2-butanone (MEK)	78-93-3	10	10
1,1,1-trichloroethane	71-55-6	5	5
Carbon tetrachloride	56-23-5	5	5
Vinyl acetate	108-05-4	10	10
Bromodichloromethane	75-27-4	5	5
1,2-dichloropropane	78-87-5	5	5
cis-1,3-dichloropropene	10061-01-5	5	5
Trichloroethene	79-01-6	5	5
Dibromochloromethane	124-48-1	5	5
1,1,2-trichloroethane	79-00-5	5	5
Benzene	71-43-2	5	5
Trans-1,3-dichloropropene	10061-02-6	5	5
Bromoform	75-25-2	5	5
4-Methyl-2-pentanone	108-10-1	10	10
2-Hexanone	591-78-6	10	10
Tetrachloroethene	127-18-4	5	5
Tolene	108-88-3	5	5
1,1,2,2-tetrachloroethane	79-34-5	5	5
Chlorobenzene	108-90-7	5	5
Ethyl benzene	100-41-4	5	5
Styrene	100-42-5	5	5
Xylenes (total)	1330-20-7	5	5

Contract Laboratory Program
Target Compound List
Semivolatiles Quantitation Limits

COMPOUND	CAS #	WATER	SOIL SEDIMENT SLUDGE
Phenol	108-95-2	10 ug/L	330 ug/Kg
bis(2-Chloroethyl) ether	111-44-4	10	330
2-Chlorophenol	95-57-8	10	330
1,3-Dichlorobenzene	541-73-1	10	330
1,4-Dichlorobenzene	106-46-7	10	330
Benzyl Alcohol	100-51-6	10	330
1,2-Dichlorobenzene	95-50-1	10	330
2-Methylphenol	95-48-7	10	330
bis(2-Chloroisopropyl) ether	108-60-1	10	330
4-Methylphenol	106-44-5	10	330
N-Nitroso-di-n-dipropylamine	621-64-7	10	330
Hexachloroethane	67-72-1	10	330
Nitrobenzene	98-95-3	10	330
Isophorone	78-59-1	10	330
2-Nitrophenol	88-75-5	10	330
2,4-Dimethylphenol	105-67-9	10	330
Benzoic Acid	65-85-0	50	1600
bis(2-Chloroethoxy) methane	111-91-1	10	330
2,4-Dichlorophenol	120-83-2	10	330
1,2,4-Trichlorobenzene	120-82-1	10	330
Naphthalene	91-20-3	10	330
4-Chloroaniline	106-47-8	10	330
Hexachlorobutadiene	87-68-3	10	300
4-Chloro-3-methylphenol	59-50-7	10	330
2-Methylnaphthalene	91-57-6	10	330
Hexachlorocyclopentadiene	77-47-4	10	330
2,4,6-Trichlorophenol	88-06-2	10	330
2,4,5-Trichlorophenol	95-95-4	50	1600
2-Chloronaphthalene	91-58-7	10	330
2-Nitroaniline	88-74-4	50	1600
Dimethylphthalate	131-11-3	10	330
Acenaphthylene	208-96-8	10	330
2,6-Dinitrotoluene	606-20-2	10	330
3-Nitroaniline	99-09-2	50	1600
Acenaphthene	83-32-9	10	330
2,4-Dinitrophenol	51-28-5	50	1600
4-Nitrophenol	100-02-7	50	1600
Dibenzofuran	132-64-9	10	330
2,4-Dinitrotoluene	121-14-2	10	330
Diethylphthalate	84-66-2	10	330
4-Chlorophenyl-phenyl ether	7005-72-3	10	330

Contract Laboratory Program
Target Compound List
Semivolatiles Quantitation Limits

COMPOUND	CAS #	WATER	SOIL SLUDGE SEDIMENT
Fluorene	86-73-7	10 ug/L	330 ug/Kg
4-Nitroaniline	100-01-6	50	1600
4,6-Dinitro-2-methylphenol	534-52-1	50	1600
N-nitrosodiphenylamine	86-30-6	10	330
4-Bromophenyl-phenylether	101-55-3	10	330
Hexachlorobenzene	118-74-1	10	330
Pentachlorophenol	87-86-5	50	1600
Phenanthrene	85-01-8	10	330
Anthracene	120-12-7	10	330
Di-n-butylphthalate	84-74-2	10	330
Fluoranthene	206-44-0	10	330
Pyrene	129-00-0	10	330
Butylbenzylphthalate	85-68-7	10	330
3,3'-Dichlorobenzidine	91-94-1	20	660
Benzo(a)anthracene	56-55-3	10	330
Chrysene	218-01-9	10	330
bis(2-Ethylhexyl)phthalate	117-81-7	10	330
Di-n-octylphthalate	117-84-0	10	330
Benzo(b)fluoranthene	205-99-2	10	330
Benzo(k)fluoranthene	207-08-9	10	330
Benzo(a)pyrene	50-32-8	10	330
Indeno(1,2,3-cd)pyrene	193-39-5	10	330
Dibenz(a,h)anthracene	53-70-3	10	330
Benzo(g,h,i)perylene	191-24-2	10	330

Contract Laboratory Program
Target Compound List
Pesticide and PCB Quantitation Limits

COMPOUND	CAS #	WATER	SOIL SEDIMENT SLUDGE
alpha-BHC	319-84-6	0.05 ug/L	8 ug/Kg
beta-BHC	319-85-7	0.05	8
delta-BHC	319-86-8	0.05	8
gamma-BHC (Lindane)	58-89-9	0.05	8
Heptachlor	76-44-8	0.05	8
Aldrin	309-00-2	0.05	8
Heptachlor epoxide	1024-57-3	0.05	8
Endosulfan I	959-98-8	0.05	8
Dieldrin	60-57-1	0.10	16
4,4'-DDE	72-55-9	0.10	16
Endrin	72-20-8	0.10	16
Endosulfan II	33213-65-9	0.10	16
4,4'-DDD	72-54-8	0.10	16
Endosulfan sulfate	1031-07-8	0.10	16
4,4'-DDT	50-29-3	0.10	16
Methoxychlor (Mariate)	72-43-5	0.5	80
Endrin ketone	53494-70-5	0.10	16
alpha-Chlordane	5103-71-9	0.5	80
gamma-chlordane	5103-74-2	0.5	80
Toxaphene	8001-35-2	1.0	160
AROCLOR-1016	12674-11-2	0.5	80
AROCLOR-1221	11104-28-2	0.5	80
AROCLOR-1232	11141-16-5	0.5	80
AROCLOR-1242	53469-21-9	0.5	80
AROCLOR-1248	12672-29-6	0.5	80
AROCLOR-1254	11097-69-1	1.0	160
AROCLOR-1260	11096-82-5	1.0	160

Contract Laboratory Program
Target Analyte List
Inorganic Quantitation Limits

COMPOUND	PROCEDURE	SOIL WATER	SEDIMENT SLUDGE
Aluminum	ICP	200 ug/L	40 mg/Kg
Antimony	Furnace	60	2.4
Arsenic	Furnace	10	2
Barium	ICP	200	40
Beryllium	ICP	5	1
Cadmium	ICP	5	1
Calcium	ICP	5000	1000
Chromium	ICP	10	2
Cobalt	ICP	50	10
Copper	ICP	25	5
Iron	Icp	100	20
Lead	Furnace	5	1
Magnesium	ICP	5000	1000
Manganese	ICP	15	3
Mercury	Cold Vapor	0.2	0.008
Nickel	ICP	40	8
Potassium	ICP	5000	1000
Selenium	Furnace	5	1
Silver	ICP	10	2
Sodium	ICP	5000	1000
Thallium	Furnace	10	2
Vanadium	ICP	50	10
Zinc	ICP	20	4
Cyanide	Color	10	2

SPECIAL ANALYTICAL SERVICES DRINKING WATER
VOLATILE QUANTITATION LIMITS

PARAMETER	CAS #	DETECTION LIMIT IN REAGENT WATER
Benzene	71-43-2	1.5 ug/L
Bromodichloromethane	74-27-4	1.5
Bromoform	75-25-2	1.5
Bromomethane	74-83-9	10
Carbon tetrachloride	56-23-5	1.5
Chlorobenzene	108-90-7	1.5
Chloroethane	75-00-3	1.5
2-Chloroethyl vinyl ether	110-75-8	1.5
Chloroform	67-66-3	1.5
Chloromethane	74-87-3	10
Dibromochloromethane	124-48-1	1.5
1,1-Dichloroethane	75-34-3	1.5
1,2-Dichloroethane	107-06-2	1.5
1,1-Dichloroethene	75-35-4	1.5
trans-1,2-Dichloroethene	156-60-5	1.5
1,2-Dichloropropane	78-87-5	1.5
cis-1,3-Dichloropropene	10061-01-5	2
trans-1,3-Dichloropropene	10061-02-6	1
Ethyl benzene	100-41-4	1.5
Methylene chloride *	75-09-2	1
1,1,2,2-Tetrachloroethane	79-34-5	1.5
Tetrachloroethene	127-18-4	1.5
Toluene *	108-88-3	1.5
1,1,1-Trichloroethane	71-55-6	1.5
1,1,2-Trichloroethane	79-00-5	1.5
Trichloroethene	79-01-6	1.5
Vinyl chloride	75-01-4	10
Acrolein	107-02-8	100
Acetone *	67-64-1	75
Acrylonitrile	107-13-1	50
Carbon disulfide	75-15-0	3
2-Butanone	78-93-3	(50)
Vinyl acetate	108-05-4	15
4-Methyl-2-pentanone	108-10-1	(3)
2-Hexanone	519-78-6	(50)
Styrene	100-42-5	1
m-Xylene	108-38-3	2
o-Xylene **	95-47-6	
p-Xylene **	106-42-3	2.5 **
Xylene (total)	1330-02-7	

* Common laboratory solvents.
Blank limit is 5x method detection limit.
( ) Values in parentheses are estimates.
actual values are being determined at this time.
** The o-xylene and p-xylene are reported as a total of the two.

SAS DRINKING WATER
SEMIVOLATILES QUANTITATION LIMITS

PARAMETER	CAS #	DETECTION LIMIT
Aniline	62-53-3	1.5 ug/l
Bis(2-chloroethyl)ether	111-44-4	1.5
Phenol	108-95-2	2
2-Chlorophenol	95-57-8	2
1,3-Dichlorobenzene	541-73-1	2
1,4-Dichlorobenzene	106-46-7	2
1,2-Dichlorobenzene	95-50-1	2.5
Benzyl alcohol	100-51-6	2
Bis(2-chloroisopropyl)ether	39638-32-9	2.5
2-Methylphenol	95-48-7	1
Hexachloroethane	67-72-1	2
n-Nitrosodipropylamine	621-64-7	1.5
Nitrobenzene	98-95-3	2.5
4-Methylphenol	88-75-5	1
Isophorone	78-59-1	2.5
2-Nitrophenol	88-75-5	2
2,4-Dimethylphenol	105-67-9	2
Bis(2-Chloroethoxy)methane	111-91-1	2.5
2,4-Dichlorophenol	120-83-2	2
1,2,4-Trichlorobenzene	120-82-1	2
Naphthalene	91-20-3	2
4-Chloroaniline	106-47-8	2
Hexachlorobutadiene	87-68-3	2.5
Benzoic Acid	65-85-0	(30)
2-Methylnapthalene	91-57-6	2
4-Chloro-3-methylphenol	59-50-7	1.5
Hexachlorocyclopentadiene	77-47-4	2
2,4,6-Trichlorophenol	88-06-2	1.5
2,4,5-Trichlorophenol	95-95-4	1.5
2-Chloronapthalene	91-58-7	1.5
Acenapthylhene	208-96-8	1.5
Dimethyl phthalate	131-11-3	1.5
2,6-Dinitrotoluene	606-20-2	1
Acenaphthene	83-32-9	1.5
3-Nitroaniline	99-09-2	2.5
Dibenzofuran	132-64-9	1
2,4-Dinitrophenol	51-28-5	(15)
2,4-Dinitrotoluene	121-14-2	1

SAS DRINKING WATER
SEMIVOLATILE QUANTITATION LIMITS

PARAMETER	CAS #	DETECTION LIMIT
Fluorene	86-73-7	1 ug/L
4-Nitrophenol	100-02-7	1.5
4-Chlorophenyl phenyl ether	7005-72-3	1
Diethyl phthalate	84-66-2	1
4,6-Dinitro-2-methylphenol	534-52-1	(15)
1,2-Diphenylhydrazine	122-66-7	1
n-Nitrosodiphenylamine *	86-30-6	
Diphenylamine *	122-39-4	1.5
4-Nitroaniline	100-01-6	3
4-Bromophenyl-phenylether	101-55-3	1.5
Hexachlorobenzene	118-74-1	1.5
Pentachlorophenol	87-86-5	2
Phenanthrene	85-01-8	1
Anthracene	120-12-7	2.5
di-n-Butyl phthalate	84-74-2	2
Fluoranthene	206-44-0	1.5
Pyrene	129-00-0	1.5
Butyl benzyl phthalate	85-68-7	3.5
Chrysene **	218-01-9	
Benzo(A)Anthracene **	56-55-3	1.5
bis(2-ethylhexyl)phthalate	117-81-7	1
di-n-Octyl phthalate	117-84-0	1.5
Benzo(b)fluoranthene ***	205-99-2	
Benzo(k)fluoranthene ***	207-08-9	1.5
Benzo(a)pyrene	50-32-8	2
Indeno(1,2,3-cd)pyrene	193-39-5	3.5
Dibenzo(a,h)anthracene	53-70-3	2.5
Benzo(g,h,i)perylene	191-24-2	4
2-Nitroaniline	88-74-4	1

* These two parameters are reported as a total.
** These two parameters are reported as a total.
*** These two parameters are reported as a total.

( ) Values in parentheses are estimates.
The actual values are being determined at this time.

Note: Limits are for reagent water.

SAS DRINKING WATER
PESTICIDE AND PCB QUANTITATION LIMITS

PARAMETER	CAS #	DETECTION LIMIT
Aldrin	309-00-2	0.005 ug/L
alpha BHC	319-84-6	(0.010)
beta BHC	319-85-7	(0.005)
delta BHC	319-86-8	(0.005)
gamma BHC (Lindane)	58-89-9	0.005
Chlordane	57-74-9	(0.020)
4,4'-DDD	72-54-8	(0.020)
4,4'-DDE	72-55-9	(0.005)
4,4'-DDT	50-29-3	0.020
Dieldrin	60-57-1	0.010
Endosulfan I	959-98-8	0.010
Endosulfan II	33213-65-9	0.010
Endosulfan sulfate	1031-07-8	(0.10)
Endrin	72-20-8	0.010
Endrin Aldehyde	7421-93-4	(0.030)
Endrin Ketone	53494-70-5	(0.030)
Heptachlor	76-44-8	0.030
Heptachlor Epoxide	1024-57-3	0.005
4,4'-Methoxychlor	72-43-5	0.020
Toxaphene	8001-35-2	(0.25)
PCB-1242	53469-21-9	(0.10)
PCB-1248	12672-29-6	(0.10)
PCB-1254	11097-69-1	(0.10)
PCB-1260	11096-82-5	(0.10)

( ) Values in parentheses are estimates.
Actual values are being determined at this time.

Note: Limits are for reagent water.

SAS DRINKING WATER
INORGANIC DETECTION LIMITS

JANUARY 1986

PARAMETER	PROCEDURE	DETECTION LIMIT
Aluminum	ICP	100
Antimony	GFAA	2
Arsenic	GFAA	2
Barium	ICP	50
Beryllium	ICP	5
Cadmium	ICP	10
Cadmium	GFAA	0.2
Calcium	ICP	1000
Chromium	ICP	10
Cobalt	ICP	10
Copper	ICP	10
Iron	ICP	100
Lead	GFAA	2
Magnesium	ICP	1000
Manganese	ICP	10
Mercury	Cold Vapor	0.2
Nickel	ICP	20
Potassium	ICP	2000
Selenium	GFAA	2
Silver	ICP	5
Sodium	ICP	1000
Thallium	GFAA	2
Tin	ICP	40
Vanadium	ICP	10
Zinc	ICP	20
Cyanide	Colorimetric	5.0

Note: The above list may or may not contain compounds that are routinely analyzed at CRL for low level detection limits for drinking water.

See inorganic Routine Analytical Services (RAS) for related CAS #.

If gel permation chromatography, "GPC Cleanup" was performed, enter "Y" for yes. Otherwise, enter "N" for no, if GPC was not performed.

Enter pH for semivolatile and pesticides/PCBs, reported to 0.1 pH units.

"Date Received" is the date of sample receipt at the laboratory, as noted on the Traffic Report (i.e., the VTSR). It should be entered as MM/DD/YY.

"Date Extracted" and "Date Analyzed" should be entered in a similar fashion. For pesticide/PCB samples, the date of analysis should be the date of the first GC analysis performed. The date of sample receipt will be compared with the extraction and analysis dates of each fraction to ensure that contract holding times were not exceeded.

If a sample has been diluted for analysis, enter the "Dilution Factor" as a decimal number, such as 0.001 for a 1 to 1000 dilution of the sample. If a sample was not diluted, enter 1.

For positively identified TCL compounds, the contractor shall report the concentrations detected as uncorrected for blank contaminants.

For volatile and semivolatile results, report analytical results to one significant figure if the value is less than 10, and two significant figures above 10.

Report all pesticides/PCB results to two significant figures.

The appropriate concentration units, ug/L or ug/kg, must be entered.

If the result is a value greater than or equal to the quantitation limit, report the value.

Under the column labeled "Q" for qualifier, flag each result with the specific Data Reporting Qualifiers listed below. The Contractor is encouraged to use additional flags or footnotes. The definition of such flags must be explicit and must be included in the Case Narrative.

For reporting results to the USEPA, the following contract specific qualifiers are to be used. The seven qualifiers defined below are not subject to modification by the laboratory. Up to five qualifiers may be reported on Form I for each compound.

The seven EPA-defined qualifiers to be used are as follows:

U - Indicates compound was analyzed for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture. For example, 10 U for phenol in water if the sample final volume is the protocol-specified final volume. If a 1 to 10 dilution of extract is necessary, the reported limit is 100 U. For a soil sample, the value must also be adjusted for percent moisture. For example, if the sample had 24% moisture

and a 1 to 10 dilution factor, the sample quantitation limit for phenol (330 U) would be corrected to:

$$\frac{(330\ U)}{D} \times df \qquad \text{where } D = \frac{100 - \%\ \text{moisture}}{100}$$

and df = dilution factor

$$\text{at 24\% moisture, } D = \frac{100-24}{100} = 0.76$$

$$\frac{(330\ U)}{.76} \times 10 = 4300\ U$$ rounded to the appropriate number of significant figures

For soil samples subjected to GPC clean-up procedures, the CRQL is also multiplied by 2, to account for the fact that only half of the extract is recovered.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero. For example, if the sample quantitation limit is 10 ug/L, but a concentration of 3 ug/L is calculated, report it as 3J. The sample quantitation limit must be adjusted for both dilution and percent moisture as discussed for the U flag, so that if a sample with 24% moisture and a 1 to 10 dilution factor has a calculated concentration of 300 ug/L and a sample quantitation limit of 430 ug/kg, report the concentration as 300J on Form I.

C - This flag applies to pesticide results where the identification has been confirmed by GC/MS. Single component pesticides $\geq$10 ng/ul in the final extract shall be confirmed by GC/MS.

B - This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action. This flag must be used for a TIC as well as for a positively identified TCL compound.

E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis. This flag will not apply to pesticides/PCBs analyzed by GC/EC methods. If one or more compounds have a response greater than full scale, the sample or extract must be diluted and re-analyzed according to the specifications in Exhibit D. All such compounds with a response greater than full scale should have the concentration flagged with an "E" on the Form I for the original analysis. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses shall be reported on separate Forms I. The Form I for the diluted sample shall have the "DL" suffix appended to the sample number.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor. If a sample or extract is re-analyzed at a higher dilution factor, as in the "E" flag above, the "DL" suffix is appended to the sample number on the Form I for the diluted sample, and all concentration values reported on that Form I are flagged with the "D" flag.

A - This flag indicates that a TIC is a suspected aldol-condensation product.

X - Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the Sample Data Summary Package and the Case Narrative. If more than one is required, use "Y" and "Z", as needed. If more than five qualifiers are required for a sample result, use the "X" flag to combine several flags, as needed. For instance, the "X" flag might combine the "A", "B", and "D" flags for some sample.

The combination of flags "BU" or "UB" is expressly prohibited. Blank contaminants are flagged "B" only when they are also detected in the sample.

If analyses at two different dilution factors are required (see Exhibit D), follow the data reporting instructions given in Exhibit D and with the "D" and "E" flags above.

2. Form I VOA-TIC and Form I SV-TIC

Fill in all header information as above.

Report Tentatively Identified Compounds (TIC) including CAS number, compound name, retention time, and the estimated concentration (criteria for reporting TICs are given in Exhibit D, Section IV). Retention time must be reported in minutes and decimal minutes, not seconds or minutes:seconds.

If in the opinion of the mass spectral interpretation specialist, no valid tentative identification can be made, the compound shall be reported as unknown.

Include a Form I VOA-TIC or SV-TIC for every volatile and semivolatile fraction of every sample and method blank analyzed, even if no TICs are found. Total the number of TICs found, including aldol-condensation products (but see below), and enter this number in the "Number TICs found." If none were found, enter "0" (zero).

If the name of a compound exceeds the 28 spaces in the TIC column, truncate the name to 28 characters. If the compound is an unknown, restrict description to no more than 28 characters (i.e., unknown hydrocarbon, etc.).

Peaks that are suspected as aldol-condensation reaction products (i.e., 4-methyl-4-hydroxy-2-pentanone and 4-methyl-3-pentene-2-one) shall be summarized on this form, flagged "A", and included in the total "Number TICs found," but not counted as part of the 20 most intense non-TCL semi-volatile compounds to be searched.

C. Surrogate Recovery (Form II)

Form II is used to report the recoveries of the surrogate compounds added to each sample, blank, matrix spike, and matrix spike duplicate. Form II is matrix-specific as well as fraction-specific, so that surrogate recoveries for volatile water samples are reported on a different version of Form II than volatile soil sample surrogate recoveries.

Complete the header information and enter EPA Sample Numbers as described in part A. For soil samples only, specify the "level" as "LOW" or "MED", as on Form I. Do not mix low and medium level samples on one form. Complete one for each level. For each surrogate, report the percent recovery to the number of significant figures given by the QC limits at the bottom of the form.

Flag each surrogate recovery outside the QC limits with an asterisk (*). The asterisk must be placed in the last space in each appropriate column, under the "#" symbol. In the far righthand column, total the number of surrogate recoveries outside the QC limits for each sample. If no surrogates were outside the limits, enter "0".

If the surrogates are diluted out in any analysis, enter the calculated recovery or "0" (zero) if the surrogate is not detected, and flag the surrogate recoveries with a "D" in the column under the "#" symbol. Do not include results flagged "D" in the total number of recoveries for each sample outside the QC limits.

The pesticide surrogate recovery limits are only advisory, but the contractor must flag those recoveries outside the advisory QC limits or diluted out, nonetheless.

Number all pages as described in part A.

D. Matrix Spike/Matrix Spike Duplicate Recovery (Form III)

This form is used to report the results of the analyses of a matrix spike and matrix spike duplicate. As with the surrogate recovery form (II), the form is matrix-specific within each fraction.

Complete the header information as instructed in Part A, including the EPA Sample Number for the matrix spike without the suffixes MS or MSD.

For soil samples, specify "level" as "LOW" or "MED", as on Form I. Cases containing soil samples at both levels require MS/MSD at each level, therefore, for soils, prepare one form for each level.

All water samples are "Low". Therefore, there is no MS/MSD for "medium level waters", and none shall be reported.

ORGANIC DATA

RECEIVED

MAY 12 88

MPCA, Ground Water
& Solid Waste Div.

DATE: May 9, 1988

TO: Minnesota Pollution Control Agency
Site Assessment Unit
Program Development Section
Groundwater and Solid Waste Division
520 Lafayette Road
St. Paul, MN 55155

ATTN: Doug Day, Supervisor

Case No.	Site	Contract Lab	SF No.	No. Samples
9288SAS3554E	HADER GROUND WATER CONT.	S-CUBED	SF5011	10

Enclosed is one REVIEWED case. Please DO NOT return it.

FROM: U.S. EPA
Region V
Central Regional Laboratory
536 S. Clark, 10th Floor
Chicago, IL 60605

SENT BY: Erlinda Luz M. Arrola
WESTON - ESAT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 5-6-88

SUBJECT: Review of Region V CLP Data Received for Review on 4-25-88

FROM: Curtis Ross, Director (5SCRL) Central Regional Laboratory Patrick J. Churilla for

TO: Data User: MPCA
DAVE KOUBSKY, MPCA

We have reviewed the data for the following case(s).

SITE NAME: HADER GROUND WATER (MN) SMO case No. 9288SAS3554E

EPA Data Set No. SF5011 No. of Samples: 10 D.U./Activity Numbers Y905/C72277

CRL No. 88YL06S01-S08, D05, R01

SMO Traffic No. ET831-840

CLP Laboratory: S-CUBED Hrs. Required for Review: 7

Following are our findings:

This review covers the analyses of 10 low concentration water samples. Nine were analyzed for semi-volatiles, volatiles and pesticide/PCBs. One sample (ET840) was analyzed for volatiles only.

Several problems which should be noted by the data user for these samples are outlined on the following pages.

John R. Mizeizhar
ESAT-WESTON
5-2-88

( ) Data are acceptable for use.
(X) Data are acceptable for use with qualifications noted above.
( ) Data are preliminary - pending verification by Contractor Laboratory.
( ) Data are unacceptable.

cc: Duane Geuder, Quality Assurance Officer, EPA Support Services
James Petty, Chief Quality Assurance Research, EMSL, Las Vegas

EPA FORM 1320-6 (Rev. 5/87)

DATA QUALIFIERS

Contractor: S-CUBED

Case 9288 SAS 3554E

Below is a summary of the out-of-control audits and the possible effect on the data for this case:

1) Holding Time

The extractions for both the semi-volatile and pesticide/PCB fractions for samples ET831 thru ET839 exceeded the 7 days from sampling date holding time. All results from these fractions should be considered estimated. (Positive (J); Negative (UJ)).

2) Tuning

The GC/MS tuning criteria was met for both the volatile and semi-volatile fractions. Overall instrument performance was acceptable. All instrument performance criteria were met for the pesticide/PCB fraction.

3) Calibration

Calibration outliers for the volatile and semi-volatile fractions are noted on the calibration outlier sheets. Calibration criteria for the pesticide/PCB fraction were acceptable.

4) Blanks

Common contaminants were found in the volatile and semi-volatile blanks. Non-HSL contaminants were found in the semi-volatile blank. No contaminants were found in the pesticide/PCB blank. All contaminants were at acceptable levels.

5) Surrogate Recoveries

Recoveries for Phenol-D5 and 2-Fluorophenol in the semi-volatile fractions of samples ET834, ET835 and ET836 were less than 10% and under the QC limits. The fractions were re-injected with similar results. There was insufficient sample to re-extract.

Reviewed by: John R. Kozenko

Phone: 312-353-2917

Date: 5-2-88

DATA QUALIFIERS

Contractor: S-CUBED

Case 9288 SAS 3554E

Below is a summary of the out-of-control audits and the possible effect on the data for this case:

For these fractions of the three mentioned samples, positive results should be flagged estimated (J) and negative results flagged unusable (R).

6) Matrix Spike / MSD

The % recoveries for Endrin are above the QC limit for both the matrix spike / MSD. Therefore for sample ET831 the results for Endrin should be flagged estimated (positive (J), negative (UJ)).

7) Field Duplicates

Samples ET835 and ET836 were duplicates. There was relative agreement between these samples.

8) Compound Identification

All compound identifications were acceptable.

The problems identified in this review will not directly affect the quality and soundness of the data as a whole. Therefore, I find the data contained within acceptable for use.

Reviewed by: John R. Grzeczka

Phone: 312-353-2917

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION V
CALIBRATION OUTLIERS
VOLATILE HSL COMPOUNDS

CASE/SAS # 9288 SAS3554E CONTRACTOR S CUGED

Instrument # VG2	Init. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.		
DATE/TIME:	3-28-88			4-4 0913			4-4 2016								
	RF	%RSD	*	RF	%D	*	RF	%D	*	RF	%D	*	RF	%D	*
Chloromethane															
Bromomethane															
Vinyl Chloride															
Chloroethane															
Methylene Chloride															
Acetone															
Carbon Disulfide															
1,1-Dichloroethane															
1,1-Dichloroethene															
Trans-1,2-Dichloroethene															
Chloroform															
2-Butanone	0.012	18.7	J/R	0.011	8.0	J/R	0.01	17.0	J/R						
1,2-Dichloroethane															
1,1,1-Trichloroethane															
Carbon Tetrachloride															
Vinyl Acetate															
Bromodichloromethane															
1,2-Dichloropropane															
Trans-1,3-Dichloropropene															
Trichloroethene															
Dibromochloromethane															
1,1,2-Trichloroethane															
Benzene															
cis-1,3-Dichloropropene															
2-Chloroethylvinylether															
Bromoform															
4-Methyl-2-Pentanone															
2-Hexanone															
Tetrachloroethene															
1,1,2,2-Tetrachloroethane															
Toluene															
Chlorobenzene															
Ethylbenzene															
Styrene															
m-Xylene															
o/p-Xylene															
ACROLEIN	0.038	3.33	J/R	0.029	17.0	J/R	0.027	23.0	J/R						

AFFECTED SAMPLES:

LBLK 44V502	LBLK 44V502
ET831	ET837
ET833	ET831MS
ET832	ET831MSD
ET834	MATRIX BLANK
ET835	
ET836	
ET838	
ET839	
ET840	

Reviewer's Initials/Date: JL 5-2-88

* These flags should be applied to the analytes on the sample data sheets.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION V
CALIBRATION OUTLIERS
SEMIVOLATILE HSL COMPOUNDS
(Page 1)

CASE/SAS # 9288SAS3554E CONTRACTOR S-CUBED

Instrument # HP#1	Init. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.		
DATE/TIME:	4-10-88														
	RF	%RSD	*	RF	%D	*	RF	%D	*	RF	%D	*	RF	%D	*
Phenol															
bis(-2-Chloroethyl)Ether															
2-Chlorophenol															
1,3-Dichlorobenzene															
1,4-Dichlorobenzene															
Benzyl Alcohol															
1,2-Dichlorobenzene															
2-Methylphenol															
bis(2-chloroisopropyl)Ether															
4-Methylphenol															
N-Nitroso-Di-n-Propylamine															
Hexachloroethane															
Nitrobenzene															
Isophorone															
2-Nitrophenol															
2,4-Dimethylphenol															
Benzoic Acid															
bis(2-Chloroethoxy)Methane															
2,4-Dichlorophenol															
1,2,4-Trichlorobenzene															
Naphthalene															
4-Chloroaniline															
Hexachlorobutadiene															
4-Chloro-3-Methylphenol															
2-Methylnaphthalene															
Hexachlorocyclopentadiene															
2,4,6-Trichlorophenol															
2,4,5-Trichlorophenol															
2-Chloronaphthalene															
2-Nitroaniline															
Dimethyl Phthalate															
Acenaphthylene															
3-Nitroaniline															
Acenaphthene															
2,4-Dinitrophenol															
4-Nitrophenol															
Dibenzofuran															

AFFECTED SAMPLES:

LAB BLANK 47
ET833
ET834

Reviewer Initials/Date: JY 5-2-88

* These flags should be applied to the analytes on the sample data sheets.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION V
CALIBRATION OUTLIERS
SEMIVOLATILE HSL COMPOUNDS
Page 2

CASE/SAS # 9288 SAS 3554E CONTRACTOR S-CUBED

Instrument # HP#1	Init. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.		
DATE/TIME:	4-10-88														
	RF	%RSD	*	RF	%D	*	RF	%D	*	RF	%D	*	RF	%D	*
2,4-Dinitrotoluene															
2,6-Dinitrotoluene															
Diethylphthalate															
4-Chlorophenyl-phenylether															
Fluorene															
4-Nitroaniline															
4,6-Dinitro-2-Methylphenol															
N-Nitrosodiphenylamine															
4-Bromophenyl-phenylether															
Hexachlorobenzene															
Pentachlorophenol															
Phenanthrene															
Anthracene															
Di-n-Butylphthalate															
Fluoranthene															
Pyrene															
Butylbenzylphthalate															
Benzo(a)Anthracene															
bis(2-Ethylhexyl)Phthalate															
Chrysene															
Di-n-Octyl Phthalate															
Benzo(b)Fluoranthene															
Benzo(k)Fluoranthene															
Benzo(a)Pyrene															
Indeno(1,2,3-cd)Pyrene															
Dibenz(a,h)Anthracene															
Benzo(g,h,i) Perylene															

SEE PAGE 1 FOR AFFECTED SAMPLES.

* These flags should be applied to the analytes on the sample data sheets.

Reviewer's Initials/Date: JB 5-2-88

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION V
CALIBRATION OUTLIERS
SEMIVOLATILE HSL COMPOUNDS
(Page 1)

CASE/SAS # 9288SAS3554E CONTRACTOR S-CUGED

Instrument # HP#1	Init. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.		
DATE/TIME:	4-13-88														
	RF	%RSD	*	RF	%D	*	RF	%D	*	RF	%D	*	RF	%D	*
Phenol															
bis(-2-Chloroethyl)Ether															
2-Chlorophenol															
1,3-Dichlorobenzene															
1,4-Dichlorobenzene															
Benzyl Alcohol															
1,2-Dichlorobenzene															
2-Methylphenol															
bis(2-chloroisopropyl)Ether															
4-Methylphenol															
N-Nitroso-Di-n-Propylamine															
Hexachloroethane															
Nitrobenzene															
Isophorone															
2-Nitrophenol															
2,4-Dimethylphenol															
Benzoic Acid															
bis(2-Chloroethoxy)Methane															
2,4-Dichlorophenol															
1,2,4-Trichlorobenzene															
Naphthalene															
4-Chloroaniline															
Hexachlorobutadiene															
4-Chloro-3-Methylphenol															
2-Methylnaphthalene															
Hexachlorocyclopentadiene															
2,4,6-Trichlorophenol															
2,4,5-Trichlorophenol															
2-Chloronaphthalene															
2-Nitroaniline															
Dimethyl Phthalate															
Acenaphthylene															
3-Nitroaniline															
Acenaphthene															
2,4-Dinitrophenol															
4-Nitrophenol															
Dibenzofuran															

AFFECTED SAMPLES:

RRBAC
ET 837
ET 838

Reviewer Initials/Date: JG 5-2-88

* These flags should be applied to the analytes on the sample data sheets.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION V
CALIBRATION OUTLIERS
SEMIVOLATILE HSL COMPOUNDS
Page 2

CASE/SAS # 9288 SAS3554E CONTRACTOR S-CUGED

Instrument # HP #1	Init. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.		
DATE/TIME:	4-13-88														
	RF	%RSD	*	RF	%D	*	RF	%D	*	RF	%D	*	RF	%D	*
2,4-Dinitrotoluene															
2,6-Dinitrotoluene															
Diethylphthalate															
4-Chlorophenyl-phenylether															
Fluorene															
4-Nitroaniline															
4,6-Dinitro-2-Methylphenol															
N-Nitrosodiphenylamine															
4-Bromophenyl-phenylether															
Hexachlorobenzene															
Pentachlorophenol															
Phenanthrene															
Anthracene															
Di-n-Butylphthalate															
Fluoranthene															
Pyrene															
Butylbenzylphthalate															
Benzo(a)Anthracene															
bis(2-Ethylhexyl)Phthalate															
Chrysene															
Di-n-Octyl Phthalate															
Benzo(b)Fluoranthene															
Benzo(k)Fluoranthene															
Benzo(a)Pyrene															
Indeno(1,2,3-cd)Pyrene															
Dibenz(a,h)Anthracene															
Benzo(g,h,i) Perylene															

SEE PAGE 1 FOR AFFECTED SAMPLES.

* These flags should be applied to the analytes on the sample data sheets.

Reviewer's Initials/Date: JY 5-2-88

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION V
CALIBRATION OUTLIERS
SEMIVOLATILE HSL COMPOUNDS
(Page 1)

CASE/SAS # 9288SA3554E CONTRACTOR S-CUBED

Instrument # HP#1	Init. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.		
DATE/TIME:	4-14-88														
	RF	%RSD	*	RF	%D	*	RF	%D	*	RF	%D	*	RF	%D	*
Phenol															
bis(-2-Chloroethyl)Ether															
2-Chlorophenol															
1,3-Dichlorobenzene															
1,4-Dichlorobenzene															
Benzyl Alcohol															
1,2-Dichlorobenzene															
2-Methylphenol															
bis(2-chloroisopropyl)Ether															
4-Methylphenol															
N-Nitroso-Di-n-Propylamine															
Hexachloroethane															
Nitrobenzene															
Isophorone															
2-Nitrophenol															
2,4-Dimethylphenol															
Benzoic Acid															
bis(2-Chloroethoxy)Methane															
2,4-Dichlorophenol															
1,2,4-Trichlorobenzene															
Naphthalene															
4-Chloroaniline															
Hexachlorobutadiene															
4-Chloro-3-Methylphenol															
2-Methylnaphthalene															
Hexachlorocyclopentadiene															
2,4,6-Trichlorophenol															
2,4,5-Trichlorophenol															
2-Chloronaphthalene															
2-Nitroaniline															
Dimethyl Phthalate															
Acenaphthylene															
3-Nitroaniline															
Acenaphthene															
2,4-Dinitrophenol															
4-Nitrophenol															
Dibenzofuran															

AFFECTED SAMPLES:

LAB BLK 4-14
ET831
ET831MS
ET831MSD
ET832

Reviewer Initials/Date: PH 5-2-88

* These flags should be applied to the analytes on the sample data sheets.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION V
CALIBRATION OUTLIERS
SEMIVOLATILE HSL COMPOUNDS
Page 2

CASE/SAS # 9288SAS3554E CONTRACTOR S-CUBED

Instrument # HP#1	Init. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.		
DATE/TIME:	4-14-88														
	RF	%RSD	*	RF	%D	*	RF	%D	*	RF	%D	*	RF	%D	*
2,4-Dinitrotoluene															
2,6-Dinitrotoluene															
Diethylphthalate															
4-Chlorophenyl-phenylether															
Fluorene															
4-Nitroaniline															
4,6-Dinitro-2-Methylphenol															
N-Nitrosodiphenylamine															
4-Bromophenyl-phenylether															
Hexachlorobenzene															
Pentachlorophenol															
Phenanthrene															
Anthracene															
Di-n-Butylphthalate															
Fluoranthene															
Pyrene															
Butylbenzylphthalate															
Benzo(a)Anthracene															
bis(2-Ethylhexyl)Phthalate															
Chrysene															
Di-n-Octyl Phthalate															
Benzo(b)Fluoranthene															
Benzo(k)Fluoranthene															
Benzo(a)Pyrene															
Indeno(1,2,3-cd)Pyrene															
Dibenz(a,h)Anthracene															
Benzo(g,h,i) Perylene															

SEE PAGE 1 FOR AFFECTED SAMPLES.

* These flags should be applied to the analytes on the sample data sheets.

Reviewer's Initials/Date: JY 5-2-88

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION V
CALIBRATION OUTLIERS
SEMIVOLATILE HSL COMPOUNDS
(Page 1)

CASE/SAS # 9288SAS3554E CONTRACTOR S-CUBED

Instrument # HP#1	Init. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.		
DATE/TIME:	4-19-88														
	RF	%RSD	*	RF	%D	*	RF	%D	*	RF	%D	*	RF	%D	*
Phenol															
bis(-2-Chloroethyl)Ether															
2-Chlorophenol															
1,3-Dichlorobenzene															
1,4-Dichlorobenzene															
Benzyl Alcohol															
1,2-Dichlorobenzene															
2-Methylphenol															
bis(2-chloroisopropyl)Ether															
4-Methylphenol															
N-Nitroso-Di-n-Propylamine															
Hexachloroethane															
Nitrobenzene															
Isophorone															
2-Nitrophenol															
2,4-Dimethylphenol															
Benzoic Acid															
bis(2-Chloroethoxy)Methane															
2,4-Dichlorophenol															
1,2,4-Trichlorobenzene															
Naphthalene															
4-Chloroaniline															
Hexachlorobutadiene															
4-Chloro-3-Methylphenol															
2-Methylnaphthalene															
Hexachlorocyclopentadiene															
2,4,6-Trichlorophenol															
2,4,5-Trichlorophenol															
2-Chloronaphthalene															
2-Nitroaniline															
Dimethyl Phthalate															
Acenaphthylene															
3-Nitroaniline															
Acenaphthene															
2,4-Dinitrophenol															
4-Nitrophenol															
Dibenzofuran															

AFFECTED SAMPLES:

ET835
ET836
ET839

Reviewer Initials/Date: JY 5-2-88

* These flags should be applied to the analytes on the sample data sheets.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION V
CALIBRATION OUTLIERS
SEMIVOLATILE HSL COMPOUNDS
Page 2

CASE/SAS # 9288SAS3554E CONTRACTOR S-CUBED

Instrument #	Init. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.		
DATE/TIME:															
	RF	%RSD	*	RF	%D	*	RF	%D	*	RF	%D	*	RF	%D	*
2,4-Dinitrotoluene															
2,6-Dinitrotoluene															
Diethylphthalate															
4-Chlorophenyl-phenylether															
Fluorene															
4-Nitroaniline															
4,6-Dinitro-2-Methylphenol															
N-Nitrosodiphenylamine															
4-Bromophenyl-phenylether															
Hexachlorobenzene															
Pentachlorophenol															
Phenanthrene															
Anthracene															
Di-n-Butylphthalate															
Fluoranthene															
Pyrene															
Butylbenzylphthalate															
Benzo(a)Anthracene															
bis(2-Ethylhexyl)Phthalate															
Chrysene															
Di-n-Octyl Phthalate															
Benzo(b)Fluoranthene															
Benzo(k)Fluoranthene															
Benzo(a)Pyrene															
Indeno(1,2,3-cd)Pyrene															
Dibenz(a,h)Anthracene															
Benzo(g,h,i) Perylene															

SEE PAGE 1 FOR AFFECTED SAMPLES.

* These flags should be applied to the analytes on the sample data sheets.

Reviewer's Initials/Date: JLy 5-2-88

Case: 9288-SAS3554E

Contractor: S-CUBED

TENTATIVELY IDENTIFIED COMPOUNDS MATCH ASSESSMENT

NOTE: Reviewer should note directly on Organic Analysis Data Sheet (OADS) those matches that in his opinion (based on contract criteria) are unreasonable.

CRITERIA

(1) Relative intensities of major ions (>10%) reference spectrum should be present in the sample spectrum.

(2) Relative intensities of major ions in sample spectrum should agree to within ± 20% of reference spectrum intensities.

(3) Molecular ions present in reference spectrum should be present in sample spectrum.

(4) Ions present in sample spectrum, but not in reference spectrum should be reviewed for possible background contamination or presence of coeluting interferences.

(5) Ions present in reference spectrum, but not in the sample spectrum should be reviewed for possible subtraction from the sample spectrum because of background contamination or coeluting interferences.

(6) If, in the reviewer's opinion, no valid identification can be made the compound should be labelled as "unknown" and the initials and date of the reviewer placed on the OADS.

S-CUBED
A Division of Maxwell Laboratories, Inc.

April 22, 1988 Volume 1 of 1

NARRATIVE CASE 9288/SAS 3554E
S-CUBED CONTRACT NO. 68-01-7261

This case consists of nine waters for full analysis and one VOA only water sample. These were analyzed under the requirements of SAS 3554E which differ considerably in terms of detection limits, compound to be analyzed for as well as continuing and initial calibration requirements.

The major problem encountered was low to non-existent phenols-d_5 and fluorophenol surrogate recoveries in ET834, ET835, and ET836. These extracts were reinjected with similar results but reextraction could not be carried out because of the minimal sample available.

Pesticide holding times for sample extraction were missed because of a known laboratory phthalate contamination. The samples were held until laboratory corrective action showed that the extracts would not be affected by this glassware contamination.

RECEIVED
APR 25 1988
U.S. EPA CENTRAL
REGIONAL LAB

JoAnn Wilkinson
JoAnn Wilkinson
Project Manager

P.O. Box 1620, La Jolla, California 92038-1620 3398 Carmel Mountain Road, San Diego, California 92121-1095
Tel: (619) 453-0060 TWX: 910-337-1253 Telecopier: (619) 755-0474

APR 18 198

SUPERFUND 5011

CENTRAL REGIONAL LABORATORY SAMPLE DATA REPORT
ORGANICS/INORGANICS

LOG IN DATE: 4/19/88
DUE DATE: 5/6

THIS FORM IS TO BE USED FOR SAMPLES SENT TO CONTRACT ONLY

CASE NUMBER/SAS No. 9288/3554E/3727E SITE NAME HADER GROUND WATER CONTAMINATION (SIC6) LABORATORY S-Cubed (S3) - Organic ENSECO/Rocky Mtn. Analytical - Inorganic Post Buckley Schuh & Jernigan (PBSJ) - NITRATES SULFATES DATE SHIPPED 4-1-88

SUPERFUND DU NUMBER Y905 EPA RPM or OSC (S.M.S.)/(CES) DAVE KOWBSKY, MPCA PAGE 1 OF 1

ACTIVITY NUMBER C72200

CRL LOG NUMBER	ORGANIC TRAFFIC REPORT NUMBER or SAS Packing List No.	INORGANIC TRAFFIC REPORT NUMBER	WATER OR LIQUIDS: ACID BASE NEUTRAL CPDS ORGANIC SCAN UG L TOX17574	VOLATILE ORGANIC ANALYSIS ORGANIC SCAN UG L TOX17564	WATER POLYCHLORINATED BIPHENYLS UG L PES 17144	WATER CHLORINATED PESTICIDES UG L PES17134	TOTAL METALS IN WATER UG L MET111	WATER CYANIDE UG L MIN74919	NITRATE NITRITE MG L MIN7284	AMMONIA MG L MIN7294	RESIDUE FILTERABLE TDS MG L MIN7362	RESIDUE NON-FILT TSS MG L MIN7372	SULFATE, CHLORIDE, PH	ALKALINITY, ACIDITY	SEDIMENTS or SOILS: ACID-BASE NEUTRAL CPDS ORGANIC SCAN MG KG TOX215722	VOLATILE ORGANIC ANALYSIS ORGANIC SCAN MG KG TOX215622	SEDIMENTS POLYCHLORINATED BIPHENYLS MG KG PES211422	SEDIMENT CHLORINATED PESTICIDES MG KG 211322	TOTAL METALS MG KG MET413	CYANIDE MG KG MIN44930	EP TOXICITY METALS MG KG	AMMONIA MG KG MIN42925				
88YL06S01	ET 831	MEW 615	X	X	X	X	X	X																		
88YL06S02	ET 832	MEW 616	X	X	X	X	X	X																		
88YL06S03	ET 833	MEW 617	X	X	X	X	X	X																		
88YL06S04	ET 834	MEW 618	X	X	X	X	X	X																		
88YL06S05	ET 835	MEW 619	X	X	X	X	X	X																		
88YL06D05	ET 836	MEW 620	X	X	X	X	X	X																		
88YL06S06	ET 837	MEW 621	X	X	X	X	X	X																		
88YL06S07	ET 838	MEW 622	X	X	X	X	X	X																		
88YL06S08	ET 839	MEW 623	X	X	X	X	X	X																		
88YL06R01	ET 840	—		X																						
88YL06S01	3727-E 01								X				X	X												
88YL06S02	3727-E 02								X				X	X												
88YL06S03	3727-E 03								X				X	X												
88YL06S04	3727-E 04								X				X	X												
88YL06S05	3727-E 05								X				X	X												
88YL06D05	3727-E 09								X				X	X												
88YL06S06	3727-E 06								X				X	X												
88YL06S07	3727-E 07								X				X	X												
88YL06S08	3727-E 08								X				X	X												

WATER SURROGATE PERCENT RECOVERY SUMMARY

Case No. 9288 (SA3554E) Contract Laboratory S-CUBED Contract No. 68-01-7261

	VOLATILE			SEMI-VOLATILE								PESTICIDE
SAMPLE TRAFFIC NO.	TOLUENE-D8 (88-110)	BFB (86-115)	1,2 DICHLORO-ETHANE-D4 (76-114)	NITRO-BENZENE-D5 (35-114)	2-FLUORO-BIPHENYL (43-116)	TERPHENYL-D14 (33-141)			PHENOL-D5 (10-94)	2-FLUORO-PHENOL (21-100)	2,4,6 TRIBROMO-PHENOL (10-123)	DIBUTYL-CHLORENDATE** (24-154)
ET831	90	89	101	74	79	85			34	46	71	123
ET831MS	100	89	93	74	75	80			27	39	76	117
ET831MSD	99	92	88	70	75	85			38	50	83	131
ET832	89	91	101	71	78	81			30	44	71	118
ET833	107	93	99	101	99	110			36	47	102	120
ET834 (3)	102	90	104	94	93	102			0*	1*	31	120
ET835 (3)	98	89	108	68	63	77			0*	0*	15	103
ET836 (3)	96	87	99	53	52	69			1*	1*	39	91
ET837	102	94	110	70	73	81			53	57	81	109
ET838	108	97	111	75	80	83			40	48	84	126
ET839	106	94	109	51	56	66			19	23	56	126
ET840	106	93	107	NA	NA	NA			NA	NA	NA	NA
(1) LAB BLANK	94	90	105	108	107	118			66	84	94	96
(2) LAB BLANK	99	92	91	72	73	88			51	67	79	NA

* VALUES ARE OUTSIDE OF CONTRACT REQUIRED QC LIMITS

**ADVISORY LIMITS ONLY

Volatiles: 0 out of 42 ; outside of QC limits

Semi-Volatiles: 6 out of 78 ; outside of QC limits

Pesticides: 0 out of 12 ; outside of QC limits

Comments: (1) 4AV2021 (VOA) ; LAB BLANK 4-11 (PEST) ; LBA07 (BNA)

(2) 4AV2021 (VOA) . BBBA6 (BNA)

(3) Reextraction not possible due to minimal sample volume.

WATER MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Case No. 9288 (SAS 3554E) Contractor S-CUBED Contract No. 68-01-~~6868~~ 7261

FRACTION	COMPOUND	CONC. SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MS	% REC	CONC. MSD	% REC	RPD	QC LIMITS* RPD	QC LIMITS* RECOVERY
VOA SMO SAMPLE NO. ET831	1,1-Dichloroethene	12	0	12	100	11	92	9	14	61-145
	Trichloroethene	11	0	10	91	11	100	10	14	71-120
	Chlorobenzene	11	0	11	100	11	100	0	13	75-130
	Toluene	12	0	12	100	12	100	0	13	76-125
	Benzene	12	0	12	100	12	100	0	11	76-127
B/N SMO SAMPLE NO. ET 831	1,2,4-Trichlorobenzene	20	0	14	70	14	70	0	28	39-98
	Acenaphthene	20	0	15	75	15	75	0	31	46-118
	2,4 Dinitrotoluene	20	0	15	75	15	75	0	38	24-96
	Pyrene	20	0	16	80	17	85	6	31	26-127
	N-Nitroso-Di-n-Propylamine	20	0	15	75	14	70	7	38	41-116
	1,4-Dichlorobenzene	20	0	14	70	14	70	0	28	36-97
ACID SMO SAMPLE NO. ET 831	Pentachlorophenol	40	0	27	68	30	75	11	50	9-103
	Phenol	40	0	11	28	15	38	31	42	12-89
	2-Chlorophenol	40	0	23	58	26	65	12	40	27-123
	4-Chloro-3-Methylphenol	40	0	25	63	29	73	15	42	23-97
	4-Nitrophenol	40	0	12	30	15	38	22	50	10-80
PEST SMO SAMPLE NO. ET831	Lindane	0.02	0	.021	105	.024	120	13.	15	56-123
	Heptachlor	0.02	0	.022	110	.024	120	8.7	20	40-131
	Aldrin	0.02	0	.022	110	.023	115	4.4	22	40-120
	Dieldrin	0.05	0	.056	112	.060	120	7.0	18	52-126
	Endrin	0.05	0	.065	130*	.073	146*	12.	21	56-121
	4,4'-DDT	0.05	0	.055	110	.061	122	10.	27	38-127

*ASTERISKED VALUES ARE OUTSIDE QC LIMITS.

RPD: VOAs 0 out of 5 : outside QC limits
B/N 0 out of 6 : outside QC limits
ACID 0 out of 5 : outside QC limits
PEST 0 out of 6 : outside QC limits

RECOVERY: VOAs 0 out of 10 : outside QC limits
B/N 0 out of 12 : outside QC limits
ACID 0 out of 10 : outside QC limits
PEST 2 out of 12 : outside QC limits

Comments:

METHOD BLANK SUMMARY

(SAS3554E)

Case No. 9288 Region 5 Contractor S-CUBED Contract No. 68-01-7261

FILE ID	DATE OF ANALYSIS	FRACTION	MATRIX	CONC. LEVEL	INST. ID	CAS NUMBER	COMPOUND (INCL. TIC OR UNKNOWN)	CONC.	UNITS	CRQL
LAB BLANK 4-11	04-12-88	PEST	H_2O	LOW	HP5890II	319-85-7	~~B-BHC~~ NOTHING FOUND	~~0.0044~~	~~µg/L~~	~~0.005~~
4AV2021	4-4-88	VOA			VG2	75-09-2	methylene chloride	1.3		1.0
(A) 4AV2021	4-4-88	VOA			VG2	75-09-2	methylene chloride	2.2		1.0
RRBA6 ①	4-13-88	ABN			HP1		NOTHING FOUND			
LBA07 ②	4-10-88					84-66-2	diethyl phthalate	2.1		1.0
						21964498	1,13 tetradecadiene (S1294)	22		NR
LBA07	4-10-88	ABN	H_2O	LOW	HP1	19812647	1,14 tetradecanediol (S1298)	6	ug/L	NR

Comments: ① ext 4/6/88
② ext 4/7/88
(A) also case holding blank

ORGANICS ANALYSIS DATA SHEET
(Page 1)

Sample Number: ET831

Laboratory Name: S-CUBED
Lab Sample ID No: 44V2031 (VOA)
Sample Matrix: WATER
Data Release Authorized By: _____

Case No: 9288 (SAS3554E)
QC Report No: N.R
Contract No: 68-01-7261
Date Sample Received: 04-02-88

VOLATILE COMPOUNDS

Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 04-04-88
Date Analyzed: 04-04-88
Conc/Dil Factor: 1.0 pH: N.R
Percent Moisture (Not Decanted): N.R

CAS Number		ug/l or ug/kg (Circle One)	CAS Number		ug/l or ug/kg (Circle One)
74-87-3	CHLOROMETHANE	10 U	78-87-5	1,2-DICHLOROPROPANE	1.5 U
74-83-9	BROMOMETHANE	10 U	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1 U
75-01-4	VINYL CHLORIDE	10 U	79-01-6	TRICHLOROETHENE	1.5 U
75-00-3	CHLOROETHANE	1.5 U	124-48-1	DIBROMOCHLOROMETHANE	1.5 U
75-09-2	METHYLENE CHLORIDE	1.3 B U	79-00-5	1,1,2-TRICHLOROETHANE	1.5 U
67-64-1	ACETONE	75 U	71-43-2	BENZENE	1.5 U
75-15-0	CARBON DISULFIDE	3 U	10061-01-5	CIS-1,3-DICHLOROPROPENE	2 U
75-35-4	1,1-DICHLOROETHENE	1.5 U	110-75-8	2-CHLOROETHYLVINYLETHER	1.5 U
75-34-3	1,1-DICHLOROETHANE	1.5 U	75-25-2	BROMOFORM	1.5 U
	TOTAL-1,2-DICHLOROETHENE'S	1.5 U	591-78-6	2-HEXANONE	50 U
67-66-3	CHLOROFORM	1.5 U	108-10-1	4-METHYL-2-PENTANONE	3 U
107-06-2	1,2-DICHLOROETHANE	1.5 U	127-18-4	TETRACHLOROETHENE	1.5 U
78-93-3	2-BUTANONE	50 U	79-34-5	1,1,2,2-TETRACHLOROETHANE	1.5 U
71-55-6	1,1,1-TRICHLOROETHANE	1.5 U	108-88-3	TOLUENE	1.5 U
56-23-5	CARBON TETRACHLORIDE	1.5 U	108-90-7	CHLOROBENZENE	1.5 U
108-05-4	VINYL ACETATE	15 U	100-41-4	ETHYLBENZENE	1.5 U
75-27-4	BROMODICHLOROMETHANE	1.5 U	100-42-5	STYRENE	1 U
107-02-8	ACROLEIN	100 U		M-XYLENE	2 U
107-13-1	ACRYLONITRILE	50 U		O/P-XYLENE	2.5 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifier are used. Additional flags or footnotes explaning results are encouraged.However,the definition of each flag must be explicit.

Value: If the result is a value greater than or equal to the detection limit,report the value.

U Indicates compound was analyzed for but not detected.Report the minimum detection limit for the sample with the U (eg.10U) based on necessary concentration/dilution action.(this is not necessarily the instrument detection limit.)The footnotes should read:U-Compound was analyzed for but not detected.The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value:This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg 10J) .If limit of detection is 10 ug/L and a concentration of 3ug/L is calculated,report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS.Single component pesticides > or = 10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when analyte is found in the blank as well as sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

S Matrix spiked compound.

Laboratory Name S-CUBED

Case No 9288/ 3554E

Sample Number
ET 831

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration (Low) Medium (Circle One)

Date Extracted/Prepared 6Apr 88

Date Analyzed 15APR88

Conc/Dil Factor 1.0

Percent Moisture (Decanted) NA

GPC Cleanup ☐Yes ☑No

Separatory Funnel Extraction ☑Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)	
108-95-2	Phenol	2.0	U
111-44-4	bis(-2-Chloroethyl)Ether	1.5	U
95-57-8	2-Chlorophenol	2.0	U
541-73-1	1 3-Dichlorobenzene	2.0	U
106-46-7	1, 4-Dichlorobenzene	2.0	U
100-51-6	Benzyl Alcohol	2.0	U
95-50-1	1, 2-Dichlorobenzene	2.5	U
95-48-7	2-Methylphenol	1.0	U
39638-32-9	bis(2-chloroisopropyl)Ether	2.5	U
106-44-5	4-Methylphenc	1.0	U
621-64-7	N-Nitroso-Di-n-Propylamine	1.5	U
67-72-1	Hexachloroethane	2.0	U
98-95-3	Nitrobenzene	2.5	U
78-59-1	Isophorone	2.5	U
88-75-5	2-Nitrophenol	2.0	U
105-67-9	2, 4-Dimethylphenol	2.0	U
65-85-0	Benzoic Acid	30	U
111-91-1	bis(2-Chloroethoxyl)Methane	2.5	U
120-83-2	2, 4-Dichlorophenol	2.0	U
120-82-1	1 2 4-Trichlorobenzene	2.0	U
91-20-3	Naphthalene	2.0	U
106-47-8	4-Chloroaniline	2.0	U
87-68-3	Hexachlorobutadiene	2.5	U
59-50-7	4-Chloro-3-Methylphenol	1.5	U
91-57-6	2-Methylnaphthalene	2.0	U
77-47-4	Hexachlorocyclopentadiene	2.0	U
88-06-2	2, 4, 6-Trichlorophenol	1.5	U
95-95-4	2, 4, 5-Trichlorophenol	1.5	U
91-58-7	2-Chloronaphthalene	1.5	U
88-74-4	2-Nitroaniline	1.0	U
131-11-3	Dimethyl Phthalate	1.5	U
208-96-8	Acenaphthylene	1.5	U
99-09-2	3-Nitroaniline	2.5	U

CAS Number		ug/l or ug/Kg (Circle One)	
83-32-9	Acenaphthene	1.5	U
51-28-5	2, 4-Dinitrophenol	15	U
100-02-7	4-Nitrophenol	1.5	U
132-64-9	Dibenzofuran	1.0	U
121-14-2	2, 4-Dinitrotoluene	1.0	U
606-20-2	2, 6-Dinitrotoluene	1.0	U
84-66-2	Diethylphthalate	1.5	
7005-72-3	4-Chlorophenyl-phenylether	1.0	U
86-73-7	Fluorene	1.0	U
100-01-6	4-Nitroaniline	3.0	U
534-52-1	4, 6-Dinitro-2-Methylphenol	15	U
86-30-6	N-Nitrosodiphenylamine (1)	1.5	U
101-55-3	4-Bromophenyl-phenylether	1.5	U
118-74-1	Hexachlorobenzene	1.5	U
87-86-5	Pentachlorophenol	2.0	U
85-01-8	Phenanthrene	1.0	U
120-12-7	Anthracene	2.5	U
84-74-2	Di-n-Butylphthalate	2.0	U
206-44-0	Fluoranthene	1.5	U
129-00-0	Pyrene	1.5	U
85-68-7	Butylbenzylphthalate	3.5	U
91-94-1	3, 3'-Dichlorobenzidine	NR	
56-55-3	Benzo(a)Anthracene *	1.5	U
117-81-7	bis(2-Ethylhexyl)Phthalate	1.9	
218-01-9	Chrysene *	—	
117-84-0	Di-n-Octyl Phthalate	1.5	U
205-99-2	Benzo(b)Fluoranthene * *	1.5	U
207-08-9	Benzo(k)Fluoranthene * *	—	
50-32-8	Benzo(a)Pyrene	2.0	U
193-39-5	Indeno(1, 2, 3-cd)Pyrene	3.5	U
53-70-3	Dibenz(a, h)Anthracene	2.5	U
191-24-2	Benzo(g, h, i)Perylene	4.0	U

(1)-Cannot be separated from diphenylamine

* THESE TWO PARAMETERS ARE REPORTED AS A TOTAL.

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Laboratory Name S-CUBED

Case No 9288 (3554E)

Sample Number ET 831

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration (Low) Medium (Circle One)

Date Extracted/Prepared 4-11-88

Date Analyzed 4-12-88

Conc/Dil Factor 1.0

Percent Moisture (decanted) NA

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		(ug/l or ug/Kg) (Circle One)
319-84-6	Alpha-BHC	0.010 µ
319-85-7	Beta-BHC	0.005 µ
319-86-8	Delta-BHC	0.005 µ
58-89-9	Gamma-BHC (Lindane)	0.005 µ
76-44-8	Heptachlor	0.030 µ
309-00-2	Aldrin	0.005 µ
1024-57-3	Heptachlor Epoxide	0.005 µ
959 98-8	Endosulfan I	0.010 µ
60-57-1	Dieldrin	0.010 µ
72-55-9	4,4'-DDE	0.005 µ
72-20-8	Endrin	0.010 µ
33213-65-9	Endosulfan II	0.010 µ
72-54-8	4,4'-DDD	0.020 µ
1031-07-8	Endosulfan Sulfate	0.100 µ
50-29-3	4,4'-DDT	0.020 µ
72-43-5	Methoxychlor	0.020 µ
53494-70-5	Endrin Ketone	0.030 µ
57-74-9	Chlordane	0.020 µ
8001-35-2	Toxaphene	0.25 µ
12674-11-2	Aroclor-1016	0.10 µ
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	0.10 µ
12672-29-6	Aroclor-1248	0.10 µ
11097-69-1	Aroclor-1254	0.10 µ
11096-82-5	Aroclor-1260	0.10 µ
7421-93-4	ENDRIN ALDEHYDE	0.030 µ

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s 1000 ml or W_s NA V_t 1.00 ml V_i 1.0 µl

Laboratory Name S-CUBED

Case No 9288 (SAS3554E)

Sample Number ET831

44V2031 (VOA)
ET831 (BNA)

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. NA	UNKNOWN	VOA	277	1.75
2.				
3. 21964498	1,13 tetradecadiene	BNA	1280	3 J
4.				
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ORGANICS ANALYSIS DATA SHEET
(Page 1)

Sample Number: ET832

Laboratory Name: S-CUBED
Lab Sample ID No: 44V2051 (VOA)
Sample Matrix: WATER
Data Release Authorized By:

Case No: 9288 (SAS3554E)
QC Report No: N.R
Contract No: 68-01-7261
Date Sample Received: 04-02-88

VOLATILE COMPOUNDS

Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 04-04-88
Date Analyzed: 04-04-88
Conc/Dil Factor: 1.0 pH: N.R
Percent Moisture (Not Decanted): N.R

CAS Number		ug/l or ug/kg (Circle One)	CAS Number		ug/l or ug/kg (Circle One)
74-87-3	CHLOROMETHANE	10 U	78-87-5	1,2-DICHLOROPROPANE	1.5 U
74-83-9	BROMOMETHANE	10 U	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1 U
75-01-4	VINYL CHLORIDE	10 U	79-01-6	TRICHLOROETHENE	1.5 U
75-00-3	CHLOROETHANE	1.5 U	124-48-1	DIBROMOCHLOROMETHANE	1.5 U
75-09-2	METHYLENE CHLORIDE	~~0.87 J B~~ U	79-00-5	1,1,2-TRICHLOROETHANE	1.5 U
67-64-1	ACETONE	75 U	71-43-2	BENZENE	1.5 U
75-15-0	CARBON DISULFIDE	3 U	10061-01-5	CIS-1,3-DICHLOROPROPENE	2 U
75-35-4	1,1-DICHLOROETHENE	1.5 U	110-75-8	2-CHLOROETHYLVINYLETHER	1.5 U
75-34-3	1,1-DICHLOROETHANE	1.5 U	75-25-2	BROMOFORM	1.5 U
	TOTAL-1,2-DICHLOROETHENE'S	1.5 U	591-78-6	2-HEXANONE	50 U
67-66-3	CHLOROFORM	1.5 U	108-10-1	4-METHYL-2-PENTANONE	3 U
107-06-2	1,2-DICHLOROETHANE	1.5 U	127-18-4	TETRACHLOROETHENE	1.5 U
78-93-3	2-BUTANONE	50 U	79-34-5	1,1,2,2-TETRACHLOROETHANE	1.5 U
71-55-6	1,1,1-TRICHLOROETHANE	1.5 U	108-88-3	TOLUENE	1.5 U
56-23-5	CARBON TETRACHLORIDE	1.5 U	108-90-7	CHLOROBENZENE	1.5 U
108-05-4	VINYL ACETATE	15 U	100-41-4	ETHYLBENZENE	1.5 U
75-27-4	BROMODICHLOROMETHANE	1.5 U	100-42-5	STYRENE	1 U
107-02-8	ACROLEIN	100 U		M-XYLENE	2 U
107-13-1	ACRYLONITRILE	50 U		O/P-XYLENE	2.5 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifier are used. Additional flags or footnotes explaning results are encouraged.However,the definition of each flag must be explicit.

Value: If the result is a value greater than or equal to the detection limit,report the value.

U Indicates compound was analyzed for but not detected.Report the minimum detection limit for the sample with the U (eg.10U) based on necessary concentration/dilution action.(this is not necessarily the instrument detection limit.)The footnotes should read:U-Compound was analyzed for but not detected.The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value:This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg 10J) .If limit of detection is 10 ug/L and a concentration of 3ug/L is calculated,report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS.Single component pesticides > or = 10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when analyte is found in the blank as well as sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

S Matrix spiked compound.

Laboratory Name S-CUBED

Case No 9288/3554E

Sample Number ET832

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: Low Medium (Circle One)

Date Extracted/Prepared 4-6-88

Date Analyzed 4-15-88

Conc/Dil Factor 1.0

Percent Moisture (Decanted) NA

GPC Cleanup ☐Yes ☑No

Separatory Funnel Extraction ☑Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
108-95-2	Phenol	2.0 U
111-44-4	bis(-2-Chloroethyl)Ether	1.5 U
95-57-8	2-Chlorophenol	2.0 U
541-73-1	1 3-Dichlorobenzene	2.0 U
106-46-7	1, 4-Dichlorobenzene	2.0 U
100-51-6	Benzyl Alcohol	2.0 U
95-50-1	1, 2-Dichlorobenzene	2.5 U
95-48-7	2-Methylphenol	1.0 U
39638-32-9	bis(2-chloroisopropyl)Ether	2.5 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-n-Propylamine	1.5 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	2.5 U
78-59-1	Isophorone	2.5 U
88-75-5	2-Nitrophenol	2.0 U
105-67-9	2, 4-Dimethylphenol	2.0 U
65-85-0	Benzoic Acid	30 U
111-91-1	bis(2-Chloroethoxyl)Methane	2.5 U
120-83-2	2, 4-Dichlorophenol	2.0 U
120-82-1	1 2 4-Trichlorobenzene	2.0 U
91-20-3	Naphthalene	2.0 U
106-47-8	4-Chloroaniline	2.0 U
87-68-3	Hexachlorobutadiene	2.5 U
59-50-7	4-Chloro-3-Methylphenol	1.5 U
91-57-6	2-Methylnaphthalene	2.0 U
77-47-4	Hexachlorocyclopentadiene	2.0 U
88-06-2	2, 4, 6-Trichlorophenol	1.5 U
95-95-4	2, 4, 5-Trichlorophenol	1.5 U
91-58-7	2-Chloronaphthalene	1.5 U
88-74-4	2-Nitroaniline	1.0 U
131-11-3	Dimethyl Phthalate	1.5 U
208-96-8	Acenaphthylene	1.5 U
99-09-2	3-Nitroaniline	2.5 U

CAS Number		ug/l or ug/Kg (Circle One)
83-32-9	Acenaphthene	1.5 U
51-28-5	2, 4-Dinitrophenol	15 U
100-02-7	4-Nitrophenol	1.5 U
132-64-9	Dibenzofuran	1.0 U
121-14-2	2, 4-Dinitrotoluene	1.0 U
606-20-2	2, 6-Dinitrotoluene	1.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	3.0 U
534-52-1	4, 6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine (1)	1.5 U
101-55-3	4-Bromophenyl-phenylether	1.5 U
118-74-1	Hexachlorobenzene	1.5 U
87-86-5	Pentachlorophenol	2.0 U
85-01-8	Phenanthrene	1.0 U
120-12-7	Anthracene	2.5 U
84-74-2	Di-n-Butylphthalate	2.0 U
206-44-0	Fluoranthene	1.5 U
129-00-0	Pyrene	1.5 U
85-68-7	Butylbenzylphthalate	3.5 U
91-94-1	3, 3'-Dichlorobenzidine	NR
56-55-3	Benzo(a)Anthracene *	1.5 U
117-81-7	bis(2-Ethylhexyl)Phthalate	1.0 U
218-01-9	Chrysene *	—
117-84-0	Di-n-Octyl Phthalate	1.5 U
205-99-2	Benzo(b)Fluoranthene * *	1.5 U
207-08-9	Benzo(k)Fluoranthene * *	—
50-32-8	Benzo(a)Pyrene	2.0 U
193-39-5	Indeno(1, 2, 3-cd)Pyrene	3.5 U
53-70-3	Dibenz(a, h)Anthracene	2.5 U
191-24-2	Benzo(g, h, i)Perylene	4.0 U

(1)-Cannot be separated from diphenylamine

* THESE TWO PARAMETERS ARE REPORTED AS A TOTAL

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Laboratory Name S-CUBED

Case No 9288 (3554E)

Sample Number ET 832

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration (Low) Medium (Circle One)

Date Extracted/Prepared 04-11-88

Date Analyzed 04-13-88

Conc/Dil Factor 1.0

Percent Moisture (decanted) NA

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
319-84-6	Alpha-BHC	0.010 µ
319-85-7	Beta-BHC	0.005 µ
319-86-8	Delta-BHC	0.005 µ
58-89-9	Gamma-BHC (Lindane)	0.005 µ
76-44-8	Heptachlor	0.030 µ
309-00-2	Aldrin	0.005 µ
1024-57-3	Heptachlor Epoxide	0.005 µ
959 98-8	Endosulfan I	0.010 µ
60-57-1	Dieldrin	0.010 µ
72-55-9	4,4'-DDE	0.005 µ
72-20-8	Endrin	0.010 µ
33213-65-9	Endosulfan II	0.010 µ
72-54-8	4,4'-DDD	0.020 µ
1031-07-8	Endosulfan Sulfate	0.100 µ
50-29-3	4,4'-DDT	0.020 µ
72-43-5	Methoxychlor	0.020 µ
53494-70-5	Endrin Ketone	0.030 µ
57-74-9	Chlordane	0.020 µ
8001-35-2	Toxaphene	0.25 µ
12674-11-2	Aroclor-1016	0.10 µ
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	0.10 µ
12672-29-6	Aroclor-1248	0.10 µ
11097-69-1	Aroclor-1254	0.10 µ
11096-82-5	Aroclor-1260	0.10 µ
7421-93-4	ENDRIN ALDEHYDE	0.030 µ

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s 1000 ml or W_s NA V_t 1.00 ml V_i 1.0 µl

Laboratory Name S-CUBED

Case No 9288 (SAS3554E)

Sample Number ET832

44V2051 (VOA)
ET832 (BNA)

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	No TIC FOUND.	VOA		
2.				
3.	No TIC Found	BNA		
4.				
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ORGANICS ANALYSIS DATA SHEET
(Page 1)

Sample Number: ET833

Laboratory Name: S-CUBED
Lab Sample ID No: 44V2041 (VOA)
Sample Matrix: WATER
Data Release Authorized By: _____

Case No: 9288 (SAS3554E)
QC Report No: N.R
Contract No: 68-01-7261
Date Sample Received: 04-02-88

VOLATILE COMPOUNDS

Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 04-04-88
Date Analyzed: 04-04-88
Conc/Dil Factor: 1.0 pH: N.R
Percent Moisture (Not Decanted): N.R

CAS Number		ug/l or ug/kg (Circle One)	CAS Number		ug/l or ug/kg (Circle One)
74-87-3	CHLOROMETHANE	10 U	78-87-5	1,2-DICHLOROPROPANE	1.5 U
74-83-9	BROMOMETHANE	10 U	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1 U
75-01-4	VINYL CHLORIDE	10 U	79-01-6	TRICHLOROETHENE	1.5 U
75-00-3	CHLOROETHANE	1.5 U	124-48-1	DIBROMOCHLOROMETHANE	1.5 U
75-09-2	METHYLENE CHLORIDE	1.0 ~~0.84 J B~~ V	79-00-5	1,1,2-TRICHLOROETHANE	1.5 U
67-64-1	ACETONE	75 U	71-43-2	BENZENE	1.5 U
75-15-0	CARBON DISULFIDE	3 U	10061-01-5	CIS-1,3-DICHLOROPROPENE	2 U
75-35-4	1,1-DICHLOROETHENE	1.5 U	110-75-8	2-CHLOROETHYLVINYLETHER	1.5 U
75-34-3	1,1-DICHLOROETHANE	1.5 U	75-25-2	BROMOFORM	1.5 U
	TOTAL-1,2-DICHLOROETHENE'S	1.5 U	591-78-6	2-HEXANONE	50 U
67-66-3	CHLOROFORM	1.5 U	108-10-1	4-METHYL-2-PENTANONE	3 U
107-06-2	1,2-DICHLOROETHANE	1.5 U	127-18-4	TETRACHLOROETHENE	1.5 U
78-93-3	2-BUTANONE	50 U	79-34-5	1,1,2,2-TETRACHLOROETHANE	1.5 U
71-55-6	1,1,1-TRICHLOROETHANE	1.5 U	108-88-3	TOLUENE	1.5 U
56-23-5	CARBON TETRACHLORIDE	1.5 U	108-90-7	CHLOROBENZENE	1.5 U
108-05-4	VINYL ACETATE	15 U	100-41-4	ETHYLBENZENE	1.5 U
75-27-4	BROMODICHLOROMETHANE	1.5 U	100-42-5	STYRENE	1 U
107-02-8	ACROLEIN	100 U		M-XYLENE	2 U
107-13-1	ACRYLONITRILE	50 U		O/P-XYLENE	2.5 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifier are used. Additional flags or footnotes explaning results are encouraged. However, the definition of each flag must be explicit.

Value: If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (eg. 10U) based on necessary concentration/dilution action. (this is not necessarily the instrument detection limit.) The footnotes should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value: This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg 10J). If limit of detection is 10 ug/L and a concentration of 3ug/L is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides > or = 10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when analyte is found in the blank as well as sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

S Matrix spiked compound.

Laboratory Name S-CUBED

Case No 9288/3554E

Sample Number ET833

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration (Low) Medium (Circle One)

Date Extracted/Prepared 4-7-88

Date Analyzed 4-10-88

Conc/Dil Factor 1.0

Percent Moisture (Decanted) NA

GPC Cleanup ☐Yes ☑No

Separatory Funnel Extraction ☑Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
108-95-2	Phenol	2.0 U
111-44-4	bis(2-Chloroethyl)Ether	1.5 U
95-57-8	2-Chlorophenol	2.0 U
541-73-1	1,3-Dichlorobenzene	2.0 U
106-46-7	1,4-Dichlorobenzene	2.0 U
100-51-6	Benzyl Alcohol	2.0 U
95-50-1	1,2-Dichlorobenzene	2.5 U
95-48-7	2-Methylphenol	1.0 U
39638-32-9	bis(2-chloroisopropyl)Ether	2.5 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-n-Propylamine	1.5 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	2.5 U
78-59-1	Isophorone	2.5 U
88-75-5	2-Nitrophenol	2.0 U
105-67-9	2,4-Dimethylphenol	2.0 U
65-85-0	Benzoic Acid	30 U
111-91-1	bis(2-Chloroethoxy)Methane	2.5 U
120-83-2	2,4-Dichlorophenol	2.0 U
120-82-1	1,2,4-Trichlorobenzene	2.0 U
91-20-3	Naphthalene	2.0 U
106-47-8	4-Chloroaniline	2.0 U
87-68-3	Hexachlorobutadiene	2.5 U
59-50-7	4-Chloro-3-Methylphenol	1.5 U
91-57-6	2-Methylnaphthalene	2.0 U
77-47-4	Hexachlorocyclopentadiene	2.0 U
88-06-2	2,4,6-Trichlorophenol	1.5 U
95-95-4	2,4,5-Trichlorophenol	1.5 U
91-58-7	2-Chloronaphthalene	1.5 U
88-74-4	2-Nitroaniline	1.0 U
131-11-3	Dimethyl Phthalate	1.5 U
208-96-8	Acenaphthylene	1.5 U
99-09-2	3-Nitroaniline	2.5 U

CAS Number		ug/l or ug/Kg (Circle One)
83-32-9	Acenaphthene	1.5 U
51-28-5	2,4-Dinitrophenol	15 U
100-02-7	4-Nitrophenol	1.5 U
132-64-9	Dibenzofuran	1.0 U
121-14-2	2,4-Dinitrotoluene	1.0 U
606-20-2	2,6-Dinitrotoluene	1.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	3.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine (1)	1.5 U
101-55-3	4-Bromophenyl-phenylether	1.5 U
118-74-1	Hexachlorobenzene	1.5 U
87-86-5	Pentachlorophenol	2.0 U
85-01-8	Phenanthrene	1.0 U
120-12-7	Anthracene	2.5 U
84-74-2	Di-n-Butylphthalate	2.0 U
206-44-0	Fluoranthene	1.5 U
129-00-0	Pyrene	1.5 U
85-68-7	Butylbenzylphthalate	3.5 U
91-94-1	3,3'-Dichlorobenzidine	NR
56-55-3	Benzo(a)Anthracene *	1.5 U
117-81-7	bis(2-Ethylhexyl)Phthalate	1.0 U
218-01-9	Chrysene *	—
117-84-0	Di-n-Octyl Phthalate	1.5 U
205-99-2	Benzo(b)Fluoranthene * *	1.5 U
207-08-9	Benzo(k)Fluoranthene * *	—
50-32-8	Benzo(a)Pyrene	2.0 U
193-39-5	Indeno(1,2,3-cd)Pyrene	3.5 U
53-70-3	Dibenz(a,h)Anthracene	2.5 U
191-24-2	Benzo(g,h,i)Perylene	4.0 U

(1)-Cannot be separated from diphenylamine

* THESE TWO PARAMETERS ARE REPORTED AS A [illegible]

* * THESE TWO PARAMETERS ARE REPORTED AS A TOTAL

Laboratory Name S-CUBED

Case No 9288 3554E

Sample Number ET 833

Organics Analysis Data Sheet
(Page 3)

Pesticide / PCBs

Concentration (Low) Medium (Circle One)

Date Extracted / Prepared 04-11-88

Date Analyzed 04-13-88

Conc / Dil Factor 1.0

Percent Moisture (decanted) NA

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
319-84-6	Alpha-BHC	0.010 µ
319-85-7	Beta-BHC	0.005 µ
319-86-8	Delta-BHC	0.005 µ
58-89-9	Gamma-BHC (Lindane)	0.005 µ
76-44-8	Heptachlor	0.030 µ
309-00-2	Aldrin	0.005 µ
1024-57-3	Heptachlor Epoxide	0.005 µ
959 98-8	Endosulfan I	0.010 µ
60-57-1	Dieldrin	0.010 µ
72-55-9	4,4'-DDE	0.005 µ
72-20-8	Endrin	0.010 µ
33213-65-9	Endosulfan II	0.010 µ
72-54-8	4,4'-DDD	0.020 µ
1031-07-8	Endosulfan Sulfate	0.100 µ
50-29-3	4,4'-DDT	0.020 µ
72-43-5	Methoxychlor	0.020 µ
53494-70-5	Endrin Ketone	0.030 µ
57-74-9	Chlordane	0.020 µ
8001-35-2	Toxaphene	0.25 µ
12674-11-2	Aroclor-1016	0.10 µ
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	0.10 µ
12672-29-6	Aroclor-1248	0.10 µ
11097-69-1	Aroclor-1254	0.10 µ
11096-82-5	Aroclor-1260	0.10 µ
7421-93-4	ENDRIN ALDEHYDE	0.030 µ

V_t = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s 1000 ml or W_s NA V_t 1.00 ml V_t 1.0 µl

Laboratory Name S-CUBED

Case No 9288 (SAS3554E)

Sample Number ET833

44V2041 (VOA)

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	No TIC FOUND.	VOA		
2.				
3. 21964498	1,13 tetradecadiene	BNA	1291	12 JB
4. NA	UNKNOWN	↓	1396	6 J
5.				
6.				
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9.				
10.				
11.				
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ORGANICS ANALYSIS DATA SHEET
(Page 1)

Sample Number: ETB34

Laboratory Name: S-CUBED
Lab Sample ID No: 44V2061 (VOA)
Sample Matrix: WATER
Data Release Authorized By: _____

Case No: 9288 (SAS3554E)
QC Report No: N.R
Contract No: 68-01-7261
Date Sample Received: 04-02-88

VOLATILE COMPOUNDS

Concentration: Low, Medium (Circle One)
Date Extracted/Prepared: 04-04-88
Date Analyzed: 04-04-88
Conc/Dil Factor: 1.0 pH: N.R
Percent Moisture (Not Decanted): N.R

CAS Number		ug/l or ug/kg (Circle One)	CAS Number		ug/l or ug/kg (Circle One)
74-87-3	CHLOROMETHANE	10 U	78-87-5	1,2-DICHLOROPROPANE	1.5 U
74-83-9	BROMOMETHANE	10 U	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1 U
75-01-4	VINYL CHLORIDE	10 U	79-01-6	TRICHLOROETHENE	1.5 U
75-00-3	CHLOROETHANE	1.5 U	124-48-1	DIBROMOCHLOROMETHANE	1.5 U
75-09-2	METHYLENE CHLORIDE	1.0 ~~0.74 J B~~ U	79-00-5	1,1,2-TRICHLOROETHANE	1.5 U
67-64-1	ACETONE	75 U	71-43-2	BENZENE	1.5 U
75-15-0	CARBON DISULFIDE	3 U	10061-01-5	CIS-1,3-DICHLOROPROPENE	2 U
75-35-4	1,1-DICHLOROETHENE	1.5 U	110-75-8	2-CHLOROETHYLVINYLETHER	1.5 U
75-34-3	1,1-DICHLOROETHANE	1.5 U	75-25-2	BROMOFORM	1.5 U
	TOTAL-1,2-DICHLOROETHENE'S	1.5 U	591-78-6	2-HEXANONE	50 U
67-66-3	CHLOROFORM	1.5 U	108-10-1	4-METHYL-2-PENTANONE	3 U
107-06-2	1,2-DICHLOROETHANE	1.5 U	127-18-4	TETRACHLOROETHENE	1.5 U
78-93-3	2-BUTANONE	50 U	79-34-5	1,1,2,2-TETRACHLOROETHANE	1.5 U
71-55-6	1,1,1-TRICHLOROETHANE	1.5 U	108-88-3	TOLUENE	1.5 U
56-23-5	CARBON TETRACHLORIDE	1.5 U	108-90-7	CHLOROBENZENE	1.5 U
108-05-4	VINYL ACETATE	15 U	100-41-4	ETHYLBENZENE	1.5 U
75-27-4	BROMODICHLOROMETHANE	1.5 U	100-42-5	STYRENE	1 U
107-02-8	ACROLEIN	100 U		M-XYLENE	2 U
107-13-1	ACRYLONITRILE	50 U		O/P-XYLENE	2.5 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifier are used. Additional flags or footnotes explaning results are encouraged.However,the definition of each flag must be explicit.

Value: If the result is a value greater than or equal to the detection limit,report the value.

U Indicates compound was analyzed for but not detected.Report the minimum detection limit for the sample with the U (eg.10U) based on necessary concentration/dilution action.(this is not necessarily the instrument detection limit.)The footnotes should read:U-Compound was analyzed for but not detected.The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value:This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg 10J) .If limit of detection is 10 ug/L and a concentration of 3ug/L is calculated,report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS.Single component pesticides > or = 10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when analyte is found in the blank as well as sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

S Matrix spiked compound.

Laboratory Name S-CUBED

Case No 9288/3554E

Sample Number ET 834

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration (Low) Medium (Circle One)

Date Extracted/Prepared 4-7-88

Date Analyzed 4-10-88

Conc/Dil Factor 1.0

Percent Moisture (Decanted) NA

GPC Cleanup ☐Yes ☑No

Separatory Funnel Extraction ☑Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)	
108-95-2	Phenol	2.0	U
111-44-4	bis(2-Chloroethyl)Ether	1.5	U
95-57-8	2-Chlorophenol	2.0	U
541-73-1	1 3-Dichlorobenzene	2.0	U
106-46-7	1, 4-Dichlorobenzene	2.0	U
100-51-6	Benzyl Alcohol	2.9	
95-50-1	1, 2-Dichlorobenzene	2.5	U
95-48-7	2-Methylphenol	1.0	U
39638-32-9	bis(2-chloroisopropyl)Ether	2.5	U
106-44-5	4-Methylphenc	1.0	U
621-64-7	N-Nitroso-Di-n-Propylamine	1.5	U
67-72-1	Hexachloroethane	2.0	U
98-95-3	Nitrobenzene	2.5	U
78-59-1	Isophorone	2.5	U
88-75-5	2-Nitrophenol	2.0	U
105-67-9	2 4-Dimethylphenol	2.0	U
65-85-0	Benzoic Acid	30	U
111-91-1	bis(2-Chloroethoxy)Methane	2.5	U
120-83-2	2, 4-Dichlorophenol	2.0	U
120-82-1	1 2 4-Trichlorobenzene	2.0	U
91-20-3	Naphthalene	2.0	U
106-47-8	4-Chloroaniline	2.0	U
87-68-3	Hexachlorobutadiene	2.5	U
59-50-7	4-Chloro-3-Methylphenol	1.5	U
91-57-6	2-Methylnaphthalene	2.0	U
77-47-4	Hexachlorocyclopentadiene	2.0	U
88-06-2	2, 4, 6-Trichlorophenol	1.5	U
95-95-4	2, 4, 5-Trichlorophenol	1.5	U
91-58-7	2-Chloronaphthalene	1.5	U
88-74-4	2-Nitroaniline	1.0	U
131-11-3	Dimethyl Phthalate	1.5	U
208-96-8	Acenaphthylene	1.5	U
99-09-2	3-Nitroaniline	2.5	U

CAS Number		ug/l or ug/Kg (Circle One)	
83-32-9	Acenaphthene	1.5	U
51-28-5	2, 4-Dinitrophenol	15	U
100-02-7	4-Nitrophenol	1.5	U
132-64-9	Dibenzofuran	1.0	U
121-14-2	2, 4-Dinitrotoluene	1.0	U
606-20-2	2, 6-Dinitrotoluene	1.0	U
84-66-2	Diethylphthalate	2.9	BU
7005-72-3	4-Chlorophenyl-phenylether	1.0	U
86-73-7	Fluorene	1.0	U
100-01-6	4-Nitroaniline	3.0	U
534-52-1	4, 6-Dinitro-2-Methylphenol	15	U
86-30-6	N-Nitrosodiphenylamine (1)	1.5	U
101-55-3	4-Bromophenyl-phenylether	1.5	U
118-74-1	Hexachlorobenzene	1.5	U
87-86-5	Pentachlorophenol	2.0	U
85-01-8	Phenanthrene	1.0	U
120-12-7	Anthracene	2.5	U
84-74-2	Di-n-Butylphthalate	2.0	U
206-44-0	Fluoranthene	1.5	U
129-00-0	Pyrene	1.5	U
85-68-7	Butylbenzylphthalate	3.5	U
91-94-1	3 3'-Dichlorobenzidine	NR	
56-55-3	Benzo(a)Anthracene *	1.5	U
117-81-7	bis(2-Ethylhexyl)Phthalate	1.0	U
218-01-9	Chrysene *	—	
117-84-0	Di-n-Octyl Phthalate	1.5	U
205-99-2	Benzo(b)Fluoranthene * *	1.5	U
207-08-9	Benzo(k)Fluoranthene * *	—	
50-32-8	Benzo(a)Pyrene	2.0	U
193-39-5	Indeno(1, 2, 3-cd)Pyrene	3.5	U
53-70-3	Dibenz(a h)Anthracene	2.5	U
191-24-2	Benzo(g, h, i)Perylene	4.0	U

(1)-Cannot be separated from diphenylamine

* THESE TWO PARAMETERS ARE REPORTED AS A TOT

* * THESE TWO PARAMETERS ARE REPORTED AS A TOTAL

Laboratory Name S-CUBED

Case No 9288 (3554 E)

Sample Number ET 834

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration (Low) Medium (Circle One)

Date Extracted/Prepared 04-11-88

Date Analyzed 04-13-88

Conc/Dil Factor 1.0

Percent Moisture (decanted) NA

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		(ug/l or ug/Kg) (Circle One)
319-84-6	Alpha-BHC	0.010 µ
319-85-7	Beta-BHC	0.005 µ
319-86-8	Delta-BHC	0.005 µ
58-89-9	Gamma-BHC (Lindane)	0.005 µ
76-44-8	Heptachlor	0.030 µ
309-00-2	Aldrin	0.005 µ
1024-57-3	Heptachlor Epoxide	0.005 µ
959 98-8	Endosulfan I	0.010 µ
60-57-1	Dieldrin	0.010 µ
72-55-9	4,4'-DDE	0.005 µ
72-20-8	Endrin	0.010 µ
33213-65-9	Endosulfan II	0.010 µ
72-54-8	4,4'-DDD	0.020 µ
1031-07-8	Endosulfan Sulfate	0.100 µ
50-29-3	4,4'-DDT	0.020 µ
72-43-5	Methoxychlor	0.020 µ
53494-70-5	Endrin Ketone	0.030 µ
57-74-9	Chlordane	0.020 µ
8001-35-2	Toxaphene	0.25 µ
12674-11-2	Aroclor-1016	0.10 µ
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	0.10 µ
12672-29-6	Aroclor-1248	0.10 µ
11097-69-1	Aroclor-1254	0.10 µ
11096-82-5	Aroclor-1260	0.10 µ
7421-93-4	ENDRIN ALDEHYDE	0.030 µ

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s 1000 ml or W_s NA V_t 1.00 ml V_i 1.0 µl

Laboratory Name S-CUBED

Case No 9288 (SAS3554E)

Sample Number ET834

44V2061 (VOA)
ET834 (BNA)

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	No TIC FOUND.	VOA		
2.				
3. NA	UNKNOWN	BNA	243	4 J
4. NA	UNKNOWN		1226	4 J
5. 21964498	1,13 tetradecadiene		1293	11 JB
6. NA	UNKNOWN		1345	9 J
7. 1	UNKNOWN		1358	4 J
8. NA	UNKNOWN		1462	3 J
9.				
10.				
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ORGANICS ANALYSIS DATA SHEET
(Page 1)

Sample Number: ET835

Laboratory Name: S-CUBED
Lab Sample ID No: 44V2071 (VOA), RR885(ABN)
Sample Matrix: WATER
Data Release Authorized By: ___

Case No: 9288 (SAS3554E)
QC Report No: N.R
Contract No: 68-01-7261
Date Sample Received: 04-02-88

VOLATILE COMPOUNDS
Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 04-04-88
Date Analyzed: 04-04-88
Conc/Dil Factor: 1.0 pH: N.R
Percent Moisture (Not Decanted): N.R

CAS Number		ug/l or ug/kg (Circle One)	CAS Number		ug/l or ug/kg (Circle One)
74-87-3	CHLOROMETHANE	10 U	78-87-5	1,2-DICHLOROPROPANE	1.5 U
74-83-9	BROMOMETHANE	10 U	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1 U
75-01-4	VINYL CHLORIDE	10 U	79-01-6	TRICHLOROETHENE	1.5 U
75-00-3	CHLOROETHANE	1.5 U	124-48-1	DIBROMOCHLOROMETHANE	1.5 U
75-09-2	METHYLENE CHLORIDE	1.0 ~~0.59 J B~~ U	79-00-5	1,1,2-TRICHLOROETHANE	1.5 U
67-64-1	ACETONE	75 U	71-43-2	BENZENE	1.5 U
75-15-0	CARBON DISULFIDE	3 U	10061-01-5	CIS-1,3-DICHLOROPROPENE	2 U
75-35-4	1,1-DICHLOROETHENE	1.5 U	110-75-8	2-CHLOROETHYLVINYLETHER	1.5 U
75-34-3	1,1-DICHLOROETHANE	1.5 U	75-25-2	BROMOFORM	1.5 U
	TOTAL-1,2-DICHLOROETHENE'S	1.5 U	591-78-6	2-HEXANONE	50 U
67-66-3	CHLOROFORM	1.5 U	108-10-1	4-METHYL-2-PENTANONE	3 U
107-06-2	1,2-DICHLOROETHANE	1.5 U	127-18-4	TETRACHLOROETHENE	1.5 U
78-93-3	2-BUTANONE	50 U	79-34-5	1,1,2,2-TETRACHLOROETHANE	1.5 U
71-55-6	1,1,1-TRICHLOROETHANE	1.5 U	108-88-3	TOLUENE	1.5 U
56-23-5	CARBON TETRACHLORIDE	1.5 U	108-90-7	CHLOROBENZENE	1.5 U
108-05-4	VINYL ACETATE	15 U	100-41-4	ETHYLBENZENE	1.5 U
75-27-4	BROMODICHLOROMETHANE	1.5 U	100-42-5	STYRENE	1 U
107-02-8	ACROLEIN	100 U		M-XYLENE	2 U
107-13-1	ACRYLONITRILE	50 U		O/P-XYLENE	2.5 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifier are used. Additional flags or footnotes explaning results are encouraged.However,the definition of each flag must be explicit.

Value: If the result is a value greater than or equal to the detection limit,report the value.

U Indicates compound was analyzed for but not detected.Report the minimum detection limit for the sample with the U (eg.10U) based on necessary concentration/dilution action.(this is not necessarily the instrument detection limit.)The footnotes should read:U-Compound was analyzed for but not detected.The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value:This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg 10J) .If limit of detection is 10 ug/L and a concentration of 3ug/L is calculated,report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS.Single component pesticides > or = 10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when analyte is found in the blank as well as sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

S Matrix spiked compound.

Laboratory Name S-CUBED

Case No 9288/3554E

Sample Number ET835

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration (Low) Medium (Circle One)

Date Extracted/Prepared 4-7-88

Date Analyzed 4-19-88

Conc/Dil Factor 1.0

Percent Moisture (Decanted) NA

GPC Cleanup ☐Yes ☑No

Separatory Funnel Extraction ☑Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
108-95-2	Phenol	2.0 U
111-44-4	bis(-2-Chloroethyl)Ether	1.5 U
95-57-8	2-Chlorophenol	2.0 U
541-73-1	1 3-Dichlorobenzene	2.0 U
106-46-7	1, 4-Dichlorobenzene	2.0 U
100-51-6	Benzyl Alcohol	2.0 U
95-50-1	1, 2-Dichlorobenzene	2.5 U
95-48-7	2-Methylphenol	1.0 U
39638-32-9	bis(2-chloroisopropyl)Ether	2.5 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-n-Propylamine	1.5 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	2.5 U
78-59-1	Isophorone	2.5 U
88-75-5	2-Nitrophenol	2.0 U
105-67-9	2, 4-Dimethylphenol	2.0 U
65-85-0	Benzoic Acid	30 U
111-91-1	bis(-2-Chloroethoxy)Methane	2.5 U
120-83-2	2, 4-Dichlorophenol	2.0 U
120-82-1	1 2 4-Trichlorobenzene	2.0 U
91-20-3	Naphthalene	2.0 U
106-47-8	4-Chloroaniline	2.0 U
87-68-3	Hexachlorobutadiene	2.5 U
59-50-7	4-Chloro-3-Methylphenol	1.5 U
91-57-6	2-Methylnaphthalene	2.0 U
77-47-4	Hexachlorocyclopentadiene	2.0 U
88-06-2	2, 4, 6-Trichlorophenol	1.5 U
95-95-4	2, 4, 5-Trichlorophenol	1.5 U
91-58-7	2-Chloronaphthalene	1.5 U
88-74-4	2-Nitroaniline	1.0 U
131-11-3	Dimethyl Phthalate	1.5 U
208-96-8	Acenaphthylene	1.5 U
99-09-2	3-Nitroaniline	2.5 U

CAS Number		ug/l or ug/Kg (Circle One)
83-32-9	Acenaphthene	1.5 U
51-28-5	2, 4-Dinitrophenol	15 U
100-02-7	4-Nitrophenol	1.5 U
132-64-9	Dibenzofuran	1.0 U
121-14-2	2, 4-Dinitrotoluene	1.0 U
606-20-2	2, 6-Dinitrotoluene	1.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	3.0 U
534-52-1	4, 6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine (1)	1.5 U
101-55-3	4-Bromophenyl-phenylether	1.5 U
118-74-1	Hexachlorobenzene	1.5 U
87-86-5	Pentachlorophenol	2.0 U
85-01-8	Phenanthrene	1.0 U
120-12-7	Anthracene	2.5 U
84-74-2	Di-n-Butylphthalate	2.0 U
206-44-0	Fluoranthene	1.5 U
129-00-0	Pyrene	1.5 U
85-68-7	Butylbenzylphthalate	3.5 U
91-94-1	3 3'-Dichlorobenzidine	NR
56-55-3	Benzo(a)Anthracene *	1.5 U
117-81-7	bis(2-Ethylhexyl)Phthalate	1.0 U
218-01-9	Chrysene *	—
117-84-0	Di-n-Octyl Phthalate	1.5 U
205-99-2	Benzo(b)Fluoranthene * *	1.5 U
207-08-9	Benzo(k)Fluoranthene * *	—
50-32-8	Benzo(a)Pyrene	2.0 U
193-39-5	Indeno(1, 2, 3-cd)Pyrene	3.5 U
53-70-3	Dibenz(a, h)Anthracene	2.5 U
191-24-2	Benzo(g, h, i)Perylene	4.0 U

(1)-Cannot be separated from diphenylamine

* THESE TWO PARAMETERS ARE REPORTED AS A TOT

* * THESE TWO PARAMETERS ARE REPORTED AS A TOTAL.

Laboratory Name S-CUBED

Case No 9288 (3554E)

Sample Number ET 835

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration (Low) Medium (Circle One)

Date Extracted/Prepared 04-11-88

Date Analyzed 04-13-88

Conc/Dil Factor 1.0

Percent Moisture (decanted) NA

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/L or ug/Kg (Circle One)
319-84-6	Alpha-BHC	0.010 µ
319-85-7	Beta-BHC	0.005 µ
319-86-8	Delta-BHC	0.005 µ
58-89-9	Gamma-BHC (Lindane)	0.005 µ
76-44-8	Heptachlor	0.030 µ
309-00-2	Aldrin	0.005 µ
1024-57-3	Heptachlor Epoxide	0.005 µ
959 98-8	Endosulfan I	0.010 µ
60-57-1	Dieldrin	0.010 µ
72-55-9	4,4'-DDE	0.005 µ
72-20-8	Endrin	0.010 µ
33213-65-9	Endosulfan II	0.010 µ
72-54-8	4,4'-DDD	0.020 µ
1031-07-8	Endosulfan Sulfate	0.100 µ
50-29-3	4,4'-DDT	0.020 µ
72-43-5	Methoxychlor	0.020 µ
53494-70-5	Endrin Ketone	0.030 µ
57-74-9	Chlordane	0.020 µ
8001-35-2	Toxaphene	0.25 µ
12674-11-2	Aroclor-1016	0.10 µ
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	0.10 µ
12672-29-6	Aroclor-1248	0.10 µ
11097-69-1	Aroclor-1254	0.10 µ
11096-82-5	Aroclor-1260	0.10 µ
7421-93-4	ENDRIN ALDEHYDE	0.030 µ

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s 1000 ml or W_s NA V_t 1.00 ml V_i 1.0 µl

Laboratory Name S-CUBED

Case No 9288 (SAS3554E)

Sample Number ET835

44V2071 (VOA)
RR835 (BNA)

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	NO TIC FOUND.	VOA		
2.				
3. NA	UNKNOWN	BNA	228	8 J
4.				
5.				
6.				
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ORGANICS ANALYSIS DATA SHEET
(Page 1)

Sample Number: ETB36

Laboratory Name: S-CUBED
Lab Sample ID No: 44V2081 (VOA), RR836(ABN)
Sample Matrix: WATER
Data Release Authorized By: _____

Case No: 9288 (SAS3554E)
QC Report No: N.R
Contract No: 68-01-7261
Date Sample Received: 04-02-88

VOLATILE COMPOUNDS

Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 04-04-88
Date Analyzed: 04-04-88
Conc/Dil Factor: 1.0 pH: N.R
Percent Moisture (Not Decanted): N.R

CAS Number		ug/l or ug/kg (Circle One)	CAS Number		ug/l or ug/kg (Circle One)
74-87-3	CHLOROMETHANE	10 U	78-87-5	1,2-DICHLOROPROPANE	1.5 U
74-83-9	BROMOMETHANE	10 U	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1 U
75-01-4	VINYL CHLORIDE	10 U	79-01-6	TRICHLOROETHENE	1.5 U
75-00-3	CHLOROETHANE	1.5 U	124-48-1	DIBROMOCHLOROMETHANE	1.5 U
75-09-2	METHYLENE CHLORIDE	1.0 ~~0.64 J B~~ U	79-00-5	1,1,2-TRICHLOROETHANE	1.5 U
67-64-1	ACETONE	75 U	71-43-2	BENZENE	1.5 U
75-15-0	CARBON DISULFIDE	3 U	10061-01-5	CIS-1,3-DICHLOROPROPENE	2 U
75-35-4	1,1-DICHLOROETHENE	1.5 U	110-75-8	2-CHLOROETHYLVINYLETHER	1.5 U
75-34-3	1,1-DICHLOROETHANE	1.5 U	75-25-2	BROMOFORM	1.5 U
	TOTAL-1,2-DICHLOROETHENE'S	1.5 U	591-78-6	2-HEXANONE	50 U
67-66-3	CHLOROFORM	1.5 U	108-10-1	4-METHYL-2-PENTANONE	3 U
107-06-2	1,2-DICHLOROETHANE	1.5 U	127-18-4	TETRACHLOROETHENE	1.5 U
78-93-3	2-BUTANONE	50 U	79-34-5	1,1,2,2-TETRACHLOROETHANE	1.5 U
71-55-6	1,1,1-TRICHLOROETHANE	1.5 U	108-88-3	TOLUENE	1.5 U
56-23-5	CARBON TETRACHLORIDE	1.5 U	108-90-7	CHLOROBENZENE	1.5 U
108-05-4	VINYL ACETATE	15 U	100-41-4	ETHYLBENZENE	1.5 U
75-27-4	BROMODICHLOROMETHANE	1.5 U	100-42-5	STYRENE	1 U
107-02-8	ACROLEIN	100 U		M-XYLENE	2 U
107-13-1	ACRYLONITRILE	50 U		O/P-XYLENE	2.5 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifier are used. Additional flags or footnotes explaning results are encouraged.However,the definition of each flag must be explicit.

Value: If the result is a value greater than or equal to the detection limit,report the value.

U Indicates compound was analyzed for but not detected.Report the minimum detection limit for the sample with the U (eg.10U) based on necessary concentration/dilution action.(this is not necessarily the instrument detection limit.)The footnotes should read:U-Compound was analyzed for but not detected.The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value:This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg 10J) .If limit of detection is 10 ug/L and a concentration of 3ug/L is calculated,report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS.Single component pesticides > or = 10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when analyte is found in the blank as well as sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

S Matrix spiked compound.

Laboratory Name S-CUBED

Case No 9288 / 3554E

Sample Number ET 836

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration (Low) Medium (Circle One)

Date Extracted/Prepared 4-7-88

Date Analyzed 4-19-88

Conc/Dil Factor 1.0

Percent Moisture (Decanted) NA

GPC Cleanup ☐Yes ☑No

Separatory Funnel Extraction ☑Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
108-95-2	Phenol	2.0 U
111-44-4	bis(-2-Chloroethyl)Ether	1.5 U
95-57-8	2-Chlorophenol	2.0 U
541-73-1	1 3-Dichlorobenzene	2.0 U
106-46-7	1, 4-Dichlorobenzene	2.0 U
100-51-6	Benzyl Alcohol	2.0 U
95-50-1	1, 2-Dichlorobenzene	2.5 U
95-48-7	2-Methylphenol	1.0 U
39638-32-9	bis(2-chloroisopropyl)Ether	2.5 U
106-44-5	4-Methylphenc	1.0 U
621-64-7	N-Nitroso-Di-n-Propylamine	1.5 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	2.5 U
78-59-1	Isophorone	2.5 U
88-75-5	2-Nitrophenol	2.0 U
105-67-9	2, 4-Dimethylphenol	2.0 U
65-85-0	Benzoic Acid	30 U
111-91-1	bis(-2-Chloroethoxy)Methane	2.5 U
120-83-2	2, 4-Dichlorophenol	2.0 U
120-82-1	1 2 4-Trichlorobenzene	2.0 U
91-20-3	Naphthalene	2.0 U
106-47-8	4-Chloroaniline	2.0 U
87-68-3	Hexachlorobutadiene	2.5 U
59-50-7	4-Chloro-3-Methylphenol	1.5 U
91-57-6	2-Methylnaphthalene	2.0 U
77-47-4	Hexachlorocyclopentadiene	2.0 U
88-06-2	2, 4, 6-Trichlorophenol	1.5 U
95-95-4	2, 4, 5-Trichlorophenol	1.5 U
91-58-7	2-Chloronaphthalene	1.5 U
88-74-4	2-Nitroaniline	1.0 U
131-11-3	Dimethyl Phthalate	1.5 U
208-96-8	Acenaphthylene	1.5 U
99-09-2	3-Nitroaniline	2.5 U

CAS Number		ug/l or ug/Kg (Circle One)
83-32-9	Acenaphthene	1.5 U
51-28-5	2, 4-Dinitrophenol	15 U
100-02-7	4-Nitrophenol	1.5 U
132-64-9	Dibenzofuran	1.0 U
121-14-2	2, 4-Dinitrotoluene	1.0 U
606-20-2	2, 6-Dinitrotoluene	1.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	3.0 U
534-52-1	4, 6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine (1)	1.5 U
101-55-3	4-Bromophenyl-phenylether	1.5 U
118-74-1	Hexachlorobenzene	1.5 U
87-86-5	Pentachlorophenol	2.0 U
85-01-8	Phenanthrene	1.0 U
120-12-7	Anthracene	2.5 U
84-74-2	Di-n-Butylphthalate	2.0 U
206-44-0	Fluoranthene	1.5 U
129-00-0	Pyrene	1.5 U
85-68-7	Butylbenzylphthalate	3.5 U
91-94-1	3, 3'-Dichlorobenzidine	NR
56-55-3	Benzo(a)Anthracene *	1.5 U
117-81-7	bis(2-Ethylhexyl)Phthalate	1.0 U
218-01-9	Chrysene *	—
117-84-0	Di-n-Octyl Phthalate	1.5 U
205-99-2	Benzo(b)Fluoranthene * *	1.5 U
207-08-9	Benzo(k)Fluoranthene * *	—
50-32-8	Benzo(a)Pyrene	2.0 U
193-39-5	Indeno(1, 2, 3-cd)Pyrene	3.5 U
53-70-3	Dibenz(a, h)Anthracene	2.5 U
191-24-2	Benzo(g, h, i)Perylene	4.0 U

(1)-Cannot be separated from diphenylamine

* THESE TWO PARAMETERS ARE REPORTED AS A TOT

* * THESE TWO PARAMETERS ARE REPORTED AS A TOTAL

Laboratory Name S-CUBED

Case No 9288 (3554E)

Sample Number ET 836

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration (Low) Medium (Circle One)

Date Extracted/Prepared 04-11-88

Date Analyzed 04-13-88

Conc/Dil Factor 1.0

Percent Moisture (decanted) NA

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
319-84-6	Alpha-BHC	0.010 µ
319-85-7	Beta-BHC	0.005 µ
319-86-8	Delta-BHC	0.005 µ
58-89-9	Gamma-BHC (Lindane)	0.005 µ
76-44-8	Heptachlor	0.030 µ
309-00-2	Aldrin	0.005 µ
1024-57-3	Heptachlor Epoxide	0.005 µ
959 98-8	Endosulfan I	0.010 µ
60-57-1	Dieldrin	0.010 µ
72-55-9	4,4'-DDE	0.005 µ
72-20-8	Endrin	0.010 µ
33213-65-9	Endosulfan II	0.010 µ
72-54-8	4,4'-DDD	0.020 µ
1031-07-8	Endosulfan Sulfate	0.100 µ
50-29-3	4,4'-DDT	0.020 µ
72-43-5	Methoxychlor	0.020 µ
53494-70-5	Endrin Ketone	0.030 µ
57-74-9	Chlordane	0.020 µ
8001-35-2	Toxaphene	0.25 µ
12674-11-2	Aroclor-1016	0.10 µ
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	0.10 µ
12672-29-6	Aroclor-1248	0.10 µ
11097-69-1	Aroclor-1254	0.10 µ
11096-82-5	Aroclor-1260	0.10 µ
7421-93-4	ENDRIN ALDEHYDE	0.030 µ

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s 1000 ml or W_s NA V_t 1.00 ml V_i 1.0 µl

Laboratory Name S-CUBED

Case No 9288 (SAS3554E)

Sample Number ET836

44V2081 (VOA)
RR836 (BNA)

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	NO TIC FOUND.	VOA		
2.				
3. NA	UNKNOWN	BNA	227	4 J
4. 21964498	1,13 tetradecadiene.	BNA	1274	20 JB
5.				
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ORGANICS ANALYSIS DATA SHEET
(Page 1)

Sample Number: ET837

Laboratory Name: S-CUBED
Lab Sample ID No: 4AV2031 (VOA)
Sample Matrix: WATER
Data Release Authorized By: ___M___

Case No: 9288 (SAS3554E)
QC Report No: N.R
Contract No: 68-01-7261
Date Sample Received: 04-02-88

VOLATILE COMPOUNDS
Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 04-04-88
Date Analyzed: 04-04-88
Conc/Dil Factor: 1.0 pH: N.R
Percent Moisture (Not Decanted): N.R

CAS Number		ug/l or ug/kg (Circle One)	CAS Number		ug/l or ug/kg (Circle One)
74-87-3	CHLOROMETHANE	10 U	78-87-5	1,2-DICHLOROPROPANE	1.5 U
74-83-9	BROMOMETHANE	10 U	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1 U
75-01-4	VINYL CHLORIDE	10 U	79-01-6	TRICHLOROETHENE	1.5 U
75-00-3	CHLOROETHANE	1.5 U	124-48-1	DIBROMOCHLOROMETHANE	1.5 U
75-09-2	METHYLENE CHLORIDE	1 BU	79-00-5	1,1,2-TRICHLOROETHANE	1.5 U
67-64-1	ACETONE	75 U	71-43-2	BENZENE	1.5 U
75-15-0	CARBON DISULFIDE	3 U	10061-01-5	CIS-1,3-DICHLOROPROPENE	2 U
75-35-4	1,1-DICHLOROETHENE	1.5 U	110-75-8	2-CHLOROETHYLVINYLETHER	1.5 U
75-34-3	1,1-DICHLOROETHANE	1.5 U	75-25-2	BROMOFORM	1.5 U
	TOTAL-1,2-DICHLOROETHENE'S	1.5 U	591-78-6	2-HEXANONE	50 U
67-66-3	CHLOROFORM	1.5 U	108-10-1	4-METHYL-2-PENTANONE	3 U
107-06-2	1,2-DICHLOROETHANE	1.5 U	127-18-4	TETRACHLOROETHENE	1.5 U
78-93-3	2-BUTANONE	50 U	79-34-5	1,1,2,2-TETRACHLOROETHANE	1.5 U
71-55-6	1,1,1-TRICHLOROETHANE	1.5 U	108-88-3	TOLUENE	1.5 U
56-23-5	CARBON TETRACHLORIDE	1.5 U	108-90-7	CHLOROBENZENE	1.5 U
108-05-4	VINYL ACETATE	15 U	100-41-4	ETHYLBENZENE	1.5 U
75-27-4	BROMODICHLOROMETHANE	1.5 U	100-42-5	STYRENE	1 U
107-02-8	ACROLEIN	100 U		M-XYLENE	2 U
107-13-1	ACRYLONITRILE	50 U		O/P-XYLENE	2.5 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifier are used. Additional flags or footnotes explaning results are encouraged.However,the definition of each flag must be explicit.

Value: If the result is a value greater than or equal to the detection limit,report the value.

U Indicates compound was analyzed for but not detected.Report the minimum detection limit for the sample with the U (eg.10U) based on necessary concentration/dilution action.(this is not necessarily the instrument detection limit.)The footnotes should read:U-Compound was analyzed for but not detected.The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value:This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg 10J) .If limit of detection is 10 ug/L and a concentration of 3ug/L is calculated,report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS.Single component pesticides > or = 10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when analyte is found in the blank as well as sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

S Matrix spiked compound.

Laboratory Name S-CUBED

Case No 9288/3554E

Sample Number ET 837

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration (Low) Medium (Circle One)

Date Extracted/Prepared 4-7-88

Date Analyzed 4-14-88

Conc/Dil Factor 1.0

Percent Moisture (Decanted) NA

GPC Cleanup ☐Yes ☑No

Separatory Funnel Extraction ☑Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
108-95-2	Phenol	2.6
111-44-4	bis(-2-Chloroethyl)Ether	1.5 U
95-57-8	2-Chlorophenol	2.0 U
541-73-1	1 3-Dichlorobenzene	2.0 U
106-46-7	1, 4-Dichlorobenzene	2.0 U
100-51-6	Benzyl Alcohol	2.0 U
95-50-1	1, 2-Dichlorobenzene	2.5 U
95-48-7	2-Methylphenol	1.0 U
39638-32-9	bis(2-chloroisopropyl)Ether	2.5 U
106-44-5	4-Methylphenc	1.0 U
621-64-7	N-Nitroso-Di-n-Propylamine	1.5 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	2.5 U
78-59-1	Isophorone	2.5 U
88 75-5	2-Nitrophenol	2.0 U
105-67-9	2, 4-Dimethylphenol	2.0 U
65-85-0	Benzoic Acid	30 U
111-91-1	bis(-2-Chloroethoxy)Methane	2.5 U
120-83-2	2, 4-Dichlorophenol	2.0 U
120-82-1	1, 2 4-Trichlorobenzene	2.0 U
91-20-3	Naphthalene	2.0 U
106-47-8	4-Chloroaniline	2.0 U
87-68-3	Hexachlorobutadiene	2.5 U
59-50-7	4-Chloro-3-Methylphenol	1.5 U
91-57-6	2-Methylnaphthalene	2.0 U
77-47-4	Hexachlorocyclopentadiene	2.0 U
88-06-2	2, 4, 6-Trichlorophenol	1.5 U
95-95-4	2, 4, 5-Trichlorophenol	1.5 U
91-58-7	2-Chloronaphthalene	1.5 U
88-74-4	2-Nitroaniline	1.0 U
131-11-3	Dimethyl Phthalate	1.5 U
208-96-8	Acenaphthylene	1.5 U
99-09-2	3-Nitroaniline	2.5 U

CAS Number		ug/l or ug/Kg (Circle One)
83-32-9	Acenaphthene	1.5 U
51-28-5	2, 4-Dinitrophenol	15 U
100-02-7	4-Nitrophenol	1.5 U
132-64-9	Dibenzofuran	1.0 U
121-14-2	2, 4-Dinitrotoluene	1.0 U
606-20-2	2, 6-Dinitrotoluene	1.0 U
84-66-2	Diethylphthalate	1.9 BU
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	3.0 U
534-52-1	4, 6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine (1)	1.5 U
101-55-3	4-Bromophenyl-phenylether	1.5 U
118-74-1	Hexachlorobenzene	1.5 U
87-86-5	Pentachlorophenol	2.0 U
85-01-8	Phenanthrene	1.0 U
120-12-7	Anthracene	2.5 U
84-74-2	Di-n-Butylphthalate	2.0 U
206-44-0	Fluoranthene	1.5 U
129-00-0	Pyrene	1.5 U
85-68-7	Butylbenzylphthalate	6.6
91-94-1	3, 3'-Dichlorobenzidine	NR
56-55-3	Benzo(a)Anthracene *	1.5 U
117-81-7	bis(2-Ethylhexyl)Phthalate	1.0 U
218-01-9	Chrysene *	—
117-84-0	Di-n-Octyl Phthalate	1.5 U
205-99-2	Benzo(b)Fluoranthene **	1.5 U
207-08-9	Benzo(k)Fluoranthene **	—
50-32-8	Benzo(a)Pyrene	2.0 U
193-39-5	Indeno(1, 2, 3-cd)Pyrene	3.5 U
53-70-3	Dibenz(a, h)Anthracene	2.5 U
191-24-2	Benzo(g, h, i)Perylene	4.0 U

(1)-Cannot be separated from diphenylamine

* THESE TWO PARAMETERS ARE REPORTED AS A TOT

** THESE TWO PARAMETERS ARE REPORTED AS A TOTAL

Form I 7 85

Laboratory Name S-CUBED

Case No 9288 (3554E)

Sample Number ET 837

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration (Low) Medium (Circle One)

Date Extracted/Prepared 04-11-88

Date Analyzed 04-13-88

Conc/Dil Factor 1.0

Percent Moisture (decanted) NA

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
319-84-6	Alpha-BHC	0.010 µ
319-85-7	Beta-BHC	0.005 µ
319-86-8	Delta-BHC	0.005 µ
58-89-9	Gamma-BHC (Lindane)	0.005 µ
76-44-8	Heptachlor	0.030 µ
309-00-2	Aldrin	0.005 µ
1024-57-3	Heptachlor Epoxide	0.005 µ
959 98-8	Endosulfan I	0.010 µ
60-57-1	Dieldrin	0.010 µ
72-55-9	4,4'-DDE	0.005 µ
72-20-8	Endrin	0.010 µ
33213-65-9	Endosulfan II	0.010 µ
72-54-8	4,4'-DDD	0.020 µ
1031-07-8	Endosulfan Sulfate	0.100 µ
50-29-3	4,4'-DDT	0.020 µ
72-43-5	Methoxychlor	0.020 µ
53494-70-5	Endrin Ketone	0.030 µ
57-74-9	Chlordane	0.020 µ
8001-35-2	Toxaphene	0.25 µ
12674-11-2	Aroclor-1016	0.10 µ
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	0.10 µ
12672-29-6	Aroclor-1248	0.10 µ
11097-69-1	Aroclor-1254	0.10 µ
11096-82-5	Aroclor-1260	0.10 µ
7421-93-4	ENDRIN ALDEHYDE	0.030 µ

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s 1000 ml or W_s NA V_t 1.00 ml V_i 1.0 µl

Laboratory Name S-CUBED

Case No 9288 (SAS3554E)

Sample Number ET837

4AV2031 (VOA)
ET 837 (BNA)

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	NO TIC FOUND.	VOA		
2.				
3. 21964498	1,13 tetradecadiene	BNA	1284	7 JB
4.				
5.				
6.				
7.				
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30.				

ORGANICS ANALYSIS DATA SHEET
(Page 1)

Sample Number: ET838

Laboratory Name: S-CUBED
Lab Sample ID No: V244011 (VOA)
Sample Matrix: WATER
Data Release Authorized By: M

Case No: 9288 (SAS3554E)
GC Report No: N.R
Contract No: 68-01-7261
Date Sample Received: 04-02-88

VOLATILE COMPOUNDS

Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 04-04-88
Date Analyzed: 04-04-88
Conc/Dil Factor: 1.0 pH: N.R
Percent Moisture (Not Decanted): N.R

CAS Number		ug/L or ug/kg (Circle One)	CAS Number		ug/L or ug/kg (Circle One)
74-87-3	CHLOROMETHANE	10 U	78-87-5	1,2-DICHLOROPROPANE	1.5 U
74-83-9	BROMOMETHANE	10 U	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1 U
75-01-4	VINYL CHLORIDE	10 U	79-01-6	TRICHLOROETHENE	1.5 U
75-00-3	CHLOROETHANE	1.5 U	124-48-1	DIBROMOCHLOROMETHANE	1.5 U
75-09-2	METHYLENE CHLORIDE	1 B U	79-00-5	1,1,2-TRICHLOROETHANE	1.5 U
67-64-1	ACETONE	75 U	71-43-2	BENZENE	1.5 U
75-15-0	CARBON DISULFIDE	3 U	10061-01-5	CIS-1,3-DICHLOROPROPENE	2 U
75-35-4	1,1-DICHLOROETHENE	1.5 U	110-75-8	2-CHLOROETHYLVINYLETHER	1.5 U
75-34-3	1,1-DICHLOROETHANE	1.5 U	75-25-2	BROMOFORM	1.5 U
	TOTAL-1,2-DICHLOROETHENE'S	1.5 U	591-78-6	2-HEXANONE	50 U
67-66-3	CHLOROFORM	1.5 U ~~0.38 J~~	108-10-1	4-METHYL-2-PENTANONE	3 U
107-06-2	1,2-DICHLOROETHANE	1.5 U	127-18-4	TETRACHLOROETHENE	1.5 U
78-93-3	2-BUTANONE	50 U	79-34-5	1,1,2,2-TETRACHLOROETHANE	1.5 U
71-55-6	1,1,1-TRICHLOROETHANE	1.5 U	108-88-3	TOLUENE	1.5 U
56-23-5	CARBON TETRACHLORIDE	1.5 U	108-90-7	CHLOROBENZENE	1.5 U
108-05-4	VINYL ACETATE	15 U	100-41-4	ETHYLBENZENE	1.5 U
75-27-4	BROMODICHLOROMETHANE	1.5 U	100-42-5	STYRENE	1 U
107-02-8	ACROLEIN	100 U		M-XYLENE	2 U
107-13-1	ACRYLONITRILE	50 U		O/P-XYLENE	2.5 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifier are used. Additional flags or footnotes explaning results are encouraged.However,the definition of each flag must be explicit.

Value: If the result is a value greater than or equal to the detection limit,report the value.

U Indicates compound was analyzed for but not detected.Report the minimum detection limit for the sample with the U (eg.10U) based on necessary concentration/dilution action.(this is not necessarily the instrument detection limit.)The footnotes should read:U-Compound was analyzed for but not detected.The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value:This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg 10J) .If limit of detection is 10 ug/L and a concentration of 3ug/L is calculated,report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS.Single component pesticides > or = 10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when analyte is found in the blank as well as sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

S Matrix spiked compound.

Laboratory Name S-CUBED

Case No 9288/3554E

Sample Number ET838

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration (Low) Medium (Circle One)

Date Extracted/Prepared 4-7-88

Date Analyzed 4-14-88

Conc/Dil Factor 1.0

Percent Moisture (Decanted) NA

GPC Cleanup ☐Yes ☑No

Separatory Funnel Extraction ☑Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
108-95-2	Phenol	2.0 U
111-44-4	bis(2-Chloroethyl)Ether	1.5 U
95-57-8	2-Chlorophenol	2.0 U
541-73-1	1,3-Dichlorobenzene	2.0 U
106-46-7	1,4-Dichlorobenzene	2.0 U
100-51-6	Benzyl Alcohol	2.0 U
95-50-1	1,2-Dichlorobenzene	2.5 U
95-48-7	2-Methylphenol	1.0 U
39638-32-9	bis(2-chloroisopropyl)Ether	2.5 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-n-Propylamine	1.5 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	2.5 U
78-59-1	Isophorone	2.5 U
88-75-5	2-Nitrophenol	2.0 U
105-67-9	2,4-Dimethylphenol	2.0 U
65-85-0	Benzoic Acid	30 U
111-91-1	bis(2-Chloroethoxy)Methane	2.5 U
120-83-2	2,4-Dichlorophenol	2.0 U
120-82-1	1,2,4-Trichlorobenzene	2.0 U
91-20-3	Naphthalene	2.0 U
106-47-8	4-Chloroaniline	2.0 U
87-68-3	Hexachlorobutadiene	2.5 U
59-50-7	4-Chloro-3-Methylphenol	1.5 U
91-57-6	2-Methylnaphthalene	2.0 U
77-47-4	Hexachlorocyclopentadiene	2.0 U
88-06-2	2,4,6-Trichlorophenol	1.5 U
95-95-4	2,4,5-Trichlorophenol	1.5 U
91-58-7	2-Chloronaphthalene	1.5 U
88-74-4	2-Nitroaniline	1.0 U
131-11-3	Dimethyl Phthalate	1.5 U
208-96-8	Acenaphthylene	1.5 U
99-09-2	3-Nitroaniline	2.5 U

CAS Number		ug/l or ug/Kg (Circle One)
83-32-9	Acenaphthene	1.5 U
51-28-5	2,4-Dinitrophenol	15 U
100-02-7	4-Nitrophenol	1.5 U
132-64-9	Dibenzofuran	1.0 U
121-14-2	2,4-Dinitrotoluene	1.0 U
606-20-2	2,6-Dinitrotoluene	1.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	3.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine (1)	1.5 U
101-55-3	4-Bromophenyl-phenylether	1.5 U
118-74-1	Hexachlorobenzene	1.5 U
87-86-5	Pentachlorophenol	2.0 U
85-01-8	Phenanthrene	1.0 U
120-12-7	Anthracene	2.5 U
84-74-2	Di-n-Butylphthalate	2.0 U
206-44-0	Fluoranthene	1.5 U
129-00-0	Pyrene	1.5 U
85-68-7	Butylbenzylphthalate	3.5 U
91-94-1	3,3'-Dichlorobenzidine	NR
56-55-3	Benzo(a)Anthracene *	1.5 U
117-81-7	bis(2-Ethylhexyl)Phthalate	1.0 U
218-01-9	Chrysene *	—
117-84-0	Di-n-Octyl Phthalate	1.5 U
205-99-2	Benzo(b)Fluoranthene * *	1.5 U
207-08-9	Benzo(k)Fluoranthene * *	—
50-32-8	Benzo(a)Pyrene	2.0 U
193-39-5	Indeno(1,2,3-cd)Pyrene	3.5 U
53-70-3	Dibenz(a,h)Anthracene	2.5 U
191-24-2	Benzo(g,h,i)Perylene	4.0 U

(1)-Cannot be separated from diphenylamine

* THESE TWO PARAMETERS ARE REPORTED AS A TOT

* * THESE TWO PARAMETERS ARE REPORTED AS A TOTAL

Laboratory Name S-CUBED

Case No 9288 (3554E)

Sample Number ET 838

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration (Low) Medium (Circle One)

Date Extracted/Prepared 04-11-88

Date Analyzed 04-13-88

Conc/Dil Factor 1.0

Percent Moisture (decanted) NA

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
319-84-6	Alpha-BHC	0.010 µ
319-85-7	Beta-BHC	0.005 µ
319-86-8	Delta-BHC	0.005 µ
58-89-9	Gamma-BHC (Lindane)	0.005 µ
76-44-8	Heptachlor	0.030 µ
309-00-2	Aldrin	0.005 µ
1024-57-3	Heptachlor Epoxide	0.005 µ
959 98-8	Endosulfan I	0.010 µ
60-57-1	Dieldrin	0.010 µ
72-55-9	4,4'-DDE	0.005 µ
72-20-8	Endrin	0.010 µ
33213-65-9	Endosulfan II	0.010 µ
72-54-8	4,4'-DDD	0.020 µ
1031-07-8	Endosulfan Sulfate	0.100 µ
50-29-3	4,4'-DDT	0.020 µ
72-43-5	Methoxychlor	0.020 µ
53494-70-5	Endrin Ketone	0.030 µ
57-74-9	Chlordane	0.020 µ
8001-35-2	Toxaphene	0.25 µ
12674-11-2	Aroclor-1016	0.10 µ
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	0.10 µ
12672-29-6	Aroclor-1248	0.10 µ
11097-69-1	Aroclor-1254	0.10 µ
11096-82-5	Aroclor-1260	0.10 µ
7421-93-4	ENDRIN ALDEHYDE	0.030 µ

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s 1000 ml or W_s NA V_t 1.00 ml V_i 1.0 µl

Laboratory Name S-CUBED

Case No 9288 (SAS3554E)

Sample Number
ET838

V244011 (VOA)
ET838 (BNA)

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/Kg or ug/kg)
1.	NO TIC FOUND.	VOA		
2.				
3. 21964498	1,13 tetradecadiene	BNA	1287	12 JB
4. 19812647	1,14 tetradecanediol		1290	3 JB
5.				
6.				
7.				
8.				
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ORGANICS ANALYSIS DATA SHEET
(Page 1)

Sample Number: ET839

Laboratory Name: S-CUBED
Lab Sample ID No: V244021 (VOA), R8839 (ABN)
Sample Matrix: WATER
Data Release Authorized By: JW

Case No: 9288 (SAS3554E)
GC Report No: N.R
Contract No: 68-01-7261
Date Sample Received: 04-02-88

VOLATILE COMPOUNDS

Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 04-04-88
Date Analyzed: 04-04-88
Conc/Dil Factor: 1.0 pH: N.R
Percent Moisture (Not Decanted): N.R

CAS Number		ug/l or ug/kg (Circle One)	CAS Number		ug/l or ug/kg (Circle One)
74-87-3	CHLOROMETHANE	10 U	78-87-5	1,2-DICHLOROPROPANE	1.5 U
74-83-9	BROMOMETHANE	10 U	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1 U
75-01-4	VINYL CHLORIDE	10 U	79-01-6	TRICHLOROETHENE	1.5 U
75-00-3	CHLOROETHANE	1.5 U	124-48-1	DIBROMOCHLOROMETHANE	1.5 U
75-09-2	METHYLENE CHLORIDE	1.4 BU	79-00-5	1,1,2-TRICHLOROETHANE	1.5 U
67-64-1	ACETONE	75 U	71-43-2	BENZENE	1.5 U
75-15-0	CARBON DISULFIDE	3 U	10061-01-5	CIS-1,3-DICHLOROPROPENE	2 U
75-35-4	1,1-DICHLOROETHENE	1.5 U	110-75-8	2-CHLOROETHYLVINYLETHER	1.5 U
75-34-3	1,1-DICHLOROETHANE	1.5 U	75-25-2	BROMOFORM	1.5 U
	TOTAL-1,2-DICHLOROETHENE'S	1.5 U	591-78-6	2-HEXANONE	50 U
67-66-3	CHLOROFORM	1.5u ~~0.23 J~~ JW	108-10-1	4-METHYL-2-PENTANONE	3 U
107-06-2	1,2-DICHLOROETHANE	1.5 U	127-18-4	TETRACHLOROETHENE	1.5 U
78-93-3	2-BUTANONE	50 U	79-34-5	1,1,2,2-TETRACHLOROETHANE	1.5 U
71-55-6	1,1,1-TRICHLOROETHANE	1.5 U	108-88-3	TOLUENE	1.5 U
56-23-5	CARBON TETRACHLORIDE	1.5 U	108-90-7	CHLOROBENZENE	1.5 U
108-05-4	VINYL ACETATE	15 U	100-41-4	ETHYLBENZENE	1.5 U
75-27-4	BROMODICHLOROMETHANE	1.5 U	100-42-5	STYRENE	1 U
107-02-8	ACROLEIN	100 U		M-XYLENE	2 U
107-13-1	ACRYLONITRILE	50 U		O/P-XYLENE	2.5 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifier are used. Additional flags or footnotes explaning results are encouraged. However, the definition of each flag must be explicit.

Value: If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (eg. 10U) based on necessary concentration/dilution action. (this is not necessarily the instrument detection limit.) The footnotes should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value: This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg 10J). If limit of detection is 10 ug/L and a concentration of 3ug/L is calculated, report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides > or = 10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when analyte is found in the blank as well as sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

S Matrix spiked compound.

Laboratory Name S-CUBED

Case No 9288/3554E

Sample Number ET 839

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration (Low) Medium (Circle One)

Date Extracted/Prepared 4-7-88

Date Analyzed 4-19-88

Conc./Dil Factor 1.0

Percent Moisture (Decanted) NA

GPC Cleanup ☐Yes ☑No

Separatory Funnel Extraction ☑Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
108-95-2	Phenol	2.0 U
111-44-4	bis(-2-Chloroethyl)Ether	1.5 U
95-57-8	2-Chlorophenol	2.0 U
541-73-1	1 3-Dichlorobenzene	2.0 U
106-46-7	1, 4-Dichlorobenzene	2.0 U
100-51-6	Benzyl Alcohol	2.0 U
95-50-1	1, 2-Dichlorobenzene	2.5 U
95-48-7	2-Methylphenol	1.0 U
39638-32-9	bis(2-chloroisopropyl)Ether	2.5 U
106-44-5	4-Methylphenc	1.0 U
621-64-7	N-Nitroso-Di-n-Propylamine	1.5 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	2.5 U
78-59-1	Isophorone	2.5 U
88-75-5	2-Nitrophenol	2.0 U
105-67-9	2, 4-Dimethylphenol	2.0 U
65-85-0	Benzoic Acid	30 U
111-91-1	bis(-2-Chloroethoxy)Methane	2.5 U
120-83-2	2, 4-Dichlorophenol	2.0 U
120-82-1	1 2 4-Trichlorobenzene	2.0 U
91-20-3	Naphthalene	2.0 U
106-47-8	4-Chloroaniline	2.0 U
87-68-3	Hexachlorobutadiene	2.5 U
59-50-7	4-Chloro-3-Methylphenol	1.5 U
91-57-6	2-Methylnaphthalene	2.0 U
77-47-4	Hexachlorocyclopentadiene	2.0 U
88-06-2	2, 4, 6-Trichlorophenol	1.5 U
95-95-4	2, 4, 5-Trichlorophenol	1.5 U
91-58-7	2-Chloronaphthalene	1.5 U
88-74-4	2-Nitroaniline	1.0 U
131-11-3	Dimethyl Phthalate	1.5 U
208-96-8	Acenaphthylene	1.5 U
99-09-2	3-Nitroaniline	2.5 U

CAS Number		ug/l or ug/Kg (Circle One)
83-32-9	Acenaphthene	1.5 U
51-28-5	2, 4-Dinitrophenol	15 U
100-02-7	4-Nitrophenol	1.5 U
132-64-9	Dibenzofuran	1.0 U
121-14-2	2, 4-Dinitrotoluene	1.0 U
606-20-2	2, 6-Dinitrotoluene	1.0 U
84-66-2	Diethylphthalate	1.2 U B
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	3.0 U
534-52-1	4, 6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine (1)	1.5 U
101-55-3	4-Bromophenyl-phenylether	1.5 U
118-74-1	Hexachlorobenzene	1.5 U
87-86-5	Pentachlorophenol	2.0 U
85-01-8	Phenanthrene	1.0 U
120-12-7	Anthracene	2.5 U
84-74-2	Di-n-Butylphthalate	2.0 U
206-44-0	Fluoranthene	1.5 U
129-00-0	Pyrene	1.5 U
85-68-7	Butylbenzylphthalate	7.1
91-94-1	3, 3'-Dichlorobenzidine	NR
56-55-3	Benzo(a)Anthracene *	1.5 U
117-81-7	bis(2-Ethylhexyl)Phthalate	1.0 U
218-01-9	Chrysene *	—
117-84-0	Di-n-Octyl Phthalate	1.5 U
205-99-2	Benzo(b)Fluoranthene * *	1.5 U
207-08-9	Benzo(k)Fluoranthene * *	—
50-32-8	Benzo(a)Pyrene	2.0 U
193-39-5	Indeno(1, 2, 3-cd)Pyrene	3.5 U
53-70-3	Dibenz(a h)Anthracene	2.5 U
191-24-2	Benzo(g, h, i)Perylene	4.0 U

(1)-Cannot be separated from diphenylamine

* THESE TWO PARAMETERS ARE REPORTED AS A TOT

* * THESE TWO PARAMETERS ARE REPORTED AS A TOTAL

Laboratory Name S-CUBED

Case No 9288 (3554E)

Sample Number ET 839

Organics Analysis Data Sheet
(Page 3)

Pesticide /PCBs

Concentration (Low) Medium (Circle One)

Date Extracted /Prepared 04-11-88

Date Analyzed 04-13-88

Conc /Dil Factor 1.0

Percent Moisture (decanted) NA

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/L or ug/Kg (Circle One)
319-84-6	Alpha-BHC	0.010 µ
319-85-7	Beta-BHC	0.005 µ
319-86-8	Delta-BHC	0.005 µ
58-89-9	Gamma-BHC (Lindane)	0.005 µ
76-44-8	Heptachlor	0.030 µ
309-00-2	Aldrin	0.005 µ
1024-57-3	Heptachlor Epoxide	0.005 µ
959 98-8	Endosulfan I	0.010 µ
60-57-1	Dieldrin	0.010 µ
72-55-9	4,4'-DDE	0.005 µ
72-20-8	Endrin	0.010 µ
33213-65-9	Endosulfan II	0.010 µ
72-54-8	4,4'-DDD	0.020 µ
1031-07-8	Endosulfan Sulfate	0.100 µ
50-29-3	4,4'-DDT	0.020 µ
72-43-5	Methoxychlor	0.020 µ
53494-70-5	Endrin Ketone	0.030 µ
57-74-9	Chlordane	0.020 µ
8001-35-2	Toxaphene	0.25 µ
12674-11-2	Aroclor-1016	0.10 µ
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	0.10 µ
12672-29-6	Aroclor-1248	0.10 µ
11097-69-1	Aroclor-1254	0.10 µ
11096-82-5	Aroclor-1260	0.10 µ
7421-93-4	ENDRIN ALDEHYDE	0.030 µ

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s 1000 ml or W_s NA V_t 1.00 ml V_i 1.0 µl

Laboratory Name S-CUBED

Case No 9288 (SAS3554E)

Sample Number ET839

V244021 (VOA)
RR 839 (BNA)

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	No TIC FOUND.	VOA		
2.				
3. 8196498	1,13 tetradecadiene	BNA	1274	4 JB
4. NA	UNKNOWN	↓	1379	8 J
5.				
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29.				
30.				

ORGANICS ANALYSIS DATA SHEET
(Page 1)

Sample Number: ET840

Laboratory Name: S-CUBED
Lab Sample ID No: V244031 (VOA)
Sample Matrix: WATER
Data Release Authorized By: _____

Case No: 9288 (SAS3554E)
QC Report No: N.R
Contract No: 68-01-7261
Date Sample Received: 04-02-88

VOLATILE COMPOUNDS

Concentration: Low, Medium (Circle One)
Date Extracted/Prepared: 04-04-88
Date Analyzed: 04-04-88
Conc/Dil Factor: 1.0 pH: N.R
Percent Moisture (Not Decanted): N.R

CAS Number		ug/l or ug/kg (Circle One)	CAS Number		ug/l or ug/kg (Circle One)
74-87-3	CHLOROMETHANE	10 U	78-87-5	1,2-DICHLOROPROPANE	1.5 U
74-83-9	BROMOMETHANE	10 U	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1 U
75-01-4	VINYL CHLORIDE	10 U	79-01-6	TRICHLOROETHENE	1.5 U
75-00-3	CHLOROETHANE	1.5 U	124-48-1	DIBROMOCHLOROMETHANE	1.5 U
75-09-2	METHYLENE CHLORIDE	1.3 UB	79-00-5	1,1,2-TRICHLOROETHANE	1.5 U
67-64-1	ACETONE	75 U	71-43-2	BENZENE	1.5 U
75-15-0	CARBON DISULFIDE	3 U	10061-01-5	CIS-1,3-DICHLOROPROPENE	2 U
75-35-4	1,1-DICHLOROETHENE	1.5 U	110-75-8	2-CHLOROETHYLVINYLETHER	1.5 U
75-34-3	1,1-DICHLOROETHANE	1.5 U	75-25-2	BROMOFORM	1.5 U
	TOTAL-1,2-DICHLOROETHENE'S	1.5 U	591-78-6	2-HEXANONE	50 U
67-66-3	CHLOROFORM	1.5 U	108-10-1	4-METHYL-2-PENTANONE	3 U
107-06-2	1,2-DICHLOROETHANE	1.5 U	127-18-4	TETRACHLOROETHENE	1.5 U
78-93-3	2-BUTANONE	50 U	79-34-5	1,1,2,2-TETRACHLOROETHANE	1.5 U
71-55-6	1,1,1-TRICHLOROETHANE	1.5 U	108-88-3	TOLUENE	1.5 U
56-23-5	CARBON TETRACHLORIDE	1.5 U	108-90-7	CHLOROBENZENE	1.5 U
108-05-4	VINYL ACETATE	15 U	100-41-4	ETHYLBENZENE	1.5 U
75-27-4	BROMODICHLOROMETHANE	1.5 U	100-42-5	STYRENE	1 U
107-02-8	ACROLEIN	100 U		M-XYLENE	2 U
107-13-1	ACRYLONITRILE	50 U		O/P-XYLENE	2.5 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifier are used. Additional flags or footnotes explaning results are encouraged.However,the definition of each flag must be explicit.

Value: If the result is a value greater than or equal to the detection limit,report the value.

U Indicates compound was analyzed for but not detected.Report the minimum detection limit for the sample with the U (eg.10U) based on necessary concentration/dilution action.(this is not necessarily the instrument detection limit.)The footnotes should read:U-Compound was analyzed for but not detected.The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value:This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg 10J) .If limit of detection is 10 ug/L and a concentration of 3ug/L is calculated,report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS.Single component pesticides > or = 10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when analyte is found in the blank as well as sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

S Matrix spiked compound.

Laboratory Name S-CUBED

Case No 9288 (SAS3554E)

Sample Number ET840

V244031 (VOA)

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	NO TIC FOUND.	VOA		
2.				
3.	NO ABN ANALYSIS			
4.				
5.				
6.				
7.				
8.				
9.				
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

ESD/Central Regional Laboratory
DATA TRACKING FORM FOR CONTRACT SAMPLES

CRL Data Set No. SF 5011 CERCLIS No. —

SMO Case No. 9288 SAS 3554E Site Name and Location: HADER GROUND WATER

Name of Contractor or EPA Laboratory: S-CUBED Data User: MPCA

No. of Samples: 10 Date Samples or Data Received: 4-25-88

1. Have chain-of-custody records been received? YES ✓ NO
2. Have Traffic Reports or packing lists been received? YES ✓ NO
3. If no, are Traffic Report or packing list numbers written on the chain-of-custody record? YES ___ NO ___
4. If no, which Traffic report or packing list numbers are missing?

Are basic data forms in? YES ✓ NO ___

Number of samples claimed: 10 Number of samples received: 10

Checked by: Erlinda Luz M. Arreola Date: 4-25-88

Received by Contract Project Management Section: P. Chunilla Date: 4-25-88

Review Started: 5-2-88 Reviewer Signature: [signature]

Total time spent on review: 7hr Date review completed: 5-2-88

Copied (xeroxed) by: ___ Date: ___

Mailed to Data User by: Wanda Freeman Date: 5-6-88

DATA USERS:

Please fill in the blanks below and return this form to: Sylvia Griffin, Data Management Coordinator, Region V, 5SCRL

Data received by: ___ Date: ___

Q.A. review received by: ___ Date: ___

Inorganic Date Complete [ ], Suitable for Intended Purposes [ ] ✓ [ ] if acceptable.
Organic Data Complete [ ], Suitable for Intended Purposes [ ] List problems below.
Dioxin Data Complete [ ], Suitable for Intended Purposes [ ]
SAS Data Complete [ ], Suitable for Intended Purposes [ ]

See Attached "Missing Data Request Form" [ ]
PROBLEMS: Please indicate reasons (if any) why data are not suitable for your uses. Other problems.

Received by Data Management Coordinator, CRL for File: Date: ___

Signature:

ORGANICS ANALYSIS DATA SHEET
(Page 1)

Sample Number:
LAB BLANK

Laboratory Name: S-CUBED
Lab Sample ID No: 44V2021 (VOA), RRBAG (ABN) Labblank 4-11 (post)
Sample Matrix: WATER
Data Release Authorized By: [illegible]

Case No: 9288 (SAS3554E)
QC Report No: N.R
Contract No: 68-01-7261
Date Sample Received: N.R

VOLATILE COMPOUNDS

Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 04-04-88
Date Analyzed: 04-04-88
Conc/Dil Factor: 1.0 pH: N.R
Percent Moisture (Not Decanted): N.R

CAS Number		ug/L or ug/kg (Circle One)	CAS Number		ug/L or ug/kg (Circle One)
74-87-3	CHLOROMETHANE	10 U	78-87-5	1,2-DICHLOROPROPANE	1.5 U
74-83-9	BROMOMETHANE	10 U	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1 U
75-01-4	VINYL CHLORIDE	10 U	79-01-6	TRICHLOROETHENE	1.5 U
75-00-3	CHLOROETHANE	1.5 U	124-48-1	DIBROMOCHLOROMETHANE	1.5 U
75-09-2	METHYLENE CHLORIDE	1.3	79-00-5	1,1,2-TRICHLOROETHANE	1.5 U
67-64-1	ACETONE	75 U	71-43-2	BENZENE	1.5 U
75-15-0	CARBON DISULFIDE	3 U	10061-01-5	CIS-1,3-DICHLOROPROPENE	2 U
75-35-4	1,1-DICHLOROETHENE	1.5 U	110-75-8	2-CHLOROETHYLVINYLETHER	1.5 U
75-34-3	1,1-DICHLOROETHANE	1.5 U	75-25-2	BROMOFORM	1.5 U
	TOTAL-1,2-DICHLOROETHENE'S	1.5 U	591-78-6	2-HEXANONE	50 U
67-66-3	CHLOROFORM	1.5 U	108-10-1	4-METHYL-2-PENTANONE	3 U
107-06-2	1,2-DICHLOROETHANE	1.5 U	127-18-4	TETRACHLOROETHENE	1.5 U
78-93-3	2-BUTANONE	50 U	79-34-5	1,1,2,2-TETRACHLOROETHANE	1.5 U
71-55-6	1,1,1-TRICHLOROETHANE	1.5 U	108-88-3	TOLUENE	1.5 U
56-23-5	CARBON TETRACHLORIDE	1.5 U	108-90-7	CHLOROBENZENE	1.5 U
108-05-4	VINYL ACETATE	15 U	100-41-4	ETHYLBENZENE	1.5 U
75-27-4	BROMODICHLOROMETHANE	1.5 U	100-42-5	STYRENE	1 U
107-02-8	ACROLEIN	100 U		M-XYLENE	2 U
107-13-1	ACRYLONITRILE	50 U		O/P-XYLENE	2.5 U

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J Indicates an estimated value:This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg 10J) .If limit of detection is 10 ug/L and a concentration of 3ug/L is calculated,report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS.Single component pesticides > or = 10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when analyte is found in the blank as well as sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

S Matrix spiked compound.

Laboratory Name S-CUBED

Case No 9288/3554E

Sample Number
Lab Blank 4-6

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration (Low) Medium (Circle One)

Date Extracted/Prepared 4-6-88

Date Analyzed 4-13-88

Conc./Dil Factor 1.0

Percent Moisture (Decanted) N/A

GPC Cleanup ☐Yes ☑No

Separatory Funnel Extraction ☑Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)	
108-95-2	Phenol	2.0	U
111-44-4	bis(-2-Chloroethyl)Ether	1.5	U
95-57-8	2-Chlorophenol	2.0	U
541-73-1	1 3-Dichlorobenzene	2.0	U
106-46-7	1, 4-Dichlorobenzene	2.0	U
100-51-6	Benzyl Alcohol	2.0	U
95-50-1	1, 2-Dichlorobenzene	2.5	U
95-48-7	2-Methylphenol	1.0	U
39638-32-9	bis(2-chloroisopropyl)Ether	2.5	U
106-44-5	4-Methylphenc	1.0	U
621-64-7	N-Nitroso-Di-n-Propylamine	1.5	U
67-72-1	Hexachloroethane	2.0	U
98-95-3	Nitrobenzene	2.5	U
78-59-1	Isophorone	2.5	U
88 75-5	2-Nitrophenol	2.0	U
105-67-9	2, 4-Dimethylphenol	2.0	U
65-85-0	Benzoic Acid	30	U
111-91-1	bis(2-Chloroethoxyl)Methane	2.5	U
120-83-2	2, 4-Dichlorophenol	2.0	U
120-82-1	1 2 4-Trichlorobenzene	2.0	U
91-20-3	Naphthalene	2.0	U
106-47-8	4-Chloroaniline	2.0	U
87-68-3	Hexachlorobutadiene	2.5	U
59-50-7	4-Chloro-3-Methylphenol	1.5	U
91-57-6	2-Methylnaphthalene	2.0	U
77-47-4	Hexachlorocyclopentadiene	2.0	U
88-06-2	2, 4, 6-Trichlorophenol	1.5	U
95-95-4	2, 4, 5-Trichlorophenol	1.5	U
91-58-7	2-Chloronaphthalene	1.5	U
88-74-4	2-Nitroaniline	1.0	U
131-11-3	Dimethyl Phthalate	1.5	U
208-96-8	Acenaphthylene	1.5	U
99-09-2	3-Nitroaniline	2.5	U

CAS Number		ug/l or ug/Kg (Circle One)	
83-32-9	Acenaphthene	1.5	U
51-28-5	2, 4-Dinitrophenol	15	U
100-02-7	4-Nitrophenol	1.5	U
132-64-9	Dibenzofuran	1.0	U
121-14-2	2, 4-Dinitrotoluene	1.0	U
606-20-2	2, 6-Dinitrotoluene	1.0	U
84-66-2	Diethylphthalate	1.0	U
7005-72-3	4-Chlorophenyl-phenylether	1.0	U
86-73-7	Fluorene	1.0	U
100-01-6	4-Nitroaniline	3.0	U
534-52-1	4, 6-Dinitro-2-Methylphenol	15	U
86-30-6	N-Nitrosodiphenylamine (1)	1.5	U
101-55-3	4-Bromophenyl-phenylether	1.5	U
118-74-1	Hexachlorobenzene	1.5	U
87-86-5	Pentachlorophenol	2.0	U
85-01-8	Phenanthrene	1.0	U
120-12-7	Anthracene	2.5	U
84-74-2	Di-n-Butylphthalate	2.0	U
206-44-0	Fluoranthene	1.5	U
129-00-0	Pyrene	1.5	U
85-68-7	Butylbenzylphthalate	3.5	U
91-94-1	3, 3'-Dichlorobenzidine	NR	
56-55-3	Benzo(a)Anthracene *	1.5	U
117-81-7	bis(2-Ethylhexyl)Phthalate	1.0	U
218-01-9	Chrysene *	—	
117-84-0	Di-n-Octyl Phthalate	1.5	U
205-99-2	Benzo(b)Fluoranthene * *	1.5	U
207-08-9	Benzo(k)Fluoranthene * *	—	
50-32-8	Benzo(a)Pyrene	2.0	U
193-39-5	Indeno(1, 2, 3-cd)Pyrene	3.5	U
53-70-3	Dibenz(a h)Anthracene	2.5	U
191-24-2	Benzo(g, h, i)Perylene	4.0	U

(1)-Cannot be separated from diphenylamine

* THESE TWO PARAMETERS ARE REPORTED AS A TOT

* * THESE TWO PARAMETERS ARE REPORTED AS A TOTAL

Laboratory Name S-CUBED

Case No 9288 (3554E)

Sample Number LAB BLANK 4-11

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration (Low) Medium (Circle One)

Date Extracted/Prepared 4-11-88

Date Analyzed 4-12-88

Conc/Dil Factor 1.0

Percent Moisture (decanted) NA

GPC Cleanup ☐Yes ☒No

Separatory Funnel Extraction ☒Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		ug/l or ug/Kg (Circle One)
319-84-6	Alpha-BHC	0.010 µ
319-85-7	Beta-BHC	0.005 µ
319-86-8	Delta-BHC	0.005 µ
58-89-9	Gamma-BHC (Lindane)	0.005 µ
76-44-8	Heptachlor	0.030 µ
309-00-2	Aldrin	0.005 µ
1024-57-3	Heptachlor Epoxide	0.005 µ
959 98-8	Endosulfan I	0.010 µ
60-57-1	Dieldrin	0.010 µ
72-55-9	4,4'-DDE	0.005 µ
72-20-8	Endrin	0.010 µ
33213-65-9	Endosulfan II	0.010 µ
72-54-8	4,4'-DDD	0.020 µ
1031-07-8	Endosulfan Sulfate	0.100 µ
50-29-3	4,4'-DDT	0.020 µ
72-43-5	Methoxychlor	0.020 µ
53494-70-5	Endrin Ketone	0.030 µ
57-74-9	Chlordane	0.020 µ
8001-35-2	Toxaphene	0.25 µ
12674-11-2	Aroclor-1016	0.10 µ
11104-28-2	Aroclor-1221	NA
11141-16-5	Aroclor-1232	NA
53469-21-9	Aroclor-1242	0.10 µ
12672-29-6	Aroclor-1248	0.10 µ
11097-69-1	Aroclor-1254	0.10 µ
11096-82-5	Aroclor-1260	0.10 µ
7421-93-4	ENDRIN ALDEHYDE	0.030 µ

V_i = Volume of extract injected (ul)

V_s = Volume of water extracted (ml)

W_s = Weight of sample extracted (g)

V_t = Volume of total extract (ul)

V_s 1000 ml or W_s NA V_t 1.00 ml V_i 1.0 µl

Laboratory Name S-CUBED

Case No 9288 (SAS3554E)

Sample Number
LAB BLANK

44V2021 (VOA)
RRBAG (BNA)

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	No TIC FOUND.	VOA		
2.				
3.	No TIC Found	BNA		
4.				
5.				
6.				
7.				
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ORGANICS ANALYSIS DATA SHEET
(Page 1)

Sample Number:
LAB BLANK

Laboratory Name: S-CUBED
Lab Sample ID No: 4AV2021 (VOA), LBA07 (ABN)
Sample Matrix: WATER
Data Release Authorized By: _m_

Case No: 9288 (SAS3554E)
QC Report No: N.R
Contract No: 68-01-7261
Date Sample Received: N.R

VOLATILE COMPOUNDS
Concentration: Low Medium (Circle One)
Date Extracted/Prepared: 04-04-88
Date Analyzed: 04-04-88
Conc/Dil Factor: 1.0 pH: N.R
Percent Moisture (Not Decanted): N.R

CAS Number		ug/L or ug/kg (Circle One)	CAS Number		ug/L or ug/kg (Circle One)
74-87-3	CHLOROMETHANE	10 U	78-87-5	1,2-DICHLOROPROPANE	1.5 U
74-83-9	BROMOMETHANE	10 U	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1 U
75-01-4	VINYL CHLORIDE	10 U	79-01-6	TRICHLOROETHENE	1.5 U
75-00-3	CHLOROETHANE	1.5 U	124-48-1	DIBROMOCHLOROMETHANE	1.5 U
75-09-2	METHYLENE CHLORIDE	2.2	79-00-5	1,1,2-TRICHLOROETHANE	1.5 U
67-64-1	ACETONE	75 U	71-43-2	BENZENE	1.5 U
75-15-0	CARBON DISULFIDE	3 U	10061-01-5	CIS-1,3-DICHLOROPROPENE	2 U
75-35-4	1,1-DICHLOROETHENE	1.5 U	110-75-8	2-CHLOROETHYLVINYLETHER	1.5 U
75-34-3	1,1-DICHLOROETHANE	1.5 U	75-25-2	BROMOFORM	1.5 U
	TOTAL-1,2-DICHLOROETHENE'S	1.5 U	591-78-6	2-HEXANONE	50 U
67-66-3	CHLOROFORM	1.5 U	108-10-1	4-METHYL-2-PENTANONE	3 U
107-06-2	1,2-DICHLOROETHANE	1.5 U	127-18-4	TETRACHLOROETHENE	1.5 U
78-93-3	2-BUTANONE	50 U	79-34-5	1,1,2,2-TETRACHLOROETHANE	1.5 U
71-55-6	1,1,1-TRICHLOROETHANE	1.5 U	108-88-3	TOLUENE	1.5 U
56-23-5	CARBON TETRACHLORIDE	1.5 U	108-90-7	CHLOROBENZENE	1.5 U
108-05-4	VINYL ACETATE	15 U	100-41-4	ETHYLBENZENE	1.5 U
75-27-4	BROMODICHLOROMETHANE	1.5 U	100-42-5	STYRENE	1 U
107-02-8	ACROLEIN	100 U		M-XYLENE	2 U
107-13-1	ACRYLONITRILE	50 U		O/P-XYLENE	2.5 U

Data Reporting Qualifiers

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J Indicates an estimated value:This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg 10J) .If limit of detection is 10 ug/L and a concentration of 3ug/L is calculated,report as 3J.

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS.Single component pesticides > or = 10 ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when analyte is found in the blank as well as sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

S Matrix spiked compound.

Laboratory Name S-CUBED

Case No 9288/3554E

Sample Number
Lab Blank 4-7

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration (Low) Medium (Circle One)

Date Extracted/Prepared 4-7-88

Date Analyzed 4-10-88

Conc/Dil Factor 1.0

Percent Moisture (Decanted) NA

GPC Cleanup ☐Yes ☑No

Separatory Funnel Extraction ☑Yes

Continuous Liquid - Liquid Extraction ☐Yes

CAS Number		(ug/l or ug/Kg) (Circle One)
108-95-2	Phenol	2.0 U
111-44-4	bis(-2-Chloroethyl)Ether	1.5 U
95-57-8	2-Chlorophenol	2.0 U
541-73-1	1 3-Dichlorobenzene	2.0 U
106-46-7	1, 4-Dichlorobenzene	2.0 U
100-51-6	Benzyl Alcohol	2.0 U
95-50-1	1, 2-Dichlorobenzene	2.5 U
95-48-7	2-Methylphenol	1.0 U
39638-32-9	bis(2-chloroisopropyl)Ether	2.5 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-n-Propylamine	1.5 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	2.5 U
78-59-1	Isophorone	2.5 U
88-75-5	2-Nitrophenol	2.0 U
105-67-9	2, 4-Dimethylphenol	2.0 U
65-85-0	Benzoic Acid	30 U
111-91-1	bis(-2-Chloroethoxy)Methane	2.5 U
120-83-2	2, 4-Dichlorophenol	2.0 U
120-82-1	1 2 4-Trichlorobenzene	2.0 U
91-20-3	Naphthalene	2.0 U
106-47-8	4-Chloroaniline	2.0 U
87-68-3	Hexachlorobutadiene	2.5 U
59-50-7	4-Chloro-3-Methylphenol	1.5 U
91-57-6	2-Methylnaphthalene	2.0 U
77-47-4	Hexachlorocyclopentadiene	2.0 U
88-06-2	2, 4, 6-Trichlorophenol	1.5 U
95-95-4	2, 4, 5-Trichlorophenol	1.5 U
91-58-7	2-Chloronaphthalene	1.5 U
88-74-4	2-Nitroaniline	1.0 U
131-11-3	Dimethyl Phthalate	1.5 U
208-96-8	Acenaphthylene	1.5 U
99-09-2	3-Nitroaniline	2.5 U

CAS Number		(ug/l or ug/Kg) (Circle One)
83-32-9	Acenaphthene	1.5 U
51-28-5	2, 4-Dinitrophenol	15 U
100-02-7	4-Nitrophenol	1.5 U
132-64-9	Dibenzofuran	1.0 U
121-14-2	2, 4-Dinitrotoluene	1.0 U
606-20-2	2, 6-Dinitrotoluene	1.0 U
84-66-2	Diethylphthalate	2.1
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	3.0 U
534-52-1	4, 6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine (1)	1.5 U
101-55-3	4-Bromophenyl-phenylether	1.5 U
118-74-1	Hexachlorobenzene	1.5 U
87-86-5	Pentachlorophenol	2.0 U
85-01-8	Phenanthrene	1.0 U
120-12-7	Anthracene	2.5 U
84-74-2	Di-n-Butylphthalate	2.0 U
206-44-0	Fluoranthene	1.5 U
129-00-0	Pyrene	1.5 U
85-68-7	Butylbenzylphthalate	3.5 U
91-94-1	3, 3'-Dichlorobenzidine	NR
56-55-3	Benzo(a)Anthracene *	1.5 U
117-81-7	bis(2-Ethylhexyl)Phthalate	1.0 U
218-01-9	Chrysene *	—
117-84-0	Di-n-Octyl Phthalate	1.5 U
205-99-2	Benzo(b)Fluoranthene * *	1.5 U
207-08-9	Benzo(k)Fluoranthene * *	—
50-32-8	Benzo(a)Pyrene	2.0 U
193-39-5	Indeno(1, 2, 3-cd)Pyrene	3.5 U
53-70-3	Dibenz(a h)Anthracene	2.5 U
191-24-2	Benzo(g, h, i)Perylene	4.0 U

(1)-Cannot be separated from diphenylamine

* THESE TWO PARAMETERS ARE REPORTED AS A TOT

* * THESE TWO PARAMETERS ARE REPORTED AS A TOTAL

Laboratory Name S-CUBED

Case No 9288 (SAS3554E)

Sample Number
LAB BLANK
4AV2021(VOA)
LBA07 (BNA)

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	No TIC FOUND.	VOA		
2.				
3. 21964498	1,13 tetradecadiene	BNA	1294	22 J
4. 19812647	1,14 tetradecanediol	BNA	1298	6 J
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
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29.				
30.				

USEPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 ALEXANDRIA, VA 22313
703/557-2490 FTS-557-2490

CASE NO: 9288 | SAS NO: (IF APPLICABLE) 3554-E

ORGANIC TRAFFIC REPORT

(FOR CLP USE ONLY)

TYPE OF ACTIVITY (CIRCLE ONE) ①
SUPERFUND—PA SI ESI RI/FS RD RA ER
NPL O&M OTHER
NON-SUPERFUND PROGRAM

SAMPLE DESCRIPTION
(ENTER IN BOX BELOW)
1. SURFACE WATER 5. SEDIMENT
2. GROUND WATER 6. OIL (SAS)
3. LEACHATE 7. WASTE (SAS)

REGION NO: V
SAMPLING COMPANY ②: MPCA
SAMPLER: (NAME) REBECCA LOFGREN

SHIP TO: ③
S-Cubed (S3)
3398 Carmel Mountain Rd
San Diego, CA 92121
ATTN: Elaine Walters

SAMPLING DATE: ④
BEGIN: 3/29/88 END: 3/31/88
DATE SHIPPED: 4/1/88 CARRIER: FED EX
AIRBILL NO: 6820695814

DATE REC'D: SDG NO: ⑤
REC'D BY: Elaine Walters
LABORATORY CONTRACT NO. UNIT PRICE
7261

TRANSFER TO: DATE REC'D: ⑦
REC'D BY: CONTRACT NO./PRICE:

SAMPLE NUMBER (FROM LABELS)	⑧ SAMPLE DESCRIPTION (FROM BOX)	⑨ CONCENTRATION (LOW/MED)	⑩ VOLATILE	BASE/NEUTRAL ACID	PESTICIDE PCB	SPECIAL HANDLING	STATION LOCATION	⑫ SAMPLE CONDITION ON RECEIPT	⑬ HIGH CONC PHASES (CHECK) SOLID	WATER—MIS LIQUID	NON WATER—AIR LIQUID
ET 831	2	L	X	X	X		H-4				
ET 832	2	L	X	X	X		H-3				
ET 833	2	L	X	X	X		H-1				
ET 834	2	L	X	X	X		H-2				
ET 835	2	L	X	X	X		H-6				
ET 836	2	L	X	X	X		H-7				
ET 837	2	L	X	X	X		H-5				
ET 838	2	L	X	X	X		H-8				
ET 839	2	L	X	X	X		H-9				
ET 840	2	L	X				TRIP BLANK				

SAMPLING COMPLETE
(1 of 4 coolers shipped)

EPA Form 2075-7 (8-87)

WHITE — SMO COPY PINK — CLIENT COPY WHITE — LAB COPY FOR RETURN TO SMO YELLOW — LAB COPY

IDENTIFICATION
OF NAMES OF INTERNAL STANDARD (IS) AND
SURROGATES (SURR) ON RIC SHEET

VOLATILE	IS1	:	BROMOCHLOROMETHANE
	IS2	:	1,4-DIFLUOROBENZENE
	IS3	:	D5-CHLOROBENZENE
	SURR1	:	D8-TOLUENE
	SURR2	:	D4-1,2-DICHLOROETHANE
	SURR3	:	BROMOFLUOROBENZENE
SEMI-VOLATILE	IS1	:	D4-DICHLOROBENZENE
	IS2	:	D8-NAPHTHALENE
	IS3	:	D10-ACENAPHTHENE
	IS4	:	D10-PHENANTHRENE
	IS5	:	D12-CHRYSENE
	IS6	:	D12-PERYLENE
	SURR3	:	D5-NITROBENZENE
	SURR2	:	D5-PHENOL
	SURR1	:	2-FLUOROPHENOL
	SURR4	:	2-FLUOROBIPHENYL
	SURR5	:	2,4,6-TRIBROMOPHENOL
	SURR6	:	D14-TERPHENYL

GC/MS TUNING AND MASS CALIBRATION

Decafluorotriphenylphosphine (DFTPP)

Case No. 9288/3554E Contractor S-Cubed Contract No. 6801-7261.

Instrument ID HP1. Date / Time 4/10/88 1:50

Lab ID >TA07C::02 Data Release Authorized By: [signature].

m/z	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE	
51	30.0 - 60.0% of mass 198	42.77 OK	
68	less than 2.0% of mass 69	0.00 OK	(0.00) #1
69	mass 69 relative abundance	56.64	
70	less than 2.0% of mass 69	0.00 OK	(0.00) #1
127	40.0 - 60.0% of mass 198	47.44 OK	
197	less than 1.0% of mass 198	.93 OK	
198	base peak, 100% relative abundance	100.00 OK	
199	5.0 - 9.0% of mass 198	6.76 OK	
275	10.0 - 30.0% of mass 198	20.12 OK	
365	greater than 1.00% of mass 198	2.06 OK	
441	present, but less than mass 443	9.44 OK	
442	greater than 40.0% of mass 198	62.96 OK	
443	17.0 - 23.0% of mass 442	13.46 OK	(21.37) #2

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS.

#1 - Value in parenthesis is % mass 69.
#2 - Value in parenthesis is % mass 442.

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS
20 ppm ICAL	SF 101	4-10-88	0215
50 ppm ICAL	SF 102		0312
100 ppm ICAL	SF 103		0409
Lab Blk 4-7	LBA07		0507
Lab Blk 4-4	LBA04		0604
EW 276	EW 276		0701
EW 276 MS	MS 276		0759
EW 276 MSD	MSD 76		0856
EW 277	EW 277		0955
ET 833	ET 833		1053
ET 834	ET 834		1152

GC/MS TUNING AND MASS CALIBRATION

Decafluorotriphenylphosphine (DFTPP)

Case No. 9298/3554E Contractor S - CUBED Contract No. 6801-7261

Instrument ID #1(HP) Date / Time 4/13/88 17:27

Lab ID >TM13A::D3 Data Release Authorized By: [illegible]

m/z	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE	
51	30.0 - 60.0% of mass 198	40.93 OK	
68	less than 2.0% of mass 69	0.00 OK	(0.00) #1
69	mass 69 relative abundance	55.13	
70	less than 2.0% of mass 69	0.00 OK	(0.00) #1
127	40.0 - 60.0% of mass 198	46.04 OK	
197	less than 1.0% of mass 198	0.00 OK	
198	base peak, 100% relative abundance	100.00 OK	
199	5.0 - 9.0% of mass 198	7.42 OK	
275	10.0 - 30.0% of mass 198	21.56 OK	
365	greater than 1.00% of mass 198	2.10 OK	
441	present, but less than mass 443	10.14 OK	
442	greater than 40.0% of mass 198	64.91 OK	
443	17.0 - 23.0% of mass 442	14.67 OK	(22.59) #2

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS.

#1 - Value in parenthesis is % mass 69.
#2 - Value in parenthesis is % mass 442.

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS
20 ppm ICAL	SF 301	4-13-88	1752
50 ppm ICAL	SF 302		1853
100 ppm ICAL	SF 303		1951
Lab Blk 4-6	RRBA6		2051
ET 726	RR 726		2150
E 722	RR 722		2249
EW 274	RR 274	4-13-88	2348
EW 275	RR 275	4-14-88	0047
EW 280	RR 280		0146
ET 837	ET 837		0244
ET 838	ET 838		0342

GC/MS TUNING AND MASS CALIBRATION

Decafluorotriphenylphosphine (DFTPP)

Case No. 9288/3554E Contractor S - CUBED Contract No. 6801-7261

Instrument ID #1(HP) Date / Time 4/14/88 15:56

Lab ID >TA14A::02 Date Release Authorized By: _____

m/z	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	36.79 OK
68	less than 2.0% of mass 69	0.00 OK (0.00) #1
69	mass 69 relative abundance	48.04
70	less than 2.0% of mass 69	0.00 OK (0.00) #1
127	40.0 - 60.0% of mass 198	41.97 OK
197	less than 1.0% of mass 198	0.00 OK
198	base peak, 100% relative abundance	100.00 OK
199	5.0 - 9.0% of mass 198	7.33 OK
275	10.0 - 30.0% of mass 198	20.61 OK
365	greater than 1.00% of mass 198	1.77 OK
441	present, but less than mass 443	12.64 OK
442	greater than 40.0% of mass 198	80.91 OK
443	17.0 - 23.0% of mass 442	18.33 OK (22.66) #2

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS.

#1 - Value in parenthesis is % mass 69.
#2 - Value in parenthesis is % mass 442.

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS
20ppm ICAL	SF401	4-14-88	1621 ✓
50ppm ICAL	SF 402		1719 ✓
100ppm ICAL	SF 403		1817 ✓
Lab Blk 4-14	RXLBA		1919
EW 275	RX 275		2012
EW 280	RX 280	4-14-88	2109
ET 831	ET 831	4-15-88	0001 ✓
ET 831 MS	MS 831		0059 ✓
ET 831 MSD	MSD 31		0156 ✓
ET 832	ET 832		0253 ✓

GC/MS TUNING AND MASS CALIBRATION

Decafluorotriphenylphosphine (DFTPP)

Case No. 9288/3554E Contractor S - CUBED Contract No. 6801-7261

Instrument ID #1(HP) Date / Time 4/19/88 10:02

Lab ID >TA19A::D2 Data Release Authorized By: [signature]

m/z	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE	
51	30.0 - 60.0% of mass 198	51.50 OK	
68	less than 2.0% of mass 69	1.16 OK	(1.803) #1
69	mass 69 relative abundance	64.09	
70	less than 2.0% of mass 69	0.00 OK	(0.00) #1
127	40.0 - 60.0% of mass 198	51.08 OK	
197	less than 1.0% of mass 198	0.00 OK	
198	base peak, 100% relative abundance	100.00 OK	
199	5.0 - 9.0% of mass 198	6.91 OK	
275	10.0 - 30.0% of mass 198	18.55 OK	
365	greater than 1.00% of mass 198	2.09 OK	
441	present, but less than mass 443	7.13 OK	
442	greater than 40.0% of mass 198	45.09 OK	
443	17.0 - 23.0% of mass 442	9.12 OK	(20.24) #2

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS.

#1 - Value in parenthesis is % mass 69.
#2 - Value in parenthesis is % mass 442.

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS
20ppm ICAL	SF 601	4-19-88	1028
50ppm ICAL	SF 602		1128
100ppm ICAL	SF 603		1228
ET 835	RR 835		1326
ET 836	RR 836		1426
ET 839	RR 839		1525
20ppm ICAL	CB 801		1630
50ppm ICAL	CB 802		1728
80ppm ICAL	CB 803		1825
120ppm ICAL	CB 804		1924
160ppm ICAL	CB 805		2022

GC/MS TUNING AND MASS CALIBRATION

Bromofluorobenzene (BFB)

Case No. ~~9217~~ 9288 Contractor S-CUBED Contract No 68-01-~~6868~~ 7261

Instrument ID VG2 Date 20 mar 88 Time 0:59

Lab ID 328V2BFB Data Release Authorized By: [illegible]

m/e	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE
50	15.0 - 40.0% of the base peak	21.9
75	30.0 - 60.0% of the base peak	53.5
95	Base peak, 100% relative abundance	100
96	5.0 - 9.0% of the base peak	6.90
173	Less than 1.0% of the base peak	no peak
174	Greater than 50.0% of the base peak	57.8
175	5.0 - 9.0% of mass 174	4.07 (7.04)[1]
176	Greater than 95.0%, but less than 101.0% of mass 174	56.5 (97.8)[1]
177	5.0 - 9.0% of mass 176	3.80 (6.73)[2]

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS.

[1]Value in parenthesis is % mass 174
[2]Value in parenthesis is % mass 176.

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS
5ppb ICAL	328V2011	20 Mar 88	9:59
20ppb ICAL	328V2021		~~10:55~~ 10:55
10ppb ICAL	328V2031		11:46
LAB BK	328V2041		12:38
ET 603	283V2011		14:18
ET 604	283V2021		15:09
ET 605	283V2031		16:00
ET 606	283V2051		17:41

GC/MS TUNING AND MASS CALIBRATION

Bromofluorobenzene (BFB)

Case No. 9288 Contractor S-CUBED Contract No 68-01-7261

Instrument ID VG2 Date 4-APR-88 Time 19:46

Lab ID A4V2BFB Data Release Authorized By:

m/e	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE
50	15.0 - 40.0% of the base peak	19.9
75	30.0 - 60.0% of the base peak	59.5
95	Base peak, 100% relative abundance	100
96	5.0 - 9.0% of the base peak	7.06
173	Less than 1.0% of the base peak	none
174	Greater than 50.0% of the base peak	56.7
175	5.0 - 9.0% of mass 174	3.89 (6.86)[1]
176	Greater than 95.0%, but less than 101.0% of mass 174	54.9 (96.8)[1]
177	5.0 - 9.0% of mass 176	3.66 (6.56)[2]

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS.

[1]Value in parenthesis is % mass 174
[2]Value in parenthesis is % mass 176

SAMPLE ID.	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS
10PT CCAL	4AV201	4apr88	20:16
LAB BLANK	4AV202		21:11
ET037	4AV203		22:01
matrix blank	4AV204		22:5
ET031 MS	4AV205		23:41
ET001 mod.	4AV206	5apr88	0:31

FORM V

7/85

GC/MS TUNING AND MASS CALIBRATION

Bromofluorobenzene (BFB)

Case No. 9288 Contractor S-CUBED Contract No 68-01-~~6366~~ 7261

Instrument ID VG2 Date 4apr 1988 Time 8:25

Lab ID 4AV2BFB Data Release Authorized By: [illegible]

m/e	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE
50	15.0 - 40.0% of the base peak	18.8 ✓
75	30.0 - 60.0% of the base peak	52.5 ✓
95	Base peak, 100% relative abundance	100 ✓
96	5.0 - 9.0% of the base peak	6.80 ✓
173	Less than 1.0% of the base peak	no peak ✓
174	Greater than 50.0% of the base peak	59.3 ✓
175	5.0 - 9.0% of mass 174	4.16 ✓ (7.02)[1]
176	Greater than 95.0%, but less than 101.0% of mass 174	58.7 ✓ (99.0)[1]
177	5.0 - 9.0% of mass 176	~~3.7~~ 3.65 gw (~~6.30~~ 6.33 gw)[2]

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS.

[1]Value in parenthesis is % mass 174
[2]Value in parenthesis is % mass 176

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS
10 ppb	44V2011	4-Apr-88	9:13
LAB BLK	44V2021		10:09 ✓
ET 831	44V2031		11:05 ✓
ET 833	44V2041		12:04 ✓
ET 832	44V2051		12:55 ✓
ET 834	44V2061		13:45 ✓
ET 835	44V2071		14:35 ✓
ET 836	44V2081		~~Ay 15:25~~ 15:26
ET 838	~~44V2091~~ V244011		17:08 ✓
ET 839	~~44V2101~~ V244021		17:59 ✓
ET 840	V244031		18:50 ✓

INORGANIC DATA

INORGANIC DATA

SF 5011 MPCA

MT

COVER SHEET

LABORATORY RESPONSE TO RESULTS OF CONTRACT COMPLIANCE SCREENING (CCS)

Header GW

Response To: (check one)

- [ ] Organics CCS
- [x] Inorganics CCS

Response materials sent to Organics CCS should be sent to the attention of Doris Ling, SMO.

Response materials sent to Inorganics CCS should be sent to the attention of Sa'ad Masri, SMO.

Laboratory Name: Rocky Mountain Analytical

Response Date 5-18-88

EPA Contract No: 68-01-7436

SDG No: MEW615

Case No: 9288

Date Screening Results Received at Laboratory 5-10-88

Sample Nos.* SAS 3554E

* Only list sample numbers that require reconciliation.

This form is used to identify materials sent in response to results of Contract Compliance Screening (CCS). A separate form must accompany the response for each Case.

Please indicate (on the attached continuation form) which fractions and/or which criteria correspond with your resubmission. Respond materials sent to CCS should also be copied to the Region and to EMSL/LV, each with this blue Cover Sheet.

INORGANICS
LABORATORY RESPONSE TO RESULTS OF CCS

Criterion	Comments
B-H	Data packages are to be screened for RAS requirements only.
T	Submitted traffic report for this case.
FB2	Resubmitted Form IB with "NR" for Sb, Cd, and Zn.
J	Refer to item #6 in attached addendum. Also note that Form IX is for ICP serial dilutions.
J2	Serial dilution results were done at a 5x dilution; resubmitted raw data with "5x" entered.
R	Refer to item #15 in attached addendum.
I	Data packages are to be screened for RAS requirements only.
R2	See above.

ADDENDUM TO
LABORATORY RESPONSE TO RESULTS OF CCS

1. The contract states that values greater than 10 are to be reported to 3 significant figures. Raw data often have more significant figures.
(See the January 25, 1988 letter from Tony Maiorana to the USEPA's Project Officer, p.2, item 3.)

2. This is not required or even mentioned in the contract. In fact, this is impossible when lead is analyzed by both ICP and AA on different samples in the same case.
(See p.1, item 2 in the above mentioned letter.)

3. We submit CCVs only for that case reported. Earlier CCVs are not required in the data package.
(See p.3, item 17 in the above mentioned letter.)

4. There are no Calcium correction factors on this ICP.
(See p.2, item 12 in the above mentioned letter.)

5. Cyanide is being prepared using a micro-distillation process, according to the historical analysis instituted in 1981. Both the Project Officer and the Contract Officer are studying this point and will make a determination at some future time.

6. A blank field under the M column is considered an entry and indicates that the serial dilution was not required because the analyte was not analyzed by ICP.
(SOW787, B-29)

7. Beginning 3-10-88 ICV/ICB and CCV/CCB times for Mercury are reported.

8. The % solids of the sample is used to calculate the duplicate value. (See p.D-84 of SOW787, paragraph 5, last sentence.)

9. Enseco has recognized a problem with the furnace analysis of the solid LCS sample. The contract does not allow an MSA determination for the solid or aqueous LCS result (p. E-14). This causes problems for the correct quantitation of the solid LCS because the true values and control limits were set using results determined under SOW784 and SOW785 which do allow MSA quantitation of the LSC result. Enseco has contacted our Project Officer, Bill Langley, concerning this issue. Until further notification, he has instructed us to perform MSA analyses on the furnace solid LCS following the sample analysis decision tree in SOW787.

10. As required by the contract, the reported concentrations in the ICP raw data are instrument output from the diluted sample.

5/11/88

ADDENDUM
Page Two

11. The dilution factor is reported for all samples and ICV's. Standard dilution factor for CCV's is referenced at the beginning of data package on standard sources page. Also, the dilution factor is being misread by CCS screeners as volume.

12. Some of the modifications requested in the 12/87 letter of contract revisions from the Contract Officer are being instituted while others are being reconsidered by the Contract Officer. At this time, there has not been a final determination by the Contract Officer to institute any of these changes.

13. There is no contract reference given. In order to respond, a specific contract reference must be provided.

14. As per the April 7, 1988 letter from Contract Officer Mary Stotler to Enseco, CCS was found to be in error and have been directed to remove this item from the screens.

15. The question of significant figures is currently being discussed by the Contract Officer and Project Officer; as of yet the issue has not been resolved.
Please also note that the values on Forms II and III are taken directly from instrument readout. There is a hidden digit which does not print out on furnace tapes, therefore it <u>appears</u> that the rounding is being done incorrectly.

USEPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 ALEXANDRIA, VA 22313
703/557-2490 FTS-557-2490

CASE NO: 9288 | SAS NO: (IF APPLICABLE) 3554-E

INORGANIC TRAFFIC REPORT

(FOR CLP USE ONLY)

TYPE OF ACTIVITY (CIRCLE ONE) ①
SUPERFUND—PA (SI) ESI RIFS RD RA ER NPLD O&M OTHER
NON-SUPERFUND— PROGRAM

SAMPLE DESCRIPTION (ENTER IN BOX A)
1. SURFACE WATER 4. SOIL
2. GROUND WATER 5. SEDIMENT
3. LEACHATE 6. OIL (SAS)
7. WASTE (SAS)

REGION NO: V SAMPLING COMPANY ② MPCA
SAMPLER: (NAME) REBECCA LOFGREN

SHIP TO: ③ ENSECO/Rocky Mountain Analy
4955 Yarrow Street
Arvada, CO 80002
ATTN: Kathy Hutchinson

SAMPLING DATE: ④
BEGIN: 3/29/88 END: 3/31/88

DATE SHIPPED: 4/1/88 CARRIER: red. ⑤
AIRBILL NO: 6820695851

DATE REC'D: 4-2-88 SDG NO: mew 615 ⑥
REC'D BY: Trish Dellacroce IFB+250
LABORATORY CONTRACT NO. 68-017476 UNIT PRICE 00176

TRANSFER TO: DATE REC'D: ⑦
REC'D BY: CONTRACT NO./PRICE:

CLP SAMPLE NUMBER (FROM LABELS)	Ⓐ SAMPLE DESCRIPTION (FROM BOX 1) 1 2 3 4 5 6 7	Ⓑ CONCENTRATION L = LOW, M = MED H = HIGH (SAS)	Ⓒ RAS ANALYSIS: TOTAL METALS	CYANIDE	DISSOLVED METALS	HIGH ONLY (SAS): SULFIDE	pH	CONDUCTIVITY	OXIDANTS	Ⓓ SPECIAL HANDLING	Ⓔ STATION LOCATION	Ⓕ SAMPLE CONDITION ON RECEIPT	Ⓖ HIGH CONC. PHASES (CHECK): SOLID	WATER—MIS LIQUID	NON WATER—MIS LIQUID
MEW 615	2	L	X	X							H-4	OK			
MEW 616	2	L	X	X							H-3				
MEW 617	2	L	X	X							H-1				
MEW 618	2	L	X	X							H-2				
MEW 619	2	L	X	X							H-6				
MEW 620	2	L	X	X							H-7				
MEW 621	2	L	X	X							H-5				
MEW 622	2	L	X	X							H-8				
MEW 623	2	L	X	X	SDG-Final Sample						H-9				

SAMPLING COMPLETE

1 of 2 coolers shipped

EPA Form 2075-6 (8-87)

WHITE — SMO COPY PINK — CLIENT COPY WHITE — LAB COPY FOR RETURN TO SMO YELLOW — LAB COPY

U.S. EPA - CLP

00030

5B
POST DIGEST SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

mEW616A

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 35546 SDG No.: mEW615

Matrix (soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony									NR
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium		19.3		4.0	u	20.0	965		NR
Cobalt									NR
Copper									NR
Iron									NR
Lead									NR
Magnesium									NR
Manganese									NR
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

Comments:

ACT NAME : EPA1287 TIME : 15-APR-88 13:[illegible] SAMPLE NAME: [illegible] 00101

	I.S.	AL	SB	AS	BA	BE	B	CD	CA	CR
EXP# 1	1000.	.2[illegible]	.[illegible]	.0063	.0913	-.[illegible]	.0537	.0032	85.72	-.0015
EXP# 2	1000.	.2227	.0011	.0067	.0898	.0006	.0541	.0025	85.22	-.0021
AVERAGE	1000.	.[illegible]64	.0155	.0063	.0906	.0003	.0539	.0029	85.47	-.0018

	CO	CU	FE	PB	MG	MN	MO	NI	P	K
EXP# 1	.1302	.0039	76.95	-.0018	27.07	.5176	.0005	.3391	.0374	1.151
EXP# 2	.[illegible]	.0045	76.60	.0034	26.90	.5166	.0052	.3446	-.1007	[illegible]
AVERAGE	.[illegible]	.0041	76.78	.0003	26.99	.5171	.0028	.3418	-.0316	[illegible]

	SE	SIO2	AG	NA	SR	TI	SN	V	ZN
EXP# 1	[illegible]	17.25	.0006	3.653	.1475	-.[illegible]	.0133	.0025	.4779
EXP# 2	[illegible]	17.22	-.0008	3.547	.1409	-.0011	.0077	.0012	.4755
AVERAGE	[illegible]	17.23	-.0001	3.600	.1442	-.0007	.0105	.0014	.4767

ACT NAME : EPA1287 TIME : 15-APR-88 13:22 SAMPLE NAME: MEW6[illegible]L
SERIAL DILUTION (5x)

	I.S.	AL	SB	AS	BA	BE	B	CD	CA	CR
EXP# 1	1000.	.1252	-.1022	-.0217	.0815	.0000	.0499	.0042	84.67	-.0178
EXP# 2	1000.	.2477	-.1337	-.0702	.0914	.0000	.0406	.0085	86.85	-.0112
AVERAGE	1000.	.1865	-.1190	-.0460	.0866	.0000	.0452	.0064	85.76	-.0145

	CO	CU	FE	PB	MG	MN	MO	NI	P	K
EXP# 1	.1106	-.0057	76.84	-.0769	26.65	.4883	.0112	.3203	.0431	1.157
EXP# 2	.1161	-.0096	77.87	-.1084	27.07	.5133	.0160	.3341	-.6472	1.042
AVERAGE	.1134	-.0077	77.36	-.0926	26.86	.5009	.0136	.3272	-.3020	1.115

	SE	SIO2	AG	NA	SR	TI	SN	V	ZN
EXP# 1	-1.126	16.83	-.0140	-.3670	.1442	-.0120	-.0152	-.0027	.4856
EXP# 2	2.816	17.35	-.0140	5.522	.0593	-.0012	-.0496	-.0007	.4870
AVERAGE	.8448	17.09	-.0140	2.577	.1017	-.0066	-.0324	-.0017	.4863

ACT NAME : EPA1287 TIME : 15-APR-88 13:26 SAMPLE NAME: CCV3

	I.S.	AL	SB	AS	BA	BE	B	CD	CA	CR
EXP# 1	1000.	.9867	1.156	1.008	.9964	.9910	.1028	.9917	103.7	.9201
EXP# 2	1000.	1.000	1.156	1.007	1.006	1.001	.1025	.9933	104.9	.9306
AVERAGE	1000.	.9935	1.156	1.007	1.001	.9962	.1027	.9925	104.3	.9253

	CO	CU	FE	PB	MG	MN	MO	NI	P	K
EXP# 1	1.017	1.033	1.013	1.015	104.1	1.057	1.095	1.060	.2502	97.61
EXP# 2	1.031	1.038	1.031	1.015	104.8	1.068	1.125	1.068	-.0547	99.15
AVERAGE	1.024	1.036	1.022	1.015	104.5	1.063	1.110	1.064	.0978	98.38

	SE	SIO2	AG	NA	SR	TI	SN	V	ZN
EXP# 1	-.2253	.2627	.9404	101.2	.0200	.0012	.9896	1.002	1.034
EXP# 2	-.1126	.2313	.9448	103.4	.0030	.0012	.9957	1.017	1.044
AVERAGE	-.1690	.2570	.9426	102.3	.0115	.0012	.9926	1.010	1.039

Enseco

January 25, 1988

William Langley
USEPA
401 M Street, S.W.
Washington, D.C. 20460

Dear Bill:

Enseco has been getting 0% recommendations for payment recently on data packages submitted by Rocky Mountain Analytical Laboratory under SOW 787. In our recent telephone conversation concerning this issue you informed me that you have been led to believe that there are serious technical deficiencies with these data packages. I repeat what I told you then. The majority of the "real" problems associated with these data packages are minor and involve nothing more than report writing glitches in the software. Debugging of the software is an ongoing process that began with the generation of the first data package. This process will be completed in the near future.

The following addresses one of our recent screens on Case 8431 on a point by point basis. Most of our other screens have the same or similar comments. There are no major problems, certainly none requiring 0% payment. Many of the things screened are either not in the contract or are wrong and are indicated with an asterisk (18 out of 28 comments). The remainder would have been caught by the laboratory during debugging if a SOP had been received containing detailed acceptance criteria for the contract.

Case 8431.

1) CCS: "on Form I; Ca, Cu, on MDG799 don't need B under C column; and Ba on MDG 800."
Response: Form I's resubmitted without "B" for Ca and Cu on MDG799 and for Ba on MDG 800.

*2) CCS: "CA1. No need to separate furnace from ICP values for ICV/CCV on Form IIA."
Response: This is not required or even mentioned in the contract. In fact, this is impossible when lead is analyzed by both ICP and AA on different samples in the same case.

4955 Yarrow Street

*3) CCS: "CA2. The ICV and CCV values for ICP don't agree with the raw data for the significance figures."
Response: The contract states report to 3 significant figures for numbers greater than 10. Raw data often have more significant figures.

*4) CCS: "C31: missing CRDL value and %R for As and Tl on form IIB."
Response: The CRDL standards were not required since one of the standards used in the calibration was at the CRDL.

*5) CCS: "CB2: the initial CRDL value for Sb should be 151.9 not 152 for proper significant figures."
Response: Same as 3).

*6) CCS: "D1. no need to separate the furnace and ICP values for ICB/CCB."
Response: Same as 2)

*7) CCS: "E1. on form IV; the initial ICS and final ICS values for sol(AB) don't agree with the raw data (Report to one decimal place)."
Response: Same as 3).

8) CCS: "FA1. use an "s" for EPA sample #; (MDG 530S)."
Response: We are now adding "S" to the spike sample number.

9) CCS: "I2. Missing "+" flag for Pb on MDG530D on form VIII."
Response: Resubmitted Form VIII with "+" flag for Pb on sample MDG530D.

10) CCS: "I3. please change the EPA sample no MDQ 530 to MDG530 and MDQ 530D to MDG530D."
Response: Resubmitted Form VIII with corrected sample numbers.

11) CCS: "J1. Use an "L" for EPA Sample #."
Response: We are now adding a "L" for the serial dilution QC sample.

*12) CCS: "M1. missing correction values factors for Ca.
Response: There are no Ca correction factors required on this ICP.

13) CCS: "R1. the numbering of a case package must be sequential."
Response: We have always sequentially numbered the data package and then the raw data again starting from 001. We are now numbering the entire package sequentially.

*14) CCS: "R2. All furnace LCS; your raw data shows your values under ppb (ug/L) not mg/kg; final concentration shows it's mg/kg but same value under ppb is reported under final conc if these values are ug/L as in raw data your LCS is going to be out of control and samples are non-compliant; please explain and resubmit correct values with correct units in raw data and in Form VII."
Response: The values are reported in mg/kg in the furnace raw data unless specifically stated otherwise. The values are correct as is.

*15) CCS: "R3. for all furnaces; under D/F (dilution factor) report one if no dilution is needed; and don't put the volumes under the D/F."
Response: The dilution factor is reported for all samples and ICV's. Standard dilution factor for CCV's is referenced at the beginning of data package on standard sources page. Also, the dilution factor is being misread by CCS screeners as volume.

*16) CCS: "T1. missing SDG cover page for traffic report."
Response: The SDG cover sheets are sent to SMO with the traffic reports. There is no contract requirement to also include them in the data package.

*17) CCS: "CA3. need to run a CCB/CCV at end of CRI and ICSA, ICSAB at final."
Response: We submit CCV's only for that case reported. Earlier CCV's for other cases are not required in the data package.

18) CCS: "R4. in ICP raw data page 16 is out of order correct paginating your page; this page must be at the end of ICP raw data. No Action".
Response: We are now putting this page at the end of ICP raw data.

19) CCS: "E2. Remove the True value for Tl Sol(AB)."
Response: Resubmitted Form IV without the true value for Tl.

*20) CCS: "CA4. The time between ICV (8.06) and CCV (11.20) exceeds the 2 hr. limit, therefore the ICS is non-compliant."
Response: Same as 17). CCV's are run constantly for other cases but only CCV's surrounding that case is submitted in the data.

*21) CCS: "FA2. on form VA (SSR) for ICP don't agree with the raw data for the proper significance level."
Response: Same as 3).

*22) CCS: "G1. State control limits for values < 5X CRDL. on Form VI."
Response: No control limits are required if both values are below CRDL.

23) CCS: "G2. Correct control limits for % solid on Form VI."
Response: We resubmitted Form VI with correct control limits for % solids. This was a report writer glitch which we have now fixed.

*24) CCS: "G3. the duplicate values on Form VI; for ICP don't agree with the raw data."
Response: Same as 3).

25) CCS: "G3. need "D" for EPA sample number (MDG5300) on Form VI."
Response: We are now adding "D" to sample number for duplicates.

*26) CCS: "H1. No need to separate the furnace and ICP values for LCS."
Response: Same as 2).

*27) CCS: "H2. the LCS values for ICP don't agree with the raw data."
Response: Same as 3).

*28) CCS: "I1. You should have value for As on MDG5630D and Pb on MDG5300 (no 0.00)."
Response: We were not reporting values if they were not used for the concentration determination. We are now reporting values for the final concentration on Form VIII even when the value is not used.

As you can see, most of the "problems" are very minor. All of the things that were wrong (small details with no effect on the data) we have corrected. Some of the things (ie., separating ICP and furnace data) were discussed and approved with Saad Masri in Las Vegas in order to set up the Enseco report writer.

This entire situation has been exacerbated by the fact that Enseco under direct pressure from you accepted our contract minimums immediately upon award of the untested SOW 787 contract. Enseco also accepted samples beyond our minimums after persuasion and pressure was exerted by SMO.

Obviously, CCS has changed from the process set-up originally by the EPA. At least two Regions have called us and stated that CCS seems to be getting carried away with Enseco's data packages because the data packages look good to them. They did not expect perfect data packages initially under SOW 787, but are confident the deficiencies will be worked out in short order, just as in the past. To consider a data package grossly non-compliant because of minute details hurts the CLP because the compliant data percentage goes down affecting the CLP reputation, it hurts the Regional cases because it makes the data appear bad, and it hurts us because we pride ourselves on providing quality data.

Enseco is willing to send people to meet with you to address the technical problems with our data package but at this point we do not believe there are any significant major problems.

Enseco cannot indefinitely continue to analyze samples while 0% payment is being recommended. I believe you will agree that after reviewing this screen, Enseco's data packages are providing quality data that are substantially compliant with the contract and we hope you will make a fair determination of our services. At a minimum, I recommend 100% provisional payment until CCS has worked out the problems in their operation and the payment recommendations truly reflect the value of the data package to the government.

Sincerely,

Tony

Anthony P. Maiorana
Enseco, ESM

cc: Mike Carter, USEPA
Mary Stotler, USEPA
Peter Isaacson, SMO
Dick Thacker, SMO
Don Trees, SMO
Mark Carter, Enseco
Denis Lin, Enseco
Paul Taylor, Enseco
Gary Ward, Enseco

SF 5011 MPCA

Hadr G W.

U.S.E.P.A. - C.L.P.

S A M P L E M A N A G E M E N T O F F I C E

INORGANICS
RESOLUTION OF CONTRACT COMPLIANCE SCREENING (CCS) RESULTS

LABORATORY NAME : ENSECO RMAL CASE : 09288 RESPONSE RECEIPT DATE : 05/19/88

REGION : 5 SDG_NO.: MEW615 RECONCILIATION DATE : 05/24/88

RECONCILED BY : JD DATE MAILED : 05/27/88

ATTACHED ARE COPIES OF CCS SUMMARIES WHICH SHOW THE STATUS OF RELEVANT SAMPLES AFTER INCORPORATION OF LABORATORY RESPONSE TO SCREENING. PROBLEM CODES WHICH NO LONGER APPLY ARE MARKED WITH AN (X) CODE .

CRITERION	COMMENTS
B-H	ACTION REMAINS RS.
J	ACTION REMAINS RS.
J2	ACTION REMAINS RS.
R	ACTION REMAINS RS.
I	ACTION REMAINS RS.
	REPORTING OF MSA'S ARE RAS.
R2	ACTION REMAINS RS.
	SEE ABOVE.

P.O. BOX 818, ALEXANDRIA, VIRGINIA 22313. PHONE : (703) 683-0885/FTS-8-557-2490

RECONCILED STATUS OF CCS RESULTS

RESPONSE
RECEIVED DATE: 05/19/88

CONTRACT COMPLIANCE SCREENING SUMMARY FOR INORGANICS

CASE: 09288 CONTRACT: 68-01-7476 SAMPLES: 9 SDG_NO.: MEW615 DATE SCREENED: 04/29/88

LAB NAME: ENSECO RMAL REGION: 5 SCREENED BY: SW

SAMPLE NO.	A COVER PAGE	B DATA SHEET	CA CALIBRATION ICV/CCV	CB CALIBRATION CRDL	D BLANK	E ICS	FA SPIKES PRE.	FB SPIKES POST	G DUP.	H LCS	I MSA	J SER. DIL.	KA HOLDING HG	KB TIME CN	L IDL	M CORR. FACTR	N LIN. RANGE	R RAW DATA	T TR	DI-SK
MEW615-W			R	R	R					R	R							RR		
MEW615-1		R	R	R	R						R							RR		X
MEW615-9			R	R	R				R		R							RR		
MEW616-1		R	R	R	R						R							RR		X
MEW616-8			R	R	R		R	R	X		R							RR		
MEW617-1		R	R	R	R						R							RR		X
MEW618-1		R	R	R	R						R							RR		X
MEW619-1		R	R	R	R						R							RR		X
MEW620-1		R	R	R	R						R							RR		X
MEW621-1		R	R	R	R						R							RR		X
MEW622-1		R	R	R	R						R							RR		X
MEW623-1		R	R	R	R						R	RR						RR		X

PROBLEM CODE: E = EXPLAIN, R = RESUBMIT, S = SUBMIT, N = NONCOMPLIANT, X = RECONCILED

SF 5011 MPCA

MT

CONTRACT COMPLIANCE SCREENING SUMMARY FOR INORGANICS

CASE 09288 SAMPLES 9 DATE MAILED 05/06/88

LAB NAME ENSECO RMAL CONTRACT 68-01-7476 SCREENER SW DATE SCREENED 04/29/88

SDG NUMBER. MEW615 REGION 5 DATE RECEIVED 04/23/88

SAMPLE NO.	A COVER PAGE	B DATA SHEET	CA CALIBRATION ICV/CCV	CB CRDL	D BLANK	E ICS	FA SPIKES PRE	FB POST	G DUP	H LCS	I MSA	J SER DIL	KA HOLDING HG	KB TIME CN	L IDL	M CORR FACTR	N LIN RANGE	R RAW DATA	T TR	DI-SK
MEW615-W			IR	IR	IR					IR	IR							IRR		
MEW615-1		IR	IR	IR	IR						IR							IRR	IS	
MEW615-9			IR	IR	IR				IR		IR							IRR		
MEW616-1		IR	IR	IR	IR						IR							IRR	IS	
MEW616-8			IR	IR	IR		IR	IRR			IR							IRR		
MEW617-1		IR	IR	IR	IR						IR							IRR	IS	
MEW618-1		IR	IR	IR	IR						IR							IRR	IS	
MEW619-1		IR	IR	IR	IR						IR							IRR	IS	
MEW620-1		IR	IR	IR	IR						IR							IRR	IS	
MEW621-1		IR	IR	IR	IR						IR							IRR	IS	
MEW622-1		IR	IR	IR	IR						IR							IRR	IS	
MEW623-1		IR	IR	IR	IR						IR	IRR						IRR	IS	

PROBLEM CODE E = EXPLAIN, R = RESUBMIT, S = SUBMIT, N = NONCOMPLIANT

RECEIVED
JUN 20 88
MPCA Ground Water & Waste Div.

CONTRACT COMPLIANCE SCREENING FOR INORGANICS WORKSHEET A - ICP PAGE: 2

CASE: 09288 CONTRACT. 68-01-7476 SAMPLES: 9 SDG_NO . MEW615 DATE: 4/29/88

LAB NAME: ENSECO /RMAL REGION 5 SCREENED BY: SW

(9)

SAMPLE NO.	C/M	SAMP WT.	DATE RECD.	DATE ANAL.	QC ANALYSIS TYPE	QC ANALYSIS TIME	PROBLEMS
MEW615-W	ILW	0.85	02APR88	4/15	Standard	6:58-7:07	(B-H) Sb and Cd values are not reported on standard EPA forms (SOW 787, A-4) (R) B-H R
MEW615-1	ILW	1.00	02APR88	12:07 "	ICV ICB CRI (i) ICSA ICSAB	7:16-7:22 7:26 7:31 7:34 7:39	(T) submit traffic reports for all samples. (None were submitted for this case) (SOW 787, B-4) (S) B-H RT
MEW615-9	ILW	1.00	02APR88	12:13 "	CCVI CCBI	11:53 11:56	(FB) under method Sb and Cd should have NR as well as Zn. (SOW 787, B-24) (R) B-H R FB
MEW616-1	ILW	1.00	02APR88	12:17 "	p blk CCS(w)	11:59 12:03	(J) under method column, enter 'F' for furnace and 'CV' for Hg (SOW 787, B-28) (R) B-H RT
MEW616-8	ILW	1.00	02APR88	12:29 "			(J2) Serial dilution results do not reflect a 5x dilution ie, Al = 186.5 x 5 = 932.5 B-H R
MEW617-1	ILW	1.00	02APR88	12:44 "			⇓ ≠ 187 B (p 101) (SOW 787, B-28, E-12) (R) B-H RT
MEW618-1	ILW	1.00	02APR88	12:48 "			(R) Report the measured value of each analyte from the raw data to the # of decimal places B-H RT
MEW619-1	ILW	1.00	02APR88	12:51 "			⇓ specified in Exhibit B for the following forms: 2, 4, 7 (SOW 787, B-17, B-21, B-25) (R) B-H RT

CONTRACT COMPLIANCE SCREENING FOR INORGANICS — WORKSHEET A - ICP — PAGE: 3

CASE: 0928B — CONTRACT: 68-01-7476 — SAMPLES: 9 — SDG_NO.: MEW615 — DATE: 4/29/88

LAB NAME: ENSECO/Elmar — REGION: 5 — SCREENED BY: [illegible]

SAMPLE NO.	C/M	SAMP WT.	DATE RECD.	DATE ANAL.	QC ANALYSIS TYPE	QC ANALYSIS TIME	PROBLEMS
MEW620-1	ILW	1.00	02APR88	4/15 13:01			BHTR
MEW621-1	ILW	1.00	02APR88	4 13:05			BHTR
MEW622-1	ILW	1.00	02APR88	4 13:12			BHTR
MEW623-1	ILW	1.00	02APR88	4 13:16	Ser dil CCV3 CCB3	13:22 13:26 13:31	BHTRJJ2
					(f) CRI ICSA ICSAB	13:35 13:39 13:43	

CONTRACT COMPLIANCE SCREENING FOR INORGANICS WORKSHEET B - AA AND CN

CASE: 09288 CONTRACT: 68-01-7476 SAMPLES: 9 SDG_ND : MEW615 DATE: 4/29/88

LAB NAME: ENSECO/RMAL REGION: 5 SCREENED BY: [illegible]

SAMPLE	DATE	AS F	PB IF	HG CV	SE F	TL F	CN C	Sb F	CD F	PROBLEMS
MEW615-W	02APR88	4/21	4/22	4/10	4/20	4/19	4/11	4/20	4/19	I: R2:
MEW615-1	02APR88									(I) All EPA sample numbers must be in alphanumeric order under each analyte (SOW787, B-26) I: R2:
MEW615-9	02APR88									ALSO: Final concentrations must be reported for all MSA samples; you cannot I: R2:
MEW616-1	02APR88									Report 0.0 or to IDL. (SOW787, B-27) (R) I: R2:
MEW616-8	02APR88									I: R2:
MEW617-1	02APR88									I: R2:
MEW618-1	02APR88									I: R2:
MEW619-1	02APR88									I: R2:

CONTRACT COMPLIANCE SCREENING FOR INORGANICS WORKSHEET B - AA AND CN

CASE: 0928B CONTRACT: 68-01-7476 SAMPLES: 9 SDG_NO.: MEW615 DATE: 4/29/88

LAB NAME: ENSECO /EMAL REGION: 5 SCREENED BY: [illegible]

SAMPLE	DATE	AS F	PB IF	HG CV	SE F	TL F	CN C	PROBLEMS
MEW620-1	02APR88							(R) (S) p 116-120. Also, p 149-154 should be with the Pb section. Why do you have 2 different sets of MSA data for Pb but only report 1 set to form 8? I: R2:
MEW621-1	02APR88							I: R2:
MEW622-1	02APR88							Report both sets of MSA's for Pb to form 8. (SOW 787, B-7, B-27) (R) I: R2:
MEW623-1	02APR88							I: R2:

MPCA

U.S. ENVIRONMENTAL PROTECTION AGENCY
CONTRACT LABORATORY PROGRAM

RECEIVED
JUN 24 88
MPCA, Ground Water & Solid Waste Div.

SAMPLE MANAGEMENT OFFICE

RESOLUTION OF CONTRACT COMPLIANCE SCREENING (CCS) RESULT

MAIL DATE: 27MAY88

LABORATORY NAME : S3 CASE NUMBER : 09288 REGION : 5 IDENT : ET831-02

ATTACHED ARE COPIES OF RECONCILED STATUS OF CCS RESULTS WHICH SHOW THE STATUS OF THE RELEVANT SAMPLES AFTER INCORPORATION OF LABORATORY RESPONSE TO SCREENING.PROBLEM CODES WHICH NO LONGER APPLY ARE MARKED WITH AN "X" CODE.

COMMENTS : NONE.

SAMPLE	FRACTION	CRITERION	COMMENTS

P.O. BOX 818,ALEXANDRIA,VIRGINIA 22313. PHONE : (703) 557-2490/FTS-8-557-2490

ATTACHMENTS

****
*** R E C O N C I L E D S T A T U S O F C C S R E S U L T S ***
****

RESPONSE DATE 1: 10MAY88
RESPONSE DATE 2:

******* C O N T R A C T C O M P L I A N C E S C R E E N I N G S U M M A R Y F O R O R G A N I C S *******

CASE: 09288 CONTRACT: 68-01-7261 SAMPLES: 12 + DATE SCREENED: 04MAY88

LAB NAME: S3 REGION: 5 SCREENED BY: SR/AH

	VOA								BNA								PESTICIDES											
				CALIB						A			CALIB					A								CALIB		
SAMPLE	A HOLD	B TUNE	C BLKS	D INIT	E CONT	F SUR R	G MS/D	H COMP	A HOLD	1 HOLD	B TUNE	C BLKS	D INIT	E CONT	F SUR R	G MS/D	H COMP	A HOLD	1 HOLD	B BLKS	C DDT	D RT M	E ANAL	F DEG	G DBC	H MS/D	I INIT	J CONT	K COMP
ET831-02																		N											X
ET831-80																		N											X
ET831-90																		N											X
ET832-02																	X	N											X
ET833-02																	X	N											X
ET834-02															N		X	N											X
ET835-02															N		X	N											X
ET836-02															N		X	N											X
ET837-02																	X	N											X
ET838-02																	X	N											X
ET839-02																	X	N											X
ET840-02																		N											X

PROBLEM CODE: E = EXPLAIN, R = RESUBMIT, S = SUBMIT, N = NONCOMPLIANT, NA = FRACTION NOT ANALYZED, X = RECONCILED

RECEIVED
MAY 04 88
MPCA, Ground Water
& Solid Waste Div.

DATE: May 2, 1988

TO: Minnesota Pollution Control Agency
Site Assessment Unit
Program Development Section
Groundwater and Solid Waste Division
520 Layfayette Road
St. Paul, MN 55155

ATTN: Doug Day, Supervisor

Case No.	Site	Contract Lab	SF No.	No. Samples
9288SAS3554E	Hader Ground Water Contamination	RMAL	SF5011	9

Enclosed is one reviewed case.

FROM: U.S. EPA
Region V
Central Regional Laboratory
536 S. Clark, 10th Floor
Chicago, IL 60605

SENT BY: Erlinda Luz M. Arreola
WESTON/ESAT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 4.29.88

SUBJECT: Review of Region V CLP Data Received for Review on 4-25-88

FROM: Curtis Ross, Director (5SCRL) Central Regional Laboratory

TO: Data User: MPCA
Dave Koubsky

We have reviewed the data for the following case(s).

SITE NAME: Hader Ground Water Contamination SMO Case No. 9288SAS3554E

EPA Data Set No. SF 5011 No. of Samples: 9 D.U./Activity Numbers 1905/C72222

CRL No. 88YL06501-508, D05

SMO Traffic No. MEW615-623

CLP Laboratory: RMAL Hrs. Required for Review: 5.5

Following are our findings:
The laboratory's portion of case 9288/SAS3554E consisted of 9 drinking water samples analyzed for total metals and cyanide.

ICP Analysis: Cr matrix spike %R is (84%). Cr data is estimated (UJ) for all samples except sample MEW621, which is estimated (J). Duplicate RPD for Cu (17.4 ug/L) indicates poor precision. Cu is estimated (J).

GFAA Analysis: Matrix spike %R for Cd (80%), Se(205%) and Tl (122.5%) are beyond the +/-15% limit. Se and Tl data are acceptable. Cd data are estimated (UJ) for samples MEW617, 620 and estimated (J) for all the rest.
Hg and cyanide data are within control limits.

( ) Data are acceptable for use.
(X) Data are acceptable for use with qualifications referenced above. See Data Qualifier sheets and Calibration Outlier forms for flags and additional comments.
( ) Data are preliminary - pending verification by Contractor Laboratory. See Case Summary above.
( ) Data are unacceptable.

4/28/88
Weston/E

cc: Carla Dempsey, CLP Quality Assurance Officer, Analytical Operations Branch
James Petty, Chief Quality Assurance Research, EMSL, Las Vegas

EPA FORM 1320-6 (REV 3-76)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

ESD/Central Regional Laboratory
DATA TRACKING FORM FOR CONTRACT SAMPLES

CRL Data Set No. SF5011 CERCLIS No. —

SMO Case No. 9288SAS3554E Site Name and Location: Hader Ground Water

Name of Contractor or EPA Laboratory: RMAL Data User: MPCA

No. of Samples: 9 Date Samples or Data Received: 4-25-88

1. Have chain-of-custody records been received? YES ✓ NO ___
2. Have Traffic Reports or packing lists been received? YES ✓ NO ___
3. If no, are Traffic Report or packing list numbers written on the chain-of-custody record? YES ___ NO ___
4. If no, which Traffic report or packing list numbers are missing?

Are basic data forms in? YES ✓ NO ___

Number of samples claimed: 9 Number of samples received: 9

Checked by: Wanda Yvette Freeman Date: 4-25-88

Received by Contract Project Management Section: IL Date: 4-25-88

Review Started: 4/27/88 Reviewer Signature: Margaret [illegible]

Total time spent on review: 5.5 Date review completed: 4/28/88

Copied (xeroxed) by: Lettie +1 hr verified by D. Kuner Date: ___

Mailed to Data User by: Erlinda Luz M. Arreola Date: 5/2/88 5/2/88

DATA USERS:

Please fill in the blanks below and return this form to: Sylvia Griffin, Data Management Coordinator, Region V, 5SCRL

Data received by: ___ Date: ___

Q.A. review received by: ___ Date: ___

Inorganic Data Complete [ ], Suitable for Intended Purposes [ ] ✓ [ ] if acceptable.
Organic Data Complete [ ], Suitable for Intended Purposes [ ] List problems below.
Dioxin Data Complete [ ], Suitable for Intended Purposes [ ]
SAS Data Complete [ ], Suitable for Intended Purposes [ ]

See Attached "Missing Data Request Form" [ ]
PROBLEMS: Please indicate reasons (if any) why data are not suitable for your uses. Other problems.

Received by Data Management Coordinator, CRL for File: Date: ___

Signature:

U.S. EPA - CLP

00001

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

SOW No.: 7/87

EPA Sample No.	Lab Sample ID.
MEW615	
MEW615D	
MEW616	
~~MEW616A~~	
MEW616S	
MEW617	
MEW618	
MEW619	
MEW620	
MEW621	
MEW622	
MEW623	

RECEIVED APR 25 1988 U.S. EPA CENTRAL REGIONAL LAB

Were ICP interelement corrections applied? Yes/No YES

Were ICP background corrections applied? Yes/No YES

If yes-were raw data generated before application of background corrections? Yes/No NO

Comments:

9 LOW WATERS FOR TOTAL METALS AND CYANIDE ANALYSIS
ALL FURNACE VALUES ARE DETERMINED BY MSA
RMA QC# 87746 21 DAY TURNAROUND

Release of the data contained in this hardcopy data package and in the computer readable data submitted on floppy diskette have been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Lab Manager: [signature]

Date: 04/22/88

U.S. EPA - CLP

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MEW615

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Matrix (soil/water): WATER Lab Sample ID: _____

Level (low/med): LOW Date Recieved: 04/02/88

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	633			P
7440-36-0	Antimony				
7440-38-2	Arsenic	1.7	B	S	F
7440-39-3	Barium	34.4	B		P
7440-41-7	Beryllium	2.0	U		P
7440-43-9	Cadmium				
7440-70-2	Calcium	167000			P
7440-47-3	Chromium	4.0	U	N	P
7440-48-4	Cobalt	16.8			P
7440-50-8	Copper	27.4		*	P
7439-89-6	Iron	78800			P
7439-92-1	Lead	5.5		S	F
7439-95-4	Magnesium	47400			P
7439-96-5	Manganese	570			P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	86.2			P
7440-09-7	Potassium	1320	B		P
7482-49-2	Selenium	1.0	U	SN	F
7440-22-4	Silver	4.0	U		P
7440-23-5	Sodium	3570			P
7440-28-0	Thallium	2.0	U	SN	F
7440-62-2	Vanadium	4.0	U		P
7440-66-6	Zinc	1340			P
	Cyanide	10.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____
Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

U.S. EPA - CLP
1

EPA SAMPLE NO

MEW615
00003

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Matrix (soil/water): WATER Lab Sample ID:

Level (low/med): LOW Date Received: 04/02/88

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight) : UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-36-0	Antimony	2.0	U	S	F
7440-43-9	Cadmium	0.3	B	SN	F

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: YELLOW Clarity After: CLEAR Artifacts:

COMMENTS:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

00004

EPA SAMPLE NO.

MEW616

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Matrix (soil/water): WATER Lab Sample ID: _____

Level (low/med): LOW Date Recieved: 04/02/88

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	25.0	U		P
7440-36-0	Antimony				
7440-38-2	Arsenic	1.0	U	S	F
7440-39-3	Barium	88.2			P
7440-41-7	Beryllium	2.0	U		P
7440-43-9	Cadmium				
7440-70-2	Calcium	150000			P
7440-47-3	Chromium	4.0	U	N	P
7440-48-4	Cobalt	9.0	B		P
7440-50-8	Copper	10.0	U	*	P
7439-89-6	Iron	5790			P
7439-92-1	Lead	3.4		S	F
7439-95-4	Magnesium	40200			P
7439-96-5	Manganese	181			P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	42.5			P
7440-09-7	Potassium	1300	B		P
7482-49-2	Selenium	1.0	U	SN	F
7440-22-4	Silver	4.0	U		P
7440-23-5	Sodium	2290			P
7440-28-0	Thallium	2.0	U	SN	F
7440-62-2	Vanadium	4.0	U		P
7440-66-6	Zinc	908			P
	Cyanide	10.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

U.S. EPA - CLP
1

EPA SAMPLE NO

MEW616
00005

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Matrix (soil/water): WATER Lab Sample ID:

Level (low/med): LOW Date Received: 04/02/88

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight) : UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-36-0	Antimony	2.0	U	S	F
7440-43-9	Cadmium	0.2	B	SN	F

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

COMMENTS:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE No. 00006

MEW617

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Matrix (soil/water): WATER Lab Sample ID: _____

Level (low/med): LOW Date Recieved: 04/02/88

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	25.9	B		P
7440-36-0	Antimony				
7440-38-2	Arsenic	1.0	U	S	F
7440-39-3	Barium	72.6			P
7440-41-7	Beryllium	2.0	U		P
7440-43-9	Cadmium				
7440-70-2	Calcium	74300			P
7440-47-3	Chromium	4.0	U	N	P
7440-48-4	Cobalt	4.0	U		P
7440-50-8	Copper	10.0	U	*	P
7439-89-6	Iron	1560			P
7439-92-1	Lead	3.8		S	F
7439-95-4	Magnesium	23200			P
7439-96-5	Manganese	68.8			P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	10.0	U		P
7440-09-7	Potassium	1030	B		P
7482-49-2	Selenium	1.0	U	SN	F
7440-22-4	Silver	4.0	U		P
7440-23-5	Sodium	3420			P
7440-28-0	Thallium	2.0	U	SN	F
7440-62-2	Vanadium	4.0	U		P
7440-66-6	Zinc	39.1			P
	Cyanide	10.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

U.S. EPA - CLP
1

EPA SAMPLE NO

MEW617

00007

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Matrix (soil/water): WATER Lab Sample ID:

Level (low/med): LOW Date Received: 04/02/88

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight) : UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-36-0	Antimony	2.0	U	S	F
7440-43-9	Cadmium	0.1	U	SN	F

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

COMMENTS:

U.S. EPA - CLP

00008

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MEW618

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Matrix (soil/water): WATER Lab Sample ID: _____

Level (low/med): LOW Date Recieved: 04/02/88

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1660			P
7440-36-0	Antimony				
7440-38-2	Arsenic	3.6	B	S	F
7440-39-3	Barium	91.5			P
7440-41-7	Beryllium	2.0	U		P
7440-43-9	Cadmium				
7440-70-2	Calcium	80000			P
7440-47-3	Chromium	4.0	U	N	P
7440-48-4	Cobalt	47.6			P
7440-50-8	Copper	10.0	U	*	P
7439-89-6	Iron	83200			P
7439-92-1	Lead	9.5		S	F
7439-95-4	Magnesium	20700			P
7439-96-5	Manganese	655			P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	197			P
7440-09-7	Potassium	833	B		P
7482-49-2	Selenium	1.0	U	SN	F
7440-22-4	Silver	4.0	U		P
7440-23-5	Sodium	1800			P
7440-28-0	Thallium	2.0	U	SN	F
7440-62-2	Vanadium	4.0	U		P
7440-66-6	Zinc	1470			P
	Cyanide	10.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

U.S. EPA - CLP
1

EPA SAMPLE NO

MEW618

00003

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Matrix (soil/water): WATER Lab Sample ID:

Level (low/med): LOW Date Received: 04/02/88

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight) : UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-36-0	Antimony	2.0	U	S	F
7440-43-9	Cadmium	0.5	B	SN	F

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: YELLOW Clarity After: CLEAR Artifacts:

COMMENTS:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

00010

EPA SAMPLE NO.

MEW619

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Matrix (soil/water): WATER Lab Sample ID: _____

Level (low/med): LOW Date Recieved: 04/02/88

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	34.0	B		P
7440-36-0	Antimony				
7440-38-2	Arsenic	1.0	U	S	F
7440-39-3	Barium	28.6	B		P
7440-41-7	Beryllium	2.0	U		P
7440-43-9	Cadmium				
7440-70-2	Calcium	111000			P
7440-47-3	Chromium	4.0	U	N	P
7440-48-4	Cobalt	4.0	U		P
7440-50-8	Copper	10.0	U	*	P
7439-89-6	Iron	9780			P
7439-92-1	Lead	2.0	U	S	F
7439-95-4	Magnesium	40600			P
7439-96-5	Manganese	621			P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	10.0	U		P
7440-09-7	Potassium	1780	B		P
7482-49-2	Selenium	1.0	U	SN	F
7440-22-4	Silver	4.0	U		P
7440-23-5	Sodium	3230			P
7440-28-0	Thallium	2.0	U	SN	F
7440-62-2	Vanadium	4.0	U		P
7440-66-6	Zinc	32.3			P
	Cyanide	10.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

U.S. EPA - CLP
1

EPA SAMPLE NO

MEW619

00011

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Matrix (soil/water): WATER Lab Sample ID:

Level (low/med): LOW Date Received: 04/02/88

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight) : UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-36-0	Antimony	2.0	U	S	F
7440-43-9	Cadmium	0.1	B	SN	F

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: YELLOW Clarity After: CLEAR Artifacts:

COMMENTS:

U.S. EPA - CLP

00012

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MEW620

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Matrix (soil/water): WATER Lab Sample ID: _____

Level (low/med): LOW Date Recieved: 04/02/88

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	34.3	B		P
7440-36-0	Antimony				
7440-38-2	Arsenic	1.0	U	S	F
7440-39-3	Barium	28.8	B		P
7440-41-7	Beryllium	2.0	U		P
7440-43-9	Cadmium				
7440-70-2	Calcium	113000			P
7440-47-3	Chromium	4.0	U	N	P
7440-48-4	Cobalt	4.0	U		P
7440-50-8	Copper	10.0	U	*	P
7439-89-6	Iron	9700			P
7439-92-1	Lead	3.4		S	F
7439-95-4	Magnesium	41000			P
7439-96-5	Manganese	574			P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	10.0	U		P
7440-09-7	Potassium	1780	B		P
7482-49-2	Selenium	1.0	U	SN	F
7440-22-4	Silver	4.0	U		P
7440-23-5	Sodium	2890			P
7440-28-0	Thallium	2.0	U	SN	F
7440-62-2	Vanadium	4.0	U		P
7440-66-6	Zinc	28.5			P
	Cyanide	10.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

U.S. EPA - CLP
1

E SAMPLE NO
EW620
00013

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Matrix (soil/water): WATER Lab Sample ID:

Level (low/med): LOW Date Received: 04/02/88

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight) : UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-36-0	Antimony	3.5	B	S	F
7440-43-9	Cadmium	0.1	U	SN	F

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: YELLOW Clarity After: CLEAR Artifacts:

COMMENTS:

U.S. EPA - CLP

00014

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MEW621

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Matrix (soil/water): WATER Lab Sample ID: _____

Level (low/med): LOW Date Recieved: 04/02/88

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	32100			P
7440-36-0	Antimony				
7440-38-2	Arsenic	8.4		S	F
7440-39-3	Barium	55.1			P
7440-41-7	Beryllium	4.5	B		P
7440-43-9	Cadmium				
7440-70-2	Calcium	92200			P
7440-47-3	Chromium	11.0		N	P
7440-48-4	Cobalt	113			P
7440-50-8	Copper	22.0		*	P
7439-89-6	Iron	236000			P
7439-92-1	Lead	19.9		S	F
7439-95-4	Magnesium	24400			P
7439-96-5	Manganese	1670			P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	434			P
7440-09-7	Potassium	2170			P
7482-49-2	Selenium	1.0	U	SN	F
7440-22-4	Silver	4.0	U		P
7440-23-5	Sodium	2810			P
7440-28-0	Thallium	2.0	U	SN	F
7440-62-2	Vanadium	25.8			P
7440-66-6	Zinc	4120			P
	Cyanide	10.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

U.S. EPA - CLP
1

EPA SAMPLE NO

MEW621

INORGANIC ANALYSIS DATA SHEET

00015

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Matrix (soil/water): WATER Lab Sample ID:

Level (low/med): LOW Date Received: 04/02/88

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight) : UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-36-0	Antimony	2.0	U	S	F
7440-43-9	Cadmium	10.0		SN	F

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: YELLOW Clarity After: CLEAR Artifacts:

COMMENTS:

U.S. EPA - CLP

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
MEW622

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Matrix (soil/water): WATER Lab Sample ID: _____

Level (low/med): LOW Date Recieved: 04/02/88

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	25.0	U		P
7440-36-0	Antimony				
7440-38-2	Arsenic	3.6	B	S	F
7440-39-3	Barium	85.1			P
7440-41-7	Beryllium	2.0	U		P
7440-43-9	Cadmium				
7440-70-2	Calcium	84000			P
7440-47-3	Chromium	4.0	U	N	P
7440-48-4	Cobalt	4.0	U		P
7440-50-8	Copper	10.0	U	*	P
7439-89-6	Iron	3560			P
7439-92-1	Lead	2.0	U	S	F
7439-95-4	Magnesium	28500			P
7439-96-5	Manganese	69.8			P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	10.0	U		P
7440-09-7	Potassium	5660			P
7482-49-2	Selenium	1.0	U	SN	F
7440-22-4	Silver	4.0	U		P
7440-23-5	Sodium	6680			P
7440-28-0	Thallium	2.0	U	SN	F
7440-62-2	Vanadium	4.0	U		P
7440-66-6	Zinc	2720			P
	Cyanide	10.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____
Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

U.S. EPA - CLP
1

EPA SAMPLE NO

MEW622

INORGANIC ANALYSIS DATA SHEET

00017

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Matrix (soil/water): WATER Lab Sample ID:

Level (low/med): LOW Date Received: 04/02/88

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight) : UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-36-0	Antimony	2.0	U	S	F
7440-43-9	Cadmium	0.1	B	SN	F

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

COMMENTS:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

00018

EPA SAMPLE NO.

MEW623

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Matrix (soil/water): WATER Lab Sample ID: _____

Level (low/med): LOW Date Recieved: 04/02/88

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	216			P
7440-36-0	Antimony				
7440-38-2	Arsenic	5.0		S	F
7440-39-3	Barium	90.6			P
7440-41-7	Beryllium	2.0	U		P
7440-43-9	Cadmium				
7440-70-2	Calcium	85500			P
7440-47-3	Chromium	4.0	U	N	P
7440-48-4	Cobalt	120			P
7440-50-8	Copper	10.0	U	*	P
7439-89-6	Iron	76800			P
7439-92-1	Lead	2.0	U	S	F
7439-95-4	Magnesium	27000			P
7439-96-5	Manganese	517			P
7439-97-6	Mercury	0.2	U		CV
7440-02-0	Nickel	342			P
7440-09-7	Potassium	1160	B		P
7482-49-2	Selenium	1.0	U	SN	F
7440-22-4	Silver	4.0	U		P
7440-23-5	Sodium	3600			P
7440-28-0	Thallium	2.0	U	SN	F
7440-62-2	Vanadium	4.0	U		P
7440-66-6	Zinc	477			P
	Cyanide	10.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

U.S. EPA - CLP
1

EPA SAMPLE NO

MEW623
00019

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Matrix (soil/water): WATER Lab Sample ID:

Level (low/med): LOW Date Received: 04/02/88

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight) : UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-36-0	Antimony	2.0	U	S	F
7440-43-9	Cadmium	0.3	B	SN	F

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: YELLOW Clarity After: CLEAR Artifacts:

COMMENTS:

QC EXCEPTION SUMMARY REPORT

CASE # 92884/SAS3554 SITE Hader GW Cont.
DATA SET # SF5011 LAB RMHL
LAB Q.C.# 87746 REVIEWED BY MMT
DATE: 4/28/88

MATRIX: Water WATER SAMPLE SPK. _____
CONC. : low WATER SAMPLE DUP. _____
MATRIX: _____ SOIL SAMPLE SPK. _____
CONC. _____ SOIL SAMPLE DUP. _____

	OVERALL CASE QC									MATRIX SPECIFIC QC						SAMPLE SPECIFIC QC		FIELD QC			REGIONAL QC			OTHER/ COMMENTS
	Holding Time	Cal Blanks	Int Calver	Contin Calver	Prep Blk AQ	Prep Blk SOL	ICS %R	LCS % AQ	LCS % SOL	Sol Dup RPD	Sol Spk %R	AQ Dup RPD	AQ Spk %R	Ser Dilu AQ	Ser Dilu SOL	GFAA Dup	GFAA Spike	Blank	Dup RPD	Spike %R	Blind Blank	Blind Spike %R	Spiked Sample RPD	
Aluminum																								
Antimony																								
Arsenic																								
Barium																								
Beryllium																								
Cadmium													80											
Calcium																								
Chromium													84											
Cobalt																								
Copper												17.4	>±10 (IDL)											
Iron																								
Lead																								
Magnesium																								
Manganese																								
Mercury																								
Nickel																								
Potassium																								
Selenium													205											
Silver																								
Sodium												19.0 (Not flagged on Form I)												
Thallium													122.5											
Tin																								
Vanadium																								
Zinc																								
Cyanide																								

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

00020

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Initial Calibration Source: EPA-LV

Continuing Calibration Source: FISHER

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum	1980.0	2060	104.0	1000.0	977	97.7	998	99.8	P
Antimony									
Arsenic									
Barium	1980.0	2020	102.0	1000.0	985	98.5	1010	101.0	P
Beryllium	481.0	493	102.5	1000.0	988	98.8	1000	100.0	P
Cadmium									
Calcium	49800.0	53900	108.2	100000.	103000	103.0	105000	105.0	P
Chromium	506.0	462	91.3	1000.0	913	91.3	936	93.6	P
Cobalt	474.0	516	108.9	1000.0	1000	100.0	1020	102.0	P
Copper	542.0	570	105.2	1000.0	1030	103.0	1050	105.0	P
Iron	1990.0	2060	103.5	1000.0	1010	101.0	1030	103.0	P
Lead									
Magnesium	25000.0	25900	103.6	100000.	102000	102.0	106000	106.0	P
Manganese	513.0	540	105.3	1000.0	1040	104.0	1070	107.0	P
Mercury									
Nickel	496.0	503	101.4	1000.0	1040	104.0	1080	108.0	P
Potassium	50200.0	51300	102.2	100000.	97500	97.5	99800	99.8	P
Selenium									
Silver	509.0	480	94.3	1000.0	924	92.4	952	95.2	P
Sodium	50700.0	52700	103.9	100000.	100000	100.0	104000	104.0	P
Thallium									
Vanadium	511.0	513	100.4	1000.0	995	99.5	1020	102.0	P
Zinc	3100.0	3180	102.6	1000.0	1020	102.0	1050	105.0	P
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

00021

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Initial Calibration Source: EPA-LV

Continuing Calibration Source: FISHER

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum				1000.0	994	99.4			P
Antimony									
Arsenic									
Barium				1000.0	1000	100.0			P
Beryllium				1000.0	996	99.6			P
Cadmium									
Calcium				100000.	104000	104.0			P
Chromium				1000.0	925	92.5			P
Cobalt				1000.0	1020	102.0			P
Copper				1000.0	1040	104.0			P
Iron				1000.0	1020	102.0			P
Lead									
Magnesium				100000.	104000	104.0			P
Manganese				1000.0	1060	106.0			P
Mercury									
Nickel				1000.0	1060	106.0			P
Potassium				100000.	98400	98.4			P
Selenium									
Silver				1000.0	943	94.3			P
Sodium				100000.	102000	102.0			P
Thallium									
Vanadium				1000.0	1010	101.0			P
Zinc				1000.0	1040	104.0			P
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Initial Calibration Source: EPA-LV

Continuing Calibration Source: FISHER

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum									
Antimony									
Arsenic	47.0	45.1	96.0	20.0	19.1	95.5	20.0	100.0	F
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead	97.9	105	107.3	20.0	20.4	102.0	20.2	101.0	F
Magnesium									
Manganese									
Mercury	5.2	5.6	107.7	1.0	1.0	100.0	1.0	100.0	CV
Nickel									
Potassium									
Selenium	104.0	104	100.0	20.0	22.0	110.0	19.6	98.0	F
Silver									
Sodium									
Thallium	97.3	106	108.9	20.0	18.9	94.5	20.8	104.0	F
Vanadium									
Zinc									
Cyanide	105.0	101	96.2	200.0	204	102.0	208	104.0	AS

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Initial Calibration Source: EPA-LV

Continuing Calibration Source: FISHER

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum									
Antimony									
Arsenic				20.0	20.3	101.5	20.4	102.0	F
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead				20.0	19.8	99.0	19.6	98.0	F
Magnesium									
Manganese									
Mercury				1.0	1.0	100.0			CV
Nickel									
Potassium									
Selenium				20.0	20.8	104.0	21.0	105.0	F
Silver									
Sodium									
Thallium				20.0	19.3	96.5	19.8	99.0	F
Vanadium									
Zinc									
Cyanide				200.0	208	104.0			AS

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Initial Calibration Source: EPA-LV

Continuing Calibration Source: FISHER

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum									
Antimony									
Arsenic				20.0	21.9	109.5			F
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium				20.0	21.0	105.0			F
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Initial Calibration Source: EPA-LV

Continuing Calibration Source: FISHER

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead	97.9	105	107.3	20.0	20.0	100.0	19.7	98.5	F
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium	104.0	107	102.9	20.0	20.9	104.5	21.0	105.0	F
Silver									
Sodium									
Thallium	97.3	87.4	89.8	20.0	20.3	101.5	18.0	90.0	F
Vanadium									
Zinc									
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

00026

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Initial Calibration Source: EPA-LV

Continuing Calibration Source: FISHER

Concentration Units:ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Antimony	1010.0	940	93.1	20.0	20.6	103.0	20.0	100.0	F
Cadmium	96.1	90.0	93.6	2.0	2.0	100.0	2.1	105.0	F

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)		Continuing Calibration Blank 1	C	2	C	3	C	Prepa-ration Blank	C	M
Antimony	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	F
Cadmium	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	F

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

00027

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Initial Calibration Source: EPA-LV

Continuing Calibration Source: FISHER

Concentration Units:ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)		M
Antimony				20.0	17.9	89.5	18.5	92.5		F
Cadmium				2.0	2.2	110.0	1.8	90.0		F

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)		Continuing Calibration Blank 1	C	2	C	3	C		Prepa-ration Blank	C		M
Antimony			2.0	U									F
Cadmium			0.1	U									F

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

00028

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Initial Calibration Source: EPA-LV

Continuing Calibration Source: FISHER

Concentration Units:ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)		M
Antimony										
Cadmium	96.1	95.0	98.9	2.0	1.9	95.0	1.8	90.0		F

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)		Continuing Calibration Blank 1	C	2	C	3	C		Prepa-ration Blank	C		M
Antimony													
Cadmium	-0.1	B	0.1	U	0.1	U							F

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2B
CRDL STANDARD FOR AA AND ICP

00029

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

AA CRDL Standard Source: BAKER

ICP CRDL Standard Source: BAKER

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Aluminum								
Antimony								
Arsenic	5.0	4.7	94.0					
Barium								
Beryllium				10.0	11.3	113.0	11.6	116.0
Cadmium								
Calcium								
Chromium				20.0	25.1	125.5	26.1	130.5
Cobalt				20.0	29.1	145.5	28.0	140.0
Copper				20.0	26.6	133.0	30.3	151.5
Iron								
Lead	2.0	2.1	105.0					
Magnesium								
Manganese				20.0	26.2	131.0	29.2	146.0
Mercury								
Nickel				40.0	45.8	114.5	49.2	123.0
Potassium								
Selenium	2.0	1 u	0.0					
Silver				10.0	2.0	20.0	2.1	21.0
Sodium								
Thallium	2.0	2 u	0.0					
Vanadium				20.0	27.7	138.5	27.9	139.5
Zinc				40.0	51.2	128.0	55.5	138.8

U.S. EPA - CLP

00030

2B
CRDL STANDARD FOR AA AND ICP

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

AA CRDL Standard Source: BAKER

ICP CRDL Standard Source: BAKER

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
				Initial			Final	
	True	Found	%R	True	Found	%R	Found	%R
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead	2.0	2.4	120.0					
Magnesium								
Manganese								
Mercury								
Nickel								
Potassium								
Selenium	2.0	1.4	70.0					
Silver								
Sodium								
Thallium	1.0	2u	0.0					
Vanadium								
Zinc								

U.S. EPA - CLP

00031

2B
CRDL STANDARD FOR AA AND ICP

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

AA CRDL Standard Source: BAKER

ICP CRDL Standard Source: BAKER

Concentration Units: ug/L

Analyte	CRDL Standard for AA True	Found	%R	CRDL Standard for ICP True	Found	%R	Found	%R
Antimony	5.0	4.2	84.0					

U.S. EPA - CLP

3
BLANKS

00032

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	25.0	U	25.0	U	25.0	U	25.0	U	25.0	U	P
Antimony											
Arsenic											
Barium	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	P
Beryllium	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	P
Cadmium											
Calcium	81.0	U	81.0	U	81.0	U	81.0	U	81.0	U	P
Chromium	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U	P
Cobalt	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U	P
Copper	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	P
Iron	14.0	U	14.0	U	-15.0	B	-15.0	B	14.0	U	P
Lead											
Magnesium	81.0	U	81.0	U	81.0	U	81.0	U	81.0	U	P
Manganese	6.0	U	6.0	U	6.0	U	6.0	U	6.0	U	P
Mercury											
Nickel	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	P
Potassium	95.0	U	95.0	U	95.0	U	95.0	U	95.0	U	P
Selenium											
Silver	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U	P
Sodium	1360	U	1360	U	1360	U	1360	U	1360	U	P
Thallium											
Vanadium	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U	P
Zinc	3.0	U	3.0	U	3.0	U	3.0	U	3.9	B	P
Cyanide											

U.S. EPA - CLP

3
BLANKS

00033

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	F
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	F
Magnesium											
Manganese											
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	CV
Nickel											
Potassium											
Selenium	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	F
Silver											
Sodium											
Thallium	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	F
Vanadium											
Zinc											
Cyanide	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	AS

U.S. EPA - CLP

3
BLANKS

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic			1.5	B	2.2	B					F
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead			2.0	U							F
Magnesium											
Manganese											
Mercury											
Nickel											
Potassium											
Selenium			1.0	U	1.0	U					F
Silver											
Sodium											
Thallium			2.0	U							F
Vanadium											
Zinc											
Cyanide											

U.S. EPA - CLP

00035

3
BLANKS

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium											
Cobalt											
Copper											
Iron											
Lead	2.0	U	2.0	U	2.0	U					F
Magnesium											
Manganese											
Mercury											
Nickel											
Potassium											
Selenium	1.0	U	1.0	U	1.0	U					F
Silver											
Sodium											
Thallium	2.0	U	2.0	U	2.0	U					F
Vanadium											
Zinc											
Cyanide											

U.S. EPA - CLP

00036

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: mEW615

ICP ID Number: JA9000 ICS Source: EPA-LV-0387

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	%R	Final Found Sol. A	Final Found Sol. AB	%R
Aluminum	502000	508000	509000	515000	101.4	531000	514000	101.2
Antimony								
Arsenic								
Barium		483	7	473	97.9	8	485	100.4
Beryllium		474	-0	488	103.0	-0	484	102.1
Cadmium								
Calcium	506000	516000	523000	527000	102.1	537000	526000	101.9
Chromium		513	43	469	91.4	40	469	91.4
Cobalt		478	27	497	104.0	7	516	107.9
Copper		534	18	574	107.5	6	572	107.1
Iron	196000	203000	190000	194000	95.6	216000	194000	95.6
Lead								
Magnesium	498000	509000	517000	524000	102.9	564000	536000	105.3
Manganese		531	93	576	108.5	65	597	112.4
Mercury								
Nickel		916	44	954	104.1	17	975	106.4
Potassium			84	54.5		29	-119	
Selenium								
Silver		993	-0	930	93.7	-726	910	91.6
Sodium			-753	-1160			-625	
Thallium								
Vanadium		495	6	485	102.1	7	487	102.5
Zinc		973	5	984	101.1	-0	1026	104.8

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5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

MEW616S

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Matrix (soil/water): WATER Level (low/med): LOW

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	1870		25.0	U	2000	93.5		P
Antimony									
Arsenic	75-125	19.8		1.0	U	20.0	99.0		F
Barium	75-125	1930		88.2		2000	92.1		P
Beryllium	75-125	46.5		2.0	U	50.0	93.0		P
Cadmium									
Calcium	75-125	198000		150000		50000	96.0		P
Chromium	75-125	168		4.0	U	200	84.0	N	P
Cobalt	75-125	492		9.0	B	500	96.6		P
Copper	75-125	253		10.0	U	250	101.2		P
Iron		6320		5790		1000	53.0		P
Lead	75-125	20.4		3.4		20.0	85.0		F
Magnesium	75-125	64800		40200		25000	98.4		P
Manganese	75-125	369		181		200	94.0		P
Mercury	75-125	1.0		0.2	U	1.0	100.0		CV
Nickel	75-125	426		42.5		400	95.9		P
Potassium	75-125	20200		1300	B	20000	94.5		P
Selenium	75-125	20.5		1.0	U	10.0	205.0	N	F
Silver	75-125	42.8		4.0	U	50.0	85.6		P
Sodium	75-125	56200		2290		50000	107.8		P
Thallium	75-125	24.5		2.0	U	20.0	122.5	N	F
Vanadium	75-125	453		4.0	U	500	90.6		P
Zinc		1050		908		200	71.0		P
Cyanide	75-125	96.7		10.0	U	100	96.7		AS

Comments:
CONTROL LIMIT IS 85 TO 115% FOR ALL METALS EXCEPT MERCURY AND CYANIDE.
MERCURY AND CYANIDE CONTROL LIMIT IS 80 TO 120% RECOVERY.

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5A
SPIKE SAMPLE RECOVERY

00038

EPA SAMPLE NO.

MEW616S

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Matrix (soil/water): WATER Level (low/medium): LOW

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit %R	Spike Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Antimony	85-115	18.9		2.0	U	20.0	94.5		F
Cadmium	85-115	1.6		0.2	U	2.0	80.0	N	F

EPA SAMPLE NO.

DUPLICATES

MEW615D

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Antimony		2.0	U	2.0	U			F
Cadmium	5.0	0.3	B	0.4	B	28.6		F

Comments:

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00039

5B
POST DIGEST SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

mEW616A

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 35546 SDG No.: mEW615

Matrix (soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony									
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									
Calcium									NR
Chromium		19.3		4.0	u	20.0	965		NR P
Cobalt									NR
Copper									NR
Iron									NR
Lead									NR
Magnesium									NR
Manganese									NR
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									P
Cyanide									NR

Comments:

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DUPLICATES

EPA SAMPLE NO.

MEW615D

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Matrix (soil/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		633		631		0.3		P
Antimony								
Arsenic		1.7	B	1.1	B	42.9		F
Barium		34.4	B	33.5	B	2.7		P
Beryllium		2.0	U	2.0	U			P
Cadmium								
Calcium		167000		168000		0.6		P
Chromium		4.0	U	4.0	U			P
Cobalt	10.0	16.8		15.1		10.7		P
Copper	10.0	27.4		10.0	U	200	*	P
Iron		78800		78800		0.0		P
Lead	2.0	5.5		3.7		39.1		F
Magnesium		47400		47500		0.2		P
Manganese		570		571		0.2		P
Mercury		0.2	U	0.2	U			CV
Nickel	20.0	86.2		86.9		0.8		P
Potassium		1320	B	1330	B	0.8		P
Selenium		1.0	U	1.0	U			F
Silver		4.0	U	4.0	U			P
Sodium		3570		2950		19.0		P
Thallium		2.0	U	2.0	U			F
Vanadium		4.0	U	4.0	U			P
Zinc		1340		1340		0.0		P
Cyanide		10.0	U	10.0	U			AS

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00041

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LABORATORY CONTROL SAMPLE

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Solid LCS Source: EMSL - LV

Aqueous LCS Source: EMSL - LV

Analyte	Aqueous (ug/L) True	Found	%R(1)	Solid (mg/kg) True	Found	C	Limits		%R
Aluminum	1980	1970	99.5						
Antimony									
Arsenic									
Barium	1980	1960	99.0						
Beryllium	481	506	105						
Cadmium									
Calcium	49800	51400	103						
Chromium	506	442	87.4						
Cobalt	474	504	106						
Copper	542	557	103						
Iron	1990	1970	99.0						
Lead									
Magnesium	25000	25100	100						
Manganese	513	534	104						
Mercury									
Nickel	496	490	98.8						
Potassium	50200	47100	93.8						
Selenium									
Silver	509	453	89.0						
Sodium	50700	49600	97.8						
Thallium									
Vanadium	511	489	95.7						
Zinc	3100	3060	98.7						
Cyanide									

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00042

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LABORATORY CONTROL SAMPLE

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Solid LCS Source: EMSL - LV

Aqueous LCS Source: EMSL - LV

Analyte	Aqueous (ug/L) True	Found	%R(1)	Solid (mg/kg) True	Found	C	Limits		%R
Aluminum									
Antimony									
Arsenic	47.0	42.9	91.3						
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead	97.9	86.8	88.7						
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium	104	104	100						
Silver									
Sodium									
Thallium	97.3	84.6	86.9						
Vanadium									
Zinc									
Cyanide									

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7

LABORATORY CONTROL SAMPLE

0043

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract : 68-01-7476

Lab Code: ENSECO Case No.:9288 SAS No.:3554E SDG No.: MEW615

Solid LCS Source: EMSL-LV

Aqueous LCS Source: EMSL-LV

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%R
Antimony	1010.0	885	87.6						
Cadmium	96.1	90.0	93.6						

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8
STANDARD ADDITION RESULTS

00044

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Concentration Units: ug/L

EPA Sample No.	An	Dil	0 ADD ABS	1 ADD CON	1 ADD ABS	2 ADD CON	2 ADD ABS	3 ADD CON	3 ADD ABS	Final Conc.	r	Q
PB	AS	1	0.000	10	10.000	20	21.700	30	31.800	1u 0.0	0.9995	-
LCS	AS	1	45.800	10	57.000	20	67.600	30	78.000	42.9	0.9999	-
CCB1	AS	1	0.000	10	10.100	20	19.600	30	31.100	1u 0.0	0.9992	-
CCB2	AS	1	0.000	10	10.500	20	20.000	30	31.800	1u 0.0	0.9991	-
CCB3	AS	1	0.000	10	10.300	20	20.100	30	34.800	1u 0.0	0.9952	-
CCB4	AS	1	2.200	10	12.200	20	22.700	30	35.400	1.5	0.9984	-
CCV4	AS	1	23.000	10	34.600	20	43.900	30	57.200	20.4	0.9978	-
MEW621	AS	1	9.200	10	19.200	20	30.500	30	41.000	8.4	0.9998	-
MEW616S	AS	1	21.900	10	42.800	20	57.100	30	67.500	16.3	0.9880	+
MEW616S	AS	1	22.400	10	36.700	20	46.300	30	58.400	19.8	0.9973	-
CCV1	AS	1	19.900	10	28.400	20	40.100	30	49.800	19.1	0.9983	-
ICV	AS	1	46.600	10	56.900	20	67.200	30	77.600	45.1	1.0000	-
CCV3	SB	1	19.500	10	28.900	20	42.500	30	50.800	17.9	0.9959	-
MEW620	AS	1	0.000	10	11.700	20	24.600	30	37.800	1u 0.0	0.9996	-
CCV3	AS	1	20.000	10	29.900	20	42.000	30	49.300	20.3	0.9959	-
CCB3	SB	1	0.000	10	9.800	20	19.300	30	30.100	1u 0.0	0.9996	-
MEW617	AS	1	0.000	10	11.900	20	23.800	30	35.300	1u 0.0	1.0000	-
CCV2	AS	1	20.200	10	30.200	20	41.500	30	50.300	20.0	0.9990	-
MEW616	AS	1	1.300	10	12.700	20	25.800	30	38.800	1u 0.0	0.9995	-
CRA	AS	1	4.800	10	15.000	20	25.900	30	35.400	4.7	0.9997	-
CCV5	AS	1	22.100	10	30.800	20	42.200	30	51.400	21.9	0.9987	-
CCB5	AS	1	2.100	10	12.400	20	23.000	30	32.300	2.2	0.9996	-
ICB	SB	1	0.000	10	7.800	20	16.000	30	25.900	1u 0.0	0.9984	-
LCS	SB	50	19.800	10	30.400	20	42.800	30	52.800	885.0	0.9992	-

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00045

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STANDARD ADDITION RESULTS

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Concentration Units: ug/L

EPA Sample No.	An	Dil	0 ADD ABS	1 ADD CON	1 ADD ABS	2 ADD CON	2 ADD ABS	3 ADD CON	3 ADD ABS	Final Conc.	r	Q
CCB4	SB	1	0.000	10	10.200	20	20.300	30	30.900	2u 0.0	0.9999	
ICB	AS	1	0.000	10	9.300	20	20.200	30	31.200	1u 0.0	0.9992	
CCV4	SB	1	20.300	10	32.400	20	43.200	30	53.900	18.5	0.9995	
CCB2	SB	1	0.000	10	8.700	20	17.600	30	28.200	2u 0.0	0.9988	
CCV1	SB	1	19.700	10	29.600	20	39.200	30	48.600	20.6	0.9999	
ICV	SB	50	18.300	10	28.400	20	38.100	30	47.700	940.0	0.9999	
PB	SB	1	1.800	10	10.200	20	19.100	30	29.800	2u 0.0	0.9984	
CCB1	SB	1	0.000	10	8.200	20	18.800	30	27.700	2u 0.0	0.9989	
CCV2	SB	1	20.400	10	30.900	20	39.700	30	51.400	20.0	0.9986	
CRA	SB	1	4.900	10	13.000	20	23.400	30	34.300	4.2	0.9978	
MEW622	AS	1	5.000	10	17.000	20	30.700	30	43.600	3.6	0.9997	
MEW623	SB	1	0.000	10	8.400	20	19.200	30	27.800	2u 0.0	0.9988	
MEW622	SB	1	0.000	10	10.800	20	24.700	30	39.700	2u 0.0	0.9974	
MEW619	SB	1	0.000	10	11.000	20	21.000	30	33.600	2u 0.0	0.9990	
MEW618	SB	1	0.000	10	7.500	20	17.000	30	25.500	2u 0.0	0.9991	
MEW623	AS	1	5.600	10	16.900	20	28.700	30	39.300	5.0	0.9998	
MEW619	AS	1	0.000	10	12.300	20	25.900	30	39.700	1u 0.0	0.9996	
MEW615	SB	1	0.000	10	4.800	20	11.000	30	16.500	2u 0.0	0.9989	
MEW615	AS	1	2.200	10	11.600	20	23.400	30	33.500	1.7	0.9991	
MEW621	SB	1	2.500	10	11.100	20	24.800	30	38.400	2u 0.0	0.9949	+
MEW616	SB	1	0.000	10	7.800	20	17.500	30	27.600	2u 0.0	0.9983	
MEW620	SB	1	3.700	10	15.100	20	24.900	30	36.400	3.5	0.9995	
MEW618	AS	1	4.600	10	15.100	20	26.200	30	38.700	3.6	0.9992	
MEW617	SB	1	0.000	10	10.500	20	24.700	30	37.800	2u 0.0	0.9983	

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STANDARD ADDITION RESULTS

00046

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Concentration Units: ug/L

EPA Sample No.	An	Dil	0 ADD ABS	1 ADD CON	1 ADD ABS	2 ADD CON	2 ADD ABS	3 ADD CON	3 ADD ABS	Final Conc.	r	Q
MEW615D	AS	1	1.400	10	12.200	20	23.100	30	34.500	1.1	0.9999	
MEW615D	SB	1	0.000	10	4.800	20	10.900	30	16.500	1u 0.0	0.9990	
MEW616S	SB	1	20.500	10	31.200	20	40.300	30	53.200	18.9	0.9977	

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8
STANDARD ADDITION RESULTS

00047

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Concentration Units: ug/L

EPA Sample No.	An	Dil	0 ADD ABS	1 ADD CON	1 ADD ABS	2 ADD CON	2 ADD ABS	3 ADD CON	3 ADD ABS	Final Conc.	r	Q
PB	CD	1	0.000	1	0.400	1	1.000	2	1.500	0.1U 0.0	0.9973	
LCS	CD	50	1.900	1	2.500	1	3.000	2	3.500	90.0	0.9989	
CCV1	CD	1	1.800	1	2.300	1	2.800	2	3.200	1.9	0.9986	
CCV2	CD	1	1.800	1	2.300	1	2.800	2	3.300	1.8	1.0000	
ICV1	CD	50	1.900	1	2.300	1	2.800	2	3.400	90.0	0.9960	
MEW616S	CD	1	1.700	1	2.100	1	2.600	2	3.200	1.6	0.9960	
ICB	PB	1	0.000	10	10.200	20	18.700	30	29.400	2U 0.0	0.9991	
CCB2	PB	1	0.000	10	9.400	20	20.900	30	31.200	2U 0.0	0.9993	
CCV2	PB	1	19.900	10	28.700	20	38.800	30	49.400	19.7	0.9991	
ICV	CD	50	1.900	1	2.300	1	2.900	2	3.300	95.0	0.9965	
CCV1	PB	1	19.400	10	30.100	20	39.100	30	49.200	20.0	0.9995	
CCV3	PB	1	19.200	10	28.400	20	39.700	30	47.300	20.2	0.9975	
ICB	CD	1	-0.100	1	0.400	1	0.900	2	1.400	-0.1	1.0000	
CCV1	CD	1	2.000	1	2.600	1	3.100	2	3.500	2.0	0.9960	
CCB1	CD	1	0.000	1	0.500	1	1.000	2	1.500	0.1U 0.0	1.0000	
ICV	PB	1	47.300	10	55.100	20	63.700	30	74.100	52.5	0.9978	
CRA	PB	1	2.700	5	7.200	10	12.900	15	18.800	2.1	0.9982	
ICV1	PB	2	49.300	10	57.800	20	66.500	30	77.400	105.0	0.9981	
ICB1	CD	1	0.000	1	0.500	1	1.000	2	1.500	0.1U 0.0	1.0000	
CCV4	CD	1	1.900	1	2.500	1	3.100	2	3.500	1.8	0.9959	
CCB2	CD	1	-0.100	1	0.400	1	0.800	2	1.300	0.1U 0.0	0.9991	
CCB3	PB	1	0.000	10	9.300	20	20.300	30	28.200	2U 0.0	0.9982	
CCB1	CD	1	-0.100	1	0.400	1	0.900	2	1.300	0.1U 0.0	0.9986	
CCB3	CD	1	0.000	1	0.500	1	1.000	2	1.600	0.1U 0.0	0.9989	

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8
STANDARD ADDITION RESULTS

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Concentration Units: ug/L

EPA Sample No.	An	Dil	0 ADD ABS	1 ADD CON	1 ADD ABS	2 ADD CON	2 ADD ABS	3 ADD CON	3 ADD ABS	Final Conc.	r	Q
CCV2	CD	1	2.100	1	2.600	1	3.100	2	3.600	2.1	1.0000	
CCB4	CD	1	0.000	1	0.500	1	1.100	2	1.600	0.1u 0.0	0.9993	
CCB5	PB	1	0.000	10	9.400	20	21.300	30	29.000	0.1u 0.0	0.9970	
CCB1	PB	1	0.000	10	10.200	20	20.400	30	30.700	2u 0.0	1.0000	
CCB1	PB	1	0.000	10	9.500	20	20.800	30	29.700	2u 0.0	0.9990	
CCV5	PB	1	19.900	10	29.600	20	40.600	30	49.900	19.6	0.9995	
PB	PB	1	1.200	10	11.200	20	21.300	30	31.500	1.1	1.0000	
CCV1	PB	1	20.500	10	30.500	20	40.300	30	50.600	20.4	1.0000	
CRA	SB	1	4.900	10	13.000	20	23.400	30	34.300	4.2	0.9978	
CCV4	PB	1	19.900	10	29.400	20	39.700	30	49.700	19.8	0.9999	
ICB1	PB	1	0.000	10	9.400	20	19.500	30	28.300	2u 0.0	0.9997	
CRA	PB	1	2.900	5	7.600	10	13.700	15	19.000	2.4	0.9989	
CCV3	CD	1	2.000	1	2.500	1	2.900	2	3.400	2.2	0.9991	
CCB4	PB	1	0.000	10	9.600	20	21.200	30	29.000	2u 0.0	0.9974	
CCB2	CD	1	0.000	1	0.500	1	1.000	2	1.600	0.1u 0.0	0.9989	
LCS1	PB	2	43.000	10	54.200	20	64.300	30	73.100	86.8	0.9986	
MEW620	CD	1	0.100	1	0.500	1	0.900	2	1.400	0.1u 0.0	0.9984	
MEW622	CD	1	0.100	1	0.500	1	1.000	2	1.300	0.1	0.9959	
MEW616	CD	1	0.200	1	0.700	1	1.100	2	1.600	0.2	0.9991	
MEW622	PB	1	0.000	10	9.500	20	18.400	30	26.200	2u 0.0	0.9990	
MEW621	PB	1	15.200	10	22.300	20	30.000	30	37.800	19.9	0.9998	
MEW616	PB	1	2.600	10	10.200	20	17.600	30	25.500	3.4	0.9999	
MEW615	PB	1	4.300	10	11.600	20	20.000	30	27.000	5.5	0.9994	
MEW617	CD	1	0.100	1	0.500	1	1.000	2	1.500	0.1u 0.0	0.9986	

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STANDARD ADDITION RESULTS

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Concentration Units: ug/L

EPA Sample No.	An	Dil	0 ADD ABS	1 ADD CON	1 ADD ABS	2 ADD CON	2 ADD ABS	3 ADD CON	3 ADD ABS	Final Conc.	r	Q
MEW623	CD	1	0.300	1	0.800	1	1.300	2	1.800	0.3	1.0000	
MEW617	PB	1	3.600	10	13.000	20	22.100	30	31.700	3.8	1.0000	
MEW621	CD	4	2.400	1	3.000	1	3.400	2	3.900	10.0	0.9971	
MEW619	CD	1	0.100	1	0.600	1	1.100	2	1.500	0.1	0.9986	
MEW621	CD	1	7.700	1	7.500	1	7.500	2	7.900	63.0	0.4045	+
MEW620	PB	1	2.700	10	10.600	20	19.200	30	26.600	3.4	0.9996	
MEW615	CD	1	0.300	1	0.700	1	1.200	2	1.700	0.3	0.9986	
MEW618	PB	1	7.500	10	15.400	20	24.100	30	31.200	9.5	0.9993	
MEW618	CD	1	0.500	1	1.000	1	1.500	2	2.000	0.5	1.0000	
MEW619	PB	1	1.000	10	8.200	20	16.800	30	24.900	7u 0.0	0.9994	
MEW623	PB	1	0.000	10	8.700	20	16.800	30	23.700	7u 0.0	0.9987	
MEW616S	PB	1	14.200	10	22.300	20	27.500	30	36.000	20.4	0.9961	
MEW615D	CD	1	0.400	1	1.000	1	1.500	2	2.000	0.4	0.9989	
MEW615D	PB	1	2.500	10	10.200	20	17.300	30	24.300	3.7	0.9997	

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STANDARD ADDITION RESULTS

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Concentration Units: ug/L

EPA Sample No.	An	Dil	0 ADD ABS	1 ADD CON	1 ADD ABS	2 ADD CON	2 ADD ABS	3 ADD CON	3 ADD ABS	Final Conc.	r	Q
PB	SE	1	1.100	10	12.700	20	24.900	30	36.300	1u 0.0	0.9999	
CRA	SE	1	1.400	10	10.600	20	23.000	30	32.700	1u 0.0	0.9984	
CCB1	SE	1	0.000	10	10.100	20	19.600	30	31.200	1u 0.0	0.9991	
CCB5	SE	1	0.000	10	12.100	20	23.300	30	33.800	1u 0.0	0.9995	
CCV5	SE	1	21.500	10	31.800	20	42.700	30	52.100	21.0	0.9996	
ICV1	SE	2	50.600	10	59.100	20	68.000	30	78.800	107.2	0.9984	
MEW615	SE	1	0.000	10	7.300	20	13.000	30	18.400	1u 0.0	0.9973	
MEW616S	SE	1	13.900	10	18.700	20	25.500	30	33.000	20.5	0.9954	
CCV4	SE	1	21.100	10	32.000	20	41.100	30	51.900	21.0	0.9994	
CCV3	SE	1	20.600	10	30.500	20	39.400	30	50.500	20.8	0.9991	
LCS1	TL	2	47.400	10	59.600	20	68.700	30	81.800	84.6	0.9978	
CCB3	SE	1	0.000	10	10.600	20	21.700	30	30.900	1u 0.0	0.9993	
LCS	SE	2	50.000	10	61.000	20	71.600	30	79.100	103.6	0.9964	
MEW621	SE	1	0.000	10	2.300	20	5.400	30	6.500	1u 0.0	0.9856	+
ICV	SE	2	48.800	10	58.000	20	67.800	30	76.800	104.0	0.9999	
CRA	SE	1	1.700	5	6.300	10	11.700	15	17.000	1.4	0.9994	
CCB1	SE	1	0.000	10	11.600	20	22.100	30	31.900	1u 0.0	0.9993	
CCB2	SE	1	0.000	10	10.300	20	21.600	30	31.800	1u 0.0	0.9998	
CCV2	SE	1	20.500	10	29.800	20	40.100	30	49.400	21.0	0.9998	
ICB	SE	1	0.000	10	11.100	20	22.100	30	32.100	1u 0.0	0.9997	
CCB2	SE	1	0.000	10	10.000	20	20.200	30	30.400	1u 0.0	1.0000	
ICB	TL	1	0.000	10	9.300	20	20.000	30	28.400	1u 0.0	0.9990	
CCV1	SE	1	20.500	10	30.200	20	40.600	30	49.800	20.9	0.9997	
ICB1	SE	1	0.000	10	9.900	20	19.900	30	30.700	1u 0.0	0.9998	

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STANDARD ADDITION RESULTS

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Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Concentration Units: ug/L

EPA Sample No.	An	Dil	0 ADD ABS	1 ADD CON	1 ADD ABS	2 ADD CON	2 ADD ABS	3 ADD CON	3 ADD ABS	Final Conc.	r	Q
CCV1	TL	1	19.200	10	29.300	20	39.200	30	47.900	20.3	0.9994	-
CCV2	TL	1	19.400	10	30.000	20	39.300	30	48.100	20.8	0.9991	-
CCB1	TL	1	0.000	10	9.900	20	19.500	30	29.400	2u 0.0	1.0000	-
CCV2	SE	1	20.200	10	29.800	20	39.400	30	50.700	19.6	0.9992	-
CCB2	TL	1	-1.300	10	9.000	20	19.700	30	29.800	2u 0.0	0.9999	-
CCB1	TL	1	-1.400	10	9.300	20	19.800	30	30.700	2u 0.0	1.0000	-
CCV1	SE	1	21.000	10	31.600	20	41.000	30	50.300	22.0	0.9995	-
CCB4	SE	1	0.000	10	12.100	20	22.500	30	33.200	1u 0.0	0.9994	-
ICB1	TL	1	-1.200	10	9.700	20	20.300	30	30.900	2u 0.0	1.0000	-
PB	TL	1	-1.200	10	9.700	20	20.800	30	32.100	2u 0.0	1.0000	-
CCB4	TL	1	-1.300	10	9.400	20	19.600	30	29.600	2u 0.0	0.9999	-
CCV2	TL	1	18.400	10	26.000	20	37.300	30	47.200	18.0	0.9973	-
ICV	TL	2	47.000	10	56.300	20	67.900	30	78.600	87.4	0.9991	-
CRA	TL	1	0.000	5	8.100	10	14.100	15	19.500	2u 0.0	0.9954	-
CCV3	TL	1	19.300	10	30.400	20	38.200	30	50.300	19.3	0.9969	-
CCB3	TL	1	-1.200	10	9.400	20	18.700	30	30.500	2u 0.0	0.9990	-
ICV1	TL	2	48.700	10	59.600	20	69.800	30	76.600	105.6	0.9949	+
CCB2	TL	1	0.000	10	8.100	20	17.800	30	27.900	2u 0.0	0.9988	-
CCV1	TL	1	19.500	10	30.800	20	39.300	30	51.300	18.9	0.9981	-
CCV4	TL	1	19.000	10	30.900	20	40.500	30	49.200	19.8	0.9974	-
CRA	TL	1	0.000	5	6.100	10	11.600	15	16.800	2u 0.0	0.9993	-
MEW618	SE	1	0.000	10	8.400	20	16.300	30	23.200	1u 0.0	0.9990	-
MEW619	SE	1	0.000	10	9.800	20	21.000	30	30.800	1u 0.0	0.9996	-
MEW621	SE	10	1.500	10	9.800	20	18.900	30	29.700	1u 0.0	0.9982	-

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STANDARD ADDITION RESULTS

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Concentration Units: ug/L

EPA Sample No.	An	Dil	0 ADD ABS	1 ADD CON	1 ADD ABS	2 ADD CON	2 ADD ABS	3 ADD CON	3 ADD ABS	Final Conc.	r	Q
MEW623	SE	1	0.000	10	7.900	20	15.900	30	23.000	1u 0.0	0.9996	
MEW616	SE	1	0.000	10	9.200	20	18.100	30	27.300	1u 0.0	1.0000	
MEW617	TL	1	0.000	10	7.500	20	16.500	30	26.300	2u 0.0	0.9983	
MEW620	SE	1	0.000	10	9.900	20	21.100	30	30.300	1u 0.0	0.9994	
MEW615	SE	1	8.300	10	7.400	20	10.700	30	16.600	23.1	0.8791	+
MEW616	TL	1	0.000	10	8.300	20	17.400	30	27.000	2u 0.0	0.9995	
MEW622	SE	1	0.000	10	10.100	20	19.800	30	28.600	1u 0.0	0.9995	
MEW621	SE	1	0.000	10	1.600	20	4.800	30	7.400	1u 0.0	0.9925	+
MEW615	TL	1	0.000	10	8.900	20	19.700	30	28.800	2u 0.0	0.9993	
MEW623	TL	1	0.000	10	8.600	20	19.800	30	28.300	2u 0.0	0.9985	
MEW618	TL	1	0.000	10	10.700	20	21.100	30	32.800	2u 0.0	0.9997	
MEW621	TL	1	1.500	10	11.300	20	23.500	30	34.800	2u 0.0	0.9991	
MEW622	TL	1	0.000	10	5.200	20	12.100	30	19.100	2u 0.0	0.9977	
MEW619	TL	1	0.000	10	7.300	20	16.700	30	25.000	2u 0.0	0.9989	
MEW620	TL	1	0.000	10	6.700	20	15.600	30	24.600	2u 0.0	0.9978	
MEW617	SE	1	0.000	10	8.800	20	17.400	30	27.000	1u 0.0	0.9997	
MEW616S	TL	1	14.100	10	19.400	20	24.100	30	31.300	24.5	0.9957	
MEW615D	TL	1	0.000	10	9.300	20	18.900	30	28.100	2u 0.0	1.0000	
MEW615D	SE	1	0.000	10	4.900	20	10.200	30	16.500	1u 0.0	0.9983	

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ICP SERIAL DILUTIONS

EPA SAMPLE NO.

MEW623L

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

Matrix (soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	216		187	B	13.4		NR
Antimony							
Arsenic							
Barium	90.6		86.6	B	4.4		NR
Beryllium	2.0	U	10.0	U			NR
Cadmium							
Calcium	85470		85760		0.3		P
Chromium	4.0	U	20.0	U			NR
Cobalt	120		113		5.8		NR
Copper	10.0	U	50.0	U			NR
Iron	76780		77360		0.8		P
Lead							
Magnesium	26990		26860		0.5		P
Manganese	517		501		3.1		P
Mercury							
Nickel	342		327		4.4		NR
Potassium	1164	B	1115	B	4.2		NR
Selenium							
Silver	4.0	U	20.0	U			NR
Sodium	3600		6800	U	100		NR
Thallium							
Vanadium	4.0	U	20.0	U			NR
Zinc	477		486		1.9		P

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HOLDING TIMES

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

EPA Sample No.	Matrix	Date Received	Mercury Prep Date	Mercury Holding Time	Cyanide Prep Date	Cyanide Holding Time
MEW615	Water	04/02/88	04/06/88	4	04/08/88	6
MEW615D	Water	04/02/88	04/06/88	4	04/08/88	6
MEW616	Water	04/02/88	04/06/88	4	04/08/88	6
MEW616A	Water	04/02/88	04/06/88	4	04/08/88	6
MEW616S	Water	04/02/88	04/06/88	4	04/08/88	6
MEW617	Water	04/02/88	04/06/88	4	04/08/88	6
MEW618	Water	04/02/88	04/06/88	4	04/08/88	6
MEW619	Water	04/02/88	04/06/88	4	04/08/88	6
MEW620	Water	04/02/88	04/06/88	4	04/08/88	6
MEW621	Water	04/02/88	04/06/88	4	04/08/88	6
MEW622	Water	04/02/88	04/06/88	4	04/08/88	6
MEW623	Water	04/02/88	04/06/88	4	04/08/88	6

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

00055

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

ICP ID Number: JA9000 Date: 01/26/88

Flame AA ID Number: _____

Furnace AA ID Number: _____

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	237.31		100	25	P
Antimony			5		
Arsenic			5		
Barium	233.53		50	2.0	P
Beryllium	313.04		5	2.0	P
Cadmium			0.5		
Calcium	370.60		1000	81	P
Chromium	267.72		10	4.0	P
Cobalt	228.62		10	4.0	P
Copper	324.75		10	10	P
Iron	259.84		100	14	P
Lead	220.35		2	17	P
Magnesium	279.08		1000	81	P
Manganese	294.92		10	6.0	P
Mercury			0.2		
Nickel	231.60		20	10	P
Potassium	766.49		2000	95	P
Selenium			2		
Silver	328.07		5	4.0	P
Sodium	330.24		1000	1360	P
Thallium			2		
Vanadium	292.40		10	4.0	P
Zinc	213.80		20	3.0	P

Comments:
SPECTRO-PRODUCTS HG-3 SPECTROPHOTOMETER USED FOR MANUAL COLD VAPOR DETERMINATION

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INSTRUMENT DETECTION LIMITS (QUARTERLY)

00056

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: mEW615

ICP ID Number: JA9000 Date: 01/26/88

Flame AA ID Number: _____

Furnace AA ID Number: PE2380

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			100		
Antimony			5		
Arsenic	193.70	BD	5	3.0	F
Barium			50		
Beryllium			5		
Cadmium	228.80	BD	0.5	0.1	F
Calcium			1000		
Chromium			10		
Cobalt			10		
Copper			10		
Iron			100		
Lead	283.30	BD	2	1.0	F
Magnesium			1000		
Manganese			10		
Mercury	253.70	BD	0.2	0.1	CV
Nickel			20		
Potassium			2000		
Selenium	196.03	BD	2	2.0	F
Silver			5		
Sodium			1000		
Thallium	276.80	BD	2	2.0	F
Vanadium			10		
Zinc			20		

Comments:
SPECTRO-PRODUCTS HG-3 SPECTROPHOTOMETER USED FOR MANUAL COLD VAPOR DETERMINATION

U.S. EPA - CLP

11

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 9288 SAS No.: 3554E SDG No.: MEW615

ICP ID Number: JA9000 Date: 01/26/88

Flame AA ID Number:

Furnace AA ID Number: Z5000

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			100		
Antimony	217.80	BZ	5	2.0	F
Arsenic	193.70	BZ	5	1.0	F
Barium			50		
Beryllium			5		
Cadmium			0.5		
Calcium			1000		
Chromium			10		
Cobalt			10		
Copper			10		
Iron			100		
Lead			2		
Magnesium			1000		
Manganese			10		
Mercury			0.2		
Nickel			20		
Potassium			2000		
Selenium	196.03	BZ	2	1.0	F
Silver			5		
Sodium			1000		
Thallium			2		
Vanadium			10		
Zinc			20		

Comments:
SPECTRO-PRODUCTS HG-3 SPECTROPHOTOMETER USED FOR MANUAL COLD VAPOR DETERMINATION

In Reference to Case No(s):

SAS 3727E

QC 1

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM
Telephone Record Log

Date of Call: 5.11 88.

Laboratory Name: PBS & J

Lab Contact: Kimberly Kunihiro

Region: V

Regional Contact: Ada Lecin

Call Initiated By: ___ Laboratory ✓ Region

In reference to data for the following sample number(s):

E01 - E09

Summary of Questions/Issues Discussed:

1. Acidity - why you did not add 5ml 0.2N H_2SO_4 to the sample (method 305.1)
2. Alkalinity - what was your lab blank volume (end) 25mls or 50mls
3. How did you count chart units for chloride NO_3-NO_2; sulfate

Summary of Resolution:

1. Lab found problems with adding 5ml H_2SO_4
2. will be corrected and send to the Region
3. Reduced copy was sent

Ada Lecin — Signature

5.12 88. — Date

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

SF 5011

In Reference to Case No(s):

SAS 3727E

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM
Telephone Record Log

Date of Call: 4/5/88

Laboratory Name: PBS&J

Lab Contact: Tom French

Region: IV

Regional Contact: Jeb Livingood, Tony Nesky (SMO)

Call Initiated By: ✓ Laboratory ___ Region

In reference to data for the following sample number(s):

3727E-01

Summary of Questions/Issues Discussed:

Received eight containers for this sample [illegible] Should we treat this as 12 [illegible] Should extra aliquots of 3727E-01 for QC [illegible] [illegible] eight as [illegible] [illegible]

Summary of Resolution:

Treat 3727E-01 as an individual sample, use extra volume provided for QC.

Signature: [signature] Date: 4/6/88

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: Jay Thakker 5/13/88

BJECT: Review of Region V CLP Data
Received for Review on 5-2-88

FROM: Curtis Ross ,Director (5SCRL)
Central Regional Laboratory Jay Thakker

TO: Data User : MPCA

DAVE KOVBSKY

We have reviewed the data for the following case(s).

SITE NAME: HADER GROUND WATER CONT. SMO case No. SAS3727

EPA Data Set No. SF5011 No.of Samples: 9 D.U/Activity Numbers Y905/C722ZZ

CRL No. 88YL06S01-S08,D05

SMO Traffic No. E01-E09

CLP Laboratory: PBS&J Hrs.required for Review 3

Following are our findings:

This review covers nine low water samples analyzed for sulfate, chloride, nitrate/nitrite, alkalinity, acidity and pH.

All QC data are acceptable.

Bob Levin
5.12.88

(X) Data are acceptable for use.
( ) Data are acceptable for use with qualifications noted above.
( ) Data are preliminary-pending verification by Contract Laboratory.
( ) Data are unacceptable.

cc: Carla Dempsey, Quality Assurance Officer, EPA Support Services
James Petty,Chief Quality Assurance Research,EMSL,Las Vegas

EPA FORM 1320-6 (Rev. 5/87)

RECEIVED
MAY 02 1988
U.S. EPA CENTRAL
REGIONAL LAB

U.S.A EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

Date 4/26/88

COVER PAGE
INORGANIC ANALYSES DATA PACKAGE

Lab Name Post, Buckley, Schuh & Jernigan

Case No. SAS 3727E

SOW No. 7/85

Q.C. Report No. 1

Sample Numbers

EPA No.	Lab ID No.	EPA No.	Lab Id No.
3727E-01	8804014-01	3727E-09	8804014-09
3727E-02	8804014-02		
3727E-03	8804014-03		
3727E-04	8804014-04		
3727E-05	8804014-05		
3727E-06	8804014-06		
3727E-07	8804014-07		
3727E-08	8804014-08		

Comments:

ICP interelement and background corrections applied? Yes X No ____.
If yes, corrections applied before X or after ____ generation of raw data.

Footnotes:

NR - Not required by contract at this time

Form I:

Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract-required detection limit, report the value in brackets (i.e.,[10]). Indicate the analytical method used with P (for ICP), A (for Flame AA) or F (for Furnace AA).

U - Indicates element was analyzed for but not detected. Report with the instrument detection limit value (e.g., 10U).

E - Indicates a value estimated or not reported due to the presence of interference . Explanatory note included on cover page.

s - Indicates value determined by Method of Standard Addition.

N - Indicates spike sample recovery is not within control limits.

* - Indicates duplicate analysis is not within control limits.

\+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

M - Indicates duplicate injection results exceeded control limits.

P for ICP, A for Flame AA and F for Furnace.

Form 1

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-577-2490

EPA Sample No. 3727E-01

Date 4/26/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME Post, Buckley, Schuh & Jernigan

CASE NO. SAS 3727E

SOW NO. 7/85

Lab Receipt Date 4/2/88

LAB SAMPLE ID. NO. 8804014-01

Q.C. REPORT NO. 1

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

mg/L ~~ug/l~~ or mg/kg dry weight (Circle One)

1.	Sulfate	605	P	10.	
2.	Nitrate & Nitrite	0.1U	P	11.	
3.	Chloride	0.5U	F	12.	
4.	Alkalinity	122	P	13.	
5.	Acidity		P	14.	
6.	PH	6.4	P	15.	
7.			P	16.	
8.			P	17.	
9.				Percent Solids (%)	

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Colorless, clear (NO_3+NO_2)
Orange, Cloudy (Alkalinity, Acidity, PH, Sulfate, Chloride)

Lab Manager K A Kumhiro

IFB Amend One

Form 1

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-577-2490

EPA Sample No. 3727E-02

Date 4/26/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME Post, Buckley, Schuh & Jernigan

CASE NO. SAS 3727E

SOW NO. 7/85

Lab Receipt Date 4/2/88

LAB SAMPLE ID. NO. 8804014-02

Q.C. REPORT NO. 1

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

mg/L ~~ug/L~~ or mg/kg dry weight (Circle One)

1.	Sulfate	310	P	10.	
2.	Nitrate & Nitrite	0.10	P	11.	
3.	Chloride	0.50	F	12.	
4.	Alkalinity	231	P	13.	
5.	Acidity		P	14.	
6.	PH	6.8	P	15.	
7.			P	16.	
8.			P	17.	
9.				Percent Solids (%)	

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Colorless, clear (NO_3 + NO_2)
Yellow, clear (Alkalinity, Acidity, PH, Sulfate, Chloride)

Lab Manager [illegible]

IFB Amend. One

Form 1

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-577-2490

EPA Sample No. 3727E-03

Date 4/26/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME Post, Buckley, Schuh & Jernigan

CASE NO. SAS 3727E

SOW NO. 7/85

Lab Receipt Date 4/2/88

LAB SAMPLE ID. NO. 8804014-03

Q.C. REPORT NO. 1

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

mg/l ~~ug/l~~ or mg/kg dry weight (Circle One)

1.	Sulfate	313 19	P	10.	
2.	Nitrate & Nitrite	0.1U	P	11.	
3.	Chloride	0.5U	F	12.	
4.	Alkalinity	277	P	13.	
5.	Acidity		P	14.	
6.	PH	7.2	P	15.	
7.			P	16.	
8.			P	17.	
9.				Percent Solids (%)	

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Colorless, clear ($NO_3 + NO_2$)
White, clear (Alkalinity, Acidity PH, Sulfate, Chloride)

Lab Manager [signature]

IFB Amend. One

Form 1

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-577-2490

EPA Sample No. 3727E-04

Date 4/26/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME Post, Buckley, Schuh & Jernigan

CASE NO. SAS 3727E

SOW NO. 7/85

Lab Receipt Date 4/2/88

LAB SAMPLE ID. NO. 8804014-04

Q.C. REPORT NO. 1

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

mg/L ~~ug/L~~ or mg/kg dry weight (Circle One)

1.	Sulfate	315	P	10.	
2.	Nitrate & Nitrite	0.1U	P	11.	
3.	Chloride	0.5U	F	12.	
4.	Alkalinity	127	P	13.	
5.	Acidity		P	14.	
6.	PH	6.3	P	15.	
7.			P	16.	
8.			P	17.	
9.				Percent Solids (%)	

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Colorless, clear ($NO_3 + NO_2$)
Orange, cloudy (Alkalinity, Acidity, pH, Sulfate, Chloride)

Lab Manager [illegible]

IFB Amend. One

Form 1

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-577-2490

EPA Sample No. 3727E-05

Date 4/26/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME Post, Buckley, Schuh & Jernigan

CASE NO. SAS 3727E

SOW NO. 7/85

Lab Receipt Date 4/2/88

LAB SAMPLE ID. NO. 8804014-05

Q.C. REPORT NO. 1

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

mg/l ~~ug/l~~ or mg/kg dry weight (Circle One)

1.	Sulfate	136	P	10.	
2.	Nitrate & Nitrite	0.1u	P	11.	
3.	Chloride	0.5u	P	12.	
4.	Alkalinity	324	P	13.	
5.	Acidity		P	14.	
6.	PH	7.3	P	15.	
7.			P	16.	
8.			P	17.	
9.				Percent Solids (%)	

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments Colorless, clear ($NO_3 + NO_2$)
Orange, clear (Alkalinity, Acidity, PH, Sulfate, Chloride)

Lab Manager [signature]

IFB Amend. One

Form 1

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria. VA 22313
703/557-2490 FTS: 8-577-2490

EPA Sample No. 3727E-06

Date 4/26/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME Post, Buckley, Schuh & Jernigan

CASE NO. SAS 3727E

SOW NO. 7/85

Lab Receipt Date 4/2/88

LAB SAMPLE ID. NO. 8804014-06

Q.C. REPORT NO. 1

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

mg/L ~~ug/l~~ or mg/kg dry weight (Circle One)

1.	Sulfate	890	P	10.	
2.	Nitrate & Nitrite	0.1U	P	11.	
3.	Chloride	0.5U	P	12.	
4.	Alkalinity	2.0U	P	13.	
5.	Acidity	576	P	14.	
6.	PH	4.6	P	15.	
7.			P	16.	
8.			P	17.	
9.				Percent Solids (%)	

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however

Comments: Colorless, clear (NO_3 + NO_2)
White, cloudy (Alkalinity, Acidity, PH, Sulfate, Chloride

Lab Manager [illegible]

IFB Amend One

Form 1

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-577-2490

EPA Sample No. 3727E-07

Date 4/26/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME Post, Buckley, Schuh & Jernigan

CASE NO. SAS 3727E

SOW NO. 7/85

Lab Receipt Date 4/2/88

LAB SAMPLE ID. NO. 8804014-07

Q.C. REPORT NO. 1

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

mg/L ~~ug/l~~ or mg/kg dry weight (Circle One)

1.	Sulfate	24	P	10.	
2.	Nitrate & Nitrite	0.10	P	11.	
3.	Chloride	~~35~~ 3.4	F	12.	
4.	Alkalinity	340	P	13.	
5.	Acidity		P	14.	
6.	PH	7.0	P	15.	
7.			P	16.	
8.			P	17.	
9.				Percent Solids (%)	

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Colorless, clear (NO_3 + NO_2)
Yellow, clear (Alkalinity, Acidity, PH, Sulfate, Chloride)

Lab Manager [signature]

IFB Amend. One

Form 1

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-577-2490

EPA Sample No.
3727E-08

Date 4/26/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME Post, Buckley, Schuh & Jernigan

CASE NO. SAS 3727E

SOW NO. 7/85

Lab Receipt Date 4/2/88

LAB SAMPLE ID. NO. 8804014-08

Q.C. REPORT NO. 1

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

mg/L ~~ug/L~~ or mg/kg dry weight (Circle One)

1.	Sulfate	314	P	10.	
2.	Nitrate & Nitrite	0.10	P	11.	
3.	Chloride	1.2	F	12.	
4.	Alkalinity	134	P	13.	
5.	Acidity		P	14	
6.	PH	6.5	P	15.	
7.			P	16.	
8.			P	17.	
9.				Percent Solids (%)	

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Colorless, clear (NO_3+NO_2)
Orange, clear (Alkalinity, Acidity, PH, Sulfate, Chloride)

Lab Manager [signature]

IFB Amend One

Form 1

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-577-2490

EPA Sample No. 3727E-09

Date 4/26/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME Post, Buckley, Schuh & Jernigan

CASE NO. SAS 3727E

SOW NO. 7/85

Lab Receipt Date 4/2/88

LAB SAMPLE ID. NO. 8804014-09

Q.C. REPORT NO. 1

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

mg/L ug/L or mg/kg dry weight (Circle One)

1.	Sulfate	139	P	10.	
2.	Nitrate & Nitrite	0.1U	P	11.	
3.	Chloride	0.5U	P	12.	
4.	Alkalinity	329	P	13.	
5.	Acidity		P	14.	
6.	PH	7.3	P	15.	
7.			P	16.	
8.			P	17.	
9.				Percent Solids (%)	

Footnotes For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments Colorless, clear (NO_3 + NO_2)
Orange, clear (Alkalinity, Acidity, pH, Sulfate, Chloride)

Lab Manager [signature]

IFB Amend. One

Form III

Q.C. Report No. 1

BLANKS

LAB NAME Post, Buckley, Schuh & Jernigan

CASE NO. SAS 3727E

DATE 4/26/88

UNITS ~~ug/L~~ mg/L

Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Prep. Blank Matrix 1	Matrix 2
1. Sulfate	5.0U	5.0U					
2. NO3 - NO2	0.1U	0.1U				0.1U	0.1U
3. Chloride	0.5U	0.5U					
4. Alkalinity	10U	10U					
5. Acidity							
6. PH							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							
19.							
20.							
21.							
22.							
23.							
Other:							
Cyanide							

[1] Reporting Units: aqueous, ug/L; solid, mg/kg

Form V

Q.C. Report No. 1

SPIKE SAMPLE RECOVERY

LAB NAME Post, Buckley, Schuh & Jernigan

CASE NO. SAS 3727E

EPA Sample No. 3727E-01

DATE 4/26/88

Lab Sample ID No. 8804014-01

Units: ~~mg/kg~~ mg/L

Matrix LA

Compound	Control Limit %R	Spiked Sample Result (SSR)	Sample Result(SR)	Spiked Added (SA)	%R
1. Sulfate	85-115	1450	605	800	106
2. NO3 - NO2	"	0.8	0.1U	0.8	100
3. Chloride	"	4.5	0.5U	4.0	112
4. Alkalinity	"	NR			
5. Acidity	"				
6. PH	"				
7.	"				
8.	"				
9.	"				
10.	"				
11.	"				
12.	"				
13.	"				
14.	"				
15.	"				
16.	"				
17.	"				
18.	"				
19.	"				
20.	"				
21.	"				
22.	"				
23	"				
Other					
Cyanide					

[1] %R = [(SSR - SR) / SA] x 100

" N " - out of control

' NR "-Not required

Comments.

Form VI b

Q.C. Report No. 1

DUPLICATES

LAB NAME Post, Buckley, Schuh & Jernigan
DATE 4/26/88

CASE NO. SAS 3727E
EPA Sample No. 3727E-06
Lab Sample ID No. 8804014-06
Units: mg/L

Matrix LA

Compound	Control Limit1	Sample (S)	Duplicate (D)	RPD2
1. Sulfate				
2. NO3 - NO2				
3. Chloride				
4. Alkalinity				
5. Acidity		576	578	0.3
6. PH		4.6	4.6	0.0
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
Other:				
Cyanide				

* Out of Control

[1] To be added at a later date

[2] RPD = [S - D /((S + D)/2)] x 100

NC - Non calculable RPD due to value(s) less than CRDL

Form VI C

Q.C. Report No. 1

DUPLICATES

LAB NAME Post, Buckley, Schuh & Jernigan
DATE 4/26/88

CASE NO. SAS 3727E
EPA Sample No. 3727E-09
Lab Sample ID No. 8804014-09
Units: mg/L

Matrix LA

Compound	Control Limit1	Sample (S)	Duplicate (D)	RPD2
1. Sulfate				
2. NO3 - NO2				
3. Chloride				
4. Alkalinity	±10%	329	328	0.3
5. Acidity				
6. PH				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
Other:				
Cyanide				

* Out of Control

[1] To be added at a later date.

[2] RPD = [S - D /((S + D)/2)] x 100

NC - Non calculable RPD due to value(s) less than CRDL

Form VI a

Q.C. Report No. 1

DUPLICATES

LAB NAME Post, Buckley, Schuh & Jernigan
DATE 4/26/88

CASE NO. SAS 3727E
EPA Sample No. 3727E-01
Lab Sample ID No. 8804014-01
Units: mg/L

Matrix LA

Compound	Control Limit1	Sample (S)	Duplicate (D)	RPD2
1. Sulfate	±10%	588	594	1.0
2. NO3 - NO2		0.1U	0.1U	NC
3. Chloride		0.5U	0.5U	NC
4. Alkalinity				
5. Acidity				
6. PH				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
Other:				
Cyanide				

* Out of Control

[1] To be added at a later date.

[2] RPD = [S - D /((S + D)/2)] x 100

NC - Non calculable RPD due to value(s) less than CRDL

Form VII

Q.C. Report No. 1

INSTRUMENT DETECTION LIMITS AND

LABORATORY CONTROL SAMPLE

LAB NAME Post, Buckley, Schuh & Jernigan CASE NO. SAS 3727E DATE 4/26/86

LCS NO. SAS 3727E

Metals: Compound	Required Detection Limits (CRDL)-~~ug/l~~ mg/L	Instrument Detection Limits (IDL)-~~ug/l~~ mg/L ICP/AA ID#	Furnace ID#	Lab Control Sample ug/l mg/kg (circle one) True	Found	%R
Metals:						
1. Sulfate	5.0	5.0		20	20	100
2. NO3 - NO2	0.1	0.10		2.0	2.0	100
3. Chloride	0.5	0.5		52	52	100
4. Alkalinity	10	10		25	25	100
5. Acidity	∓ 10.	∓ 10		6.0	6.0	100
6. PH	0.1	0.1		~~6.0~~ 6.0	6.0	100
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
16.						
17.						
18.						
19.						
20.						
21.						
22.						
23.						
Other						
Cyanide	10	NR	NR			

NR - Not required

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

MPCA, Ground Water & Solid Waste Div.
MAY 19 '88
RECEIVED

DATE: Jay Thakker 5/13/88

SUBJECT: Review of Region V CLP Data
Received for Review on 5-2-88

FROM: Curtis Ross ,Director (5SCRL)
Central Regional Laboratory Jay Thakker

TO: Data User : MPCA

DAVE KOVBSKY

We have reviewed the data for the following case(s).

SITE NAME: HADER GROUND WATER CONT. SMO case No. SAS3727

EPA Data Set No. SF5011 No.of Samples: 9 D.U/Activity Numbers Y905/C722ZZ

CRL No. 88YL06S01-S08,D05

SMO Traffic No. E01-E09

CLP Laboratory: PBS&J Hrs.required for Review 3

Following are our findings:

This review covers nine low water samples analyzed for sulfate, chloride, nitrate/nitrite, alkalinity, acidity and pH.

All QC data are acceptable.

Bob Lerin
5.12.88

(X) Data are acceptable for use.
( ) Data are acceptable for use with qualifications noted above.
( ) Data are preliminary-pending verification by Contract Laboratory.
( ) Data are unacceptable.

cc: Carla Dempsey, Quality Assurance Officer, EPA Support Services
James Petty,Chief Quality Assurance Research,EMSL,Las Vegas

EPA FORM 1320-6 (Rev. 5/87)

U.S. EPA CENTRAL REGIONAL LAB

U.S.A EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

Date 4/26/88

COVER PAGE
INORGANIC ANALYSES DATA PACKAGE

Lab Name Post, Buckley, Schuh & Jernigan

Case No. SAS 3727E

SOW No. 7/85

Q.C. Report No. 1

Sample Numbers

EPA No.	Lab ID No.	EPA No.	Lab Id No.
3727E-01	8804014-01	3727E-09	8804014-09
3727E-02	8804014-02		
3727E-03	8804014-03		
3727E-04	8804014-04		
3727E-05	8804014-05		
3727E-06	8804014-06		
3727E-07	8804014-07		
3727E-08	8804014-08		

Comments:

ICP interelement and background corrections applied? Yes X No ____.
If yes, corrections applied before X or after ____ generation of raw data.

Footnotes:

NR - Not required by contract at this time

Form I:

Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract-required detection limit, report the value in brackets (i.e.,[10]). Indicate the analytical method used with P (for ICP), A (for Flame AA) or F (for Furnace AA).

U - Indicates element was analyzed for but not detected. Report with the instrument detection limit value (e.g., 10U).

E - Indicates a value estimated or not reported due to the presence of interference . Explanatory note included on cover page.

s - Indicates value determined by Method of Standard Addition.

N - Indicates spike sample recovery is not within control limits.

* - Indicates duplicate analysis is not within control limits.

\+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

M - Indicates duplicate injection results exceeded control limits.

[illegible] P for ICP, A for Flame AA and F for Furnace.

Form 1

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-577-2490

EPA Sample No. 3727E-01

Date 4/26/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME Post, Buckley, Schuh & Jernigan

CASE NO. SAS 3727E

SOW NO. 7/85

Lab Receipt Date 4/2/88

LAB SAMPLE ID. NO. 8804014-01

Q.C. REPORT NO. 1

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

mg/L ~~ug/L~~ or mg/kg dry weight (Circle One)

1.	Sulfate	605	P	10.	
2.	Nitrate & Nitrite	0.10	P	11.	
3.	Chloride	0.50	F	12.	
4.	Alkalinity	122	P	13.	
5.	Acidity		P	14.	
6.	PH	6.4	P	15.	
7.			P	16.	
8.			P	17.	
9.				Percent Solids (%)	

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Colorless, clear (NO_3+NO_2)
Orange, Cloudy (Alkalinity, Acidity, pH, Sulfate, Chloride)

Lab Manager K A Kumkies

IFB Amend. One

Form 1

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-577-2490

EPA Sample No. 3727E-02

Date 4/26/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME Post, Buckley, Schuh & Jernigan

CASE NO SAS 3727E

SOW NO. 7/85

Lab Receipt Date 4/2/88

LAB SAMPLE ID. NO. 8804014-02

Q.C. REPORT NO. 1

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

mg/L ~~ug/L~~ or mg/kg dry weight (Circle One)

1.	Sulfate	310	P	10.	
2.	Nitrate & Nitrite	0.10	P	11.	
3.	Chloride	0.50	P	12.	
4.	Alkalinity	231	P	13.	
5.	Acidity		P	14.	
6.	PH	6.8	P	15.	
7.			P	16.	
8.			P	17.	
9.				Percent Solids (%)	

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Colorless, clear (NO_3 + NO_2)
Yellow, clear (Alkalinity, Acidity, PH, Sulfate, Chloride)

Lab Manager [signature]

IFB Amend. One

Form 1

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-577-2490

EPA Sample No. 3727E-03

Date 4/26/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME Post, Buckley, Schuh & Jernigan

CASE NO SAS 3727E

SOW NO. 7/85

Lab Receipt Date 4/2/88

LAB SAMPLE ID. NO. 8804014-03

Q.C. REPORT NO. 1

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

mg/l ~~ug/l~~ or mg/kg dry weight (Circle One)

1.	Sulfate	313 19	P	10.	
2.	Nitrate & Nitrite	0.10	P	11.	
3.	Chloride	0.50	P	12.	
4.	Alkalinity	277	P	13.	
5.	Acidity		P	14.	
6.	PH	7.2	P	15.	
7.			P	16.	
8.			P	17.	
9.				Percent Solids (%)	

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Colorless, clear (NO_3 + NO_2)
White, clear (Alkalinity, Acidity PH, Sulfate, Chloride)

Lab Manager [signature]

IFB Amend One

Form 1

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-577-2490

EPA Sample No. 3727E-04

Date 4/26/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME Post, Buckley, Schuh & Jernigan

CASE NO SAS 3727E

SOW NO 7/85

Lab Receipt Date 4/2/88

LAB SAMPLE ID. NO. 8804014-04

Q.C. REPORT NO. 1

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

mg/L ~~ug/L~~ or mg/kg dry weight (Circle One)

1.	Sulfate	315	P	10.	
2.	Nitrate & Nitrite	0.1U	P	11.	
3.	Chloride	0.5U	P	12.	
4.	Alkalinity	127	P	13.	
5.	Acidity		P	14.	
6.	PH	6.3	P	15	
7.			P	16.	
8.			P	17.	
9.				Percent Solids (%)	

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged Definition of such flags must be explicit and contained on Cover Page, however.

Comments. Colorless, clear ($NO_3 + NO_2$)
Orange, cloudy (Alkalinity, Acidity, PH, Sulfate, Chloride)

Lab Manager [signature]

IFB Amend One

Form 1

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-577-2490

EPA Sample No. 3727E-05

Date 4/26/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME Post, Buckley, Schuh & Jernigan

CASE NO. SAS 3727E

SOW NO 7/85

Lab Receipt Date 4/2/88

LAB SAMPLE ID. NO. 8804014-05

Q.C REPORT NO. 1

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

mg/L ~~ug/L~~ or mg/kg dry weight (Circle One)

1.	Sulfate	136	P	10.	
2.	Nitrate & Nitrite	0.1u	P	11.	
3.	Chloride	0.5u	F	12.	
4.	Alkalinity	324	P	13.	
5.	Acidity		P	14.	
6.	PH	7.3	P	15.	
7.			P	16.	
8.			P	17.	
9.				Percent Solids (%)	

Footnotes. For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Colorless, clear ($NO_3 + NO_2$)
Orange, clear (Alkalinity, Acidity, PH, Sulfate, Chloride)

Lab Manager [signature]

IFB Amend. One

Form 1

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-577-2490

EPA Sample No. 3727E-06

Date 4/26/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME Post, Buckley, Schuh & Jernigan

CASE NO SAS 3727E

SOW NO. 7/85

Lab Receipt Date 4/2/88

LAB SAMPLE ID. NO. 8804014-06

Q.C. REPORT NO. 1

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

mg/L ~~ug/l~~ or mg/kg dry weight (Circle One)

1.	Sulfate	890	P	10.	
2.	Nitrate & Nitrite	0.1U	P	11.	
3.	Chloride	0.5U	P	12.	
4.	Alkalinity	2.0U	P	13.	
5.	Acidity	576	P	14.	
6.	PH	4.6	P	15.	
7.			P	16.	
8.			P	17.	
9.				Percent Solids (%)	

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however

Comments: Colorless, clear (NO_3 + NO_2)
White, cloudy (Alkalinity, Acidity, PH, Sulfate, Chloride

Lab Manager [signature]

IFB Amend One

Form 1

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-577-2490

EPA Sample No. 3727E-07

Date 4/26/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME Post, Buckley, Schuh & Jernigan

CASE NO. SAS 3727E

SOW NO. 7/85

Lab Receipt Date 4/2/88

LAB SAMPLE ID. NO 8804014-07

Q.C. REPORT NO. 1

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

mg/L ~~ug/l~~ or mg/kg dry weight (Circle One)

1.	Sulfate	24	P	10.	
2.	Nitrate & Nitrite	0.10	P	11.	
3.	Chloride	~~35~~ 33.4	F	12.	
4.	Alkalinity	340	P	13.	
5.	Acidity		P	14.	
6.	PH	7.0	P	15.	
7.			P	16.	
8.			P	17.	
9.				Percent Solids (%)	

Footnotes For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments. Colorless, clear (NO_3 + NO_2)
Yellow, clear (Alkalinity, Acidity, PH, Sulfate, Chloride)

Lab Manager [signature]

IFB Amend. One

Form 1

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-577-2490

EPA Sample No. 3727E-08

Date 4/26/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME Post, Buckley, Schuh & Jernigan

CASE NO. SAS 3727E

SOW NO. 7/85

Lab Receipt Date 4/2/88

LAB SAMPLE ID. NO. 8804014-08

Q.C REPORT NO 1

Elements Identified and Measured

Concentration: Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

mg/L ~~ug/L~~ or mg/kg dry weight (Circle One)

1.	Sulfate	314	P	10.	
2.	Nitrate & Nitrite	0.10	P	11.	
3.	Chloride	1.2	F	12.	
4.	Alkalinity	134	P	13.	
5.	Acidity		P	14.	
6.	PH	6.5	P	15.	
7.			P	16.	
8.			P	17.	
9.				Percent Solids (%)	

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however

Comments: Colorless, clear ($NO_3 + NO_2$)
Orange, clear (Alkalinity, Acidity, PH, Sulfate, Chloride)

Lab Manager [signature]

IFB Amend One

Form 1

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-577-2490

EPA Sample No. 3727E-09

Date 4/26/88

INORGANIC ANALYSIS DATA SHEET

LAB NAME Post, Buckley, Schuh & Jernigan

CASE NO SAS 3727E

SOW NO 7/85

Lab Receipt Date 4/2/88

LAB SAMPLE ID NO 8804014-09

Q.C. REPORT NO. 1

Elements Identified and Measured

Concentration. Low X Medium ____

Matrix: Water X Soil ____ Sludge ____ Other ____

mg/L ~~ug/l~~ or mg/kg dry weight (Circle One)

1.	Sulfate	139	P	10.	
2.	Nitrate & Nitrite	0.1U	P	11.	
3.	Chloride	0.5U	P	12.	
4.	Alkalinity	329	P	13.	
5.	Acidity		P	14.	
6.	PH	7.3	P	15.	
7.			P	16.	
8.			P	17.	
9.				Percent Solids (%)	

Footnotes For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments Colorless, clear (NO_3 + NO_2)
Orange, clear (Alkalinity, Acidity, pH, Sulfate, Chloride)

Lab Manager [signature]

IFB Amend. One

Form III

Q.C. Report No 1

BLANKS

LAB NAME Post, Buckley, Schuh & Jernigan

CASE NO SAS 3727E

DATE 4/26/88

UNITS ~~ug/L~~ mg/L

Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value 1	2	3	4	Prep. Blank Matrix 1	Matrix 2
1. Sulfate	5.0U	5.0U					
2. NO3 - NO2	0.1U	0.1U				0.1U	0.1U
3. Chloride	0.5U	0.5U					
4. Alkalinity	10U	10U					
5. Acidity							
6. PH							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							
19.							
20.							
21.							
22.							
23.							
Other:							
Cyanide							

[1] Reporting Units: aqueous, ug/L; solid, mg/kg

Form V

Q.C. Report No. 1

SPIKE SAMPLE RECOVERY

LAB NAME Post, Buckley, Schuh & Jernigan

CASE NO. SAS 3727E

EPA Sample No. 3727E-01

DATE 4/26/88

Lab Sample ID No. 8804014-01

Units: ~~mg/kg~~ mg/L

Matrix LA

Compound	Control Limit %R	Spiked Sample Result (SSR)	Sample Result(SR)	Spiked Added (SA)	%R
1. Sulfate	85-115	1450	605	800	106
2. NO3 - NO2	"	0.8	0.1U	0.8	100
3. Chloride	"	4.5	0.5U	4.0	112
4. Alkalinity	"	NR			
5. Acidity	"				
6. PH	"				
7.	"				
8.	"				
9.	"				
10.	"				
11	"				
12.	"				
13.	"				
14.	"				
15	"				
16	"				
17.	"				
18.	"				
19	"				
20.	"				
21	"				
22.	"				
23.	"				
Other					
Cyanide					

[1] %R = [(SSR - SR) / SA] x 100

" N " - out of control

" NR "-Not required

Comments:

Form VI b

Q C. Report No. 1

DUPLICATES

LAB NAME Post, Buckley, Schuh & Jernigan
DATE 4/26/88

CASE NO. SAS 3727E
EPA Sample No. 3727E-06
Lab Sample ID No. 8804014-06
Units: mg/L

Matrix LA

Compound	Control Limit1	Sample (S)	Duplicate (D)	RPD2
1. Sulfate				
2. NO3 - NO2				
3. Chloride				
4. Alkalinity				
5. Acidity		576	578	0.3
6. PH		4.6	4.6	0.0
7.				
8.				
9.				
10.				
11.				
12				
13.				
14				
15.				
16.				
17.				
18.				
19				
20.				
21				
22.				
23				
Other				
Cyanide				

* Out of Control

[1] To be added at a later date.

[2] RPD = [S - D /((S + D)/2)] x 100

NC - Non calculable RPD due to value(s) less than CRDL

Form VI C

Q.C. Report No. 1

DUPLICATES

LAB NAME Post, Buckley, Schuh & Jernigan
DATE 4/26/88

CASE NO. SAS 3727E
EPA Sample No. 3727E-09
Lab Sample ID No. 8804014-09
Units: mg/L

Matrix LA

Compound	Control Limit1	Sample (S)	Duplicate (D)	RPD2
1. Sulfate				
2. NO3 - NO2				
3. Chloride				
4. Alkalinity	±10%	329	328	0.3
5. Acidity				
6. PH				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
Other:				
Cyanide				

* Out of Control

[1] To be added at a later date.

[2] RPD = [S - D /((S + D)/2)] x 100

NC - Non calculable RPD due to value(s) less than CRDL

Form VI a

Q.C. Report No. 1

DUPLICATES

LAB NAME Post, Buckley, Schuh & Jernigan
DATE 4/26/88

CASE NO. SAS 3727E
EPA Sample No. 3727E-01
Lab Sample ID No. 8804014-01
Units: mg/L

Matrix LA

Compound	Control Limit1	Sample (S)	Duplicate (D)	RPD2
1. Sulfate	±10%	588	594	1.0
2. NO3 - NO2		0.1U	0.1U	NC
3. Chloride		0.5U	0.5U	NC
4. Alkalinity				
5. Acidity				
6. PH				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
Other:				
Cyanide				

* Out of Control

[1] To be added at a later date.

[2] RPD = [S - D /((S + D)/2)] x 100

NC - Non calculable RPD due to value(s) less than CRDL

Form VII

Q.C. Report No. 1

INSTRUMENT DETECTION LIMITS AND

LABORATORY CONTROL SAMPLE

LAB NAME Post, Buckley, Schuh & Jernigan CASE NO SAS3727E DATE 4/26/88

LCS NO. SAS 3727E

Metals: Compound	Required Detection Limits (CRDL) - ~~ug/l~~ mg/l	Instrument Detection Limits (IDL) - ~~ug/l~~ mg/l ICP/AA ID#	Instrument Detection Limits (IDL) - ~~ug/l~~ mg/l Furnace ID#	Lab Control Sample ug/l mg/kg (circle one) True	Found	%R
Metals:						
1. Sulfate	5.0	5.0		20	20	100
2. NO3 - NO2	0.1	0.10		2.0	2.0	100
3. Chloride	0.5	0.5		52	52	100
4. Alkalinity	10	10		25	25	100
5. Acidity	∓ 10.	∓ 10		6.0	6.0	100
6. PH	0.1	0.1		6.0	6.0	100
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
16.						
17.						
18.						
19.						
20.						
21.						
22.						
23.						
Other						
Cyanide	10	NR	NR			

NR - Not required

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

ESD/Central Regional Laboratory
DATA TRACKING FORM FOR CONTRACT SAMPLES

CRL Data Set No. SF 5011 CERCLIS No. —

SMO Case No. SAS 3727E Site Name and Location: Hader Ground Water Contamination

Name of Contractor or EPA Laboratory: PBS & J Data User: MPCA

No. of Samples: 9 Date Samples or Data Received: 5-2-88

1. Have chain-of-custody records been received? YES ✓ NO
2. Have Traffic Reports or packing lists been received? YES ✓ NO
3. If no, are Traffic Report or packing list numbers written on the chain-of-custody record? YES ___ NO ___
4. If no, which Traffic report or packing list numbers are missing?

Are basic data forms in? YES ✓ NO ___

Number of samples claimed: 9 Number of samples received: 9

Checked by: Erlinda Luz M. Arreola Date: 5-2-88

Received by Contract Project Management Section: [illegible] Date: 5.3.88

Review Started: 5.11.88 Reviewer Signature: [illegible]

Total time spent on review: 3 Date review completed: 5.12.88

Copied (xeroxed) by: [illegible] Date: 5.12.88

Mailed to Data User by: Rosemary Harris Date: 5-16-88

DATA USERS:

Please fill in the blanks below and return this form to: Sylvia Griffin, Data Management Coordinator, Region V, SSCRL

Data received by: _____ Date: _____

Q.A. review received by: _____ Date: _____

Inorganic Date Complete [ ], Suitable for Intended Purposes [ ] ✓ [ ] if acceptable.
Organic Data Complete [ ], Suitable for Intended Purposes [ ] List problems below.
Dioxin Data Complete [ ], Suitable for Intended Purposes [ ]
SAS Data Complete [ ], Suitable for Intended Purposes [ ]

See Attached "Missing Data Request Form" [ ]
PROBLEMS: Please indicate reasons (if any) why data are not suitable for your uses. Other problems.

Received by Data Management Coordinator, CRL for File: Date: _____

Signature:

Form II a

Q.C. Report No 1

INITIAL AND CONTINUING CALIBRATION VERIFICATIONS

LAB NAME Post, Buckley, Schuh & Jernigan
DATE 4/26/81

CASE NO SAS 3727E
SOW NO. 7/85
UNITS: ~~ug/L~~ mg/L

Compound	Initial Calibration1			Continuing Calibration2					
	True Value	Found	%R	True Value	Found	%R	Found	%R	Method4
1. Sulfate	8.0	8.6	108	8.0	8.5	106	8.6	108	375 2
2. NO3 - NO2	0.8	0.8	100	0.8	0.8	100	0.8	100	353 2
3. Chloride	4.0	4.0	100	4.0	4.1	102	4.2	105	325.2
4. Alkalinity	NR								
5. Acidity	1000	992	99	1000	992	99			305.1
6. PH									
7.									
8.									
9.									
10.									
11.									
12.									
13.									
14.									
15.									
Other:									
Cyanide									

1 Initial Calib. Source EMSL/LV, 2 Continuing Calib Source Lab prepared

3 Control Limits: Mercury and Tin 80-120; Other Metals 90-110; Cyanide 85-115

4 Indicate Analytical Method Used: P - ICP; A - Flame; F - Furnace AA

Form II b

Q C Report No 1

INITIAL AND CONTINUING CALIBRATION VERIFICATION3

LAB NAME Post, Buckley, Schuh & Jernigan
DATE 4/26/88

CASE NO. SAS 3727E
SOW NO. 7/85
UNITS: ~~ug/l~~ mg/L

Compound	Initial Calibration1			Continuing Calibration2					
	True Value	Found	%R	True Value	Found	%R	Found	%R	Method4
1 Sulfate				8.0	8.8	110			375.2
2. NO3 - NO2									
3. Chloride									
4 Alkalinity									
5. Acidity									
6. PH									
7.									
8.									
9.									
10.									
11									
12.									
13.									
14.									
15.									
Other:									
Cyanide				-	-				

1 Initial Calib. Source ~~EMSL/LV~~ NJ 2 Continuing Calib. Source Lab prepared

3 Control Limits: Mercury and Tin 80-120; Other Metals 90-110; Cyanide 85-115

4 Indicate Analytical Method Used: P - ICP; A - Flame; F - Furnace AA

PBSJ
POST, BUCKLEY, SCHUH & JERNIGAN, INC.
[illegible] NORTH ORANGE AVENUE
ORLANDO, FLORIDA [illegible]
[illegible]
TELEX [illegible]

SJ 4/14/88

EPA Method 1501 Corning Model 135

~~TURBIDITY~~ AND pH DATA SHEET

PROJECT NAME: EPA SAS DATE: 4.2.88

PROJECT NO.: Backup Data ANALYST: CK

Sample No.	Temperature °C	pH	~~Turbidity (NTU)~~
4.0 Buffer	(Temperature probe attached)	4.001	
7.0 Buffer		6.999	
10.0 Buffer		9.954	
WP947	T.V 6.0	5.975	99%
6501 090122 [illegible]35 880401401	put 3727E01-~~09~~	6.375	
[illegible]501 090119 1427 880401401	3727E01 CK 4.2.88	6.366	
[illegible]01 090120 1429 880401401	3727E01	6.381	Note: Analysis
[illegible]501 090120 dup [illegible]dup 880401401	3727E01	6.383	performed on all sample
6503 090141 1118 880401403	3727E03	7.211	containers received. (Page 1 ck 4.2.8
[illegible]505 090157 1123 880401405	3727E05	7.269	Since some containers
[illegible]07 090181 [illegible]32 880401407	3727E07	7.048	were duplicate samples
6005 090165 [illegible]42 880401409	3727E09	7.279	one pH is reported
[illegible]04 090149 1434 880401404	3727E04	6.342	on page 2.
[illegible]41 090189 [illegible]08 880401408	3727E08	6.514	
1027 090133 [illegible]02 880401402	3727E02	6.832	
[illegible]31 090121 6501 880401401	3727E01	6.403	
090121 dup [illegible]01 880401401	3727E01	6.391	
[illegible]34 090173 [illegible]05 880401406	3727E06	4.566	
1534 090173 1605 880401406	3727E06	4.570	

page 2

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[illegible] NORTH ORANGE AVENUE
ORLANDO, FLORIDA 32801-1064
[illegible]
[illegible]

LSJ 4/14/88

EPA Method 150.1 Corning pH Meter Model 135

~~TURBIDITY~~ AND pH DATA SHEET
CK 4.2.88

PROJECT NAME: EPA SaS Case 3727E

DATE: 4.2.88

PROJECT NO.:

ANALYST: C Knepper

Sample No.	Temperature °C	pH	~~Turbidity (NTU)~~ CK 4.2.88
4.0 Buffer	Temperature probe attached	4.001	
7.0 Buffer		6.999	
10.0 Buffer		9.954	
WP997	T.V. 6.0	5.975	99%
3727E01 880401401		6.383	6.38
3727E02 880401402		6.832	6.83
3727E03 880401403		7.211	7.21
3727E04 880401404		6.342	6.34
3727E05 880401405		7.269	7.27
3727E06 880401406	%RSD=0.06 R=0.004	4.566	4.57
3727E06 DUP 880401406		4.570	
3727E07 880401407		7.048	7.05
3727E08 880401408		6.518	6.52
3727E09 880401409		7.279	7.28

PBS&J
POST, BUCKLEY, SCHUH & JERNIGAN, INC.
889 NORTH ORANGE AVENUE
ORLANDO FLORIDA 32801
305/423 7275

SJ 4/22/88

Corning pH/ion Meter Model 135
~~COMPUTER AIDED TITRIMETER~~
~~FISHER MODEL 450~~
Instrument Log

Case # SAS 3727E

Date	EPA Sample Numbers	Sample Nos.	Element	Analyst	Buffer Concentration and Lot Nos.	0.02N H_2SO_4	Electrode Type.	Temperature Compensation Yes/No	0.02N NaOH
4/6/88	3727E-06	880401406	Acidity	F. Boone	pH 7.0 928706 6.29.89 pH 10.0 1827121 1.14.89	0.0206	Corning #476192	No	0.0190
4/2/88	3727E01-09	880401401-09	pH	C. Knepper	pH 4.0 ~~31603x~~ 31603x (6.29.89) pH 7.0 928706		Corning #476192	yes	

A3:ap

P B S J Post, Buckley, Schuh & Jernigan, Inc.
CONSULTING ENGINEERS and PLANNERS
889 NORTH ORANGE AVENUE, ORLANDO, FLORIDA 32801-1088 • 305/423 7276 • TELEX 808435

SJB 4/22/88

EPA 305.1

ACIDITY DATA SHEET

PROJECT NAME: SAS 3727E DATE: 4/6/88

PROJECT NO.: ANALYST: S.I. Jackson
F. Boone

Sample	Initial pH	Sample Volume	mlof H_2SO_4 to pH 4 or less	ml of titrant to pH 8.2	Acidity mg/l $CaCO_3$
DI BLANK	5.15	50	0.15	0.40	4.51
LAB BLANK 0.02N H_2SO_4	0.02	5	0.00	5.22	992
3727E-06 8804 01406	4.46	25	0.35	15.55	576
Dup 3727E-06 8804 01406	4.43	25	0.36	15.60	578
LAB BLANK 0.02N H_2SO_4	0.02	5	0.00	5.22	992
pH 4.0 Buffer	3.93				
pH 7.0 Buffer	7.01				
pH 10.0 Buffer	9.91				
WP 987	5.96	TRUE VALUE 6.0 95% C.I. 5.91-6.11			

Normality of Titrant: 0.0206N HCL or H_2SO_4 4/4/88 FB

CALCULATION: Acidity as mg/l $CaCO_3$ = $\frac{(A \times B) - (C \times D) \times 5 \times 10^4}{\text{ml sample}}$

A = Volume of std. NaOH used intitration
B = Normality of std. NaOH = 0.0190N 4/6/88 FB
C = Volume of std H_2SO_4 used to reduce pH to 4 or less
D = Normality of std. H_2SO_4
D = _____

Normality NaOH = $\frac{A \times B}{204.2 \times C}$

A = g KHP/l = 10.0 g/l
B = mlo KHP titrated = 10.0 mlo
C = mlo NaOH used = 25.9 mlo

Normality H_2SO_4 = $\frac{A \times B}{53.0 \times C}$

A = g Na_2CO_3/l = 2.5 g/l
B = mlo Na_2CO_3 titrated = 2.0 mlo
C = mlo H_2SO_4 used = 4.57 mlo

Dissolved!

MINNESOTA DEPARTMENT OF HEALTH
ANALYTICAL DATA

BILLING NO: ~~[illegible]~~ 032
MPCA

Samples Collected By Ruotsinoja / Adams Report To Shawn Ruotsinoja

Field Number		River, Town, Etc.	Sampling Point and Source of Sample
2	a	Hader	non responsive [redacted]
4	b	Hader	
6	c	Hader	
8	d	Hader	
10	e	Hader	

This line for Lab use only		a	b	c	d	e
Sample Number		132241	132242	132243	132244	132245
Date Collected 8/5/87						
Time Collected						
Date Received by Lab		8-17-87				
Temperature, °C						
Dissolved Oxygen						
pH value, SU	013					
Total Residual Chlorine						
Fecal Coliform, MPN/100 ml	305					
Fecal Strep., No/100 ml	313					
Total Solids	001					
Suspended Solids	003					
Turbidity, NTU	011					
Calcium as CaCO3	251 (252)	210.	250.	380.	220.	190.
Magnesium as CaCO3	253 (254)	100.	110.	170.	110.	90.
Total Hardness as CaCO3	021					
Chloride as Cl	023					
5-Day B.O.D.	096					
Nitrification Inhibited BOD5	083					
Total Phosphorus as P	059					
Orthophosphorus as P	063					
Organic Nitrogen as N	065					
Ammonia Nitrogen as N	064					
Nitrite + Nitrate Nitro.	069					
Nitrite Nitrogen as N	067					
METALS (µg/l) Arsenic as As	108					
Cadmium as Cd	*125 (123)	0.035	0.038	0.012	0.010	0.017
Total Chromium as Cr	129					
Hexavalent Chromium as Cr	034					
Copper as Cu	145/143					
Iron as Fe	152 (151)	6700.	22.	21000.	2500.	6200.
Lead as Pb	159 (158)	<0.2	0.7	<0.2	<0.2	<0.2
Manganese as Mn	166 (165)	59.	13.	440.	74.	26.
Mercury as Hg	200					
Nickel as Ni	173 (172)	16.	<1.0	9.9	<1.0	9.2
Zinc as Zn	194 (193)	500.	25.	60.	120.	440.
Flame Metals Ashing Code	207					
Phenol µg/l	085					
Oil and Grease	089					
Chlorophyll a, µg/l	450					
Kjeldahl Nitrogen	068					
Flame/Furnace						

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MPCA, HAZARDOUS WASTE DIVISION

COMPLETED
DEC 07 1987
CHEMICAL LABS

Results are in mg/l or cent as otherwise indicated

MINNESOTA DEPARTMENT OF HEALTH
SUPPLEMENTAL SHEET

ANALYTICAL DATA

Samples Collected By Ruotsinoja / Adams Report To Shawn Ruotsinoja

Field Number	2 a	4 b	6 c	8 d	10 e
Sample Number	132241	132242	132243	132244	132245
Date Rec'd. By Lab	8-17-87				
Cyanide 086					
Color 012					
Cobalt µg/l 136					
Boron 031					
Sodium ~~222~~ 258	3.0	5.6	4.4	5.4	2.5
Potassium ~~228~~ 256	0.9	0.7	1.7	1.5	0.8
Sulphate 028					
Fluoride 029					
Silver µg/l 185					
Silicate 030					
Barium µg/l 115					
Selenium µg/l 178					
Sulfide 088					
Threshold Odor No. 016					
Bicarbonate Alk. as $CaCO_3$ 019					
M-O Alkalinity 022					
Tot. Diss. Solids 005					
Spec. Conductivity 014					
C.O.D. 097					
T.O.C. 098					
Aluminum µg/l 101					
+					
−					
% Bal.					

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CHEMICAL LABS

Results are in milligrans per liter except as otherwise noted.

Dissolved

MINNESOTA DEPARTMENT OF HEALTH
ANALYTICAL DATA

BILLING NO: ~~2345~~ 032

Samples Collected By Ruotsinoja / Adams Report To MPCA Shawn Ruotsinoja

Field Number		River, Town, Etc.	Sampling Point and Source of Sample
12	a	Hader	non responsive [redacted]
14	b	"	
16	c	"	
18	d	"	
20	e	"	

This line for Lab use only		a	b	c	d	e
Sample Number		132246	132247	132248	132249	132250
Date Collected 8/6/87						
Time Collected						
Date Received by Lab		8-17-87				
Temperature, °C						
Dissolved Oxygen						
pH value, SU	013					
Total Residual Chlorine						
Fecal Coliform, MPN/100 ml	305					
Fecal Strep., No/100 ml	313					
Total Solids	001					
Suspended Solids	003					
Turbidity, NTU	011					
Calcium as CaCO3	~~255~~ 252	220.	430.	300.	260.	190.
Magnesium as CaCO3	~~253~~ 254	110.	170.	140.	140.	80.
Total Hardness as CaCO3	021					
Chloride as Cl						
5 Day B.O.D.	096					
Nitrification Inhibited BOD5	083					
Total Phosphorus as P	059					
Orthophosphorus as P	063					
Organic Nitrogen as N	065					
Ammonia Nitrogen as N	064					
Nitrite + Nitrate Nitro.	069					
Nitrite Nitrogen as N	067					
METALS (µg/l) Arsenic as As	108					
Cadmium as Cd	*125/~~122~~ 123	<0.010	1.5	0.26	<0.010	0.054
Total Chromium as Cr	129					
Hexavalent Chromium as Cr	034					
Copper as Cu	145/143					
Iron as Fe	152/~~150~~ 151	2900.	210000.	93000.	690.	80000.
Lead as Pb	159/~~157~~ 158	0.4	45.	1.1	<0.2	2.8
Manganese as Mn	166/~~162~~ 164	44.	3000.	500.	130.	600.
Mercury as Hg	200					
Nickel as Ni	173/~~171~~ 172	<1.	390.	220.	3.0	170.
Zinc as Zn	194/~~192~~ 193	490.	3200.	1000.	10.	1330.
Flame Metals Ashing Code	207					
Phenol µg/l	085					
Oil and Grease	089					
Chlorophyll a, µg/l	450					
Kjeldahl Nitrogen	068					
Flame/Furnace						

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Results are in mg/l except as otherwise noted

MINNESOTA POLLUTION CONTROL AGENCY
SUPPLEMENTAL SHEET

ANALYTICAL DATA

Samples Collected By Ruotsinoja / Adams Report To MPCA Shawn Ruotsinoja

Field Number		12 a	14 b	16 c	18 d	20 e
Sample Number		132246	132247	132248	132249	132250
Date Rec'd. By Lab		8-17-87				
Cyanide	086					
Color	012					
Cobalt µg/l	136					
Boron	031					
Sodium	~~257~~ 258	3.5	4.3	2.8	4.3	2.4
Potassium	~~255~~ 256	1.5	2.6	1.6	0.7	0.8
Sulphate	028					
Fluoride	029					
Silver µg/l	185					
Silicate	030					
Barium µg/l	115					
Selenium µg/l	178					
Sulfide	088					
Threshold Odor No.	016					
Bicarbonate Alk. as $CaCO_3$	019					
M-O Alkalinity	022					
Tot. Diss. Solids	005					
Spec. Conductivity	014					
C.O.D.	097					
T.O.C.	098					
Aluminum µg/l	101					
	+					
	-					
	% Bal.					

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MPCA, HAZARDOUS WASTE DIVISION

COMPLETED
DEC 07 1987
CHEMICAL LABS

Results are in milligrams per liter except as otherwise noted.

[redacted] gmk

MINNESOTA DEPARTMENT OF HEALTH
ANALYTICAL DATA

BILLING NO: [redacted]-395

[redacted]mples Collected By Ruotsinoja / Adams Report To Shawn Ruotsinoja, Byron Adams

Field [redacted]ber		River, Town, Etc.	Sampling Point and Source of Sample
[redacted]A	a	Hader	non responsive [redacted]
[redacted]B	b	"	
C	c	"	
[redacted]D	d	"	
[redacted]E	e	"	

[redacted]s line for Lab use only		a	b	c	d	e
Sample Number		132251	132252	132253	132254	132255
[redacted]e Collected 8/5/87						
[redacted]e Collected						
[redacted]ate Received by Lab		8-17-87				
[redacted]emperature, °C						
[redacted]solved Oxygen						
[redacted]H value, SU	013					
[redacted]otal Residual Chlorine						
[redacted]l Coliform, MPN/100 ml	305					
[redacted]l Strep., No/100 ml	313					
[redacted]otal Solids	001					
[redacted]ended Solids	003					
[redacted]idity, NTU	011					
[redacted]alcium as CaCO3	[redacted]					
[redacted]agnesium as CaCO3	[redacted]					
[redacted]l Hardness as CaCO3	021					
[redacted]loride as Cl	023	<0.50	29.	0.38	<0.50	<0.50
[redacted]-Day B.O.D.	096					
[redacted]ification Inhibited BOD5	083					
[redacted]tal Phosphorus as P	059					
[redacted]thophosphorus as P	063					
[redacted]gnic Nitrogen as N	065					
[redacted]mia Nitrogen as N	064					
[redacted]trite + Nitrate Nitro.	069					
[redacted]trite Nitrogen as N	067					
[redacted]senic as As	108					
[redacted]dmium as Cd	*125/122					
Total Chromium as Cr	129					
[redacted]xavalent Chromium as Cr	034					
[redacted]pper as Cu	145/143					
Iron as Fe	152/150					
[redacted]ad as Pb	159/157					
[redacted]nganese as Mn	166/164					
Mercury as Hg	200					
[redacted]ckel as Ni	173/171					
[redacted]nc as Zn	194/192					
[redacted]e Metals Ashing Code	207					
[redacted]nol µg/l	085					
[redacted]d Grease	089					
[redacted]ophyll a, µg/l	450					
[redacted]dahl Nitrogen	068					
[redacted]e/Furnace						

[redacted]lts are in mg/l

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MPCA SOLID & HAZ WASTE DIVISION

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SEP 21 1987
CHEMICAL LABS

MINNESOTA DEPARTMENT OF HEALTH
SUPPLEMENTAL SHEET

ANALYTICAL DATA

Samples Collected By Ruotsinoja / Adams Report To Shawn Ruotsinoja, Byron Adams

Field Number	A a	B b	C c	D d	E e
Sample Number	132251	132252	132253	132254	132255
Date Rec'd. By Lab	8-17-87				
Cyanide 086					
Color 012					
Cobalt µg/l 136					
Boron 031					
Sodium					
Potassium					
Sulphate 028	96.	40.	300.	33.	93.
Fluoride 029					
Silver µg/l 185					
Silicate 030					
Barium µg/l 115					
Selenium µg/l 178					
Sulfide 088					
Threshold Odor No. 016					
Bicarbonate Alk. as $CaCO_3$ 019					
M-O Alkalinity 022					
Tot. Diss. Solids 005	360.	440.	690.	350.	330.
Spec. Conductivity 014					
C.O.D. 097					
T.O.C. 098					
Aluminum µg/l 101					
+					
-					
% Bal.					

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MPCA, SOLID & HAZ. WASTE DIVISION

Results are in milligrans per liter except as otherwise noted.

gpmk

MINNESOTA POLLUTION CONTROL AGENCY

ANALYTICAL DATA

BILLING NO: PCA - 032

MPCA

Samples Collected By Ruotsinoja / Adams

Report To Shawn Ruotsinoja
Byron Adams

Field Number		River, Town, Etc.	Sampling Point and Source of Sample
F	a	Hader	non responsive [redacted]
G	b	"	
I	c	"	
K	d	"	
L	e	"	

This line for Lab use only		a	b	c	d	e
Sample Number		132256	132257	132258	132259	132260
Date Collected 8/6/87						
Time Collected						
Date Received by Lab		8-17-87				
Temperature, °C						
Dissolved Oxygen						
pH value, SU	013					
Total Residual Chlorine						
Fecal Coliform, MPN/100 ml	305					
Fecal Strep., No/100 ml	313					
Total Solids	001					
Suspended Solids	003					
Turbidity, NTU	011					
Calcium as CaCO3	251					
Magnesium as CaCO3	253					
Total Hardness as CaCO3	021					
Chloride as Cl	023	<0.50	<0.50	<0.50	7.7	<0.50
5-Day B.O.D.	096					
Nitrification Inhibited BOD5	083					
Total Phosphorus as P	059					
Orthophosphorus as P	063					
Organic Nitrogen as N	065					
Ammonia Nitrogen as N	064					
Nitrite + Nitrate Nitro.	069					
Nitrite Nitrogen as N	067					
METALS (µg/l) Arsenic as As	108					
Cadmium as Cd	*125/122					
Total Chromium as Cr	129					
Hexavalent Chromium as Cr	034					
Copper as Cu	145/143					
Iron as Fe	152/150					
Lead as Pb	159/157					
Manganese as Mn	166/164					
Mercury as Hg	200					
Nickel as Ni	173/171					
Zinc as Zn	194/192					
Flame Metals Ashing Code	207					
Phenol µg/l	085					
Oil and Grease	089					
Chlorophyll a, µg/l	450					
Kjeldahl Nitrogen	068					

*Flame/Furnace

COMPLETED

SEP 21 1987

CHEMICAL LABS

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SEP 21 1987

MPCA SOLID & HAZ WASTE DIVISION

MINNESOTA POLLUTION CONTROL AGENCY
SUPPLEMENTAL SHEET

ANALYTICAL DATA

Samples Collected By Ruotsinoja / Adams Report To Shawn Ruotsinoja, Byron Adams

Field Number	F [a]	G [b]	I [c]	K [d]	L [e]
Sample Number	132256	132257	132258	132259	132260
Date Rec'd. By Lab	8-17-87				
Cyanide 086					
Color 012					
Cobalt µg/l 136					
Boron 031					
Sodium 257					
Potassium 255					
Sulphate 028	35.	1100.	620.	52.	310.
Fluoride 029					
Silver µg/l 185					
Silicate 030					
Barium µg/l 115					
Selenium µg/l 178					
Sulfide 088					
Threshold Odor No. 016					
Bicarbonate Alk. as $CaCO_3$ 019					
M-O Alkalinity 022					
Tot. Diss. Solids 005	350.	1600.	900.	440.	440.
Spec. Conductivity 014					
C.O.D. 097					
T.O.C. 098					
Aluminum µg/l 101					
+					
-					
% Bal.					

Results are in milligrans per liter except as otherwise noted.

MINNESOTA DEPARTMENT OF HEALTH

ANALYTICAL DATA

BILLING NO: 032

MPCA

Samples Collected By Ruotsinoja/Adams Report To Shawn Ruotsinoja

Field Number		River, Town, Etc.	Sampling Point and Source of Sample
1	a	Hader	non responsive [redacted]
3	b	Hader	
5	c	Hader	
7	d	Hader	
9	e	Hader	

This line for Lab use only		a	b	c	d	e
Sample Number		132231	132232	132233	132234	132235
Date Collected 8/5/87						
Time Collected						
Date Received by Lab		8-17-87				
Temperature, °C						
Dissolved Oxygen						
pH value, SU	013					
Total Residual Chlorine						
Fecal Coliform, MPN/100 ml	305					
Fecal Strep., No/100 ml	313					
Total Solids	001					
Suspended Solids	003					
Turbidity, NTU	011					
Calcium as CaCO3	251					
Magnesium as CaCO3	253					
Total Hardness as CaCO3	021					
Chloride as Cl	023					
5 Day B.O.D.	096					
Nitrification Inhibited BOD5	083					
Total Phosphorus as P	059					
Orthophosphorus as P	063					
Organic Nitrogen as N	065					
Ammonia Nitrogen as N	064					
Nitrite + Nitrate Nitro.	069					
Nitrite Nitrogen as N	067					
Arsenic as As	108					
Cadmium as Cd	*125/122	0.016	0.014	<0.010	0.057	0.020
Total Chromium as Cr	129					
Hexavalent Chromium as Cr	034					
Copper as Cu	145/143					
Iron as Fe	152/150	690.	23.	100.	6400.	380.
Lead as Pb	159/157	0.8	0.9	0.6	1.3	0.5
Manganese as Mn	166/164	28.	9.	15.	82.	<3.
Mercury as Hg	200					
Nickel as Ni	173/171	17.	<1.0	<1.0	<1.0	2.3
Zinc as Zn	194/192	15.	11.	6.1	1600.	9.8
Trace Metals Ashing Code	207					
Phenol µg/l	085					
Oil and Grease	089					
Chlorophyll a, µg/l	450					
Kjeldahl Nitrogen	068					
Flame/Furnace						

Results are in mg/l except as otherwise noted

COMPLETED SEP 04 1987 CHEMICAL LABS

RECEIVED SEP 9 1987 MPCA, SOLID & HAZ. WASTE DIVISION

MINNESOTA DEPARTMENT OF HEALTH
ANALYTICAL DATA

BILLING NO: 032

Samples Collected By Ruotsinoja / Adams Report To MPCA Shawn Ruotsinoja

Field Number		River, Town, Etc.	Sampling Point and Source of Sample
11	a	Hader	non responsive [redacted]
13	b	Hader	
15	c	Hader	
17	d	Hader	
19	e	Hader	

This line for Lab use only		a	b	c	d	e
Sample Number		132236	132237	132238	132239	132240
Date Collected	8/6/87					
Time Collected						
Date Received by Lab		8-17-87				
Temperature, °C						
Dissolved Oxygen						
pH value, SU	013					
Total Residual Chlorine						
Fecal Coliform, MPN/100 ml	305					
Fecal Strep., No/100 ml	313					
Total Solids	001					
Suspended Solids	003					
Turbidity, NTU	011					
Calcium as CaCO3	251					
Magnesium as CaCO3	253					
Total Hardness as CaCO3	021					
Chloride as Cl	023					
5-Day B.O.D.	096					
Nitrification Inhibited BOD5	083					
Total Phosphorus as P	059					
Orthophosphorus as P	063					
Organic Nitrogen as N	065					
Ammonia Nitrogen as N	064					
Nitrite + Nitrate Nitro.	069					
Nitrite Nitrogen as N	067					
Arsenic as As	108					
Cadmium as Cd	*125/122	<0.010	0.010	0.42	0.019	0.010
Total Chromium as Cr	129					
Hexavalent Chromium as Cr	034					
Copper as Cu	145/143					
Iron as Fe	152/150	240.	51.	140000.	1400.	930.
Lead as Pb	159/157	0.2	0.9	22.	0.2	46.
Manganese as Mn	166/164	3.	3.	650.	160.	9.
Mercury as Hg	200					
Nickel as Ni	173/171	<1.0	<1.0	350.	2.7	24.
Zinc as Zn	194/192	18.	24.	1500.	260.	36.
Flame Metals Ashing Code	207					
Phenol µg/l	085					
Oil and Grease	089					
Chlorophyll a, µg/l	450					
Kjeldahl Nitrogen	068					

*Flame/Furnace

RECEIVED SEP 9 1987 MPCA, SOLID & HAZ WASTE DIVISION

COMPLETED SEP 04 1987 CHEMICAL LABS

E

442128092570701 1101802CDCA1 144680 GWQ0351
44 21 28.0 092 57 07.0 2
AQF: PRAIRIE DU CHIEN 367PRDC
27049 MINNESOTA GOODHUE
MAJOR BASIN: UPPER MISS 070639
MINOR BASIN: LOWER UPPER MISS RIVER
21MINNG 821211 07040002 HQ
0000 FEET DEPTH

/TYPA/AMBNT/WELL

PARAMETER			MEDIUM	RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00008 LAB	IDENT.	NUMBER	WATER		4	125400.0	8192.000	90.51000	125497	125300	82/06/29	86/10/02
00010 WATER	TEMP	CENT	WATER		3	9.500000	.0000000	.0000000	9.5	9.5	82/06/29	86/10/02
00094 CNDUCTVY	FIELD	MICROMHO	WATER		3	519.6700	136.5900	11.68700	530	507	82/06/29	86/10/02
00095 CNDUCTVY	AT 25C	MICROMHO	WATER		1	450.0000			450	450	82/06/29	82/06/29
00136 SAMPLE	TEMP AT	LAB DEGC	WATER		2	4.500000	.5000000	.7071100	5.00000	4.00000	82/06/29	82/10/14
00340 COD	HI LEVEL	MG/L	WATER		1	5.500000			6	6	82/06/29	82/06/29
00400 PH		SU	WATER		2	7.100000	.0000000	.0000000	7.10	7.10	82/06/29	86/10/02
00403 LAB	PH	SU	WATER		2	7.450000	.0449980	.2121300	7.6	7.3	82/06/29	86/10/02
00410 T ALK	CACO3	MG/L	WATER		2	255.0000	50.00000	7.071100	260	250	82/06/29	86/10/02
00425 HCO3 ALK	CACO3	MG/L	WATER		2	255.0000	50.00000	7.071100	260	250	82/06/29	86/10/02
00431 T ALK	FIELD	MG/L	WATER		1	252.0000			252	252	82/06/29	82/06/29
00505 RESIDUE	TOT VOL	MG/L	WATER		1	120.0000			120	120	82/06/29	82/06/29
00625 TOT KJEL	N	MG/L	WATER		1	.5400000			.540	.540	82/06/29	82/06/29
00630 NO2&NO3	N-TOTAL	MG/L	WATER	K	2	.0100000	.0000000	.0000000	.01	.01	82/06/29	86/10/02
00665 PHOS-TOT		MG/L P	WATER	K	1	.0050000			.005	.005	82/06/29	82/06/29
00680 T ORG C	C	MG/L	WATER		1	1.200000			1.2	1.2	86/10/02	86/10/02
				K	1	1.000000			1.0	1.0	82/06/29	82/06/29
				TOT	2	1.100000	.0200020	.1414300	1.2	1.0	82/06/29	86/10/02
00900 TOT HARD	CACO3	MG/L	WATER		2	275.0000	50.00000	7.071100	280	270	82/06/29	86/10/02
00910 CALCIUM	CACO3	MG/L	WATER		2	180.0000	200.0000	14.14200	190.0	170.0	82/06/29	86/10/02
00920 MGNSIUM	CACO3	MG/L	WATER		2	92.50000	12.50000	3.535500	95.0	90.0	82/06/29	86/10/02
00929 SODIUM	NA,TOT	MG/L	WATER		2	5.350000	.0450140	.2121600	5.50	5.20	82/06/29	86/10/02
00937 PTSSIUM	K,TOT	MG/L	WATER		2	2.400000	.0000000	.0000000	2.40	2.40	82/06/29	86/10/02
00940 CHLORIDE	TOTAL	MG/L	WATER		2	.6100000	.0002006	.0141670	.6	.6	82/06/29	86/10/02
00945 SULFATE	SO4-TOT	MG/L	WATER		2	41.50000	.5000000	.7071100	42	41	82/06/29	86/10/02
00951 FLUORIDE	F,TOTAL	MG/L	WATER		1	.3200000			.32	.32	82/06/29	82/06/29
00956 SILICA	TOTAL	MG/L	WATER		2	9.000000	1.280300	1.131500	9.8	8.2	82/06/29	86/10/02
01002 ARSENIC	AS,TOT	UG/L	WATER	K	1	1.000000			1	1	82/06/29	82/06/29
01007 BARIUM	BA,TOT	UG/L	WATER		1	63.00000			63	63	82/06/29	82/06/29
01022 BORON	B,TOT	UG/L	WATER		1	120.0000			120	120	82/06/29	82/06/29
01027 CADMIUM	CD,TOT	UG/L	WATER		1	.0150000			.02	.02	82/06/29	82/06/29
01034 CHROMIUM	CR,TOT	UG/L	WATER	K	1	.5000000			.5	.5	82/06/29	82/06/29
01042 COPPER	CU,TOT	UG/L	WATER		1	1.400000			1	1	82/06/29	82/06/29
01045 IRON	FE,TOT	UG/L	WATER		2	313.0500	188440.0	434.0900	620	6	82/06/29	86/10/02
01051 LEAD	PB,TOT	UG/L	WATER	K	1	.2000000			.2	.2	82/06/29	82/06/29
01055 MANGNESE	MN	UG/L	WATER		1	.0300000			.03	.03	86/10/02	86/10/02
				K	1	20.00000			20.0	20.0	82/06/29	82/06/29
				TOT	2	10.01500	199.4000	14.12100	20.0	.03	82/06/29	86/10/02
01067 NICKEL	NI,TOTAL	UG/L	WATER	K	1	1.000000			1	1	82/06/29	82/06/29

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21MINNG 821211 07040002 HQ
0000 FEET DEPTH

/TYPA/AMBNT/WELL

PARAMETER		MEDIUM		RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
01092 ZINC	ZN,TOT	UG/L	WATER		1	70.00000			70	70	82/06/29	82/06/29
01147 SELENIUM	SE,TOT	UG/L	WATER	K	1	1.000000			1	1	82/06/29	82/06/29
31505 TOT COLI	MPN CONF	/100ML	WATER	K	1	2.000000			2	2	82/10/14	82/10/14
				L	1	24000.00			24000	24000	82/06/29	82/06/29
				TOT	2	12001.00	2879E+05	16969.00	24000	2	82/06/29	82/10/14
31615 FEC COLI	MPNECMED	/100ML	WATER	K	1	2.000000			2	2	82/10/14	82/10/14
31679 FECSTREP	MF M-ENT	/100ML	WATER	K	1	2.000000			2	2	82/10/14	82/10/14
32101 DICLBRMT		TOTUG/L	WATER	K	1	.5000000			.5	.5	86/10/02	86/10/02
32102 CARBNTET		TOTUG/L	WATER	K	1	.2000000			.2	.2	86/10/02	86/10/02
32104 BROMOFRM	WHL-WTR	UG/L	WATER	K	1	1.000000			1.0	1.0	86/10/02	86/10/02
32106 CHLRFORM		TOTUG/L	WATER	K	1	.2000000			.2	.2	86/10/02	86/10/02
32730 PHENOLS	TOTAL	UG/L	WATER	K	1	2.000000			2	2	82/06/29	82/06/29
34010 TOLUENE		TOT UG/L	WATER	K	1	.5000000			.50	.50	86/10/02	86/10/02
34030 BENZENE		TOT UG/L	WATER	K	1	.5000000			.50	.50	86/10/02	86/10/02
34301 CHLOROBE	NZENE	TOTWUG/L	WATER	K	1	.5000000			.500	.500	86/10/02	86/10/02
34306 CHLORODI	BROMOMET	TOTWUG/L	WATER	K	1	.5000000			.500	.500	86/10/02	86/10/02
34371 ETHYLBEN	ZENE	TOTWUG/L	WATER	K	1	.5000000			.500	.500	86/10/02	86/10/02
34423 METHYLEN	ECHLORID	TOTWUG/L	WATER	K	1	1.000000			1.000	1.000	86/10/02	86/10/02
34475 TETRACHL	OROETHYL	TOTWUG/L	WATER	K	1	2.000000			2.000	2.000	86/10/02	86/10/02
34488 TRICHLOR	OFLUOROM	TOTWUG/L	WATER	K	1	.5000000			.500	.500	86/10/02	86/10/02
34496 11DICHLO	ROETHANE	TOTWUG/L	WATER	K	1	.2000000			.200	.200	86/10/02	86/10/02
34501 11DICHLO	ROETHYLE	TOTWUG/L	WATER	K	1	.2000000			.200	.200	86/10/02	86/10/02
34506 111TRICH	LOROETHA	TOTWUG/L	WATER	K	1	.5000000			.500	.500	86/10/02	86/10/02
34511 112TRICH	LOROETHA	TOTWUG/L	WATER	K	1	.2000000			.200	.200	86/10/02	86/10/02
34516 1122TETR	ACHLOROE	TOTWUG/L	WATER	K	1	2.000000			2.000	2.000	86/10/02	86/10/02
34531 12DICHLO	ROETHANE	TOTWUG/L	WATER	K	1	.2000000			.200	.200	86/10/02	86/10/02
34536 12DICHLO	ROBENZEN	TOTWUG/L	WATER	K	1	1.000000			1.000	1.000	86/10/02	86/10/02
34541 12DICHLO	ROPROPAN	TOTWUG/L	WATER	K	1	.2000000			.200	.200	86/10/02	86/10/02
34546 12DICHLO	ROETHENE	TOTWUG/L	WATER	K	1	.2000000			.200	.200	86/10/02	86/10/02
34566 13DICHLO	ROBENZEN	TOTWUG/L	WATER	K	1	1.000000			1.000	1.000	86/10/02	86/10/02
34571 14DICHLO	ROBENZEN	TOTWUG/L	WATER	K	1	1.000000			1.000	1.000	86/10/02	86/10/02
34699 T1,3-DCP	TOT WAT	UG/L	WATER	K	1	.2000000			.200	.200	86/10/02	86/10/02
34704 C1,3-DCP	TOT WAT	UG/L	WATER	K	1	.2000000			.200	.200	86/10/02	86/10/02
39180 TRICHLOR	ETHYLENE	TOT UG/L	WATER	K	1	.2000000			.200	.200	86/10/02	86/10/02
70300 RESIDUE	DISS-180 C	MG/L	WATER		1	310.0000			310	310	82/06/29	82/06/29
71900 MERCURY	HG,TOTAL	UG/L	WATER	K	1	.1000000			.1	.1	82/06/29	82/06/29
74041 WQF	SAMPLE	UPDATED	WATER		2	865670.0	41943000	6476.400	870206	861125	86/10/02	86/10/02
77093 C-1,2DCE	TOTAL	UG/L	WATER	K	1	.2000000			.200	.200	86/10/02	86/10/02
77134 M-XYLENE	TOTAL	UG/L	WATER	K	1	.5000000			.500	.500	86/10/02	86/10/02

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44 21 28.0 092 57 07.0 2
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21MINNG 821211 07040002 HQ
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/TYPA/AMBNT/WELL

PARAMETER		MEDIUM	RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
77166 2,3DCLPR TOTAL	UG/L	WATER	K	1	.2000000			.200	.200	86/10/02	86/10/02
77168 1,1DCLPR TOTAL	UG/L	WATER	K	1	.2000000			.200	.200	86/10/02	86/10/02
77223 IPROPBNZ TOTAL	UG/L	WATER	K	1	1.000000			1.000	1.000	86/10/02	86/10/02
77596 DBRMETHA TOTAL	UG/L	WATER	K	1	1.000000			1.000	1.000	86/10/02	86/10/02
77651 1,2DBRET TOTAL	UG/L	WATER	K	1	.5000000			.500	.500	86/10/02	86/10/02
77652 112C122F TOTAL	UG/L	WATER	K	1	.2000000			.200	.200	86/10/02	86/10/02
78109 ALLYLCLR TOT WH W	UG/L	WATER	K	1	.5000000			.50	.50	86/10/02	86/10/02
78121 P-XYLEN+ O-XYLEN	TOT UG/L	WATER	K	1	.5000000			.50	.50	86/10/02	86/10/02
81552 ACETONE	TOT UG/L	WATER	K	1	20.00000			20.000	20.000	86/10/02	86/10/02
81576 DIETHYL ETHER	TOT UG/L	WATER	K	1	1.000000			1.000	1.000	86/10/02	86/10/02
81595 MTH ETH KETONE	TOT UG/L	WATER	K	1	5.000000			5.000	5.000	86/10/02	86/10/02
81596 MTHISOBU KETONE	TOT UG/L	WATER	K	1	2.000000			2.000	2.000	86/10/02	86/10/02
81607 TETRAHYD FURAN	TOT UG/L	WATER	K	1	10.00000			10.000	10.000	86/10/02	86/10/02
81611 TRICL TRIFLETH	TOT UG/L	WATER	K	1	.5000000			.500	.500	86/10/02	86/10/02
84000 GEOLOGIC AGE	CODE	WATER	TXT	1	TEXT	TEXT	TEXT	TEXT	TEXT	76/01/01	76/01/01
84001 AQUIFER NAME	CODE	WATER	TXT	1	TEXT	TEXT	TEXT	TEXT	TEXT	76/01/01	76/01/01
84002 CODE GENERAL	REMARKS	WATER	TXT	4	TEXT	TEXT	TEXT	TEXT	TEXT	82/06/29	86/10/02

442003092423401 1101614BBDD1 144668 GWQ0137
44 20 12.1 092 42 21.6 2
AQF: PRAIRIE DU CHIEN 367PRDC
27049 MINNESOTA GOODHUE
MAJOR BASIN: UPPER MISS 070641
MINOR BASIN: LOWER UPPER MISS RIVER
21MINNG 790122 07040004
0000 FEET DEPTH

/TYPA/AMBNT/WELL

	PARAMETER			MEDIUM	RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00008	LAB	IDENT.	NUMBER	WATER		2	125720.0	.0000000	.0000000	125716	125715	83/10/06	83/10/06
00010	WATER	TEMP	CENT	WATER		2	9.500000	.0000000	.0000000	9.5	9.5	78/10/25	83/10/06
00080	COLOR	PT-CO	UNITS	WATER		1	5.000000			5	5	78/10/25	78/10/25
00094	CNDUCTVY	FIELD	MICROMHO	WATER		2	478.5000	420.5000	20.50600	493	464	78/10/25	83/10/06
00095	CNDUCTVY	AT 25C	MICROMHO	WATER		1	500.0000			500	500	78/10/25	78/10/25
00136	SAMPLE	TEMP AT	LAB DEGC	WATER		1	2.000000			2.00000	2.00000	83/10/06	83/10/06
00400	PH		SU	WATER		2	7.150000	.2450000	.4949700	7.50	6.80	78/10/25	83/10/06
00403	LAB	PH	SU	WATER		2	7.600000	.0000000	.0000000	7.6	7.6	78/10/25	83/10/06
00410	T ALK	CACO3	MG/L	WATER		2	255.0000	50.00000	7.071100	260	250	78/10/25	83/10/06
00425	HCO3 ALK	CACO3	MG/L	WATER		2	255.0000	50.00000	7.071100	260	250	78/10/25	83/10/06
00431	T ALK	FIELD	MG/L	WATER		2	261.0000	162.0000	12.72800	270	252	78/10/25	83/10/06
00505	RESIDUE	TOT VOL	MG/L	WATER		1	47.00000			47	47	78/10/25	78/10/25
00615	NO2-N	TOTAL	MG/L	WATER	K	1	.0100000			.010	.010	78/10/25	78/10/25
00625	TOT KJEL	N	MG/L	WATER		1	.1700000			.170	.170	78/10/25	78/10/25
00630	NO2&NO3	N-TOTAL	MG/L	WATER		2	.0250000	.0004500	.0212130	.04	.01	78/10/25	83/10/06
00665	PHOS-TOT		MG/L P	WATER	K	1	.0010000			.001	.001	78/10/25	78/10/25
00680	T ORG C	C	MG/L	WATER	K	2	1.000000	.0000000	.0000000	1.0	1.0	78/10/25	83/10/06
00900	TOT HARD	CACO3	MG/L	WATER		2	265.0000	50.00000	7.071100	270	260	78/10/25	83/10/06
00910	CALCIUM	CACO3	MG/L	WATER		2	175.0000	50.00000	7.071100	180.0	170.0	78/10/25	83/10/06
00920	MGNSIUM	CACO3	MG/L	WATER		2	92.00000	8.000000	2.828400	94.0	90.0	78/10/25	83/10/06
00929	SODIUM	NA,TOT	MG/L	WATER		1	2.300000			2.30	2.30	83/10/06	83/10/06
00930	SODIUM	NA,DISS	MG/L	WATER		1	2.100000			2.10	2.10	78/10/25	78/10/25
00935	PTSSIUM	K,DISS	MG/L	WATER		1	1.000000			1.00	1.00	78/10/25	78/10/25
00937	PTSSIUM	K,TOT	MG/L	WATER		1	1.300000			1.30	1.30	83/10/06	83/10/06
00940	CHLORIDE	TOTAL	MG/L	WATER		1	.6800000			.7	.7	83/10/06	83/10/06
					K	1	.5000000			.5	.5	78/10/25	78/10/25
					TOT	2	.5900000	.0162010	.1272800	.7	.5	78/10/25	83/10/06
00945	SULFATE	SO4-TOT	MG/L	WATER		1	16.00000			16	16	83/10/06	83/10/06
00946	SULFATE	SO4-DISS	MG/L	WATER		1	17.00000			17.0	17.0	78/10/25	78/10/25
00950	FLUORIDE	F,DISS	MG/L	WATER		1	.1400000			.14	.14	78/10/25	78/10/25
00955	SILICA	DISOLVED	MG/L	WATER		1	13.00000			13.0	13.0	78/10/25	78/10/25
01020	BORON	B,DISS	UG/L	WATER	K	1	50.00000			50	50	78/10/25	78/10/25
01027	CADMIUM	CD,TOT	UG/L	WATER		1	.0260000			.03	.03	78/10/25	78/10/25
01034	CHROMIUM	CR,TOT	UG/L	WATER	K	1	.5000000			.5	.5	78/10/25	78/10/25
01045	IRON	FE,TOT	UG/L	WATER		2	260.0000	3200.000	56.56900	300	220	78/10/25	83/10/06
01051	LEAD	PB,TOT	UG/L	WATER		1	2.400000			2	2	78/10/25	78/10/25
01055	MANGNESE	MN	UG/L	WATER		2	40.00000	200.0000	14.14200	50.0	30.0	78/10/25	83/10/06
01067	NICKEL	NI,TOTAL	UG/L	WATER		1	4.600000			5	5	78/10/25	78/10/25
01092	ZINC	ZN,TOT	UG/L	WATER		1	240.0000			240	240	78/10/25	78/10/25

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/TYPA/AMBNT/WELL

	PARAMETER		MEDIUM	RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
31505	TOT COLI MPN CONF	/100ML	WATER		1	2.000000			2	2	78/10/25	78/10/25
				K	1	2.200000			2	2	83/10/06	83/10/06
				TOT	2	2.100000	.0200030	.1414300	2	2	78/10/25	83/10/06
31615	FEC COLI MPNECMED	/100ML	WATER	K	1	2.000000			2	2	78/10/25	78/10/25
32101	DICLBRMT	TOTUG/L	WATER	K	1	.5000000			.5	.5	83/10/06	83/10/06
32102	CARBNTET	TOTUG/L	WATER	K	1	.2000000			.2	.2	83/10/06	83/10/06
32104	BROMOFRM WHL-WTR	UG/L	WATER	K	1	1.000000			1.0	1.0	83/10/06	83/10/06
32106	CHLRFORM	TOTUG/L	WATER	K	1	.2000000			.2	.2	83/10/06	83/10/06
34010	TOLUENE	TOT UG/L	WATER	K	1	.5000000			.50	.50	83/10/06	83/10/06
34030	BENZENE	TOT UG/L	WATER	K	1	.5000000			.50	.50	83/10/06	83/10/06
34301	CHLOROBE NZENE	TOTWUG/L	WATER	K	1	.5000000			.500	.500	83/10/06	83/10/06
34306	CHLORODI BROMOMET	TOTWUG/L	WATER	K	1	1.000000			1.000	1.000	83/10/06	83/10/06
34371	ETHYLBEN ZENE	TOTWUG/L	WATER	K	1	.5000000			.500	.500	83/10/06	83/10/06
34423	METHYLEN ECHLORID	TOTWUG/L	WATER	K	1	1.000000			1.000	1.000	83/10/06	83/10/06
34475	TETRACHL OROETHYL	TOTWUG/L	WATER	K	1	2.000000			2.000	2.000	83/10/06	83/10/06
34480	THALLIUM SEDMG/KG	DRY WGT	WATER	K	1	.2000000			.200	.200	83/10/06	83/10/06
34496	11DICHLO ROETHANE	TOTWUG/L	WATER	K	1	.2000000			.200	.200	83/10/06	83/10/06
34501	11DICHLO ROETHYLE	TOTWUG/L	WATER	K	1	.2000000			.200	.200	83/10/06	83/10/06
34506	111TRICH LOROETHA	TOTWUG/L	WATER	K	1	.2000000			.200	.200	83/10/06	83/10/06
34511	112TRICH LOROETHA	TOTWUG/L	WATER	K	1	.2000000			.200	.200	83/10/06	83/10/06
34516	1122TETR ACHLOROE	TOTWUG/L	WATER	K	1	2.000000			2.000	2.000	83/10/06	83/10/06
34531	12DICHLO ROETHANE	TOTWUG/L	WATER	K	1	.2000000			.200	.200	83/10/06	83/10/06
34536	12DICHLO ROBENZEN	TOTWUG/L	WATER	K	1	1.000000			1.000	1.000	83/10/06	83/10/06
34541	12DICHLO ROPROPAN	TOTWUG/L	WATER	K	1	.2000000			.200	.200	83/10/06	83/10/06
34546	12DICHLO ROETHENE	TOTWUG/L	WATER	K	1	.2000000			.200	.200	83/10/06	83/10/06
34566	13DICHLO ROBENZEN	TOTWUG/L	WATER	K	1	1.000000			1.000	1.000	83/10/06	83/10/06
34571	14DICHLO ROBENZEN	TOTWUG/L	WATER	K	1	1.000000			1.000	1.000	83/10/06	83/10/06
34576	2CHLOROE THYLVINY	TOTWUG/L	WATER	K	1	1.000000			1.000	1.000	83/10/06	83/10/06
34699	T1,3-DCP TOT WAT	UG/L	WATER	K	1	.2000000			.200	.200	83/10/06	83/10/06
34704	C1,3-DCP TOT WAT	UG/L	WATER	K	1	.2000000			.200	.200	83/10/06	83/10/06
39180	TRICHLOR ETHYLENE	TOT UG/L	WATER	K	1	.2000000			.200	.200	83/10/06	83/10/06
70300	RESIDUE DISS-180 C	MG/L	WATER		1	270.0000			270	270	78/10/25	78/10/25
71900	MERCURY HG,TOTAL	UG/L	WATER		1	.4200000			.4	.4	78/10/25	78/10/25
77093	C-1,2DCE TOTAL	UG/L	WATER	K	1	.2000000			.200	.200	83/10/06	83/10/06
77134	M-XYLENE TOTAL	UG/L	WATER	K	1	.5000000			.500	.500	83/10/06	83/10/06
77135	O-XYLENE TOTAL	UG/L	WATER	K	1	.5000000			.500	.500	83/10/06	83/10/06
77166	2,3DCLPR TOTAL	UG/L	WATER	K	1	.2000000			.200	.200	83/10/06	83/10/06
77168	1,1DCLPR TOTAL	UG/L	WATER	K	1	.2000000			.200	.200	83/10/06	83/10/06
77173	1,3DCLPR TOTAL	UG/L	WATER	K	1	3.000000			3.000	3.000	83/10/06	83/10/06

442003092423401 1101614BBDD1 144668 GWQ0137
44 20 12.1 092 42 21.6 2
AQF: PRAIRIE DU CHIEN 367PRDC
27049 MINNESOTA GOODHUE
MAJOR BASIN: UPPER MISS 070641
MINOR BASIN: LOWER UPPER MISS RIVER
21MINNG 790122 07040004
0000 FEET DEPTH

/TYPA/AMBNT/WELL

	PARAMETER		MEDIUM	RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
77223	IPROPBNZ	TOTAL UG/L	WATER	K	1	.5000000			.500	.500	83/10/06	83/10/06
77443	1,2,3TCP	TOTAL UG/L	WATER	K	1	2.000000			2.000	2.000	83/10/06	83/10/06
77562	1112TCLE	TOTAL UG/L	WATER	K	1	.2000000			.200	.200	83/10/06	83/10/06
77596	DBRMETHA	TOTAL UG/L	WATER	K	1	1.000000			1.000	1.000	83/10/06	83/10/06
77651	1,2DBRET	TOTAL UG/L	WATER	K	1	1.000000			1.000	1.000	83/10/06	83/10/06
78109	ALLYLCLR	TOT WH W UG/L	WATER	K	1	.5000000			.50	.50	83/10/06	83/10/06
78110	DICLACNI	TOT WH W UG/L	WATER	K	1	.5000000			.50	.50	83/10/06	83/10/06
78121	P-XYLEN+	O-XYLEN TOT UG/L	WATER	K	1	.5000000			.50	.50	83/10/06	83/10/06
81501	PENTACL	ETHANE TOT UG/L	WATER	K	1	2.000000			2.000	2.000	83/10/06	83/10/06
81552	ACETONE	TOT UG/L	WATER	K	1	10.00000			10.000	10.000	83/10/06	83/10/06
81576	DIETHYL	ETHER TOT UG/L	WATER	K	1	1.000000			1.000	1.000	83/10/06	83/10/06
81595	MTH ETH	KETONE TOT UG/L	WATER	K	1	5.000000			5.000	5.000	83/10/06	83/10/06
81596	MTHISOBU	KETONE TOT UG/L	WATER	K	1	1.000000			1.000	1.000	83/10/06	83/10/06
81607	TETRAHYD	FURAN TOT UG/L	WATER	K	1	5.000000			5.000	5.000	83/10/06	83/10/06
81611	TRICL	TRIFLETH TOT UG/L	WATER	K	1	.5000000			.500	.500	83/10/06	83/10/06
82368	CALCIUM	AS CACO3 DIS MG/L	WATER		1	180.0000			180.0000	180.0000	78/10/25	78/10/25
82369	MGNSIUM	AS CACO3 DIS MG/L	WATER		1	97.00000			96.9995	96.9995	78/10/25	78/10/25
84000	GEOLOGIC	AGE CODE	WATER	TXT	1	TEXT	TEXT	TEXT	TEXT	TEXT	76/01/01	76/01/01
84001	AQUIFER	NAME CODE	WATER	TXT	1	TEXT	TEXT	TEXT	TEXT	TEXT	76/01/01	76/01/01
84002	CODE	GENERAL REMARKS	WATER	TXT	3	TEXT	TEXT	TEXT	TEXT	TEXT	78/10/25	83/10/06

441858093001801 1101820DCAA1 144664 /GWQ0138/
44 18 57.9 093 00 18.7 2
AQF: PRAIRIE DU CHIEN 367PRDC
27049 MINNESOTA GOODHUE
MAJOR BASIN: UPPER MISS 070639
MINOR BASIN: LOWER UPPER MISS RIVER
21MINNG 790122 07040002
0000 FEET DEPTH

/TYPA/AMBNT/WELL

PARAMETER			MEDIUM	RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00008 LAB	IDENT.	NUMBER	WATER		2	125750.0	.0000000	.0000000	125750	125748	83/10/26	83/10/26
00010 WATER	TEMP	CENT	WATER		2	9.800000	.0801700	.2831400	10.0	9.6	78/10/26	83/10/26
00080 COLOR	PT-CO	UNITS	WATER	K	1	5.000000			5	5	78/10/26	78/10/26
00094 CNDUCTVY	FIELD	MICROMHO	WATER		2	474.5000	544.5000	23.33500	491	458	78/10/26	83/10/26
00095 CNDUCTVY	AT 25C	MICROMHO	WATER		1	540.0000			540	540	78/10/26	78/10/26
00136 SAMPLE	TEMP AT	LAB DEGC	WATER		1	2.500000			2.50000	2.50000	83/10/26	83/10/26
00400 PH		SU	WATER		2	7.200000	.0200040	.1414400	7.30	7.10	78/10/26	83/10/26
00403 LAB	PH	SU	WATER		2	7.500000	.0199890	.1413800	7.6	7.4	78/10/26	83/10/26
00410 T ALK	CACO3	MG/L	WATER		2	225.0000	50.00000	7.071100	230	220	78/10/26	83/10/26
00425 HCO3 ALK	CACO3	MG/L	WATER		2	225.0000	50.00000	7.071100	230	220	78/10/26	83/10/26
00431 T ALK	FIELD	MG/L	WATER		2	242.0000	648.0000	25.45600	260	224	78/10/26	83/10/26
00505 RESIDUE	TOT VOL	MG/L	WATER		1	48.00000			48	48	78/10/26	78/10/26
00615 NO2-N	TOTAL	MG/L	WATER	K	1	.0100000			.010	.010	78/10/26	78/10/26
00625 TOT KJEL	N	MG/L	WATER		1	.8000000			.800	.800	78/10/26	78/10/26
00630 NO2&NO3	N-TOTAL	MG/L	WATER		1	.0600000			.06	.06	78/10/26	78/10/26
				K	1	.0100000			.01	.01	83/10/26	83/10/26
				TOT	2	.0350000	.0012500	.0353550	.06	.01	78/10/26	83/10/26
00665 PHOS-TOT		MG/L P	WATER		1	.0330000			.033	.033	78/10/26	78/10/26
00680 T ORG C	C	MG/L	WATER		1	2.000000			2.0	2.0	78/10/26	78/10/26
				K	1	1.000000			1.0	1.0	83/10/26	83/10/26
				TOT	2	1.500000	.5000000	.7071100	2.0	1.0	78/10/26	83/10/26
00900 TOT HARD	CACO3	MG/L	WATER		2	254.0000	512.0000	22.62800	270	238	78/10/26	83/10/26
00910 CALCIUM	CACO3	MG/L	WATER		2	165.0000	450.0000	21.21300	180.0	150.0	78/10/26	83/10/26
00920 MGNSIUM	CACO3	MG/L	WATER		2	88.00000	.0000000	.0000000	88.0	88.0	78/10/26	83/10/26
00929 SODIUM	NA,TOT	MG/L	WATER		1	6.100000			6.10	6.10	83/10/26	83/10/26
00930 SODIUM	NA,DISS	MG/L	WATER		1	6.300000			6.30	6.30	78/10/26	78/10/26
00935 PTSSIUM	K,DISS	MG/L	WATER		1	2.400000			2.40	2.40	78/10/26	78/10/26
00937 PTSSIUM	K,TOT	MG/L	WATER		1	2.200000			2.20	2.20	83/10/26	83/10/26
00940 CHLORIDE	TOTAL	MG/L	WATER		1	.6800000			.7	.7	83/10/26	83/10/26
				K	1	.5000000			.5	.5	78/10/26	78/10/26
				TOT	2	.5900000	.0162010	.1272800	.7	.5	78/10/26	83/10/26
00945 SULFATE	SO4-TOT	MG/L	WATER		1	45.00000			45	45	83/10/26	83/10/26
00946 SULFATE	SO4-DISS	MG/L	WATER		1	52.00000			52.0	52.0	78/10/26	78/10/26
00950 FLUORIDE	F,DISS	MG/L	WATER		1	.3400000			.34	.34	78/10/26	78/10/26
00955 SILICA	DISOLVED	MG/L	WATER		1	8.100000			8.1	8.1	78/10/26	78/10/26
01020 BORON	B,DISS	UG/L	WATER		1	220.0000			220	220	78/10/26	78/10/26
01027 CADMIUM	CD,TOT	UG/L	WATER		1	.1300000			.1	.1	78/10/26	78/10/26
01034 CHROMIUM	CR,TOT	UG/L	WATER		1	1.000000			1	1	78/10/26	78/10/26
01045 IRON	FE,TOT	UG/L	WATER		2	785.0000	198450.0	445.4800	1100	470	78/10/26	83/10/26

441858093001801 1101820DCAA1 144664 GWQ0138
44 18 57.9 093 00 18.7 2
AQF: PRAIRIE DU CHIEN 367PRDC
27049 MINNESOTA GOODHUE
MAJOR BASIN: UPPER MISS 070639
MINOR BASIN: LOWER UPPER MISS RIVER
21MINNG 790122 07040002
0000 FEET DEPTH

/TYPA/AMBNT/WELL

PARAMETER		MEDIUM		RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
01051 LEAD	PB,TOT	UG/L	WATER		1	.8800000			.9	.9	78/10/26	78/10/26
01055 MANGNESE	MN	UG/L	WATER		2	30.00000	200.0000	14.14200	40.0	20.0	78/10/26	83/10/26
01067 NICKEL	NI,TOTAL	UG/L	WATER	K	1	1.000000			1	1	78/10/26	78/10/26
01092 ZINC	ZN,TOT	UG/L	WATER		1	140.0000			140	140	78/10/26	78/10/26
31505 TOT COLI	MPN CONF	/100ML	WATER	K	2	2.100000	.0200030	.1414300	2	2	78/10/26	83/10/26
31615 FEC COLI	MPNECMED	/100ML	WATER	K	1	2.000000			2	2	78/10/26	78/10/26
32101 DICLBRMT		TOTUG/L	WATER	K	1	.5000000			.5	.5	83/10/26	83/10/26
32102 CARBNTET		TOTUG/L	WATER	K	1	.2000000			.2	.2	83/10/26	83/10/26
32104 BROMOFRM	WHL-WTR	UG/L	WATER	K	1	1.000000			1.0	1.0	83/10/26	83/10/26
32106 CHLRFORM		TOTUG/L	WATER	M	1	.2000000			.2	.2	83/10/26	83/10/26
34010 TOLUENE		TOT UG/L	WATER	K	1	.5000000			.50	.50	83/10/26	83/10/26
34030 BENZENE		TOT UG/L	WATER	K	1	.5000000			.50	.50	83/10/26	83/10/26
34301 CHLOROBE	NZENE	TOTWUG/L	WATER	K	1	.5000000			.500	.500	83/10/26	83/10/26
34306 CHLORODI	BROMOMET	TOTWUG/L	WATER	K	1	1.000000			1.000	1.000	83/10/26	83/10/26
34371 ETHYLBEN	ZENE	TOTWUG/L	WATER	K	1	.5000000			.500	.500	83/10/26	83/10/26
34423 METHYLEN	ECHLORID	TOTWUG/L	WATER	K	1	1.000000			1.000	1.000	83/10/26	83/10/26
34475 TETRACHL	OROETHYL	TOTWUG/L	WATER	K	1	2.000000			2.000	2.000	83/10/26	83/10/26
34480 THALLIUM	SEDMG/KG	DRY WGT	WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
34496 11DICHLO	ROETHANE	TOTWUG/L	WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
34501 11DICHLO	ROETHYLE	TOTWUG/L	WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
34506 111TRICH	LOROETHA	TOTWUG/L	WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
34511 112TRICH	LOROETHA	TOTWUG/L	WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
34516 1122TETR	ACHLOROE	TOTWUG/L	WATER	K	1	2.000000			2.000	2.000	83/10/26	83/10/26
34531 12DICHLO	ROETHANE	TOTWUG/L	WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
34536 12DICHLO	ROBENZEN	TOTWUG/L	WATER	K	1	1.000000			1.000	1.000	83/10/26	83/10/26
34541 12DICHLO	ROPROPAN	TOTWUG/L	WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
34546 12DICHLO	ROETHENE	TOTWUG/L	WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
34566 13DICHLO	ROBENZEN	TOTWUG/L	WATER	K	1	1.000000			1.000	1.000	83/10/26	83/10/26
34571 14DICHLO	ROBENZEN	TOTWUG/L	WATER	K	1	1.000000			1.000	1.000	83/10/26	83/10/26
34576 2CHLOROE	THYLVINY	TOTWUG/L	WATER	K	1	1.000000			1.000	1.000	83/10/26	83/10/26
34699 T1,3-DCP	TOT WAT	UG/L	WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
34704 C1,3-DCP	TOT WAT	UG/L	WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
39180 TRICHLOR	ETHYLENE	TOT UG/L	WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
70300 RESIDUE	DISS-180 C	MG/L	WATER		1	290.0000			290	290	78/10/26	78/10/26
71900 MERCURY	HG,TOTAL	UG/L	WATER		1	.3700000			.4	.4	78/10/26	78/10/26
77093 C-1,2DCE	TOTAL	UG/L	WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
77134 M-XYLENE	TOTAL	UG/L	WATER	K	1	.5000000			.500	.500	83/10/26	83/10/26
77135 O-XYLENE	TOTAL	UG/L	WATER	K	1	.5000000			.500	.500	83/10/26	83/10/26
77166 2,3DCLPR	TOTAL	UG/L	WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26

441858093001801 1101820DCAA1 144664 GWQ0138
44 18 57.9 093 00 18.7 2
AQF: PRAIRIE DU CHIEN 367PRDC
27049 MINNESOTA GOODHUE
MAJOR BASIN: UPPER MISS 070639
MINOR BASIN: LOWER UPPER MISS RIVER
21MINNG 790122 07040002
0000 FEET DEPTH

/TYPA/AMBNT/WELL

	PARAMETER		MEDIUM	RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
77168	1,1DCLPR TOTAL	UG/L	WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
77173	1,3DCLPR TOTAL	UG/L	WATER	K	1	3.000000			3.000	3.000	83/10/26	83/10/26
77223	IPROPBNZ TOTAL	UG/L	WATER	K	1	.5000000			.500	.500	83/10/26	83/10/26
77443	1,2,3TCP TOTAL	UG/L	WATER	K	1	2.000000			2.000	2.000	83/10/26	83/10/26
77562	1112TCLE TOTAL	UG/L	WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
77596	DBRMETHA TOTAL	UG/L	WATER	K	1	1.000000			1.000	1.000	83/10/26	83/10/26
77651	1,2DBRET TOTAL	UG/L	WATER	K	1	1.000000			1.000	1.000	83/10/26	83/10/26
78109	ALLYLCLR TOT WH W	UG/L	WATER	K	1	.5000000			.50	.50	83/10/26	83/10/26
78110	DICLACNI TOT WH W	UG/L	WATER	K	1	.5000000			.50	.50	83/10/26	83/10/26
78121	P-XYLEN+ O-XYLEN	TOT UG/L	WATER	K	1	.5000000			.50	.50	83/10/26	83/10/26
81501	PENTACL ETHANE	TOT UG/L	WATER	K	1	2.000000			2.000	2.000	83/10/26	83/10/26
81552	ACETONE	TOT UG/L	WATER	K	1	10.00000			10.000	10.000	83/10/26	83/10/26
81576	DIETHYL ETHER	TOT UG/L	WATER	K	1	1.000000			1.000	1.000	83/10/26	83/10/26
81595	MTH ETH KETONE	TOT UG/L	WATER	K	1	5.000000			5.000	5.000	83/10/26	83/10/26
81596	MTHISOBU KETONE	TOT UG/L	WATER	K	1	1.000000			1.000	1.000	83/10/26	83/10/26
81607	TETRAHYD FURAN	TOT UG/L	WATER	K	1	5.000000			5.000	5.000	83/10/26	83/10/26
81611	TRICL TRIFLETH	TOT UG/L	WATER	K	1	.5000000			.500	.500	83/10/26	83/10/26
82368	CALCIUM AS CACO3	DIS MG/L	WATER		1	170.0000			170.0000	170.0000	78/10/26	78/10/26
82369	MGNSIUM AS CACO3	DIS MG/L	WATER		1	92.00000			91.9995	91.9995	78/10/26	78/10/26
84000	GEOLOGIC AGE	CODE	WATER	TXT	1	TEXT	TEXT	TEXT	TEXT	TEXT	76/01/01	76/01/01
84001	AQUIFER NAME	CODE	WATER	TXT	1	TEXT	TEXT	TEXT	TEXT	TEXT	76/01/01	76/01/01
84002	CODE GENERAL	REMARKS	WATER	TXT	3	TEXT	TEXT	TEXT	TEXT	TEXT	78/10/26	83/10/26

442216092540601 1111731DCD01 144691 GWQ0139
44 22 16.0 092 54 06.0 2
AQF: GALENA DOLOMITE 364GLEN
27049 MINNESOTA GOODHUE
MAJOR BASIN: UPPER MISS 070600
MINOR BASIN: LOWER UPPER MISSISSIPPI
21MINNG 790119 07040002
0000 FEET DEPTH

/TYPA/AMBNT/WELL

PARAMETER			MEDIUM	RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00008 LAB	IDENT.	NUMBER	WATER		1	125750.0			125751	125751	83/10/26	83/10/26
00010 WATER	TEMP	CENT	WATER		1	9.300000			9.3	9.3	78/10/26	78/10/26
00080 COLOR	PT-CO	UNITS	WATER	K	1	5.000000			5	5	78/10/26	78/10/26
00094 CNDUCTVY	FIELD	MICROMHO	WATER		1	729.0000			729	729	78/10/26	78/10/26
00095 CNDUCTVY	AT 25C	MICROMHO	WATER		1	450.0000			450	450	78/10/26	78/10/26
00400 PH		SU	WATER		1	7.500000			7.50	7.50	78/10/26	78/10/26
00403 LAB	PH	SU	WATER		1	7.500000			7.5	7.5	78/10/26	78/10/26
00410 T ALK	CACO3	MG/L	WATER		1	290.0000			290	290	78/10/26	78/10/26
00425 HCO3 ALK	CACO3	MG/L	WATER		1	290.0000			290	290	78/10/26	78/10/26
00431 T ALK	FIELD	MG/L	WATER		1	302.0000			302	302	78/10/26	78/10/26
00505 RESIDUE	TOT VOL	MG/L	WATER		1	160.0000			160	160	78/10/26	78/10/26
00615 NO2-N	TOTAL	MG/L	WATER	K	1	.0100000			.010	.010	78/10/26	78/10/26
00625 TOT KJEL	N	MG/L	WATER		1	.1100000			.110	.110	78/10/26	78/10/26
00630 NO2&NO3	N-TOTAL	MG/L	WATER		1	8.500000			8.50	8.50	78/10/26	78/10/26
00665 PHOS-TOT		MG/L P	WATER		1	.0430000			.043	.043	78/10/26	78/10/26
00680 T ORG C	C	MG/L	WATER		1	1.200000			1.2	1.2	78/10/26	78/10/26
00900 TOT HARD	CACO3	MG/L	WATER		1	370.0000			370	370	78/10/26	78/10/26
00910 CALCIUM	CACO3	MG/L	WATER		1	240.0000			240.0	240.0	78/10/26	78/10/26
00920 MGNSIUM	CACO3	MG/L	WATER		1	130.0000			130.0	130.0	78/10/26	78/10/26
00930 SODIUM	NA,DISS	MG/L	WATER		1	4.500000			4.50	4.50	78/10/26	78/10/26
00935 PTSSIUM	K,DISS	MG/L	WATER		1	.6600000			.66	.66	78/10/26	78/10/26
00940 CHLORIDE	TOTAL	MG/L	WATER		1	21.00000			21	21	78/10/26	78/10/26
00946 SULFATE	S04-DISS	MG/L	WATER		1	31.00000			31.0	31.0	78/10/26	78/10/26
00950 FLUORIDE	F,DISS	MG/L	WATER		1	.1900000			.19	.19	78/10/26	78/10/26
00955 SILICA	DISOLVED	MG/L	WATER		1	25.00000			25.0	25.0	78/10/26	78/10/26
01020 BORON	B,DISS	UG/L	WATER	K	1	50.00000			50	50	78/10/26	78/10/26
01027 CADMIUM	CD,TOT	UG/L	WATER		1	.0300000			.03	.03	78/10/26	78/10/26
01034 CHROMIUM	CR,TOT	UG/L	WATER		1	2.300000			2	2	78/10/26	78/10/26
01045 IRON	FE,TOT	UG/L	WATER	K	1	50.00000			50	50	78/10/26	78/10/26
01051 LEAD	PB,TOT	UG/L	WATER		1	1.000000			1	1	78/10/26	78/10/26
01055 MANGNESE	MN	UG/L	WATER		1	20.00000			20.0	20.0	78/10/26	78/10/26
01067 NICKEL	NI,TOTAL	UG/L	WATER	K	1	1.000000			1	1	78/10/26	78/10/26
01092 ZINC	ZN,TOT	UG/L	WATER		1	24.00000			24	24	78/10/26	78/10/26
31505 TOT COLI	MPN CONF	/100ML	WATER	K	1	2.000000			2	2	78/10/26	78/10/26
31615 FEC COLI	MPNECMED	/100ML	WATER	K	1	2.000000			2	2	78/10/26	78/10/26
32101 DICLBRMT		TOTUG/L	WATER	K	1	.5000000			.5	.5	83/10/26	83/10/26
32102 CARBNTET		TOTUG/L	WATER	K	1	.2000000			.2	.2	83/10/26	83/10/26
32104 BROMOFRM	WHL-WTR	UG/L	WATER	K	1	1.000000			1.0	1.0	83/10/26	83/10/26
32106 CHLRFORM		TOTUG/L	WATER	K	1	.2000000			.2	.2	83/10/26	83/10/26

442216092540601 1111731DCD01 144691 GWQ0139
44 22 16.0 092 54 06.0 2
AQF: GALENA DOLOMITE 364GLEN
27049 MINNESOTA GOODHUE
MAJOR BASIN: UPPER MISS 070600
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/TYPA/AMBNT/WELL

	PARAMETER	MEDIUM	RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
34010	TOLUENE	TOT UG/L WATER	K	1	.5000000			.50	.50	83/10/26	83/10/26
34030	BENZENE	TOT UG/L WATER	K	1	.5000000			.50	.50	83/10/26	83/10/26
34301	CHLOROBE NZENE	TOTWUG/L WATER	K	1	.5000000			.500	.500	83/10/26	83/10/26
34306	CHLORODI BROMOMET	TOTWUG/L WATER	K	1	1.000000			1.000	1.000	83/10/26	83/10/26
34371	ETHYLBEN ZENE	TOTWUG/L WATER	K	1	.5000000			.500	.500	83/10/26	83/10/26
34423	METHYLEN ECHLORID	TOTWUG/L WATER	K	1	1.000000			1.000	1.000	83/10/26	83/10/26
34475	TETRACHL OROETHYL	TOTWUG/L WATER	K	1	2.000000			2.000	2.000	83/10/26	83/10/26
34480	THALLIUM SEDMG/KG	DRY WGT WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
34496	11DICHLO ROETHANE	TOTWUG/L WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
34501	11DICHLO ROETHYLE	TOTWUG/L WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
34506	111TRICH LOROETHA	TOTWUG/L WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
34511	112TRICH LOROETHA	TOTWUG/L WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
34516	1122TETR ACHLOROE	TOTWUG/L WATER	K	1	2.000000			2.000	2.000	83/10/26	83/10/26
34531	12DICHLO ROETHANE	TOTWUG/L WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
34536	12DICHLO ROBENZEN	TOTWUG/L WATER	K	1	1.000000			1.000	1.000	83/10/26	83/10/26
34541	12DICHLO ROPROPAN	TOTWUG/L WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
34546	12DICHLO ROETHENE	TOTWUG/L WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
34566	13DICHLO ROBENZEN	TOTWUG/L WATER	K	1	1.000000			1.000	1.000	83/10/26	83/10/26
34571	14DICHLO ROBENZEN	TOTWUG/L WATER	K	1	1.000000			1.000	1.000	83/10/26	83/10/26
34576	2CHLOROE THYLVINY	TOTWUG/L WATER	K	1	1.000000			1.000	1.000	83/10/26	83/10/26
34699	T1,3-DCP TOT WAT	UG/L WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
34704	C1,3-DCP TOT WAT	UG/L WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
39180	TRICHLOR ETHYLENE	TOT UG/L WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
70300	RESIDUE DISS-180 C	MG/L WATER		1	420.0000			420	420	78/10/26	78/10/26
71900	MERCURY HG,TOTAL	UG/L WATER		1	.3900000			.4	.4	78/10/26	78/10/26
77093	C-1,2DCE TOTAL	UG/L WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
77134	M-XYLENE TOTAL	UG/L WATER	K	1	.5000000			.500	.500	83/10/26	83/10/26
77135	O-XYLENE TOTAL	UG/L WATER	K	1	.5000000			.500	.500	83/10/26	83/10/26
77166	2,3DCLPR TOTAL	UG/L WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
77168	1,1DCLPR TOTAL	UG/L WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
77173	1,3DCLPR TOTAL	UG/L WATER	K	1	3.000000			3.000	3.000	83/10/26	83/10/26
77223	IPROPBNZ TOTAL	UG/L WATER	K	1	.5000000			.500	.500	83/10/26	83/10/26
77443	1,2,3TCP TOTAL	UG/L WATER	K	1	2.000000			2.000	2.000	83/10/26	83/10/26
77562	1112TCLE TOTAL	UG/L WATER	K	1	.2000000			.200	.200	83/10/26	83/10/26
77596	DBRMETHA TOTAL	UG/L WATER	K	1	1.000000			1.000	1.000	83/10/26	83/10/26
77651	1,2DBRET TOTAL	UG/L WATER	K	1	1.000000			1.000	1.000	83/10/26	83/10/26
78109	ALLYLCLR TOT WH W	UG/L WATER	K	1	.5000000			.50	.50	83/10/26	83/10/26
78110	DICLACNI TOT WH W	UG/L WATER	K	1	.5000000			.50	.50	83/10/26	83/10/26
78121	P-XYLENE O-XYLEN	TOT UG/L WATER	K	1	.5000000			.50	.50	83/10/26	83/10/26

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	PARAMETER	MEDIUM	RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
81501	PENTACL ETHANE	TOT UG/L WATER	K	1	2.000000			2.000	2.000	83/10/26	83/10/26
81552	ACETONE	TOT UG/L WATER	K	1	10.00000			10.000	10.000	83/10/26	83/10/26
81576	DIETHYL ETHER	TOT UG/L WATER	K	1	1.000000			1.000	1.000	83/10/26	83/10/26
81595	MTH ETH KETONE	TOT UG/L WATER	K	1	5.000000			5.000	5.000	83/10/26	83/10/26
81596	MTHISOBU KETONE	TOT UG/L WATER	K	1	1.000000			1.000	1.000	83/10/26	83/10/26
81607	TETRAHYD FURAN	TOT UG/L WATER	K	1	5.000000			5.000	5.000	83/10/26	83/10/26
81611	TRICL TRIFLETH	TOT UG/L WATER	K	1	.5000000			.500	.500	83/10/26	83/10/26
82368	CALCIUM AS CACO3	DIS MG/L WATER		1	240.0000			240.0000	240.0000	78/10/26	78/10/26
82369	MGNSIUM AS CACO3	DIS MG/L WATER		1	140.0000			140.0000	140.0000	78/10/26	78/10/26
84000	GEOLOGIC AGE	CODE WATER	TXT	1	TEXT	TEXT	TEXT	TEXT	TEXT	76/01/01	76/01/01
84001	AQUIFER NAME	CODE WATER	TXT	1	TEXT	TEXT	TEXT	TEXT	TEXT	76/01/01	76/01/01
84002	CODE GENERAL	REMARKS WATER	TXT	2	TEXT	TEXT	TEXT	TEXT	TEXT	78/10/26	83/10/26

4 TOTAL STATIONS PROCESSED

	STA BEG	STA END	# OF OBS	# OF SAMPLE	STA END-PERIOD OF RECD IN YRS =0	<.5	<3	>=3
<1968	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0
1976	4	0	8	4	0	0	0	0
1977	0	0	0	0	0	0	0	0
1978	0	0	117	3	0	0	0	0
1979	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0
1982	0	0	50	2	0	0	0	0
1983	0	3	194	5	0	0	0	3
1984	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0
1986	0	1	66	2	0	0	0	1
1987	0	0	0	0	0	0	0	0
TOTAL	4	4	435	16	0	0	0	4

4 TOTAL STATIONS PROCESSED

	PARAMETER			MEDIUM	RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
00008	LAB	IDENT.	NUMBER	WATER		9	125590.0	49152.00	221.7000	125751	125300	82/06/29	86/10/02
00010	WATER	TEMP	CENT	WATER		8	9.550000	.0400390	.2001000	10.0	9.3	78/10/25	86/10/02
00080	COLOR	PT-CO	UNITS	WATER		1	5.000000			5	5	78/10/25	78/10/25
					K	2	5.000000	.0000000	.0000000	5	5	78/10/28	78/10/26
					TOT	3	5.000000	.0000000	.0000000	5	5	78/10/25	78/10/26
00094	CNDUCTVY	FIELD	MICROMHO	WATER		8	524.2500	7480.000	86.48700	729	458	78/10/25	86/10/02
00095	CNDUCTVY	AT 25C	MICROMHO	WATER		4	485.0000	1900.000	43.58900	540	450	78/10/25	82/06/29
00136	SAMPLE	TEMP AT	LAB DEGC	WATER		4	3.375000	1.895800	1.376900	5.00000	2.00000	82/06/29	83/10/26
00340	COD	HI LEVEL	MG/L	WATER		1	5.500000			6	6	82/06/29	82/06/29
00400	PH		SU	WATER		7	7.200000	.0633550	.2517000	7.50	6.80	78/10/25	86/10/02
00403	LAB	PH	SU	WATER		7	7.514300	.0148110	.1217000	7.6	7.3	78/10/25	86/10/02
00410	T ALK	CACO3	MG/L	WATER		7	251.4300	514.3000	22.67800	290	220	78/10/25	86/10/02
00425	HCO3 ALK	CACO3	MG/L	WATER		7	251.4300	514.3000	22.67800	290	220	78/10/25	86/10/02
00431	T ALK	FIELD	MG/L	WATER		6	260.0000	657.6000	25.64400	302	224	78/10/25	83/10/26
00505	RESIDUE	TOT VOL	MG/L	WATER		4	93.75000	3118.900	55.84700	160	47	78/10/25	82/06/29
00615	NO2-N	TOTAL	MG/L	WATER	K	3	.0100000	.0000000	.0000000	.010	.010	78/10/25	78/10/26
00625	TOT KJEL	N	MG/L	WATER		4	.4050000	.1055000	.3248100	.800	.110	78/10/25	82/06/29
00630	NO2&NO3	N-TOTAL	MG/L	WATER		4	2.152500	17.90800	4.231700	8.50	.01	78/10/25	83/10/06
					K	3	.0100000	.0000000	.0000000	.01	.01	82/06/29	86/10/02
					TOT	7	1.234300	10.26500	3.203900	8.50	.01	78/10/25	86/10/02
00665	PHOS-TOT		MG/L P	WATER		2	.0380000	.0000500	.0070712	.043	.033	78/10/26	78/10/26
					K	2	.0030000	.0000080	.0028284	.005	.001	78/10/25	82/06/29
					TOT	4	.0205000	.0004276	.0206800	.043	.001	78/10/25	82/06/29
00680	T ORG C	C	MG/L	WATER		3	1.466700	.2133400	.4618800	2.0	1.2	78/10/26	86/10/02
					K	4	1.000000	.0000000	.0000000	1.0	1.0	78/10/25	83/10/26
					TOT	7	1.200000	.1333300	.3651500	2.0	1.0	78/10/25	86/10/02
00900	TOT HARD	CACO3	MG/L	WATER		7	279.7200	1760.700	41.96100	370	238	78/10/25	86/10/02
00910	CALCIUM	CACO3	MG/L	WATER		7	182.8600	790.4900	28.11600	240.0	150.0	78/10/25	86/10/02
00920	MGNSIUM	CACO3	MG/L	WATER		7	96.42900	226.6300	15.05400	130.0	88.0	78/10/25	86/10/02
00929	SODIUM	NA,TOT	MG/L	WATER		4	4.775000	2.862500	1.691900	6.10	2.30	82/06/29	86/10/02
00930	SODIUM	NA,DISS	MG/L	WATER		3	4.300000	4.440000	2.107100	6.30	2.10	78/10/25	78/10/26
00935	PTSSIUM	K,DISS	MG/L	WATER		3	1.353300	.8505400	.9222500	2.40	.66	78/10/25	78/10/26
00937	PTSSIUM	K,TOT	MG/L	WATER		4	2.075000	.2758400	.5252000	2.40	1.30	82/06/29	86/10/02
00940	CHLORIDE	TOTAL	MG/L	WATER		5	4.716000	82.86700	9.103100	21	.6	78/10/26	86/10/02
					K	2	.5000000	.0000000	.0000000	.5	.5	78/10/25	78/10/26
					TOT	7	3.511400	59.47600	7.712100	21	.5	78/10/25	86/10/02
00945	SULFATE	SO4-TOT	MG/L	WATER		4	36.00000	180.6700	13.44100	45	16	82/06/29	86/10/02
00946	SULFATE	S04-DISS	MG/L	WATER		3	33.33300	310.3300	17.61600	52.0	17.0	78/10/25	78/10/26
00950	FLUORIDE	F,DISS	MG/L	WATER		3	.2233300	.0108330	.1040800	.34	.14	78/10/25	78/10/26
00951	FLUORIDE	F,TOTAL	MG/L	WATER		1	.3200000			.32	.32	82/06/29	82/06/29
00955	SILICA	DISOLVED	MG/L	WATER		3	15.36700	75.60400	8.695000	25.0	8.1	78/10/25	78/10/26
00956	SILICA	TOTAL	MG/L	WATER		2	9.000000	1.280300	1.131500	9.8	8.2	82/06/29	86/10/02
01002	ARSENIC	AS,TOT	UG/L	WATER	K	1	1.000000			1	1	82/06/29	82/06/29
01007	BARIUM	BA,TOT	UG/L	WATER		1	63.00000			63	63	82/06/29	82/06/29

4 TOTAL STATIONS PROCESSED

PARAMETER			MEDIUM	RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
01020 BORON	B,DISS	UG/L	WATER		1	220.0000			220	220	78/10/26	78/10/26
				K	2	50.00000	.0000000	.0000000	50	50	78/10/25	78/10/26
				TOT	3	106.6700	9633.300	98.15000	220	50	78/10/25	78/10/26
01022 BORON	B,TOT	UG/L	WATER		1	120.0000			120	120	82/06/29	82/06/29
01027 CADMIUM	CD,TOT	UG/L	WATER		4	.0502500	.0028669	.0535440	.1	.02	78/10/25	82/06/29
01034 CHROMIUM	CR,TOT	UG/L	WATER		2	1.650000	.8450000	.9192400	2	1	78/10/26	78/10/26
				K	2	.5000000	.0000000	.0000000	.5	.5	78/10/25	82/06/29
				TOT	4	1.075000	.7225000	.8500000	2	.5	78/10/25	82/06/29
01042 COPPER	CU,TOT	UG/L	WATER		1	1.400000			1	1	82/06/29	82/06/29
01045 IRON	FE,TOT	UG/L	WATER		6	452.6800	144840.0	380.5800	1100	6	78/10/25	86/10/02
				K	1	50.00000			50	50	78/10/26	78/10/26
				TOT	7	395.1600	143870.0	379.3000	1100	6	78/10/25	86/10/02
01051 LEAD	PB,TOT	UG/L	WATER		3	1.426700	.7141300	.8450700	2	.9	78/10/25	78/10/26
				K	1	.2000000			.2	.2	82/06/29	82/06/29
				TOT	4	1.120000	.8522700	.9231900	2	.2	78/10/25	82/06/29
01055 MANGNESE	MN	UG/L	WATER		6	26.67200	306.3500	17.50300	50.0	.03	78/10/25	86/10/02
				K	1	20.00000			20.0	20.0	82/06/29	82/06/29
				TOT	7	25.71900	261.6500	16.17600	50.0	.03	78/10/25	86/10/02
01067 NICKEL	NI,TOTAL	UG/L	WATER		1	4.600000			5	5	78/10/25	78/10/25
				K	3	1.000000	.0000000	.0000000	1	1	78/10/26	82/06/29
				TOT	4	1.900000	3.240000	1.800000	5	1	78/10/25	82/06/29
01092 ZINC	ZN,TOT	UG/L	WATER		4	118.5000	8835.700	93.99800	240	24	78/10/25	82/06/29
01147 SELENIUM	SE,TOT	UG/L	WATER	K	1	1.000000			1	1	82/06/29	82/06/29
31505 TOT COLI	MPN CONF	/100ML	WATER		1	2.000000			2	2	78/10/25	78/10/25
				K	5	2.080000	.0120010	.1095500	2	2	78/10/26	83/10/26
				L	1	24000.00			24000	24000	82/06/29	82/06/29
				TOT	7	3430.400	82272000	9070.400	24000	2	78/10/25	83/10/26
31615 FEC COLI	MPNECMED	/100ML	WATER	K	4	2.000000	.0000000	.0000000	2	2	78/10/25	82/10/14
31679 FECSTREP	MF M-ENT	/100ML	WATER	K	1	2.000000			2	2	82/10/14	82/10/14
32101 DICLBRMT		TOTUG/L	WATER	K	4	.5000000	.0000000	.0000000	.5	.5	83/10/06	86/10/02
32102 CARBNTET		TOTUG/L	WATER	K	4	.2000000	.0000000	.0000000	.2	.2	83/10/06	86/10/02
32104 BROMOFRM	WHL-WTR	UG/L	WATER	K	4	1.000000	.0000000	.0000000	1.0	1.0	83/10/06	86/10/02
32106 CHLRFORM		TOTUG/L	WATER	K	3	.2000000	.0000000	.0000000	.2	.2	83/10/06	86/10/02
				M	1	.2000000			.2	.2	83/10/26	83/10/26
				TOT	4	.2000000	.0000000	.0000000	.2	.2	83/10/06	86/10/02
32730 PHENOLS	TOTAL	UG/L	WATER	K	1	2.000000			2	2	82/06/29	82/06/29
34010 TOLUENE		TOT UG/L	WATER	K	4	.5000000	.0000000	.0000000	.50	.50	83/10/06	86/10/02
34030 BENZENE		TOT UG/L	WATER	K	4	.5000000	.0000000	.0000000	.50	.50	83/10/06	86/10/02
34301 CHLOROBE	NZENE	TOTWUG/L	WATER	K	4	.5000000	.0000000	.0000000	.500	.500	83/10/06	86/10/02
34306 CHLORODI	BROMOMET	TOTWUG/L	WATER	K	4	.8750000	.0625000	.2500000	1.000	.500	83/10/06	86/10/02
34371 ETHYLBEN	ZENE	TOTWUG/L	WATER	K	4	.5000000	.0000000	.0000000	.500	.500	83/10/06	86/10/02
34423 METHYLEN	ECHLORID	TOTWUG/L	WATER	K	4	1.000000	.0000000	.0000000	1.000	1.000	83/10/06	86/10/02
34475 TETRACHL	OROETHYL	TOTWUG/L	WATER	K	4	2.000000	.0000000	.0000000	2.000	2.000	83/10/06	86/10/02
34480 THALLIUM	SEDMG/KG	DRY WGT	WATER	K	3	.2000000	.0000000	.0000000	.200	.200	83/10/06	83/10/26

4 TOTAL STATIONS PROCESSED

	PARAMETER		MEDIUM	RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
34488	TRICHLOR	OFLUOROM TOTWUG/L	WATER	K	1	.5000000			.500	.500	86/10/02	86/10/02
34496	11DICHLO	ROETHANE TOTWUG/L	WATER	K	4	.2000000	.0000000	.0000000	.200	.200	83/10/06	86/10/02
34501	11DICHLO	ROETHYLE TOTWUG/L	WATER	K	4	.2000000	.0000000	.0000000	.200	.200	83/10/06	86/10/02
34506	111TRICH	LOROETHA TOTWUG/L	WATER	K	4	.2750000	.0225000	.1500000	.500	.200	83/10/06	86/10/02
34511	112TRICH	LOROETHA TOTWUG/L	WATER	K	4	.2000000	.0000000	.0000000	.200	.200	83/10/06	86/10/02
34516	1122TETR	ACHLOROE TOTWUG/L	WATER	K	4	2.000000	.0000000	.0000000	2.000	2.000	83/10/06	86/10/02
34531	12DICHLO	ROETHANE TOTWUG/L	WATER	K	4	.2000000	.0000000	.0000000	.200	.200	83/10/06	86/10/02
34536	12DICHLO	ROBENZEN TOTWUG/L	WATER	K	4	1.000000	.0000000	.0000000	1.000	1.000	83/10/06	86/10/02
34541	12DICHLO	ROPROPAN TOTWUG/L	WATER	K	4	.2000000	.0000000	.0000000	.200	.200	83/10/06	86/10/02
34546	12DICHLO	ROETHENE TOTWUG/L	WATER	K	4	.2000000	.0000000	.0000000	.200	.200	83/10/06	86/10/02
34566	13DICHLO	ROBENZEN TOTWUG/L	WATER	K	4	1.000000	.0000000	.0000000	1.000	1.000	83/10/06	86/10/02
34571	14DICHLO	ROBENZEN TOTWUG/L	WATER	K	4	1.000000	.0000000	.0000000	1.000	1.000	83/10/06	86/10/02
34576	2CHLOROE	THYLVINY TOTWUG/L	WATER	K	3	1.000000	.0000000	.0000000	1.000	1.000	83/10/06	83/10/26
34699	T1,3-DCP	TOT WAT UG/L	WATER	K	4	.2000000	.0000000	.0000000	.200	.200	83/10/06	86/10/02
34704	C1,3-DCP	TOT WAT UG/L	WATER	K	4	.2000000	.0000000	.0000000	.200	.200	83/10/06	86/10/02
39180	TRICHLOR	ETHYLENE TOT UG/L	WATER	K	4	.2000000	.0000000	.0000000	.200	.200	83/10/06	86/10/02
70300	RESIDUE	DISS-180 C MG/L	WATER		4	322.5000	4491.700	67.02000	420	270	78/10/25	82/06/29
71900	MERCURY	HG,TOTAL UG/L	WATER		3	.3933300	.0006337	.0251740	.4	.4	78/10/25	78/10/26
				K	1	.1000000			.1	.1	82/06/29	82/06/29
				TOT	4	.3200000	.0219340	.1481000	.4	.1	78/10/25	82/06/29
74041	WQF	SAMPLE UPDATED	WATER		2	865670.0	41943000	6476.400	870206	861125	86/10/02	86/10/02
77093	C-1,2DCE	TOTAL UG/L	WATER	K	4	.2000000	.0000000	.0000000	.200	.200	83/10/06	86/10/02
77134	M-XYLENE	TOTAL UG/L	WATER	K	4	.5000000	.0000000	.0000000	.500	.500	83/10/06	86/10/02
77135	O-XYLENE	TOTAL UG/L	WATER	K	3	.5000000	.0000000	.0000000	.500	.500	83/10/06	83/10/26
77166	2,3DCLPR	TOTAL UG/L	WATER	K	4	.2000000	.0000000	.0000000	.200	.200	83/10/06	86/10/02
77168	1,1DCLPR	TOTAL UG/L	WATER	K	4	.2000000	.0000000	.0000000	.200	.200	83/10/06	86/10/02
77173	1,3DCLPR	TOTAL UG/L	WATER	K	3	3.000000	.0000000	.0000000	3.000	3.000	83/10/06	83/10/26
77223	IPROPBNZ	TOTAL UG/L	WATER	K	4	.6250000	.0625000	.2500000	1.000	.500	83/10/06	86/10/02
77443	1,2,3TCP	TOTAL UG/L	WATER	K	3	2.000000	.0000000	.0000000	2.000	2.000	83/10/06	83/10/26
77562	1112TCLE	TOTAL UG/L	WATER	K	3	.2000000	.0000000	.0000000	.200	.200	83/10/06	83/10/26
77596	DBRMETHA	TOTAL UG/L	WATER	K	4	1.000000	.0000000	.0000000	1.000	1.000	83/10/06	86/10/02
77651	1,2DBRET	TOTAL UG/L	WATER	K	4	.8750000	.0625000	.2500000	1.000	.500	83/10/06	86/10/02
77652	112C122F	TOTAL UG/L	WATER	K	1	.2000000			.200	.200	86/10/02	86/10/02
78109	ALLYLCLR	TOT WH W UG/L	WATER	K	4	.5000000	.0000000	.0000000	.50	.50	83/10/06	86/10/02
78110	DICLACNI	TOT WH W UG/L	WATER	K	3	.5000000	.0000000	.0000000	.50	.50	83/10/06	83/10/26
78121	P-XYLEN+	O-XYLEN TOT UG/L	WATER	K	4	.5000000	.0000000	.0000000	.50	.50	83/10/06	86/10/02
81501	PENTACL	ETHANE TOT UG/L	WATER	K	3	2.000000	.0000000	.0000000	2.000	2.000	83/10/06	83/10/26
81552	ACETONE	TOT UG/L	WATER	K	4	12.50000	25.00000	5.000000	20.000	10.000	83/10/06	86/10/02
81576	DIETHYL	ETHER TOT UG/L	WATER	K	4	1.000000	.0000000	.0000000	1.000	1.000	83/10/06	86/10/02
81595	MTH ETH	KETONE TOT UG/L	WATER	K	4	5.000000	.0000000	.0000000	5.000	5.000	83/10/06	86/10/02
81596	MTHISOBU	KETONE TOT UG/L	WATER	K	4	1.250000	.2500000	.5000000	2.000	1.000	83/10/06	86/10/02
81607	TETRAHYD	FURAN TOT UG/L	WATER	K	4	6.250000	6.250000	2.500000	10.000	5.000	83/10/06	86/10/02
81611	TRICL	TRIFLETH TOT UG/L	WATER	K	4	.5000000	.0000000	.0000000	.500	.500	83/10/06	86/10/02
82368	CALCIUM	AS CACO3 DIS MG/L	WATER		3	196.6700	1433.400	37.86000	240.0000	170.0000	78/10/25	78/10/26

4 TOTAL STATIONS PROCESSED

PARAMETER	MEDIUM	RMK	NUMBER	MEAN	VARIANCE	STAN DEV	MAXIMUM	MINIMUM	BEG DATE	END DATE
82369 MGNSIUM AS CACO3 DIS MG/L	WATER		3	109.6700	696.3500	26.38800	140.0000	91.9995	78/10/25	78/10/26
84000 GEOLOGIC AGE CODE	WATER	TXT	4	TEXT	TEXT	TEXT	TEXT	TEXT	76/01/01	76/01/01
84001 AQUIFER NAME CODE	WATER	TXT	4	TEXT	TEXT	TEXT	TEXT	TEXT	76/01/01	76/01/01
84002 CODE GENERAL REMARKS	WATER	TXT	12	TEXT	TEXT	TEXT	TEXT	TEXT	78/10/25	86/10/02

STORET RETRIEVAL DATE 85/05/07

440400092451601 1071616CCDC1 215847 GWQ0026
44 03 59.0 092 45 15 8 2
AQF: ST. PETER SANDSTONE 364STPR
27039 MINNESOTA DODGE
MAJOR BASIN: UPPER MISS 070341
MINOR BASIN: LOWER UPPER MISS RIVER
21MINNG 780816 07040004
0000 FEET DEPTH CSN-RSP 0475368-0870954

/TYPA/MUN/INTAKE/AMBNT/WELL

DATE FROM TO	TIME OF DAY	DEPTH FEET	00425 HCO3 ALK CACO3 MG/L	00900 TOT HARD CACO3 MG/L	00940 CHLORIDE TOTAL MG/L	00945 SULFATE SO4-TOT MG/L	00929 SODIUM NA,TOT MG/L	00937 PTSSIUM K,TOT MG/L	00951 FLUORIDE F,TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P
78/03/23	14 00		290	310	1					0.300K	0.02	0.004
83/10/06	13 50		280	320	0.5K	47	4.00	2.30			0.01K	

DATE FROM TO	TIME OF DAY	DEPTH FEET	T	00680 ORG C C MG/L	00340 COD HI LEVEL MG/L	32730 PHENOLS TOTAL UG/L	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	31679 FECSTREP MF M-ENT /100ML	00500 RESIDUE TOTAL MG/L	00505 RESIDUE TOT VOL MG/L	70300 RESIDUE DISS-180 C MG/L	01002 ARSENIC AS,TOT UG/L
78/03/23	14 00			1.0K			2K	2K	9K		120	350	
83/10/06	13 50			1.3			2						
83/10/27	16 20						2K						

DATE FROM TO	TIME OF DAY	DEPTH FEET	01007 BARIUM BA,TOT UG/L	01022 BORON B,TOT UG/L	01027 CADMIUM CD,TOT UG/L	00910 CALCIUM CACO3 MG/L	01034 CHROMIUM CR,TOT UG/L	01042 COPPER CU,TOT UG/L	01045 IRON FE,TOT UG/L	01051 LEAD PB,TOT UG/L	00920 MGNSIUM CACO3 MG/L	01055 MANGNESE MN UG/L
78/03/23	14 00				0.02	200.0	1		450	1	110.0	54.0
83/10/06	13 50					210.0			1300		110.0	50.0

DATE FROM TO	TIME OF DAY	DEPTH FEET	71900 MERCURY HG,TOTAL UG/L	01067 NICKEL NI,TOTAL UG/L	01147 SELENIUM SE,TOT UG/L	00956 SILICA TOTAL MG/L	01092 ZINC ZN,TOT UG/L
78/03/23	14 00		0.1K	2K			45

STORET RETRIEVAL DATE 85/05/07

/TYPA/MUN/INTAKE/AMBNT/WELL

440400092451601 1071616CCDC1 215847 GWQ0026
44 03 59.0 092 45 15.8 2
AQF: ST. PETER SANDSTONE 364STPR
27039 MINNESOTA DODGE
MAJOR BASIN: UPPER MISS 070341
MINOR BASIN: LOWER UPPER MISS RIVER
21MINNG 780816 07040004
0000 FEET DEPTH CSN-RSP 0475368-0870954

DESCRIPTION

STATION ESTABLISHED BY THE MINNESOTA POLLUTION CONTROL AGENCY IN 1978 AS PART OF A GROUND WATER QUALITY MONITORING PROGRAM.

NAME: CITY OF MANTORVILLE WELL #1; FIRE STATION

M.ADDRESS: CITY CLERK'S OFFICE, MANTORVILLE, MN 55955

DIRECTIONS: 5TH STREET IN MANTORVILLE. WELL LOCATED JUST SOUTH OF FIRE STATION; SAMPLED FROM INSIDE FAUCET ON E END OF BUILDING.

WELL DATA(OWNERSHIP): CITY WELL USE: WITHDRAW YEAR CONSTR: 1959

DEPTH FT: 181 LAND SURF DATUM FT: 1125 WATER USE: PS STANDBY, FIRE

CASING(FT CASED): 155 DIAM INCHES: 8 MATERIAL: STEEL

OBSERVATIONS: SEE GROUND WATER MONITORING PHOTO LOG FOR THE EXACT SITE LOCATION. PARTIAL WELL LOG AVAILABLE. SLIGHT IRON ODOR 831006.

QUAD: DODGE CENTER 7.5'

DATE FROM TO	TIME OF DAY	DEPTH FEET	84002 CODE GENERAL REMARKS	00008 LAB IDENT. NUMBER	00010 WATER TEMP CENT	00136 SAMPLE TEMP AT LAB DEGC	00400 PH SU	00403 LAB PH SU	00094 CNDUCTVY FIELD MICROMHO	00095 CNDUCTVY AT 25C MICROMHO	00431 T ALK FIELD MG/L	00410 T ALK CACO3 MG/L
78/03/23	14 00		RDM1		9.7		7.10	7.5	591	600		290
83/10/06	13 50		RDM1	125714	10.5	2.00000	6.70	7.3	564		280	280
83/10/27	16 20		RDM1	125754		1.50000						
84/01/26	13 55		ORG	36424								

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MND	981961873

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
HADER GROUND WATER CONTAMINATION	NE 1/4 SEC. 5, T110N, R16W

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
MINNEOLA TOWNSHIP	MN	55027	GOODHUE	049	01

09 COORDINATES: LATITUDE 44° 22' 30.0" LONGITUDE 092° 45' 00.0"

10 TYPE OF OWNERSHIP (Check one): ☐ A PRIVATE ☐ B FEDERAL ☐ C STATE ☐ D COUNTY ☐ E MUNICIPAL ☒ F OTHER Private property in rural/agricultural area ☐ G UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION: 6 / 1 / 87 (MONTH DAY YEAR)

02 SITE STATUS: ☐ ACTIVE ☐ INACTIVE N/A

03 YEARS OF OPERATION: BEGINNING YEAR / ENDING YEAR ☒ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply): ☐ A EPA ☐ B EPA CONTRACTOR (Name of firm) ☐ C. MUNICIPAL ☐ D MUNICIPAL CONTRACTOR (Name of firm) ☒ E. STATE ☐ F. STATE CONTRACTOR (Name of firm) ☐ G OTHER (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO
BECKY LOFGREN	PROJECT MANAGER	MPCA	(612) 296-7391

09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO
SHAWN RUOTSINOJA	ASSIS. PROJECT MANAGER	MPCA	(612) 296-7783
SUSAN PRICE	HYDROLOGIST	MPCA	(612) 297-1796
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
non responsive [redacted]			
			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one): ☒ PERMISSION ☐ WARRANT

18 TIME OF INSPECTION: 3-29-88 to 3-31-88, 8:00 AM – 5:00 PM

19 WEATHER CONDITIONS: SUNNY AND COOL

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO
SUSAN PRICE	MN POLLUTION CONTROL AGENCY (MPCA)	(612) 297-1796

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO	08 DATE
BECKY LOFGREN	MPCA		(612) 296-7391	/ / (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MND	981961873

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- ☐ A SOLID
- ☐ B POWDER FINES
- ☐ C SLUDGE
- ☐ D OTHER _____ (Specify)
- ☐ E SLURRY
- ☒ F LIQUID
- ☐ G GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS _____

CUBIC YARDS _____

NO OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

- ☒ A TOXIC
- ☒ B CORROSIVE
- ☐ C RADIOACTIVE
- ☒ D PERSISTENT
- ☐ E SOLUBLE
- ☐ F INFECTIOUS
- ☐ G FLAMMABLE
- ☐ H IGNITABLE
- ☐ I HIGHLY VOLATILE
- ☐ J EXPLOSIVE
- ☐ K REACTIVE
- ☐ L INCOMPATIBLE
- ☐ M NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS	UNKNOWN		

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
MES	Aluminum	7429905		32100	ug/l (ppb)
	Arsenic	7440382		8.4	
	Barium	7440393		91.5	
	Calcium	7440702		167000	
	Chromium	7440473		11.0	
	Cobalt	—		113	
	Copper	7440508		27.4	
	Iron	NA		236000	
	Lead	7439921		19.9	
	Magnesium	7439954		47400	
	Manganese	7439965		1670	
	Nickel	7440020		434	
	Potassium	7440097		5660	
	Sodium	7440235		66680	
	Vanadium	7440622		25.8	
	Zinc	7440666		4120	
	Sulfate	—		890	

V. FEEDSTOCKS (See Appendix for CAS numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS	N/A		FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

MPCA Hader GW Contamination Files.

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MND	981961873

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. GROUNDWATER CONTAMINATION — 02 [ ] OBSERVED (DATE _____) — [X] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 473 — 04 NARRATIVE DESCRIPTION

The elevated concentrations of metals in the residential well water appears to be a naturally occurring problem. The geology of the area and the possibility of iron bacteria in the well could be impacting the quality of the water. No contaminant source has been identified through the site inspection process

01 [X] B. SURFACE WATER CONTAMINATION — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

Numerous small streams and creeks flow through the Site and are used primarily by livestock. However, no source for a release of contaminants has been identified, therefore, surface water contamination is not of concern.

01 [X] C. CONTAMINATION OF AIR — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

There is no documentation of air contamination and there is no potential for air contamination at the Site.

01 [X] D. FIRE/EXPLOSIVE CONDITIONS — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

Fire and explosive conditions do not exist at this site.

01 [X] E. DIRECT CONTACT — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

No source of the contamination has been identified. The elevated levels of metals appear to be a naturally occurring problem, therefore direct contact is not possible.

01 [X] F. CONTAMINATION OF SOIL — 02 [ ] OBSERVED (DATE _____) — [X] POTENTIAL — [ ] ALLEGED
03 AREA POTENTIALLY AFFECTED _____ (ACRES) — 04 NARRATIVE DESCRIPTION

No soil samples were taken because of the large area of the Site (approximately 24 square miles) and no source of the contamination could be identified.

01 [X] G. DRINKING WATER CONTAMINATION — 02 [X] OBSERVED (DATE 3/29-31/88) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 473 — 04 NARRATIVE DESCRIPTION

Numerous residential wells were sampled during the site inspection. Water from the residential wells show elevated levels of metals - nickel in particular. The ground water in the area is classified as a "calcium-magnesium bicarbonate type". High metal concentrations may be due to the geology of the area and possibly iron bacteria.

01 [X] H. WORKER EXPOSURE/INJURY — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
03 WORKERS POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

Contamination problem is with residential wells. No workers are "on-site".

01 [X] I. POPULATION EXPOSURE/INJURY — 02 [ ] OBSERVED (DATE _____) — [X] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ — 04 NARRATIVE DESCRIPTION

The only possibility of exposure is through the drinking water.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MND	981961873

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 [X] J DAMAGE TO FLORA — 02 [ ] OBSERVED (DATE _____) [ ] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION
Damage to flora has not been documented and no damage was seen during the site inspection.

01 [■] K DAMAGE TO FAUNA — 02 [ ] OBSERVED (DATE _____) [ ] POTENTIAL [■] ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species)
Local farmers allege that livestock have died from drinking "bad" water. There is no documented proof of this claim.

01 [X] L CONTAMINATION OF FOOD CHAIN — 02 [ ] OBSERVED (DATE _____) [ ] POTENTIAL [X] ALLEGED
04 NARRATIVE DESCRIPTION
SEE K. ABOVE

01 [X] M UNSTABLE CONTAINMENT OF WASTES (Spills, Runoff, Standing liquids, Leaking drums) — 02 [ ] OBSERVED (DATE _____) [ ] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION
There is no evidence of hazardous waste on-site.

01 [X] N DAMAGE TO OFFSITE PROPERTY — 02 [ ] OBSERVED (DATE _____) [X] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION
Other offsite residential wells may have the same problem with elevated metal levels.

01 [X] O CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 [ ] OBSERVED (DATE _____) [ ] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION
Sewer and storm drains are not in the area of concern. This is a rural area with septic systems.

01 [■] P ILLEGAL/UNAUTHORIZED DUMPING — 02 [ ] OBSERVED (DATE _____) [ ] POTENTIAL [■] ALLEGED
04 NARRATIVE DESCRIPTION
An unpermitted dump had been operating from the early 1970s through 1980 in an abandoned quarry approximately 1½ miles northwest of the Site. This dump is being investigated through a site inspection on the Hader Dump.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS
NONE

III. TOTAL POPULATION POTENTIALLY AFFECTED _____

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)
MPCA Hader GW Contamination File

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MN	D981961873

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☐ A NPDES				
☐ B UIC				
☐ C AIR				
☐ D RCRA				
☐ E RCRA INTERIM STATUS				
☐ F SPCC PLAN				
☐ G STATE (Specify)				
☐ H. LOCAL (Specify)				
☐ I OTHER (Specify)				
☒ J NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☐ A. SURFACE IMPOUNDMENT	N/A	
☐ B PILES		
☐ C DRUMS, ABOVE GROUND		
☐ D TANK, ABOVE GROUND		
☐ E TANK, BELOW GROUND		
☐ F. LANDFILL		
☐ G LANDFARM		
☐ H OPEN DUMP		
☐ I OTHER (Specify)		

04 TREATMENT (Check all that apply) N/A

- ☐ A. INCENERATION
- ☐ B UNDERGROUND INJECTION
- ☐ C. CHEMICAL/PHYSICAL
- ☐ D. BIOLOGICAL
- ☐ E WASTE OIL PROCESSING
- ☐ F SOLVENT RECOVERY
- ☐ G. OTHER RECYCLING/RECOVERY
- ☐ H. OTHER (Specify)

05 OTHER

■ A. BUILDINGS ON SITE

Several Farmsteads

06 AREA OF SITE

15360 (Acres)

07 COMMENTS

IV. CONTAINMENT N/A

01 CONTAINMENT OF WASTES (Check one)

☐ A ADEQUATE, SECURE ☐ B. MODERATE ☐ C. INADEQUATE, POOR ☐ D INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC

N/A

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE ☐ YES ■ NO

02 COMMENTS

VI. SOURCES OF INFORMATION (Cite specific references e g state files sample analysis, reports)

MPCA Hader GW Contamination File

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MN	D981961873

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)

	SURFACE	WELL
COMMUNITY	A ☐	B ☐
NON-COMMUNITY	C ☐	D ☒

02 STATUS

ENDANGERED	AFFECTED	MONITORED
A ☐	B. ☐	C. ☐
D ☐	E ☒	F. ☐

03 DISTANCE TO SITE

A _____ (mi)
B _____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☒ A ONLY SOURCE FOR DRINKING
☐ B DRINKING (Other sources available) COMMERCIAL INDUSTRIAL, IRRIGATION (No other water sources available)
☐ C COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available)
☐ D NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER 3.8 x 130 = 494

03 DISTANCE TO NEAREST DRINKING WATER WELL 0 (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
16 (ft)	North	16 (ft)	150 (gpd)	☐ YES ☒ NO

09 DESCRIPTION OF WELLS (Including usage, depth, and location relative to population and buildings)

All wells are open-hole to bedrock (Prairie du Chien and Jordan) with the exception of 1 surficial well.

10 RECHARGE AREA

☒ YES ☐ NO

COMMENTS: Recharge area for Cannon River Watershed

11 DISCHARGE AREA

☐ YES ☒ NO

COMMENTS:

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☐ A. RESERVOIR, RECREATION DRINKING WATER SOURCE
☐ B IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES
☐ C. COMMERCIAL, INDUSTRIAL
■ D. NOT CURRENTLY USED — Occasionally used by livestock for drinking

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME.	AFFECTED	DISTANCE TO SITE
Belle Creek	☐	1.5 (mi)
Zumbro River	☐	4.0 (mi)
	☐	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A 141 NO OF PERSONS	B 211 NO OF PERSONS	C 494 NO OF PERSONS

02 DISTANCE TO NEAREST POPULATION 0 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE 55

04 DISTANCE TO NEAREST OFF-SITE BUILDING 0 (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site e g rural village densely populated urban area)

Minneola and Belle Creek townships are sparsely populated areas in Goodhue county. The land is used primarily for agricultural purposes.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION
01 STATE: MN
02 SITE NUMBER: D981961873

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A $10^{-6} - 10^{-8}$ cm/sec ☐ B $10^{-4} - 10^{-6}$ cm/sec ☒ C $10^{-4} - 10^{-3}$ cm/sec ☐ D GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☐ A IMPERMEABLE (Less than 10^{-6} cm/sec) ☐ B RELATIVELY IMPERMEABLE ($10^{-4} - 10^{-6}$ cm/sec) ☒ C RELATIVELY PERMEABLE ($10^{-2} - 10^{-4}$ cm/sec) ☐ D VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH
35 (ft)	N/A (ft)	N/A

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
-3 (in)	2.45 (in)	5 %	VARIES DUE TO LARGE AREA	5-7 %

09 FLOOD POTENTIAL

SITE IS IN N/A YEAR FLOODPLAIN

10 ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE: A N/A (mi)

OTHER: B BELLE CREEK .76 (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

N/A (mi)

ENDANGERED SPECIES _____

13 LAND USE IN VICINITY

DISTANCE TO

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS, NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AGRICULTURAL LANDS: AG LAND
A N/A (mi)	B 0 (mi)	C. 0 (mi)	D 24 sq. (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

Site is hummocky farmland over 24 square miles in area.

VII. SOURCES OF INFORMATION (Cite specific references e.g., state files, sample analysis, reports)

MPCA Hunter Groundwater Contamination File

Water Resources of the Cannon River Watershed, Southeastern Minnesota, Anderson, H.W. et.al. USGS 1974

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MN	D981961873

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER	10	S-Cubed (Organic), ENSECO/Rocky Mtn. Analy. (Inorganic), Post Buckley Schuh & Jernigan (SAS)	
SURFACE WATER	0		
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL			
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
pH	used to stabilize well prior to sampling
Temperature	
Specific Conductivity	

IV. PHOTOGRAPHS AND MAPS

01 TYPE ■ GROUND ☐ AERIAL

02 IN CUSTODY OF MN POLLUTION CONTROL AGENCY - SITE ASSESSMENT UNIT
(Name of organization or individual)

03 MAPS ■ YES ☐ NO

04 LOCATION OF MAPS MN POLLUTION CONTROL AGENCY

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

MPCA Hadley GW Contamination File

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MN	0981961873

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P O Box RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P O Box RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P O Box RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P O Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

PARENT COMPANY (If applicable)

08 NAME	09 D+B NUMBER
10 STREET ADDRESS (P O Box RFD #, etc.)	11 SIC CODE
12 CITY	13 STATE / 14 ZIP CODE

08 NAME	09 D+B NUMBER
10 STREET ADDRESS (P O Box RFD # etc.)	11 SIC CODE
12 CITY	13 STATE / 14 ZIP CODE

08 NAME	09 D+B NUMBER
10 STREET ADDRESS (P O Box RFD # etc.)	11 SIC CODE
12 CITY	13 STATE / 14 ZIP CODE

08 NAME	09 D+B NUMBER
10 STREET ADDRESS (P O Box RFD #, etc.)	11 SIC CODE
12 CITY	13 STATE / 14 ZIP CODE

III. PREVIOUS OWNER(S) (List most recent first)

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P O Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P O Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P O Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

IV. REALTY OWNER(S) (If applicable list most recent first)

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P O Box RFD # etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P O Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P O Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
MN	D981961873

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME	02 D+B NUMBER
N/A	

03 STREET ADDRESS (P O Box RFD #, etc)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER

OPERATOR'S PARENT COMPANY (If applicable)

10 NAME	11 D+B NUMBER
N/A	

12 STREET ADDRESS (P O Box RFD # etc)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

III. PREVIOUS OPERATOR(S) (List most recent first provide only if different from owner)

01 NAME	02 D+B NUMBER
N/A	

03 STREET ADDRESS (P O Box RFD # etc)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

10 NAME	11 D+B NUMBER
N/A	

12 STREET ADDRESS (P O Box, RFD # etc)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P O Box, RFD # etc)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P O Box, RFD # etc)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P O Box, RFD # etc)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P O Box RFD # etc)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

IV. SOURCES OF INFORMATION (Cite specific references e g state files sample analysis reports)

MPCA Site Inspection

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MN	D981961873

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
N/A	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
N/A			
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
N/A			
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

MPCA Site Inspection

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MN	D981961873

II. PAST RESPONSE ACTIVITIES

01 ■ A. WATER SUPPLY CLOSED — 02 DATE 9-2-87 — 03 AGENCY MN DEPT. OF HEALTH
04 DESCRIPTION Discontinued use of their water for drinking and food preparation was advised for 3 residents due to elevated lead and nickel levels. The drinking water advisories still allowed the water to be used for bathing, dishwashing, etc.

01 ■ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE 7-28-87 — 03 AGENCY MPCA
04 DESCRIPTION Bottled water was supplied to 3 residents in the area due to Minnesota Department of Health analytical results showing elevated levels of lead and nickel above recommended Allowable Limits.

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION N/A

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION N/A

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION N/A

01 ☐ F. WASTE REPACKAGED — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION N/A

01 ☐ G. WASTE DISPOSED ELSEWHERE — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION N/A

01 ☐ H. ON SITE BURIAL — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION N/A

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION N/A

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION N/A

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION N/A

01 ☐ L. ENCAPSULATION — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION N/A

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION N/A

01 ☐ N. CUTOFF WALLS — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION N/A

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION N/A

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION N/A

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION N/A

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MN	D981961873

II PAST RESPONSE ACTIVITIES *(Continued)*

01 ☐ R BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION N/A

01 ☐ S CAPPING/COVERING — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION N/A

01 ☐ T. BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION N/A

01 ☐ U. GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION N/A

01 ☐ V BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION N/A

01 ☐ W. GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION N/A

01 ☐ X FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION N/A

01 ☐ Y. LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION N/A

01 ☐ Z. AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION N/A

01 ☐ 1. ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION N/A

01 ☐ 2. POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION N/A

01 ☐ 3 OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION N/A

III. SOURCES OF INFORMATION *(Cite specific references, e.g. state files, sample analysis, reports)*

MPCA Site Inspection

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MN	D981961873

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☐ YES ☒ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

N/A

III. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

MPCA GWSW Files

EPA FORM 2070-13 (7-81)

IMMEDIATE REMOVAL ACTION CHECK SHEET

	High	Moderate	Low
Fire and Explosion Hazard			
Flammable Materials			X
Explosives			X
Incompatible Chemicals			X
Direct Contact With Acutely Toxic Chemicals			
Site Security			X
Leaking Drums or Tanks			X
Open Lagoons or Pits			X
Materials on Surface			X
Proximity of Population			X
Evidence of Casual Site Use			X
Contaminated Water Supply			
Exceeds 10 Day Snarl			X
Gross Taste or Odors	X		
Alternate Water Available			X
Potential Contamination			X
Is the site abandoned, active, or inactive? Inactive			

Comments: NFRAP

SHP

228320

(184)

2 DIFFERENT TILLERS
C.J. AND OBERT
ASK IN HADER NIP.

NIP

David Langworthy

Tiller, Obert, Hader, Minn Mar 61

103 ft deep 6" well
38 ft to water 35 ft to limestone
Cased 45 ft with 6 in.
Cased 10 ft into Galena 45' with 6" pipe
pump set 53'

8000 1-35 Lunch
OGAL 35-103 Galena T/1155

No Tillers in Pl.

Agrifer
CGAL-OGAL

Ask in Hader

CODED

11-16-31 A
SL 1190
70-A

neighbor
70A

open-hole

ATION OF WELL
Goodhue

WATER WELL RECORD
Minnesota Statutes 156A.111 (3)

for Water Sample

non responsive

[redacted]

FORMATION DESCRIPTION	COLOR	FORMATION	FROM	TO
QUUU clay			0	24
shale			24	47
QTUU gravel & broken limerock			47	53
OERL limerock	T/1157		53	115
OPPL shale	T/1095		115	217
OSTP sandrock	T/993		217	321
OPDC limerock	T/889		321	390

111-16-31 BDCDDA

EL- 1210 ± 5'

Aquifer 70-A
OPDC- OPDC

Owner

open hole

CODED

Use a second sheet if needed

15 REMARKS, ELEVATION, SOURCE OF DATA, etc

3☐ Test Well 6☐ Air Conditioning 9☐

7 CASING — HEIGHT Above/Below — HOLE DIAM

1☒ Black 4☐ Threaded
2☐ Galv 5☒ Welded
3☐ Plastic 6☐
Surface ____ ft
Drive Shoe? Yes ____ No ____

8 in to 346.5 ft Weight ____ lbs/ft
4 in to 342'4" ft Weight ____ lbs/ft
____ in to ____ ft Weight ____ lbs/ft

8 SCREEN — Or open hole from 342'4" ft to 390 ft

Make ____
Type ____ Dia ____
Slot/Gauge ____ Length ____
Set between ____ ft and ____ ft
____ ft and ____ ft
____ ft and ____ ft
FITTINGS

9 STATIC WATER LEVEL
290 ft 1☒ below land surface 2☐ above Date Measured ____

10 PUMPING LEVEL (below land surface)
____ ft after ____ hrs pumping ____ g.p.m.
____ ft after ____ hrs pumping ____ g.p.

11 WELL HEAD COMPLETION
1☒ Pitless adapter 2☐ Basement offset 3☒ At least 12" above grade

12 Well grouted?
☒ Yes ☐ No Cu Yds 1½
1☒ Neat Cement 2☐ Bentonite 3☐ ____
Depth from 0 ft to 342'4" ft
from ____ ft. to ____ ft

13 Nearest sources of possible contamination
____ feet ____ direction ____
Well disinfected upon completion? Yes☒ No☐

14 PUMP
Date Installed 1/16/78
☐ Not Installed
Manufacturer's Name Flint and Walling
Model Number ____ HP 1 Volts ____
Length of drop pipe 263 ft capacity ____ g.p.m.
Material of drop pipe galv. steel
Type 1☒ Submersible 3☐ L.S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐ ____

16 WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief

Cannon Well Drilling — License Business Name — 25240 License No.

Address RR1 Box 266A Cannon Falls, Mn.

Signed ____ Authorized Representative Date 7/6/7

Frank Otto — Name of Driller Date 12/16/

GEOLOGICAL SURVEY COPY 162712

6/74 30M
7/76 30M
7/78 30M

Field Checked 111-16-34

111-16-34 [illegible]

Exist. 1201

[illegible] 64F 218799

GK

Goodhue

HANSON, HAROLD 111-16-34-BBA 7-67

Belle Creek Township

Goodhue, Mn.

ALL 1200

336' well

281' cased 6"

234½' to water

LOG:

QUVU	0-40	Drift DRFT	T/1161
ODCR	40-125	Shale SHLE	
OPVL	125-141	Platteville LMSN	
OGWD	141-150	Glenwood SHLE	
OSTP	150-263	St.Peter SNDS	T/1051
OPDC	263-335	Shakopee DLMT	T/938

Hardness--19ppm; iron 10''m; pH 7.0 neutral

Aquifer

OPDC - OPDC

CODED

Minnesota WELL LOG

CANNON WELL COMPANY

Cannon Falls, Minn. 55009

Well Owner: non responsive [redacted]

Location: [redacted]

Date Completed: 12-14-73 Driller: Kay

Depth			Description of Formation
0	to	75	dirt + clay
75	to	220	sand rock
220	to	310	lime rock
	to		
	to		
	to		
	to		
	to		
	to		
	to		

SIZES AND MATERIALS USED

Top Casing Line: Inside Diameter 5 in. Wt. per ft. 15 lbs.

Depth 225 ft. in.

Any Reduced Casing Sizes S

Total Depth to bottom of Casing S ft. in.

Total Depth to bottom of Well ft. in.

Depth measured from: ground Water level:

Screened Well: Size of Screen: Diam. in. Length ft. Slot

Make of Screen Metal

Fittings S

Rock Well: Open Borehole 5 inches diam. ft. deep below casing

Test data: (gpm) (gph) ft. drawdown. Pumped for hrs.

Test Pump:

Tot. Len. of Setting:

NOTES:

Bella Creek WELL LOG

CANNON WELL COMPANY

Cannon Falls, Minn. 55009

Well Owner: non responsive [redacted]

Location: [redacted]

Date Completed: 6-12-71 Driller: john

Depth			Description of Formation
0	to	81	old well
81	to	107	lime-rock or sandrock
	to		
	to		
	to		
	to		
	to		
	to		
	to		
	to		

SIZES AND MATERIALS USED

Top Casing Line: Inside Diameter in. Wt. per ft. lbs.

Depth ft. in.

Any Reduced Casing Sizes 4

Total Depth to bottom of Casing 84 ft. in.

Total Depth to bottom of Well 107 ft. in.

Depth measured from: ground Water level:

Screened Well: Size of Screen: Diam. in. Length ft. Slot

Make of Screen Metal

Fittings

Rock Well: Open Borehole 4 inches diam. 25 ft. deep below casing

Test data: (gpm) (gph) ft. drawdown. Pumped for hrs.

Test Pump:

Tot. Len. of Setting:

NOTES: Redrilled to try and get rid of oil tast still bad.

Goodhue Minnesota

WELL LOG

CANNON WELL COMPANY

Cannon Falls, Minn. 55009

Well Owner: non responsive [redacted]

Location: [redacted]

Date Completed: 9-24-70 Driller: Bob Vaught

Depth			Description of Formation
0'	to	13'	Dirt & clay
13	to	15'	Limestone
15	to	95'	Blue clay
95	to	99'	Layered limestone & blue clay
99	to	113'	Limestone (very hard)
113	to	124'	Gray clay
124	to	146'	Gray sandrock
146	to	165'	Tan sandrock
165	to	188'	Yellow sandrock
188	to	210'	Tan sandrock

SIZES AND MATERIALS USED

Top Casing Line: Inside Diameter 5 in. Wt. per ft. 15 lbs.
Depth 245 ft. 6 in.

Any Reduced Casing Sizes --

Total Depth to bottom of Casing 245 ft. 6 in.

Total Depth to bottom of Well 260 ft. in.

Depth measured from: ground Water level: 180

Screened Well: Size of Screen: Diam. -- in. Length ft. Slot

Make of Screen --- Metal

Fittings ----

Rock Well: Open Borehole 5 inches diam. 15 ft. deep below casing

Test data: 12 (gpm) (gph) ft. drawdown. Pumped for 1 hrs.

Test Pump: 3/4 HP submersible

Tot. Len. of Setting: 200 ft.

NOTES:

WELL LOG

CANNON WELL COMPANY

Cannon Falls, Minn. 55009

Well Owner: non responsive [redacted]

Location:

Date Completed: Driller:

Depth			Description of Formation
0'	to	210'	on page 1
210	to	232'	Light gray sandrock
232	to	238'	Dark gray sandrock
238	to	239'	Brown limestone
239	to	240'	Gray sandrock
240	to	260'	Limestone
	to		
	to		
	to		
	to		

STATE OF MINNESOTA DEPARTMENT OF HEALTH

WATER WELL RECORD

Minnesota Statutes 1564.01-08

MINNESOTA UNIQUE WELL NO for Water Sample: 435190

non responsive

[redacted]

3 FORMATION LOG	COLOR	HARDNESS OF FORMATION	FROM	TO
Clay	Blue	Soft	0	60
Clay	Blue	Hard	60	180
Sand Rock	White	Hard	180	256
Lime Rock	Blue	Hard	256	280
Sand Rock	White	Med.	280	300

Use a second sheet if needed

7 REMARKS ELEVATION SOURCE OF DATA etc

_____ in to _____ ft Weight _____ lbs/ft 4 in to 300

_____ in to _____ ft Weight _____ lbs/ft _____ in to _____ ft

9 SCREEN

Make _____ Or open hole from 258 ft to 300 ft

Type _____ Dia _____

Slot/Gauze _____ Length _____ FITTINGS

Set between _____ ft and _____ ft

10 STATIC WATER LEVEL

140 ft ☒ below ☐ above land surface Date Measured 6-26-87

11 PUMPING LEVEL (below land surface)

200 ft after 2 hrs pumping 30 g p m

_____ ft after _____ hrs. pumping _____ g p m

12 HEAD WELL COMPLETION

1☒ Pitless adapter manufacturer _____ model _____

2☐ Basement offset 3☐ At least 12" above ground

4☐ Plastic casing protection _____

13 WELL GROUTED?

☒ Yes ☐ No

1☒ Neat Cement 2☐ Bentonite 3☐ _____

Grout material Neat from 0 to 258 ft cu yds 7½

14 NEAREST SOURCES OF POSSIBLE CONTAMINATION

75 feet N direction Sewer

Well disinfected upon completion? ☒ Yes ☐ No

15 PUMP

Date installed _____ ☒ Not installed

Manufacturer's name _____

Model number _____ HP _____ Volts

Length of drop pipe _____ ft capacity _____

Material of drop pipe _____

Type 1☐ Submersible 3☐ L S Turbine 5☐ Reciprocating

2☐ Jet 4☐ Centrifugal 6☐ _____

16 EXISTING WELLS

Unused well on property? ☐ Yes ☒ No

Abandoned ☐ Permanent ☐ Temporary ☐ Not sealed

18 WATER WELL CONTRACTORS CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief

KIMMES - BAUER, INC. 521

Licensee Business Name License No.

Address Hastings, Minnesota 55033

Signed [signature] Date _____

Authorized Representative

Les Anderson Date 6-26-87

Name of Driller

Minnesota Pollution Control Agency

December 29, 1988

Ms. Jeanne Griffin
U.S. Environmental Protection Agency
Waste Management Division
Program Support Section (5HR-11)
Remedial Response Branch
230 South Dearborn Street
Chicago, Illinois 60604

Dear Ms. Griffin:

Re: Minnesota Pollution Control Agency (MPCA) Submittal of Screening Site Inspection Reports
Preliminary Assessment/Site Inspection (PA/SI) Cooperative Agreement with the U.S. Environmental Protection Agency

Pursuant to the PA/SI Cooperative Agreement, MPCA staff hereby submit for your review and approval Screening Site Inspection Reports for the following four (4) potential hazardous waste sites:

Site Name	EPA Identification Number
1. FOLEY RR IMPROVEMENT PROJECT	MND981961659
2. HADER DUMP	MND981961865
3. HADER GROUND WATER CONTAMINATION	MND981961873
4. HOBART CORPORATION	MND068152768

If you have any comments or questions regarding these Screening Site Inspection Reports please contact me at 612/297-1793.

Sincerely,

Ronald R. Swenson

Ronald R. Swenson
Supervisor, Site Assessment Unit
Program Development Section
Ground Water and Solid Waste Division

RRS:

Enclosure

Phone:_____
520 Lafayette Road, St. Paul, Minnesota 55155
Regional Offices • Duluth/Brainerd/Detroit Lakes/Marshall/Rochester
Equal Opportunity Employer

cks.