Water Quality Assessment For The North Dakota National Guard Camp Grafton (South Unit), Eddy County, North Dakota: 2013

Prepared By
W.M. Schuh and M.L. Ginsbach
North Dakota State Water Commission

In Cooperation with
Kent Belland
North Dakota National Guard

ND Water Resource Investigation No. 56
Todd Sando, State Engineer

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ACKNOWLEDGMENT

The work presented in this report was accomplished through the leadership and assistance of National Guard Employees. Initial planning and organization, administrative oversight, and ongoing coordination and field support were supervised by Kent Belland, of the North Dakota National Guard Environmental Section. Outstanding on-site support was provided by Joel Cichos. The project was planned and implemented under the administration of Col. Steve Herda. Thanks also to North Dakota State Water Commission field sampling technician Dan McDonald who provided many hours of work in preparation and field work.

LIST OF ACRONYMS

CGS	Camp Grafton South Unit" facility
CPQL	Combat Pistol Qualification Range
DNT	Dinitrotoluene; an explosive chemmical
DOD	U.S. Department of Defense
DRO	Diesel-range organics
DWEL	"protective of adverse, non-cancer health effects, that assumes all of the contaminant is from a drinking water source."
EPA-MCL	The U.S. Environmental Agency Maximum Contaminant Level. Maximum permissible level of contaminant in water which is delivered to any user of a public water system.
GCEM	General C. Emerson Murray Ranges
GRO/BTEX	Gasoline-range organics / benzene, toluene, ethyl-benzene, xylene
HAL	Health Advisory Level
HMX	Cyclotetramethylene-tetranitramine; an explosive chemical
LOAEL	Lowest-observed-adverse effect level
MDL	Laboratory minimum detection level
MICLIC	Mine Clearing Line Charge
MPMG	Multiple Purpose Machine-Gun range
MRF	Modified Record Fire range
NOAEL	no-observed-adverse-effect-level
RDX	Cyclotrimethylenetrinitramine; an explosive chemical
RfD	"Reference Dose": an estimate of daily exposure to the human population that is likely to b e non-deleterious to human health over a lifetime.

LIST OF ACRONYMS (Continued)

SAR	Sodium-adsorption ratio
TDS	Total Dissolved Solids
TNT	Trinitrotoluene; an explosive chemical
TPH	Total petroleum hydrdocarbons
USEPA	U.S. Environmental Protection Agency
ZERO	Sighting range

Photo 1. Air-pressure lift used for evacuating wells used for general chemistry sampling.

Photo 2. Evacuating well using suction (screw) pump. (2013 sampling used an electric motor powered by the truck battery through an accessory connector in place of the gasoline engine shown.

EXECUTIVE SUMMARY

In May and June of 2013 the North Dakota National Guard and the North Dakota State Water Commission entered an agreement for a water quality inventory of the Camp Grafton South Military Reservation. The plan included sampling and analysis for general water chemistry, trace elements, and organic contaminants – the later of which included munitions and explosives residues, petroleum hydrocarbon residues, and pesticide residues. Water samples were collected in October of 2013 from wells specially constructed for this purpose in 1986 and 1993 and from surface waters located on the Reservation. Samples were planned to conform to areas of use.

Results indicated no significant changes in general chemistry of Reservation waters attributable to management and use. Nitrate levels were all below natural background levels and indicated negligible impact from land use. Aside from a couple of rare exceptions, trace element levels were below levels of environmental and toxicological concern and showed no indications of change due to CGS land use and management.

Trace elements indicated a slight increase in lithium in waters below the munitions and explosives ranges but the changes were slight and of no toxicological significance. Arsenic concentrations approaching or sometimes exceeding the EPA-MCL (Maximum Contaminant Level Standard, 10 μg/L) were also detected in about a third of the wells, mostly deeper wells, and in Lakes Coe and South Washington Lake. High arsenic has a natural source in the weathered Pierre Shale comprising part of the aquifer and boundary-material matrix and was present at substantially higher concentrations than present levels in early (pre-2000) sampling. It is considered likely that dilution of lake waters due to the wet climate shift of the last 20 years is the cause of the decrease in concentration.

There were not detections of pesticides (herbicides or insecticides) used on the Reservation. Earlier samplings (prior to 2001) had indicated trace amounts of picloram in some surface waters but there were no detections in recent years.

Organic samples for volatile, semi-volatile, nitroaromatics and nitramines, BTEX, diesel range organics, and gasoline range organics indicated the following detections in the areas of the firing and demolitions ranges: acetone, butyl-benzyl phthalate, benzyl alcohol, Bis(2-ethylhexyl) phthalate, carbon disulfide, pentaerythritol tetranitrate (PETN), and vinyl chloride. All detections were at very

low concentration near detection levels and were all below levels of toxicological concerns. Most are plasticizers likely associated with sample equipment such as tubing or well construction materials or solvents frequently used in laboratory equipment and container cleaning. Carbon disulfide was previously detected but is common in the environment and can be produced in the soil. The only known residue likely caused by Reservation land use was an explosive, PETN. The measured PETN concentrations were very low and were all below levels of toxicological concern. It is also known that PETN quickly degrades in the environment.

A general summary of results indicates there are no concentrations or trends of inorganic or organic chemicals attributable to Reservation land use that are of environmental or toxicological concern in any of the samplings to date. However, arsenic is naturally high and caution is warranted in using high-arsenic waters for applications (such as reverse osmosis) that would require the disposal of a concentrated filtrate. Filtrate in such exercises should be remixed with the filtered water for disposal at the natural concentration.

Well and sample site conditions warrant some attention. Brush needs to be cleared from almost all of the well sites. In addition, improved and reconstructed livestock guards should be installed to replace the damaged and aged barbed-wire fencing.

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INTRODUCTION

In May of 2013 the Water Appropriation Division of the North Dakota State Water Commission was contacted by the North Dakota National Guard regarding the possibility of a comprehensive water quality sampling for the Camp Grafton South Training Reservation (CGS) located in Eddy County North Dakota.[1] A preparatory meeting was held at the Fraine Barracks on May 29, 2013. A survey of recent CGS chemical use was provided by Kent Belland with the assistance of facility personnel.[2] Water Sampling was conducted on Oct. 7th through Oct. 16th. This report summarizes the findings of that sampling.

History of the Camp Grafton South Water Quality Monitoring Program

In 1986, at the request of the North Dakota National Guard, the North Dakota State Water Commission conducted an initial exploratory hydrologic investigation on the CGS facility, constructing two transects of well nests, labeled WS-1 in this report. An initial background description of the Cherry Lake aquifer (which underlies CGS) and the construction, placement and lithologies of well nests was published by Comesky (1989). For additional information on the Cherry Lake aquifer, the North Dakota County Study published by Trapp (1966B) can be consulted.

In 1992, at the request of the North Dakota National Guard, a comprehensive water quality monitoring plan for the CGS facility in Eddy County, North Dakota, was submitted to the North Dakota National Guard (Schuh 1992). The plan was designed to consider existing geologic and hydrologic information, current and future use patterns of the facility, objectives and goals for protection - including the sensitivity of resources to be protected, and the limitations of funding and resources available for implementing the plan. An attempt was also made to consider training objectives and resource conservation in a balanced manner, and to maximize the information obtainable from limited field data.

The initial sampling plan was laid out in two phases. Phase I consisted of the selection of appropriate surface water sites and the construction of appropriate additional wells for collecting water samples to test for organic contaminants (munitions and explosives residues, petroleum residues, and pesticide contamination). Phase I also included baseline water samples for appropriate contaminants and for basic water quality and trace elements on each of the selected sites. Phase I was implemented in 1992 and 1993. In 1994, a report was published describing the monitoring well network, the water sample

[1] Contact: Kent Belland, JFND-ENV. Cc: LTC Stephen Herda. E-mail contact - to W.M. Schuh, May 9, 2013.

[2] Contact: Kent Belland, JFND-ENV. E-mail contact - to W.M. Schuh, May 30, June 5, June 19, 2013.

collection plan, and results of the baseline samples collected for each of the potential contaminant groups sampled at CGS (Schuh 1994). Included in the 1994 publication were:

1. Well and sampling locations;
2. Well completion information, including lithologies, materials, construction methods, development, and cleaning procedures;
3. Sampling procedures, including well purging methods, sampling methods, and sample-handling methods and procedures;
4. Baseline data for basic water chemistry and trace elements from each newly constructed sample well;
5. Data for water quality and trace elements measured in wells constructed before Phase I; and
6. A brief analysis and interpretation of results.

Phase II consisted of a plan for ongoing periodic assessment of water quality at CGS. The provisions of the initial Phase II plan were designed to be flexible and to allow for modification as understanding of area hydrology and its effect on water quality increases. Ongoing assessments of CGS water quality were to be accomplished through periodic (three- to six-year interval) reevaluation of use of CGS and potential water contamination resulting from use patterns.

Since 1993 additional comprehensive samplings were conducted at approximate 5-year intervals in 1996, 2001, and 2006. Results for each sampling were reported by Schuh (1994, 1997, 2002, and 2007). All reports are available in PDF format at the North Dakota State Water Commission web site under Reports and Publications/Water Resources Investigations as WRI Numbers 27, 33, 37 and 40.[3] WRI No. 40 consisted of a review of climate, hydrology, sampling methods, and comprehensive review of all previous sample periods and results. The reader is referred to WRI NO. 40 for in depth discussion of these topics. An abbreviated discussion of well locations, construction and purpose, and methods will be provided in this report. An abbreviated discussion of previous results will be treated in this report within the context of comparison of current sample results with previous reported results.

[3] http://www.swc.nd.gov/4dlink9/4dcgi/GetSubCategoryRecord/Reports%20and%20Publications/Water%20Resource%20Investigations

LOCATION AND NUMBERING SYSTEM

The location and numbering system used in this report is based on the public land classification system used by the U.S. Bureau of Land Management. The system is illustrated in Figure 1. The first number denotes the township north of a base line, the second number denotes the range west of the fifth principal meridian, and the third number denotes the section in which the well or test hole is located. The letters A, B, C, and D designate, respectively, the northeast, northwest, southwest, and southeast quarter section, quarter-quarter section, and quarter-quarter-quarter section (10-acre tract). For example, well 149-063-4ADD is located in the SE 1/4 SE 1/4 NE 1/4 Sec. 4, T. 149 N., R. 63 W. Consecutive terminal numerals are added if more than one well or test hole is located within a 10 acre tract.

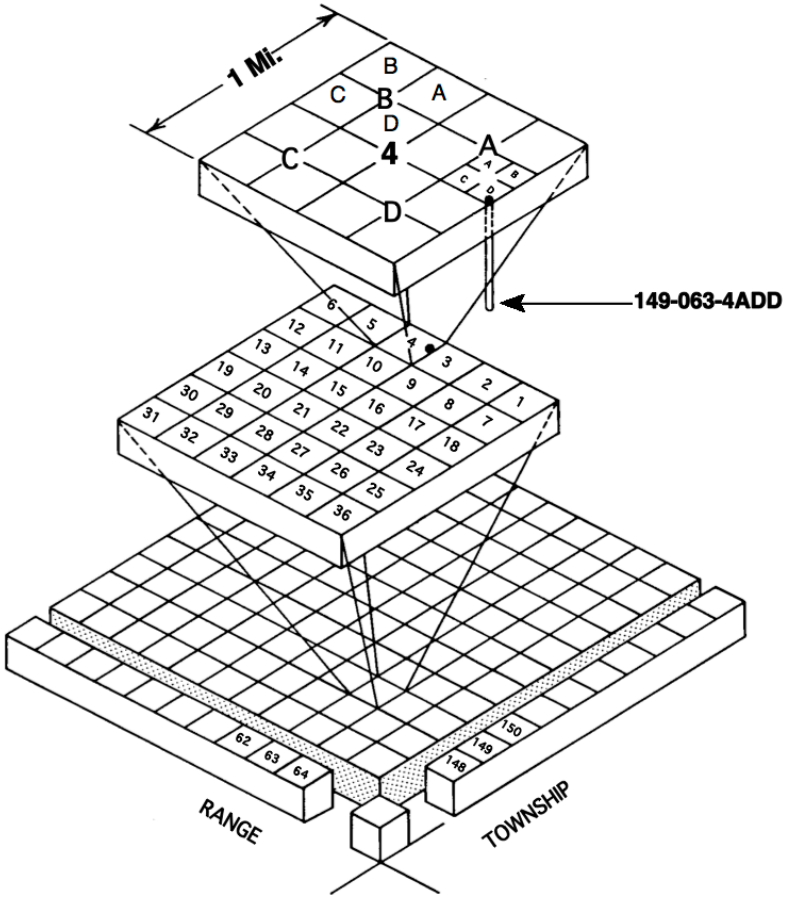

Figure 1. Location and numbering system used in this report (from the U.S. Bureau of Land Management).

LOCATION

CGS is located in Eddy County in east central North Dakota (Figure 2). The facility occupies portions of four townships, Lake Washington (149-063), Colvin (149-062), Paradise (148-062), and Cherry Lake (148-062). CGS lands are approximately bisected by State Highway 15, which runs east-west.

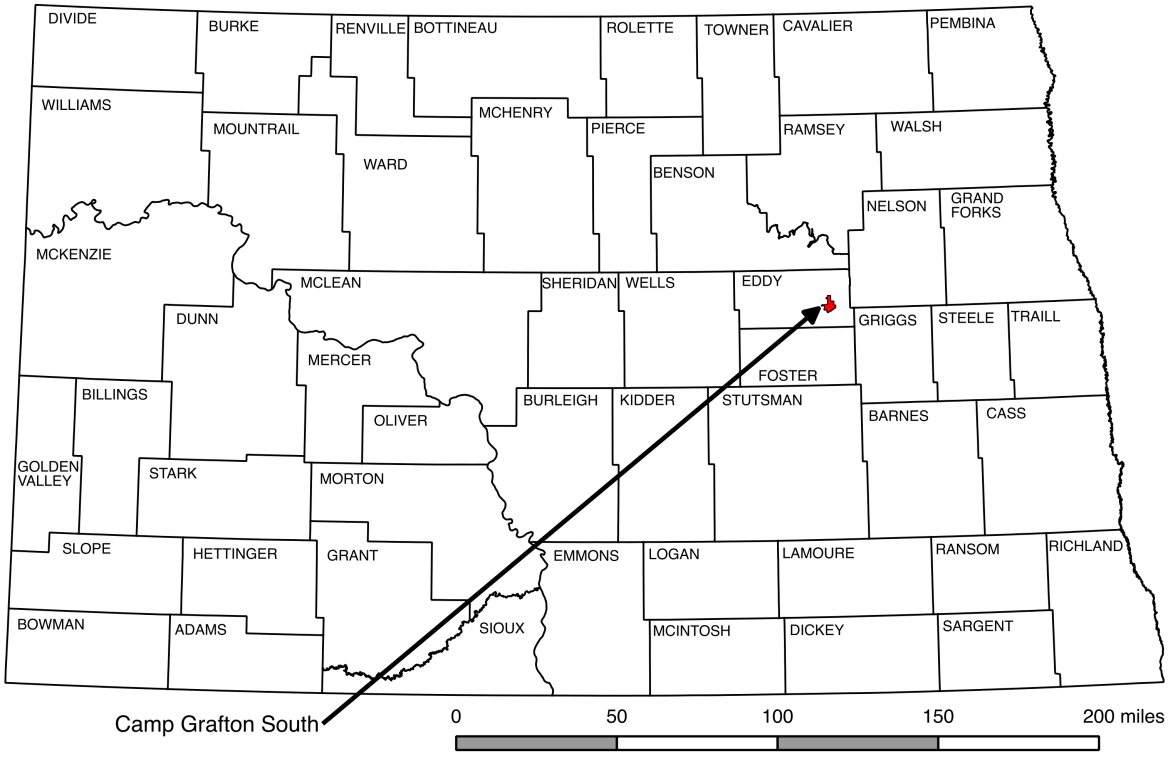

Figure 2. Location of Camp Grafton (South Unit) training reservation.

SAMPLE PLAN DESIGN

Objectives And Priorities

Objectives and priorities for the CGS water quality sampling plan were discussed in detail by Schuh (1994). In brief, priorities in designing the plan were:

Priority 1 - protection of groundwater and surface water exterior to CGS. The primary focus is on detection of contaminants migrating to regional, rather than local, flow systems, before they can substantially effect the regional resource.

Priority 2 - protection of the wildlife, such as migratory waterfowl, that inhabit the lakes and wetlands of CGS.

Priority 3 - protection of the local fresh-water supply.

Monitoring Plan Criteria

Factors considered in the water quality monitoring plan included: (1) The nature of local and regional surface drainage; (2) The nature of local and regional groundwater flow; (3) The disposition and use of water by others near the military reservation; (4) The sensitivity of specific water uses on and near the reservation to specific contaminants; and (5) Land use patterns on the military reservation. Consideration was also given to the desirability of having all major use areas of the reserve given sample representation

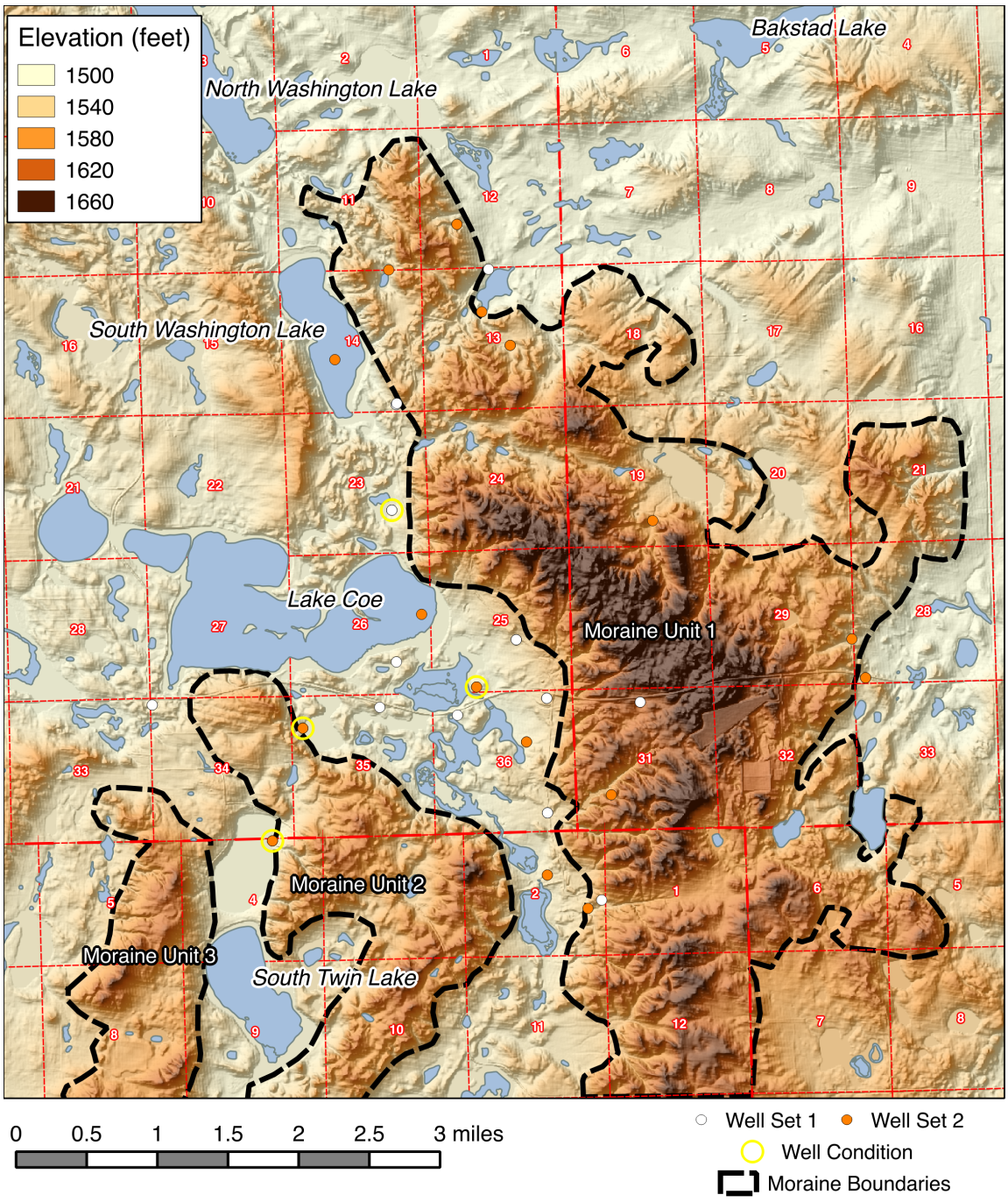

Figure 3. Location of WS-2 sample-well sites and surface water sampling sites in relation to moraine subunits and direction of groundwater flow

DESIGN, CONSTRUCTION AND USE OF WELL SITES

Water samples are collected from three basic sources on CGS. The three sample sources include two sets of sampling and monitoring wells, and a number of surface water sources that include two lakes, two springs, and one reservoir. Since the wet climatic shift which began in 1993, surface waters have expanded and encroached on some of the well sites, destroying some of them and making others inaccessible.

Well Set 1 (WS-1)

The first well set (labeled Well Set 1 or WS-1) was constructed by driller Gary Calheim under direction of Comeskey (1989), in mapping the Cherry Lake aquifer on CGS. This well set consists of 25 wells placed in nests of one to four wells at a total of 12 sites. Well placement was non-biased with respect to CGS use patterns, geology, and topography. Wells were placed at approximately evenly spaced intervals along two transects, one north to south and the other east to west. Well were constructed using 2-inch and 1.25-inch polyvinyl chloride (PVC) casing, and joints were bonded using solvent-weld cement containing methyl-ethyl ketone. WS-1 wells are protected from cattle by barbed wire fences but they do not have a protective cover (PC), nor are they locked and secured. Placement of these wells limits their usefulness for sampling contaminants from targeted land uses. Construction methods and security limitations also limit their usefulness for sampling organic contaminants (Parker et al. 1990; Sykes et al. 1986). However, both construction and placement methods render the WS-1 wells suited for sampling background inorganic water chemistry. In addition, these wells have the longest sampling record for basic water chemistry, dating to 1987. WS-1 wells are used for ongoing sampling of basic water chemistry and for piezometric readings. They may also be used for supplemental sampling of organic contaminants if needed for investigation of specific problems. Locations of WS-1 wells are summarized on Table 1 and illustrated on Figs. 3 and 4. Detailed hydrologic setting of well nests, lithologic logs for WS-1 wells, and initial water chemistry data from samples collected in 1987 are reported in Comeskey (1989). Locations of WS-1 wells and assessed well conditions as of the fall of 2013 are listed on Table 1 and generically illustrated on Figure 4.

Table 1. List and well and surface water sample locations. L, lake sampling site; R, reservoir sampling site; S, natural spring sampling site; W, well sampling site; WS-1, wells placed by Comeskey (1989); WS-2, wells placed by Schuh (1994); F/M, well flooded or missing in 2013.

Well Set	Site	SWC Well No.	Township N	Range W	Section	Location	Condition
WS-1		12024A	148	63	1	CBBC1	
WS-1		12024B	148	63	1	CBBC2	
WS-1		12024C	148	63	1	CBBC3	
WS-1		12020A	149	63	14	DACD1	
WS-1		12020B	148	63	14	DACD2	
WS-1		12020C	148	63	14	DACD3	
WS-1	*	12019A	149	63	23	ADBB1	F/M
WS-1	*	12019B	149	63	23	ADBB2	F/M
WS-1	*	12019C	149	63	23	ADBB3	F/M
WS-1		12017A	149	63	25	DBBC1	
WS-1		12017B	149	63	25	DBBC2	
WS-1		12017C	149	63	25	DBBC3	
WS-1		12017D	149	63	25	DBBB4	
WS-1		12025	149	63	26	DCA	
WS-1		12012	149	63	27	DDDC1	
WS-1		12015B	149	63	31	ABBC2	
WS-1		12015C	149	63	31	ABBC3	
WS-1		12026A	149	63	34	BBB1	
WS-1		12026B	149	63	34	BBB2	
WS-1		12011B	149	63	35	ABBD2	
WS-1		12014A	149	63	36	AACB1	
WS-1		12014B	149	63	36	AACB2	
WS-1		12014C	149	63	36	AACB3	
WS-1		12014D	149	63	36	AACB4	
WS-1		12023A	149	63	36	DDBBC1	
WS-1		12023B	149	63	36	DDBBC2	
WS-1		12023C	149	63	36	DDBC3	
WS-1		12021A	149	63	13	BAAB1	
WS-2	1	13104	149	62	28	CCC2	
WS-2	2	13105	149	62	29	DAD	
WS-2	3	Spring	148	63	2	DA	
WS-2	4	Reservoir	149	62	31	C	
WS-2	5	13098	149	63	36	ACA2	
WS-2	6*	13102	149	63	25	CDC2	F/M
WS-2	7	13087	148	63	2	ACA2	
WS-2	8	13091	149	62	19	DBD2	
WS-2	9	13089	149	63	13	DAA2	
WS-2	10	13093	149	63	12	CAC2	
WS-2	11	S W Lake	149	63	14	CAC	
WS-2	12	13085	148	63	2	BABC2	
WS-2	13	13100	149	63	35	BCBA2	F
WS-2	14	Lake Coe	149	63	26	ADD	
WS-2	15	Lake Coe	149	63	27	DDB	
WS-2	16	Spring	149	63	13	BDA	
WS-2	17*	13096	148	63	4	ABA2	F/M
WS-2	18a		149	63	14	BAA	
WS-2	18b)		149	63	14	BAA	
WS-2	18c		149	63	14	BAA	
WS-2	19		148	63	11	DDC	
WS-2	20	13094	149	63	14	AAB	

* Well Set WS-1 (12019) could not be located in 2013, and is likely now flooded by Lake Coe.
* Well Set WS-2 (6) could not be located in 2013, and is likely now flooded by Lake Coe.
* Well Set WS-2 (13) is visible but flooded. Substantial erosion has occurred around the well.
* Well Set WS-2 (17) was destroyed by flooding, ice action and sedimentation. This site is now under North Twin Lake and there is no trace of the wells.

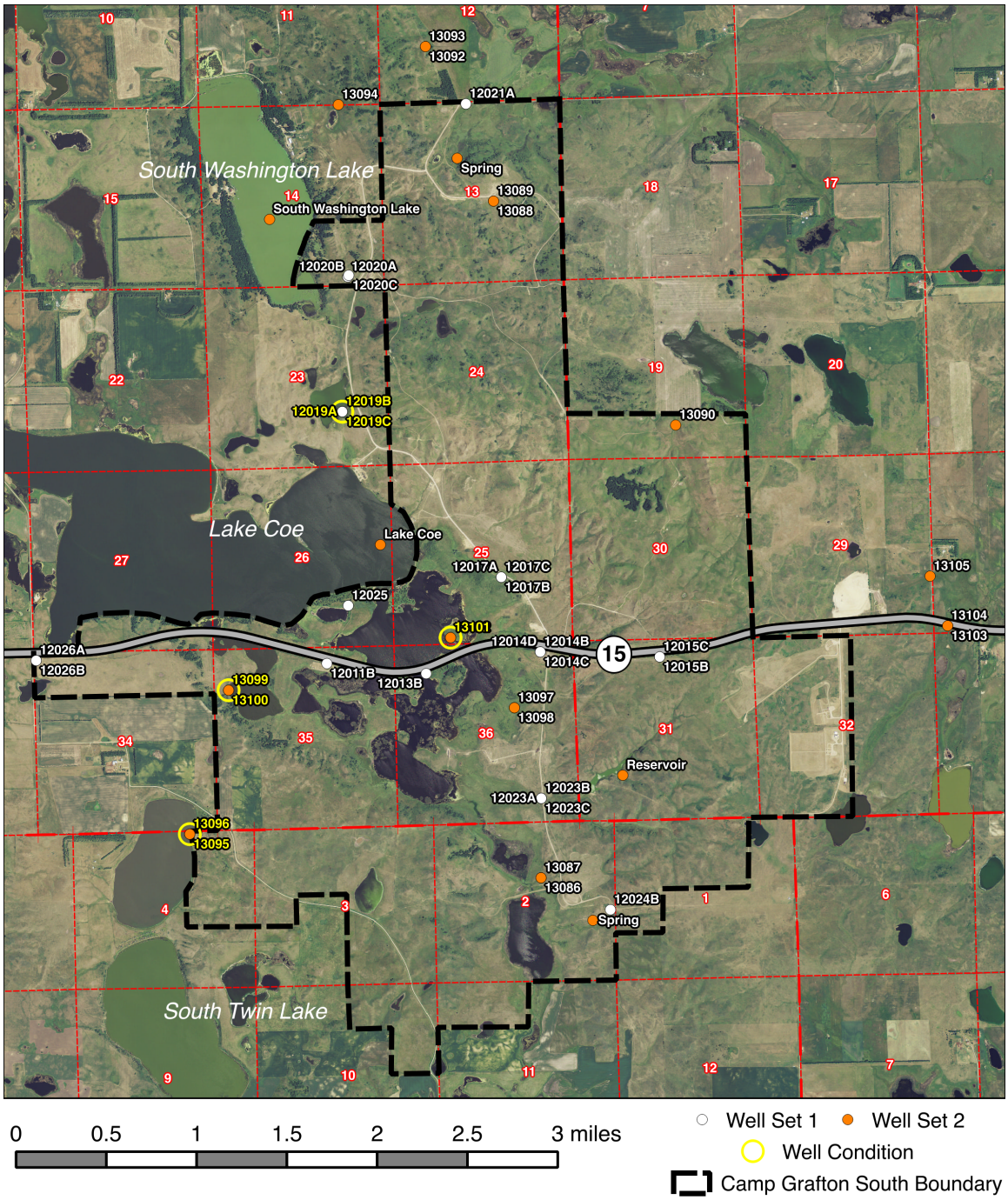

Figure 4. Location of groundwater and surface water sampling sites used for monitoring water quality on Camp Grafton (South Unit) lands. Yellow circles indicate wells that are flooded or otherwise destroyed as of 2013.

Well Set 2 (WS-2)

The second well set (labeled Well Set 2 or WS-2) was constructed by driller Gary Calheim under direction of Schuh (1994). This set consists of 23 wells, placed in nests of one to three, at 12 unique sites. WS-2 sites were selected for coverage of drainage areas from areas of specific use within the CGS facility, generally within the lower reaches of coulees feeding into the Colvin Creek and Lake Coe and South Washington Lake basins and their tributaries. Hydrologic reasons for placement were explained in each of the previous reports cited. Well placement was also based on specific land use within the watershed. Specific targeted uses included weapons and demolitions ranges, vehicle staging areas, bivouac areas, and pest control areas.

To accommodate sampling for organic contaminants, well construction consisted of 2-inch PVC casing, with joints fastened using stainless steel screws, rather than solvent weld cement (Parker et al. 1990, Schuh et al. 1997, Sykes et al. 1986). Well annuli above the well-screen were sealed with high solids bentonite. Each well was secured by a 6-inch PVC protective cover (PC) with concrete at the base, and by a locking aluminum cap.

Placement, construction, and security make WS-2 wells most appropriate for sampling organic contaminants, and site-specific contaminants from munitions, pesticides, and petroleum spills on weapons and demolitions ranges, vehicular staging areas, bivouac sites, and pest control areas. Specific uses and locations for each well set were described in detail by Schuh (1994). A summary of water samples collected from each well site in previous years with interpretations is provided in Schuh (2007). Piezometric readings are avoided in these wells because of the desirability of avoiding surface contamination. WS-2 wells were sampled after their construction to provide baseline data in basic water chemistry and trace elements. The deeper WS-2 wells are not routinely sampled for general chemistry and trace elements. These samples are routinely collected from WS-1 wells. WS-2 wells may be used for supplementary samples for basic water chemistry if needed for a specific investigative purpose. They are also sampled at all depths in periodic comprehensive sample sets. Locations of WS-2 wells are summarized on Table 1, and illustrated on Figure 4. Detailed hydrologic setting of well nests, lithologic logs for WS-2 wells, and initial water chemistry data from samples collected in 1992 and 1993 are described in Schuh (1994). Locations of WS-2 wells and assessed well conditions as of the fall of 2013 are listed on Table 3 and generically illustrated on Figure 3 and Figure 4.

CAMP GRAFTON SOUTH

BIVOUAC SITES, TRAINING AREAS AND RANGES

Area No.	Area Description	Grid Location
B-1-1	Bivouac Site	NII 22658585
B-1-10	Bivouac Site	NII 22908160
B-1-11	Bivouac Site	NII 22158155
B-1-12	Bivouac Site	NII 26558268
B-1-13	Bivouac Site	NII 25057945
B-1-14	Bivouac Site	NII 25358280
B-1-2	Bivouac Site	NII 23108489
B-1-3	Bivouac Site	NII 23808503
B-1-4	Bivouac Site	NII 25558490
B-1-6	Bivouac Site	NII 23368054
B-1-7	Bivouac Site	NII 22908090
B-1-8	Bivouac Site	NII 24148175
B-1-9	Bivouac Site	NII 23758175
R-1-1	M203, AT 4, MK 19 Range	NII 25757995
R-1-2	Demolition Range	NII 25608025
R-1-3	Multipurpose MG Range	NII 28308130
R-1-4	Modified Record Fire Range	NII 28308020
R-1-6	25 Meter Zero Range	NII 28308055
R-1-7	Compat Pistol Range	NII 28308060
R-1-8	MICLIC Range	NII 28308085
T-1-1	Indirect Weapsons Empl.	VIC NII 245845
T-1-2	Direct Fire Emplacement	VIC NII 257825
T-1-3	Tank Ditch/Barrier Area	NII 251825 TO 257817
T-1-4	Timber Trestle Bridge Site	VIC NII 247827
T-1-5	Bailey Bridge Site	VIC NII 246824
T-1-6	Engineer Equip. Training Site	VIC NII 25858
T-1-7	M4T6 Bridge Site, Dry, (North)	VIC NII 256845
T-1-8	M4T6 Bridge Site, Dry (South)	VIC NII 146826

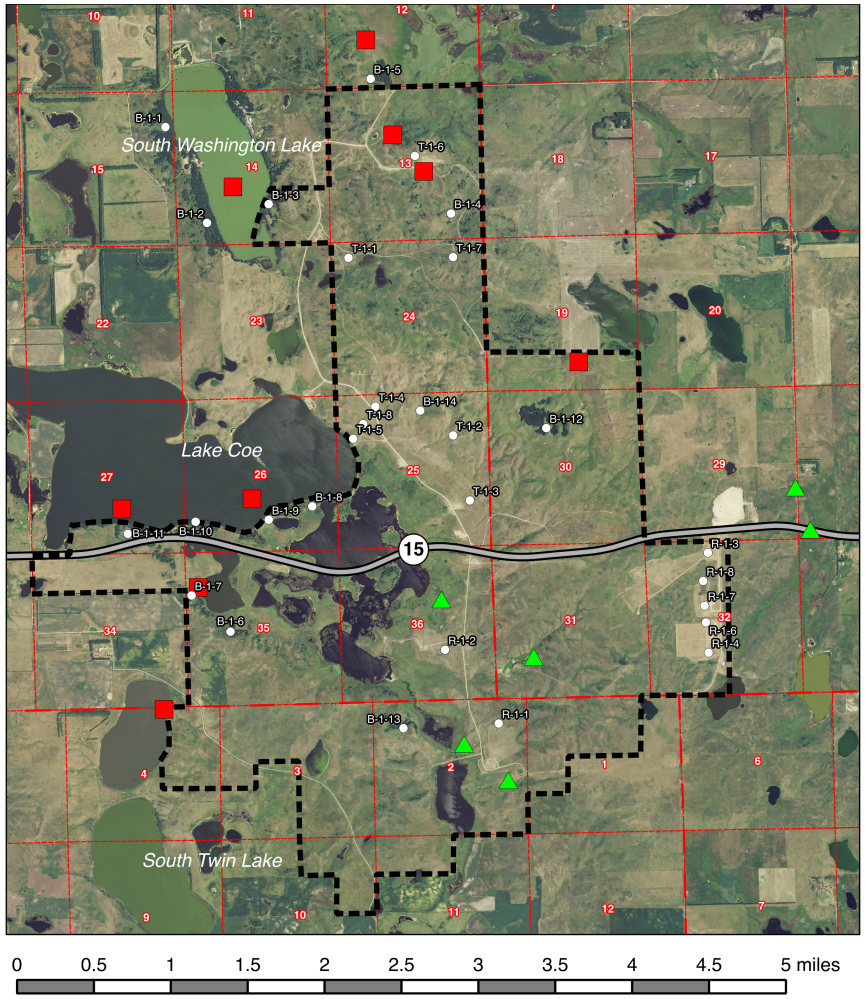

Figure 5. Sample sites for pesticide samples in relation to bivouac sites and sample sites for explosives residue samples in relation to training areas involved demolitions and munitions training.

CAMP GRAFTON SOUTH USE PATTERNS

Overview of CGS Chemical Use

The water sample plan for CGS is based on land use patterns, including locations of use for munitions and explosives, insecticides, herbicides for weed control, and vehicle staging areas for petroleum residues. A general CGS Reservation use map, with a corresponding general sample site "intent" identification provided on Figure 5. The 2013 sample program is adapted from the general use areas identified.

Sample results in this report will be discussed under categories: 1. General chemistry; 2. Trace elements; 3. Munitions and explosives residues; 4. petroleum residues; and 5. pesticides. CGS use patterns affecting water quality can be summarized as follows.

1. Agricultural use: Most of the CGS facility is used for grazing during part of the year. The primary chemical parameter of concern would be nitrate. Nitrate is assayed with general chemistry for water sample from the WS-1 wells and selected WS-2 wells. Weed control (primarily leafy spurge) is practiced throughout CGS. Herbicides used are bromoxynil, picloram and 2,4-D. In addition, prometon is used for weed control around buildings and other infrastructure. In 2006 we sampled for picloram, 2,4-d, bromoxynil and prometon.

The following list includes pesticides used in 2007 through 2012.[4] Herbicides, sprayed annually, include 2,4-D, picloram, glyphosate. Locations of herbicide applications for leafy-spurge control (2,4-D, picloram) are shown on Figure 6. A synthetic pyrethroid insecticide (cyfuthrin) was applied in 2011. Cattle tags used for insect control include abamectin, coumaphos, permethrin, piperonyl butoxide, terachlorvinphos, and dichlorvos. Cattle tages represent small point sources, and are considered unlikely to cause environmental contamination of measurable extent.

Mineral supplements in salt & lick barrels primarily contain: dicalcium phosphate, monocalcium phosphate, calcium carbonate, salt, magnesium sulfate, potassium sulfate, magnesium oxide, cane molasses, soybean hulls, cobalt sulfate, copper sulfate, and calcium iodate.

[4] Provided by Kent Belland, e-mail communication, July 9 2013.

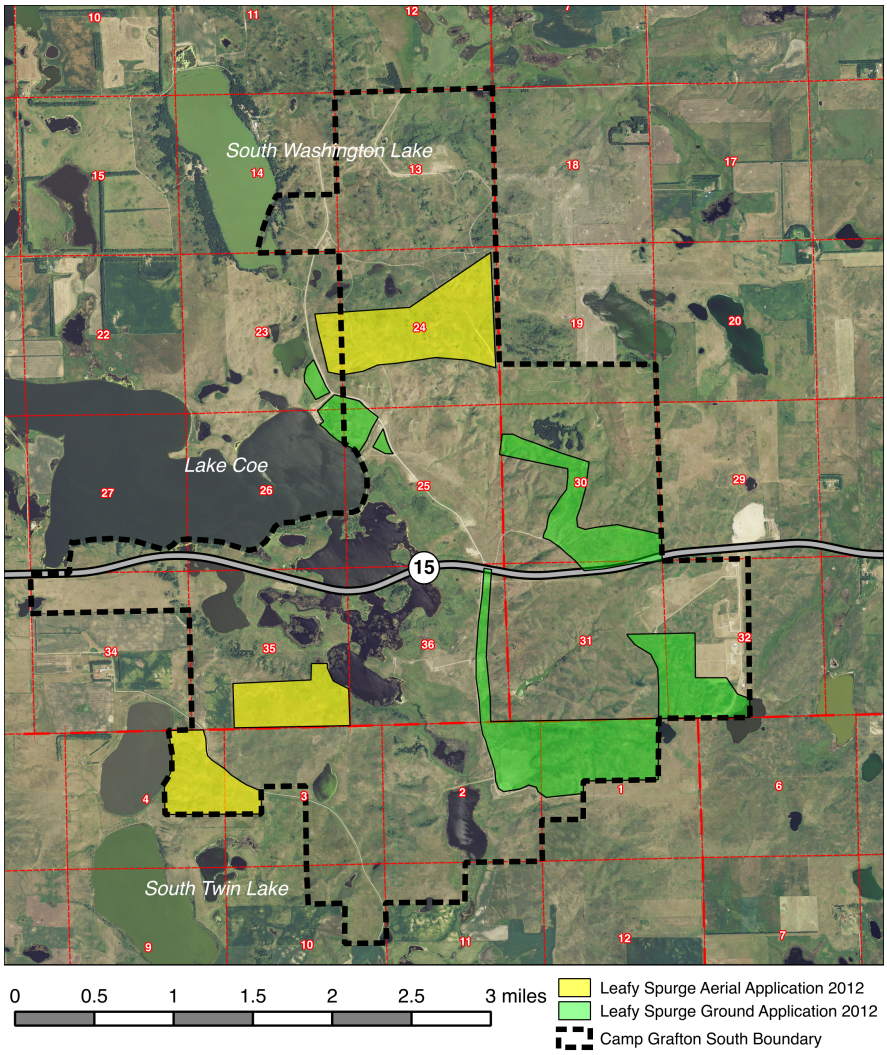

Figure 6. Map of herbicide (2,4-D and picloram) application areas for leafy-spurge control in 2012. [5]

2. Bivouac sites and operational sites: Common bivouac site locations are shown on Figure 5. Potential contaminants on bivouac sites include gasoline and diesel fuel (from vehicles staged on site) and insecticides used for mosquito control (usually malathion or chlorpyrifos). In 2006, samping was performed for malathion. Previously, potential nitrate and bacterial contamination from latrines was possible. Current CGS practice (since about 1990) is to use portable lavatories, which should minimize future contamination. Tests for bivouac areas previously included TPH as gasoline and TPH as fuel oil (which includes diesel fuel). This has been replaced by GRO (gasoline range organics), DRO (diesel range organics) and BTEX (volatile organic compounds in gasoline). In 2006 we sampled only for GRO. In addition, a well nest (Site 9, Table 1) and a spring (Site 16, Table 1) located near a previously used but now unused

[5] Modified from Jim Bennington to Bill Schuh (through Kent Belland, e-mail communication, June 20, 2013).

Engineering Training Site, located in 149-063-13 were sampled for gasoline and diesel residues in 2013.

3. Munitions and explosives use sites: Most of these are located south of Hwy 15. The demolitions range, located at 149-063-36DC has been in operation since 1993. The M60 range located at 149-062-32B was completed in 1993. The M203 range was completed in 1992; and the pistol range was completed in 1995. The combined system of weapons ranges was completed in 1997, and has been named the General C. Emerson Murray range. A wide range of munitions and explosives residues were sampled in 2001, 2006 amd 2013.

Munitions and Explosives Use, Residues and Sampling Strategy

In 2001 sample plans for munitions and explosives residues were revised and intensified to: (1) Identify well and surface water sample sites associated with each operational area; (2) Identify as many known compounds as possible for each use and operational area; (3) Identify sampling procedures and laboratory methods required to evaluate those compounds; and (4) Sample each well and surface water site for the required compounds and methods.

Use areas of influence were:

(1) The M203 range, located in the northwest quarter of 148-063-02. Both groundwater and surface runoff from this area would flow westward toward the wetlands in the center of 148-063-02, and from there northward through the Lake Coe and South Washington Lake basins toward the Sheyenne River. Groundwater from the M203 range may also discharge from the spring located at 148-063-02DA.

(2) The western half of 149-062-32 is occupied by several training sites, including an M-60/ 50-caliber machine gun training site (MPMG), a pistol range, an M-16 zero range, and a modified record fire range (MRF), which are collectively identified as the General Emerson Murray (GCEM) ranges. Depending on time, conditions and specific locations of use, both surface water and groundwater flow could carry contaminants in either direction. A reservoir located in the southwest quarter of 149-062-31 collects water from the training area and would be expected to trap contaminants.

(3) A demolitions range is located in the south half of 149-063-36. Surface water and groundwater draining from this area would flow northwestward to the Lake Coe and South Washington Lake basins, and from there toward the Sheyenne River. In addition, possible contamination of the reservoir between the demolitions range and the firing ranges (Site 4, Figures 3, 4,5) and the South Spring (Site 3, Figures 3, 4, 5) could occur through atmospheric deposit following demolitions exercises.

FIELD SAMPLING AND LABORATORY METHODS

Field Methods

Sampling methods were designed for specific contaminants. Sampling procedures for low level detection of organic compounds, such as petroleum products, explosives residues, and pesticides, require "clean-clean" procedures, which involve high assurance against spurious contamination caused by field procedures. Because of their low concentrations, trace elements also require greater cleanliness in sampling. Basic water chemistry can usually be sampled using less stringent procedures, although even for these elements reasonable care is necessary to avoid contamination.

In the CGS monitoring plan, general water chemistry and trace elements in WS-1 wells were sampled using PVC bailers. Samples were collected from wells from which at least three well volumes had been purged using either air lift (Photo 1, front), or suction lift (Photo 2, front) methods. Air-lift purging was used for WS-1 wells having piezometric surface too deep for suction lift. A rubber compressor hose was inserted in the well to a level at least 20 feet above the well screen. An air compressor was used to air lift the water. Suction lift was used on both WS-1 and WS-2 wells having piezometric surface near enough to the surface to support a water column (generally less than 20 feet). A 1-inch rigid polyethylene hose was washed with non-phosphate soap and stored in a polyethylene bag. The hose was inserted in the well, and water was pumped using a screw pump.

For organic contaminants, five well volumes were evacuated from the well to be sampled. Air lift was not used for these samples, because of concern over possible introduction of petroleum residues on a compressor hose. Clean-clean procedures were used. A polyethylene apron was placed on the soil around each well to be sampled, and weeds and brush were cut or flattened by a utility worker. The well-cap was removed, and the inside and outside of the well were cleaned using non-phosphate soap and a clean-white disposable laboratory tissue. Shallow wells were purged using the suction-lift procedure described above. Wells having water levels too deep for suction lift were purged using a Cole-Palmer Model 75509-60S™ submersible pump with polyethylene tubing. Before sampling the submersible pump and tubing were washed in a dedicated tub using non-phosphate soap and distilled water. For the suction pump, only the polyethylene hose was washed. Both suction and submersible pumps were operated off the car battery accessory connection without the engine running to avoid engine exhaust in the air while sampling.

Three workers performed the sampling operation for organic contaminants: a dedicated clean worker, an assistant, and a utility worker. All work requiring frequent environmental or material contact such as brush clearing was performed by a dedicated

utility worker. Before sampling the assistant washed his hands with soap and distilled water, and put on clean latex gloves from a container held by the clean worker. . After purging, water samples were collected using a dedicated disposable Voss Technologies™ rigid polyethylene bailer for each well. Throughout the sampling process the assistant would periodically rinse his gloves with distilled water. The assistant washed the hands of the clean worker with non-phosphate soap and distilled water and then presented an opened package of disposable latex gloves to the clean worker, who removed them without touching the container and put them on his hands. The assistant opened the end of the disposable bailer package, without touching the bailer, and placed the still-covered body of the bailer under the arm of the clean worker. The assistant then opened the plastic cover of the bailer with a knife and exposed the end, without touching the bailer. Next the assistant removed a spool of nylon rope from a polyethylene bag, and without touching the rope presented the spool to the clean worker. The clean worker tied the rope to the bailer with gloved hand, and then placed the bailer down the well for sampling. About one additional well volume was bailed using the disposable bailer, and the well was then sampled. The assistant opened caps of the bottles during filling and covered them during bailing. Replicate bottles were partially filled from each bailer sample. Bottles were filled to the top before capping. After completion the samples were placed in coolers with frozen "blue-ice". All samples were placed in a refrigerator in a utility building at the CGS facility within two hours of sampling. Cold samples (approx. 3^{o} C) were packed on ice in insulated coolers and transported for arrival at the laboratory within 24 hours of packing. All samples arrived within 24 hours on ice. Cooler temperatures at delivery ranged from 6^{o} to 8^{o} C, with the exception of one cooler at 12^{o} C. Ambient groundwater temperature is normally at about 8-9 ^{o}C. Chain of custody and evaluations of sample condition on arrival are provided with laboratory data in Appendices B.

General Water Chemistry and Trace Elements

Water samples for general water chemistry [pH, total dissolved solids (TDS), hardness, specific conductivity (EC), temperature, bicarbonate (HCO_3^-), potassium (K^+), sodium (Na^+), sulfate (SO_4^{2-}), nitrate (NO_3^-), chloride (Cl^-), fluoride (F^-), boron (B), silicate (SiO_2), iron (Fe^{2+}), manganese (Mn^{2+}), calcium (Ca^{2+}), and magnesium (Mg^{2+})] were collected from each well and surface water site. In 1996 samplings water samples for determination of trace elements [arsenic (As), mercury (Hg), lead (Pb), and selenium (Se)] were collected. Previous samples collected in 1993 included cadmium (Cd) and zinc (Zn) as well. In 2006 trace elements determined included aluminum (Al), antimony (Sb), arsenic (As), barium (Ba), beryllium (Be), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), lithium (Li), mercury (Hg), molybdenum (Mo), nickel (Ni), selenium (Se), strontium (Sr), thallium (Tl), and zinc (Zn).

In 2013, total rather than dissolved trace elements were determined, for comparison with previous dissolved analyte tests. Analytes included aluminum, antimony, arsenic, barium, boron, cadmium, copper, lead, nickel, selenium, silver, strontium, thallium, and zinc. Not included from previous samplings were iron, manganese, lithium, mercury, molybdenum and strontium.

All water samples were collected after purging of at least three well volumes of water from the well. Samples were stored in 500 ml polyethylene bottles. All general chemistry sample bottles were washed with well water before collecting the sample. Bottles used for water samples for trace metal analysis were washed with concentrated nitric acid, two distilled water washes, and one deionized water wash before use. Samples for trace metal analysis were acidified in the field with 2 ml of concentrated nitric acid per 500 ml sample. Lab methods for general chemistry and trace elements were described previously by Schuh and Bottrel (2014).

Organic Compounds

BTEX, GRO (gasoline range organics), DRO (diesel range organics), picloram, 2,4-D, permethrin, and cyfuthrin were analyzed by ALS Laboratory (Salt Lake City, Utah.) For DRO and GRO the laboratory used Method 8015B (EPA-SW-846, Rev. 2, 1996).

Picloram and 2,4-D were extracted and measured using Method 8151 (EPA-SW-846, Rev. 2, 1996).

An inventory of known compounds for uses on each location was compiled by Brig. Gen. (then LTC) David Anderson (Letter of 3/23/2000); Personal Communication, Appendix A). Most common uses of munitions and explosives are located at the Demolition Range and the assembly of ranges (GCEM) located in the northeast corner of the camp, south of Hwy 29. Of the listed chemicals, there are standard EPA screening methods for Pentaerytrital Tetranitrate (PETN), 2,4,6-trinitrogoluene (TNT), Styrene, Nitroglycerin, Dipubylphthalate, and Toluene. Cadmium, magnesium, lead, nickel, and zinc components can also be tested using standard trace element methods.

Methods for initial munitions and explosives samples collected prior to 2005 are described in Schuh (2006). Organic sample sets included volatile compounds (8260), semi-volatile compounds (8270), and munitions and explosives compounds (8330) and 8332 for nitroglycerine. A list of selected analytes determined by these methods, with MDL's (minimum detection levels) is provided on Table 2. Analytes of specific concern are indicated by an asterisk (*).

Table 2. List of organic analytes and methods included in the CGS sample plan for 2013.

Analyte	MDL µg/L	Analyte	MDL µg/L	Analyte	MDL µg/L
EPA METH.8260		1,1,2-Trichloroethane	0.3	Hexachlorobutadiene	0.3
Ethyl ether	0.3	2-Hexanone	4	Naphthalene	0.31
1,1-Dichloroethene	0.3	1,2-Dibromoethane	0.3	1,2,3-Trichlorobenzene	0.3
Freon 113	0.3	Toluene*	0.3		
Acetone	3.2	1,3-Dichloropropane	0.3	**EPA METH. 8270**	
Iodomethane	0.3	Dibromochloromethane	0.3	Pyridine	3.1
Carbon disulfide	0.3	Bromoform	0.3	Phenol	1.5
Methyl Acetate	0.3	Tetrachloroethene	0.3	Bis(2-chloroethyl)ether	1.5
Allyl chloride	0.3	1-Chlorohexane	0.33	2-Chlorophenol	1.5
Methylene chloride	0.3	Chlorobenzene	0.3	1,3-Dichlorobenzene	1.5
trans-1,2-Dichloroethene	0.3	1,1,1,2-Tetrachloroethane	0.3	1,4-Dichlorobenzene	1.5
Methyl-t-butyl ether	0.3	Ethylbenzene*	0.3	Benzyl alcohol	1.5
cis-1,2-Dichloroethene	0.3	m,p-Xylene *	0.3	1,2-Dichlorobenzene	1.5
1,1-Dichloroethane	0.3	o-Xylene *	0.3	2-Methylphenol	1.5
2,2-Dichloropropane	0.3	Styrene	0.3	bis(2-Chloroisopropyl)ether	1.7
2-Butanone	3.9	Isopropylbenzene	0.3	4-Methylphenol	1.5
Ethyl acetate	3.7	1,1,2,2-Tetrachloroethane	0.3	N-Nitrosodi-n-propyl amine	1.5
Bromochloromethane	0.3	Bromobenzene	0.3	Hexachloroethane	1.5
Tetrahydrofuran	3.5	1,2,3-Trichloropropane	0.3	Nitrobenzene	1.5
Chloroform	0.3	trans-1,4-Dichloro-2-butene	3.8	Isophorone	1.5
1,1,1-Trichloroethane	0.3	Pentachloroethane	0.33	2-Nitrophenol	1.6
Cyclohexane	0.3	n-Propylbenzene	0.3	2,4-Dimethylphenol	1.5
1,1-Dichloropropene	0.3	1,3,5-Trimethylbenzene	0.3	Benzoic acid	17
1,2-Dichloroethane	0.3	2-Chlorotoluene	0.3	Bis(2-Chloroethoxy)methane	1.5
Carbon tetrachloride	0.3	4-Chlorotoluene	0.3	2,4-Dichlorophenol	1.5
Benzene	0.3	tert-Butylbenzene	0.3	1,2,4-Trichlorobenzene	1.5
Trichloroethene	0.3	1,2,4-Trimethylbenzene	0.3	Naphthalene	1.5
Methylcyclohexane	0.3	sec-Butylbenzene	0.3	4-Chloroaniline	1.5
1,2-Dichloropropane	0.3	p-Isopropyltoluene	0.3	Hexachlorobutadiene	1.5
Dibromomethane	0.3	1,3-Dichlorobenzene	0.3	4-Chloro-3-methylphenol	1.5
Bromodichloromethane	0.3	1,4-Dichlorobenzene	0.3	2-Methylnaphthalene	1.5
cis-1,3-Dichloropropene	0.3	n-Butylbenzene	0.3	Hexachlorocyclopentadiene	2.2
4-Methyl-2-pentanone	4.1	1,2-Dichlorobenzene	0.3	2,4,6-Trichlorophenol	1.5
trans-1,3-Dichloropropene	0.3	1,2-Dibromo-3-Chloropropane	0.3	2,4,5-Trichlorophenol	1.5
Ethyl methacrylate	0.32	1,2,4-Trichlorobenzene	0.3	2-Chloronaphthalene	1.5

* Analyte known or probable for use on the CGS Reservation

** RL (Reporting Level – no MDL available)

Table 2 (cont.) List of organic analytes and methods included in the CGS sample plan for 2013.

Analyte	MDL µg/L	Analyte	MDL µg/L	Analyte	MDL µg/L
EPA METH. 8270 (Cont.)		**EPA METH. 8270 (Cont.)**		**EPA METH. 8260**	
				GRO*	15
2-Nitroaniline	1.5	Benzo(b)fluoranthene	1.5		
Dimethylphthalate	1.5	Benzo(k)fluoranthene	1.5	**EPA METH. 3510**	
2,6-Dinitrotoluene	1.5	Benzo(a)pyrene	1.5	DRO*	3.2
Acenaphthylene	1.5	Indeno(1,2,3-c,d)pyrene	1.5	2,4-D*	0.21**
3-Nitroaniline	2.1	Dibenz(a,h)anthracene	1.5	Picloram*	0.21**
Acenaphthene	1.5	Benzo(g,h,i)perylene	1.5		
2,4-Dinitrophenol	27			**LC/MS**	
4-Nitrophenol	15	**EPA METH. 8330/8332**		Glyphosate*	50**
Dibenzofuran	1.5	Nitroglycerin*	0.41		
2,4-Dinitrotoluene	1.5	PETN*	0.51	**GC/MS**	
Diethylphthalate	1.5	HMX*	0.1	Cyfluthrin*	
4-Chlorophenyl phenyl ether	1.5	RDX*	0.097	Permethrin*	
Fluorene	1.5	1,3,5-Trinitrobenzene	0.36		
4-Nitroaniline	2	1,3-Dinitrobenzene	0.34		
4,6-Dinitro-2-methylphenol	32	Nitrobenzene	0.091		
N-Nitrosodiphenylamine	1.5	TETRYL	0.15		
4-Bromophenyl phenyl ether	1.5	2,4,6-Trinitrotoluene*	0.11		
Hexachlorobenzene	1.5	2-Amino-4,6-dinitrotoluene	0.13		
Pentachlorophenol	29	4-Amino-2,6-dinitrotoluene	0.13		
Phenanthrene	1.5	2,4-Dinitrotoluene*	0.39		
Anthracene	1.5	2,6-Dinitrotoluene*	0.092		
Carbazole	1.5	2-Nitrotoluene	0.19		
Di-n-butylphthalate*	1.5	4-Nitrotoluene	0.18		
Fluoranthene	1.5	3-Nitrotoluene	0.2		
Pyrene	1.5				
Butylbenzylphthalate	1.5				
3,3'-Dichlorobenzidine	1.7				
Benzo(a)anthracene	1.5				
Chrysene	1.5				
Bis(2-ethylhexyl)phthalate	1.5				
Di-n-octylphthalate	1.5				

* Analyte known for probable for use on the CGS Reservation

** RL (Reporting Level – no MDL available)

EVALUATION OF FIELD SAMPLING AND DELIVERY LIMITATIONS: 2014

Several factors related to field conditions, weather, sample site conditions, or normal hazards of transport and shipping. Some of the factors affecting this sample set are:

Well Condition – Wet climatic conditions since well construction in the late 1980s and early 1990s, particularly the beginning of large precipitation years in 1993 which caused wetland and lake expansion, have caused damage or destruction of some sample wells. Missing wells include: the 12019 wells (WS-1), which are now apparently covered by a wetland in Section 23 northeast of Lake Coe; wells 13095 and 13096 (WS-2 Site 17), which are entirely beneath North Twin Lake; and wells 13101 and 13102 (WS-2 Site 6) which are apparently flooded (or at least currently inaccessible) beneath the southeastern portion of Lake Coe just north of HWY 15. These wells could not be found or sampled.

Wells 13099 and 13100 (WS-2 Site 13), and 12013 (WS-1) were flooded by expanded lakes and wetlands south of HWY 15. Well 12013 was flooded, but sampled. Wells 13099 and 13100 (WS-2 Site 13) were inaccessible for sampling and locks were rusted and frozen. Well 13094 (WS-2 Site 20) was not sampled because of a badly eroded access road and wet conditions which would have endangered the vehicles.

Well Site Condition - Most of the well sites, particularly those of WS-1 set, are badly grown in with buck brush and need cleaning. Also the barb wire fences are in bad condition – a welded steel border guard would be preferable for each site.

Sample Condition at Laboratory – As is always the case, some breakage occurred during shipment. The problem is almost entirely with the 1-L amber glass bottles. All bottles were placed in bubble wrap jackets, with bubble wrap padding on cooler walls and bottoms. Bubble wrap and foam packing chips were also placed between and above the bottles.

Samples were refrigerated within two hours of sampling, and were shipped on ice, usually two or three double bagged ice packs per cooler placed on top. Ice remained in all coolers upon receipt, and most coolers were at or below 8 degrees C, while one cooler reached 12 degrees. Ambient groundwater temperatures are about 9 degrees C, so accelerated degradation should not have occurred in samples. The relatively high temperature of 12 degrees C is noted, but occurred over only a few hours at most before receipt. Laboratory observations of sample condition are documented in Appendix B. Laboratory Quality Control is Documented in Appendix C.

Chain of Custody **–** Chain of custody was followed and documented to the FedEx shipping point where the agent signed the transfer. Chain of Custody seals were not used on the coolers, as was noted in the Laboratory receiving report (Appendix B), but all coolers were strongly secured with packing tape, and the report notes that there was no indication of tampering.

Recommendations for Future Sampling **–** The following recommendations are made for future sample site maintenance and future sampling.

1. National Guard should clean all buck brush and detritus from each of the well sites, while exercising care for the wells. WS-2 wells particularly should be protected from organic contaminants and well damage.

2. National guard should adopt long-term improvement project for replacing barbed wire barriers with steel pipe barriers. SWC should provide a design.

3. In the next sampling (approximately 5 years following the current schedule) SWC should adopt the following improvements:

a) Pack less bottles per cooler and space bottles more, with more packing protection.

b) Pack more ice in the coolers to maintain cooler temperatures – and use thermometers in the refrigerators to assure minimal freezing and optimal initial shipping sample temperatures – location in the refrigerator is an important consideration because of some freezing and breakage near cold spots.

c) Consider using chain of custody seals on the coolers to improve chain of custody certainty.

d) Use more redundancy (extra sample bottles) to compensate for breakage.

Table 3. Well location and water chemistry parameters for the WS-1 monitoring well set, CGS. Red=2013 sampling.

Well No.	Location	Top Screen Feet	Bottom Screen Feet	Longitude	Latitude	x-coord	y-coord	Date Sampled	Water Level Feet bls	Field Cond. µS/cm	Lab Cond. µS/cm	Field pH	Lab pH	Field Temp °C	TDS Det. mg/L	TDS Calc. mg/L	SAR
12011B	14906335ABBD2	45	50	-98.68326785	47.68561295	2415978	741504	9/1/87	16.04	880	864		7.82	10	505	564	2.5
12011B	14906335ABBD2	45	50	-98.68326785	47.68561295	2415978	741504	10/24/91	21.54	869	893	8.02	7.47	7	565	585	2.4
12011B	14906335ABBD2	45	50	-98.68326785	47.68561295	2415978	741504	9/10/96		835	984		7.6	7.7	647	627	2.4
12011B	14906335ABBD2	45	50	-98.68326785	47.68561295	2415978	741504	9/6/01	15.45	887	994		7.95		622	609	2.4
12011B	14906335ABBD2	45	50	-98.68326785	47.68561295	2415978	741504	9/6/06	16.12	842	887	8.45	7.45			550	2.38
12011B	14906335ABBD2	45	50	-98.68326785	47.68561295	2415978	741504	10/7/13		793	830		7.97			538	2.12
12012	14906327DDDC1	164	169	-98.70573941	47.68694066			9/6/06	58.85	653	688	8.41	7.96			427	181
12013B	14906336BBDA2	22	27	-98.67150962	47.68462529	2418882	741211	9/1/87	3.7	620	627		7.87	14	377	395	1.3
12013B	14906336BBDA2	22	27	-98.67150962	47.68462529	2418882	741211	10/24/91	7.01	620	628	7.96	7.33	9	377	394	1.4
12013B	14906336BBDA2	22	27	-98.67150962	47.68462529	2418882	741211	9/11/96		536	634		7.67	8.7	401	376	1.3
12013B	14906336BBDA2	22	27	-98.67150962	47.68462529	2418882	741211	9/6/06	4.89	744	786	7.57	7.56			487	1.41
12013B	14906336BBDA2	22	27	-98.67150962	47.68462529	2418882	741211	10/7/13		722	745		8.11			461	1.34
12014B	14906336AACB2	181	186	-98.65790652	47.68614360	2422219	741843	9/2/87	49.15	950	958		7.94	10	523	626	4.2
12014B	14906336AACB2	181	186	-98.65790652	47.68614360	2422219	741843	10/22/91	53.91	929	984	7.75	7.45	7	578	619	4.2
12014B	14906336AACB2	181	186	-98.65790652	47.68614360	2422219	741843	9/11/96		804	960		7.74	8.4	608	601	4.2
12014B	14906336AACB2	181	186	-98.65790652	47.68614360	2422219	741843	9/5/06	45.09	935	999	6.36	8.02			619	4.64
12014B	14906336AACB2	181	186	-98.65790652	47.68614360	2422219	741843	10/7/13		953	988		7.97			599	4.08
12014C	14906336AACB3	64	69	-98.65790652	47.68614360	2422219	741843	9/2/87	11.36	740	685		7.73	10	348	450	0.2
12014C	14906336AACB3	64	69	-98.65790652	47.68614360	2422219	741843	10/22/91	15.53	763	807	7.41	7.28	8	416	499	0.2
12014C	14906336AACB3	64	69	-98.65790652	47.68614360	2422219	741843	9/11/96		627	744		7.61	8.4	464	444	0.2
12014C	14906336AACB3	64	69	-98.65790652	47.68614360	2422219	741843	9/5/06	11.88	705	745	6.26	7.7			462	0.22
12014C	14906336AACB3	64	69	-98.65790652	47.68614360	2422219	741843	10/7/13		666	682		7.75			393	0.21
12014D	14906336AACB4	24	29	-98.65790652	47.68614360	2422219	741843	9/2/87	12.31	540	510		7.87	12	286	325	0.1
12014D	14906336AACB4	24	29	-98.65790652	47.68614360	2422219	741843	10/22/91	16.14	597	568	7.59	7.48	8	359	353	0.2
12014D	14906336AACB4	24	29	-98.65790652	47.68614360	2422219	741843	9/10/96		481	563		7.54	7.6	334	323	0.1
12014D	14906336AACB4	24	29	-98.65790652	47.68614360	2422219	741843	9/6/01	12.18	577	600		7.89		319	346	0.1
12014D	14906336AACB4	24	29	-98.65790652	47.68614360	2422219	741843	9/5/06	13.25	613	643	7.02	7.8			399	0.14
12014D	14906336AACB4	24	29	-98.65790652	47.68614360	2422219	741843	10/7/13		625	648		7.77			386	0.22

Table 3 (cont.) Well location and water chemistry parameters for the WS-1 monitoring well set, CGS. Red=2013 sampling.

Well No.	Location	Top Screen Feet	Bottom Screen Feet	Longitude	Latitude	x-coord	y-coord	Date Sampled	Water Level Feet bls	Field Cond. µS/cm	Lab Cond. µS/cm	Field pH	Lab pH	Field Temp °C	TDS Det. mg/L	TDS Calc. mg/L	SAR
12015B	14906231ABBC2	162	167	-98.64374799	47.68552364	2425711	741699	9/1/87	94.68	570	575		7.9	13	358	370	2.2
12015B	14906231ABBC2	162	167	-98.64374799	47.68552364	2425711	741699	10/23/91	98.97	563	580	8.44	7.48	5	378	358	2.3
12015B	14906231ABBC2	162	167	-98.64374799	47.68552364	2425711	741699	9/11/96		493	565		7.83	7.9	348	329	2.2
12015B	14906231ABBC2	162	167	-98.64374799	47.68552364	2425711	741699	9/5/06	92.07	558	582	6.97	8.06			361	2.51
12015B	14906231ABBC2	162	167	-98.64374799	47.68552364	2425711	741699	10/7/13		546	574		8.3			339	2.21
12015C	14906231ABBC3	78	83	-98.64374799	47.68552364	2425711	741699	10/23/91	64.75	455	471	7.97	7.22	6	287	295	0.2
12015C	14906231ABBC3	78	83	-98.64374799	47.68552364	2425711	741699	9/11/96		410	475		7.48	7.6	299	269	0.1
12015C	14906231ABBC3	78	83	-98.64374799	47.68552364	2425711	741699	9/6/01	58.35	470	491		8.3		292	266	0.2
12015C	14906231ABBC3	78	83	-98.64374799	47.68552364	2425711	741699	9/5/06	57.3	456	480	7.07	7.49			298	0.19
12015C	14906231ABBC3	78	83	-98.64374799	47.68552364	2425711	741699	10/7/13		453	471		8.23			279	0.25
12015B	14906231ABBC2	162	167	-98.64374799	47.68552364	2425711	741699	9/1/87	94.68	570	575		7.9	13	358	370	2.2
12017A	14906325DBBC1	263	268	-98.66232991	47.69220213	2421078	744027	9/1/87	39.48	1200	1190		8.21	12	743	721	13
12017A	14906325DBBC1	263	268	-98.66232991	47.69220213	2421078	744027	10/24/91	44.23	1144	1210	8.15	7.92	5	722	729	14
12017A	14906325DBBC1	263	268	-98.66232991	47.69220213	2421078	744027	9/11/96		1008	1180		7.98	8.8	733	715	14
12017A	14906325DBBC1	263	268	-98.66232991	47.69220213	2421078	744027	9/5/06	35.05	1150	1230	7.24	8.02			763	16
12017A	14906325DBBC1	263	268	-98.66232991	47.69220213	2421078	744027	10/7/13		1135	1210		8.39			704	12.3
12017B	14906325DBBC2	78	83	-98.66232991	47.69220213	2421078	744027	9/2/87	5.17	860	877		7.99	11	567	573	7.1
12017B	14906325DBBC2	78	83	-98.66232991	47.69220213	2421078	744027	10/24/91	7.29	706	719	8.16	7.96	7	467	460	5.8
12017B	14906325DBBC2	78	83	-98.66232991	47.69220213	2421078	744027	9/11/96		632	702		7.89	7.9	471	435	5
12017B	14906325DBBC2	78	83	-98.66232991	47.69220213	2421078	744027	9/5/06	4.22	646	668	7.21	8.17			414	5.02
12017B	14906325DBBC2	78	83	-98.66232991	47.69220213	2421078	744027	10/7/13		655	676		8.4			412	4.46
12017C	14906325DBBC3	51	56	-98.66232991	47.69220213	2421078	744027	9/2/87	3.04	490	505		7.99	11	303	316	0.2
12017C	14906325DBBC3	51	56	-98.66232991	47.69220213	2421078	744027	10/24/91	9.45	457	449	7.84	7.62	9	275	274	0.2
12017C	14906325DBBC3	51	56	-98.66232991	47.69220213	2421078	744027	9/10/96		411	473		7.62	9.4	274	269	0.1
12017C	14906325DBBC3	51	56	-98.66232991	47.69220213	2421078	744027	9/5/06	5.92	506	532	6.98	7.8			330	0.18
12017C	14906325DBBC3	51	56	-98.66232991	47.69220213	2421078	744027	10/7/13		502	523		7.92			305	0.25
12017D	14906325DBBC4	23	28	-98.66232991	47.69220213	2421078	744027	9/2/87	6.13	500	504		7.98	9	316	314	0.1
12017D	14906325DBBC4	23	28	-98.66232991	47.69220213	2421078	744027	10/24/91	9.39	500	506	7.32	7.11	9	298	317	0.2
12017D	14906325DBBC4	23	28	-98.66232991	47.69220213	2421078	744027	9/10/96		442	508		7.44	7.5	301	289	0.2
12017D	14906325DBBC4	23	28	-98.66232991	47.69220213	2421078	744027	9/6/01	7.55	504	531		7.84		284	289	0.2
12017D	14906325DBBC4	23	28	-98.66232991	47.69220213	2421078	744027	9/5/06	8.2	509	526	6.8	7.19			326	0.22
12017D	14906325DBBC4	23	28	-98.66232991	47.69220213	2421078	744027	9/2/87	6.13	500	504		7.98	9	316	314	0.1

Table 3 (cont.) Well location and water chemistry parameters for the WS-1 monitoring well set, CGS. Red=2013 sampling.

Well No.	Location	Top Screen Feet	Bottom Screen Feet	Longitude	Latitude	x-coord	y-coord	Date Sampled	Water Level Feet bls	Field Cond. µS/cm	Lab Cond. µS/cm	Field pH	Lab pH	Field Temp °C	TDS Det. mg/L	TDS Calc. mg/L	SAR
12019A	14906323ADBB1	218	223	-98.68074564	47.70575185	2416429	748863	9/1/87	7.99	590	579		7.82	12	347	367	2.8
12019A	14906323ADBB1	218	223	-98.68074564	47.70575185	2416429	748863	10/23/91	13.87	569	592	8.3	7.4	6	368	363	2.3
12019A	14906323ADBB1	218	223	-98.68074564	47.70575185	2416429	748863	9/11/96		491	572		7.52	8.5	362	335	2.6
12019A	14906323ADBB1	218	223	-98.68074564	47.70575185	2416429	748863	9/6/06	3.9	601	612	9.23	7.44			379	2.9
12019B	14906323ADBB2	32	37	-98.68074564	47.70575185	2416429	748863	9/1/87	4.23	515	511		8.03	11	294	323	0.2
12019B	14906323ADBB2	32	37	-98.68074564	47.70575185	2416429	748863	10/23/91	7.88	524	538	8.08	7.25	9	325	331	0.2
12019B	14906323ADBB2	32	37	-98.68074564	47.70575185	2416429	748863	9/10/96		471	541		7.57	7.9	334	317	0.2
12019B	14906323ADBB2	32	37	-98.68074564	47.70575185	2416429	748863	9/6/06	2.21	499	521	8.6	7.4			323	0.16
12019C	14906323ADBB3	7	12	-98.68074564	47.70575185	2416429	748863	9/1/87	4.29	585	461		7.87	14	272	301	0.1
12019C	14906323ADBB3	7	12	-98.68074564	47.70575185	2416429	748863	10/23/91	7.53	537	558	8.08	7.24	10	303	334	0.1
12019C	14906323ADBB3	7	12	-98.68074564	47.70575185	2416429	748863	9/10/96		462	518		7.47	10.9	321	297	0.1
12019C	14906323ADBB3	7	12	-98.68074564	47.70575185	2416429	748863	9/6/01	1.3	525	542		7.85		333	294	0.1
12019C	14906323ADBB3	7	12	-98.68074564	47.70575185	2416429	748863	9/6/06	2.11	477	499	8.43	7.4			309	0.1
12020A	14906314DACD1	212	217	-98.67972132	47.71653647	2416590	752802	9/1/87	41.57	3070	2990		8.13	12	1910	1870	32
12020A	14906314DACD1	212	217	-98.67972132	47.71653647	2416590	752802	10/23/91	45.36	2310	2270	8.62	8.19	6	1430	1450	32
12020A	14906314DACD1	212	217	-98.67972132	47.71653647	2416590	752802	9/11/96		1858	2230		8.01	8.3	1410	1370	34
12020A	14906314DACD1	212	217	-98.67972132	47.71653647	2416590	752802	9/5/06	35.37	2100	2270	7.1	8.22			1410	37.3
12020A	14906314DACD1	212	217	-98.67972132	47.71653647	2416590	752802	10/9/13		2126	2220		8.28			1450	33.7
12020B	14906314DACD2	151	156	-98.67972132	47.71653647	2416590	752802	9/1/87	34.94	1460	1400		8.21	12	903	915	19
12020B	14906314DACD2	151	156	-98.67972132	47.71653647	2416590	752802	10/23/91	39.35	1384	1420	8.41	8.01	6	924	923	20
12020B	14906314DACD2	151	156	-98.67972132	47.71653647	2416590	752802	9/11/96		1173	1430		7.94	8.4	904	885	20
12020B	14906314DACD2	151	156	-98.67972132	47.71653647	2416590	752802	9/5/06	31.04	1383	1460	7.29	8.14			905	23.7
12020B	14906314DACD2	151	156	-98.67972132	47.71653647	2416590	752802	10/9/13		1370	1440		8.19			946	21
12020C	14906314DACD3	38	43	-98.67961150	47.71665814	2416616	752847	9/1/87	23.53	580	572		8.09	12	323	362	0.5
12020C	14906314DACD3	38	43	-98.67961150	47.71665814	2416616	752847	10/23/91	29.58	567	569	8.04	7.5	6	357	350	0.4
12020C	14906314DACD3	38	43	-98.67961150	47.71665814	2416616	752847	9/10/96		499	572		7.56	7.7	343	328	0.4
12020C	14906314DACD3	38	43	-98.67961150	47.71665814	2416616	752847	9/6/01	23.15	585	596		7.89		349	330	0.4
12020C	14906314DACD3	38	43	-98.67961150	47.71665814	2416616	752847	9/5/06	24.32	550	579	7.05	7.77			359	0.33
12020C	14906314DACD3	38	43	-98.67961150	47.71665814	2416616	752847	10/9/13		618	637		7.89			396	0.65

Table 3 (cont.) Well location and water chemistry parameters for the WS-1 monitoring well set, CGS. Red=2013 sampling.

Well No.	Location	Top Screen Feet	Bottom Screen Feet	Longitude	Latitude	x-coord	y-coord	Date Sampled	Water Level Feet bls	Field Cond. µS/cm	Lab Cond. µS/cm	Field pH	Lab pH	Field Temp °C	TDS Det. mg/L	TDS Calc. mg/L	SAR
12021A	14906313BAAB1	96	101	-98.66521977	47.73016393	2420043	757855	9/1/87	10.14	3710	3450		8	12	1510	1540	13
12021A	14906313BAAB1	96	101	-98.66521977	47.73016393	2420043	757855	10/23/91	11.04	4440	4520	8.03	7.68	6	2440	2560	18
12021A	14906313BAAB1	96	101	-98.66521977	47.73016393	2420043	757855	9/11/96		3060	4680		7.66	7.9	2580	2580	18
12021A	14906313BAAB1	96	101	-98.66521977	47.73016393	2420043	757855	9/6/01	6.22	3980	4940		7.79		2560	2620	19
12021A	14906313BAAB1	96	101	-98.66521977	47.73016393	2420043	757855	9/6/06	6.25	4260	4560	8.66	7.94			2830	21.8
12021A	14906313BAAB1	96	101	-98.66521977	47.73016393	2420043	757855	10/9/13		3813	3910		7.74			2240	19.6
12022	14906327DDDC2	158	163	-98.70573941	47.68694066	2410433	741861	9/1/87	22.52	241	385		6.8	13	150	207	0.1
12022	14906327DDDC2	158	163	-98.70573941	47.68694066	2410433	741861	11/19/91	102.53	638	674	7.53	7.53	7		423	2
12022	14906327DDDC2	158	163	-98.70573941	47.68694066	2410433	741861	9/11/96		725	676		7.83	7.7	482	434	2
12023A	14906336DDBC1	131	136	-98.65819588	47.67442052	2422248	737566	9/2/87	10.36	720	742		8.06	11	456	474	5.4
12023A	14906336DDBC1	131	136	-98.65819588	47.67442052	2422248	737566	10/22/91	15.84	748	766	8.18	7.57	6	483	482	6.1
12023A	14906336DDBC1	131	136	-98.65819588	47.67442052	2422248	737566	9/11/96		613	724		7.69	7.7	457	439	5.7
12023A	14906336DDBC1	131	136	-98.65819588	47.67442052	2422248	737566	9/5/06	12.9	723	758	6.78	8.01			470	6.19
12023A	14906336DDBC1	131	136	-98.65819588	47.67442052	2422248	737566	10/7/13		729	753		8.07			451	5.27
12023B	14906336DDBC2	83	88	-98.65819588	47.67442052	2422248	737566	9/2/87	10.63	620	617		8.12	10	382	394	1.9
12023B	14906336DDBC2	83	88	-98.65819588	47.67442052	2422248	737566	10/22/91	14.28	598	622	7.83	7.34	6	371	381	1.6
12023B	14906336DDBC2	83	88	-98.65819588	47.67442052	2422248	737566	9/11/96		509	612		7.61	7.4	390	364	1.6
12023B	14906336DDBC2	83	88	-98.65819588	47.67442052	2422248	737566	9/5/06	11.4	596	632	6.58	7.82			392	1.66
12023B	14906336DDBC2	83	88	-98.65819588	47.67442052	2422248	737566	10/7/13		610	630		7.99			364	1.56
12023C	14906336DDBC3	46	51	-98.65819588	47.67442052	2422248	737566	9/2/87	14.84	540	540		7.86	10	342	336	0.2
12023C	14906336DDBC3	46	51	-98.65819588	47.67442052	2422248	737566	10/22/91	18.41	548	572	2	7.34	7	346	349	0.4
12023C	14906336DDBC3	46	51	-98.65819588	47.67442052	2422248	737566	9/10/96		465	541		7.39	7.9	318	316	0.3
12023C	14906336DDBC3	46	51	-98.65819588	47.67442052	2422248	737566	9/6/01	14.85	531	578		7.94		324	313	0.2
12023C	14906336DDBC3	46	51	-98.65819588	47.67442052	2422248	737566	9/5/06	15.87	549	582	6.97	7.37			361	0.24
12024B	14806301CBBC2	151	156	-98.65030232	47.66537260	2424270	734312	9/1/83	43.81	590	607		8.11	11	357	379	2.7
12024B	14806301CBBC2	151	156	-98.65030232	47.66537260	2424270	734312	10/22/87	47.58	583	614	8.03	7.54	6	375	386	2.9
12024B	14806301CBBC2	151	156	-98.65030232	47.66537260	2424270	734312	9/10/92		509	594		7.72	8.1	383	359	3
12024B	14806301CBBC2	151	156	-98.65030232	47.66537260	2424270	734312	9/4/02	44.21	587	619	7.18	7.99			384	3.35
12024B	14806301CBBC2	151	156	-98.65030232	47.66537260	2424270	734312	10/6/09		585	611		8.2			366	2.91
12024B	14806301CBBC2	151	156	-98.65030232	47.66537260	2424270	734312	10/7/13		585	611		8.2			366	2.91

Table 3 (cont.) Well location and water chemistry parameters for the WS-1 monitoring well set, CGS. Red=2013 sampling.

Well No.	Location	Top Screen Feet	Bottom Screen Feet	Longitude	Latitude	x-coord	y-coord	Date Sampled	Water Level Feet bls	Field Cond. µS/cm	Lab Cond. µS/cm	Field pH	Lab pH	Field Temp °C	TDS Det. mg/L	TDS Calc. mg/L	SAR
12025	14906326DCA	38	43	-98.68057616	47.69021308	2416602	743197	9/1/87	16.32	975	973		7.86	11	610	647	1.9
12025	14906326DCA	38	43	-98.68057616	47.69021308	2416602	743197	10/24/91	20.12	996	1050	7.87	7.41	7	671	688	1.8
12025	14906326DCA	38	43	-98.68057616	47.69021308	2416602	743197	9/12/96		880	1140		7.65	7.9	748	740	1.7
12025	14906326DCA	38	43	-98.68057616	47.69021308	2416602	743197	9/6/01	13.57	992	1150		7.63		703	698	1.9
12025	14906326DCA	38	43	-98.68057616	47.69021308	2416602	743197	9/6/06	13.28	1087	1160	7.21	7.54			719	2.26
12025	14906326DCA	38	43	-98.68057616	47.69021308	2416602	743197	10/7/13		1331	1400		7.64			921	2.4
12026A	14906334BBB1	251	256	-98.71776161	47.68638790	2407477	741592	9/1/87	25		913		7.77		578	577	3.6
12026A	14906334BBB1	251	256	-98.71776161	47.68638790	2407477	741592	11/19/91	28.4	595	632	7.05	7.26	7		384	1.9
12026A	14906334BBB1	251	256	-98.71776161	47.68638790	2407477	741592	9/12/96		491	581		7.66	8	372	340	1.6
12026A	14906334BBB1	251	256	-98.71776161	47.68638790	2407477	741592	9/6/06	20.12	557	580	8.06	8.17			360	1.76
12026A	14906334BBB1	251	256	-98.71776161	47.68638790	2407477	741592	10/7/13		557	582		8.2			358	1.73
12026B	14906334BBB2	27	32	-98.71776161	47.68638790	2407477	741592	9/1/87	21.46	670	635		8.06	11	380	405	0.7
12026B	14906334BBB2	27	32	-98.71776161	47.68638790	2407477	741592	10/24/91	25.95	566	584	7.95	7.32	6	372	368	0.5
12026B	14906334BBB2	27	32	-98.71776161	47.68638790	2407477	741592	10/22/92			565		6.68		380	354	0.4
12026B	14906334BBB2	27	32	-98.71776161	47.68638790	2407477	741592	9/12/96		486	597		7.74	7.4	373	357	0.5
12026B	14906334BBB2	27	32	-98.71776161	47.68638790	2407477	741592	9/6/06	18.33	596	630	7.89	7.53			391	0.28
12026B	14906334BBB2	27	32	-98.71776161	47.68638790	2407477	741592	10/7/13		594	621		7.99			378	0.47

Table 4. General chemistry (anions and cations) for water samples from the WS-1 well set, CGS. Red=2013 sampling.

Well No.	Date Sampled	Location	Top Screen Feet	Bottom Screen Feet	Silica mg/L	Calcium mg/L	Magnesium mg/L	Potassium mg/L	Sodium mg/L	Fluoride mg/L	Bicarbonate mg/L	Sulfate mg/L	Chloride mg/L	Nitrate mg/L	Nitrate + Nitrite mg/L
12011B	9/1/87	14906335ABBD2	45	50	29	68	25	9.6	93	0.2	422	120	8.5	1.8	
12011B	10/24/91	14906335ABBD2	45	50	27	68	26	9.9	94	0.3	432	130	10	5.5	
12011B	9/10/96	14906335ABBD2	45	50		80	29	10	99	0.2	459	170	11	0.1	
12011B	9/6/01	14906335ABBD2	45	50		79	29	9.3	97	0.2	455	160	9.4	0.1	
12011B	9/6/06	14906335ABBD2	45	50		62.9	24.9	8.16	88.1	0.182	413	129	7.18	<0.09	<0.02
12011B	10/7/13	14906335ABBD2	45	50	30.8					0.25	431	134	<3		<0.03
12013B	9/1/87	14906336BBDA2	22	27	31	59	22	7.5	47	0.3	358	43	8	1	
12013B	10/24/91	14906336BBDA2	22	27	30	60	19	7.7	49	0.3	358	42	8.9	0.2	
12013B	9/11/96	14906336BBDA2	22	27		66	19	7.6	45	0.3	370	47	8.2	0.4	
12013B	9/6/06	14906336BBDA2	22	27		72.9	22.6	7.47	53.8	0.211	390	93.1	7.66	<0.09	<0.02
12013B	10/7/13	14906336BBDA2	22	27	28.6					0.25	374	93.4	8.48		1.15
12014B	9/2/87	14906336AACB2	181	186	31	63	13	9.8	140	0.2	452	110	32	2.7	
12014B	10/22/91	14906336AACB2	181	186	28	62	13	9	140	0.1	457	110	30	0.8	
12014B	9/11/96	14906336AACB2	181	186		64	13	9.5	140	0.2	467	110	33	0.2	
12014B	9/5/06	14906336AACB2	181	186		54.8	12.2	7.89	146	0.099	461	107	31.6	0.09	0.02
12014B	10/7/13	14906336AACB2	181	186	29.9					0.18	472	109	31.7		0.03
12014C	9/2/87	14906336AACB3	64	69	32	110	30	7.4	11	0.2	401	57	3	0.4	
12014C	10/22/91	14906336AACB3	64	69	29	120	32	7.4	11	0.1	486	55	5	0	
12014C	9/11/96	14906336AACB3	64	69		110	29	6.5	9	0.2	472	50	5.2	0.1	
12014C	9/5/06	14906336AACB3	64	69		92.2	28.2	6.27	9.3	0.13	441	44.9	5.5	<0.09	<0.02
12014C	10/7/13	14906336AACB3	64	69	30.3					0.19	404	43.1	9.49		<0.03
12014D	9/2/87	14906336AACB4	24	29	29	79	23	3.5	5.5	0.2	305	29	2.9	3.2	
12014D	10/22/91	14906336AACB4	24	29	26	78	23	5.6	6	0.1	329	36	6	10	
12014D	9/10/96	14906336AACB4	24	29		82	23	2.8	4	0.2	342	27	4.1	12	
12014D	9/6/01	14906336AACB4	24	29		91	26	3	5.5	0.1	352	29	2.8	15	
12014D	9/5/06	14906336AACB4	24	29		79.2	25.3	3.49	5.4	0.1	364	33.2	3.8	14.2	3.2
12014D	10/7/13	14906336AACB4	24	29	28.1					0.16	374	38.9	6.88		3.19

Table 4 (cont.) General chemistry (anions and cations) for water samples from the WS-1 well set, CGS. Red=2013 sampling.

Well No.	Date Sampled	Location	Top Screen Feet	Bottom Screen Feet	Silica mg/L	Calcium mg/L	Magnesium mg/L	Potassium mg/L	Sodium mg/L	Fluoride mg/L	Bicarbonate mg/L	Sulfate mg/L	Chloride mg/L	Nitrate mg/L	Nitrate + Nitrite mg/L
12015B	9/1/87	14906231ABBC2	162	167	31	45	12	9.1	64	0.3	321	43	4	2.8	
12015B	10/23/91	14906231ABBC2	162	167	29	42	12	9	65	0.3	325	36	4.4	0	
12015B	9/11/96	14906231ABBC2	162	167		42	11	8.9	61	0.3	332	37	4.2	0.1	
12015B	9/5/06	14906231ABBC2	162	167		37.1	11.6	8.53	68.4	0.27	323	38.1	2.72	<0.09	<0.02
12015B	10/7/13	14906231ABBC2	162	167	30.2					0.36	334	39	3.83		<0.03
12015C	10/23/91	14906231ABBC3	78	83	32	63	18	6.2	5.5	0.2	290	19	3	3.6	
12015C	9/11/96	14906231ABBC3	78	83		69	18	5.2	4.5	0.2	300	21	2.5	0.1	
12015C	9/6/01	14906231ABBC3	78	83		68	18	5.5	6.5	0.2	300	19	0	0.6	
12015C	9/5/06	14906231ABBC3	78	83		54.7	17	5.53	6.2	0.14	286	18.1	1.31	0.49	0.11
12015C	10/7/13	14906231ABBC3	78	83	35.5					0.2	296	27.2	<3		<0.03
12017A	9/1/87	14906325DBBC1	263	268	30	19	4.5	7.5	240	0.4	444	100	99	0.6	
12017A	10/24/91	14906325DBBC1	263	268	27	18	4.5	8	250	0.4	454	100	96	0	
12017A	9/11/96	14906325DBBC1	263	268		18	4.5	7.4	250	0.4	458	110	97	1.2	
12017A	9/5/06	14906325DBBC1	263	268		15	4.1	6.24	272	0.358	447	106	98.5	0.13	0.03
12017A	10/7/13	14906325DBBC1	263	268	27.2					0.39	456	109	97.9		<0.03
12017B	9/2/87	14906325DBBC2	78	83	22	26	7.5	14	160	0.5	376	150	4.1	3.1	
12017B	10/24/91	14906325DBBC2	78	83	26	25	7.5	7.9	130	0.5	416	45	7.5	5.6	
12017B	9/11/96	14906325DBBC2	78	83		29	8.5	8.3	120	0.5	418	53	8.4	0.9	
12017B	9/5/06	14906325DBBC2	78	83		27.2	8.9	7.31	118	0.359	380	39.9	2.4	0.09	0.02
12017B	10/7/13	14906325DBBC2	78	83	28.4					0.41	397	45.2	3.24		<0.03
12017C	9/2/87	14906325DBBC3	51	56	31	72	20	5.1	6	0.3	314	25	1	0.4	
12017C	10/24/91	14906325DBBC3	51	56	24	62	17	3.9	6.5	0.2	264	23	4.8	2.4	
12017C	9/10/96	14906325DBBC3	51	56		66	19	4.3	5	0.2	293	26	3.7	0.6	
12017C	9/5/06	14906325DBBC3	51	56		63.3	19.1	5.08	6.3	0.13	309	28.6	1.6	<0.09	<0.02
12017C	10/7/13	14906325DBBC3	51	56	32.3					0.21	317	31.6	<3		<0.03
12017D	9/2/87	14906325DBBC4	23	28	32	72	19	5.2	5.5	0.2	319	19	1.3	1	
12017D	10/24/91	14906325DBBC4	23	28	32	70	19	4.9	7	0.2	316	18	4	3	
12017D	9/10/96	14906325DBBC4	23	28		74	19	4.3	6	0.2	325	20	2.9	0.1	
12017D	9/6/01	14906325DBBC4	23	28		74	20	2	8	0.2	324	22	0	0.1	
12017D	9/5/06	14906325DBBC4	23	28		63.2	18.4	4.69	7.8	0.202	309	22.9	1.58	<0.09	<0.02

Table 4 (cont.) General chemistry (anions and cations) for water samples from the WS-1 well set, CGS. Red=2013 sampling.

Well No.	Date Sampled	Location	Top Screen Feet	Bottom Screen Feet	Silica mg/L	Calcium mg/L	Magnesium mg/L	Potassium mg/L	Sodium mg/L	Fluoride mg/L	Bicarbonate mg/L	Sulfate mg/L	Chloride mg/L	Nitrate mg/L	Nitrate + Nitrite mg/L
12019A	9/1/87	14906323ADBB1	218	223	30	41	10	6.9	76	0.2	322	19	21	2.9	
12019A	10/23/91	14906323ADBB1	218	223	28	44	11	6.3	67	0.2	331	23	16	4.3	
12019A	9/11/96	14906323ADBB1	218	223		41	9.5	6.5	70	0.2	337	23	18	0.2	
12019A	9/6/06	14906323ADBB1	218	223		38	9.6	5.9	77.3	0.17	331	22.2	21.2	0.44	0.1
12019B	9/1/87	14906323ADBB2	32	37	28	74	21	3.6	6.5	0.2	298	40	1.6	0.4	
12019B	10/23/91	14906323ADBB2	32	37	26	72	21	3.3	8	0.2	304	45	3.9	0.7	
12019B	9/10/96	14906323ADBB2	32	37		77	22	3.1	6	0.1	310	53	1.7	0.4	
12019B	9/6/06	14906323ADBB2	32	37		64.1	19.2	3.11	5.8	0.148	288	39.1	1.76	0.13	0.03
12019C	9/1/87	14906323ADBB3	7	12	38	77	18	2.3	4	0.2	287	16	1	3.4	
12019C	10/23/91	14906323ADBB3	7	12	27	82	20	1.2	3.5	0.2	331	9.9	3.4	24	
12019C	9/10/96	14906323ADBB3	7	12		80	18	1.4	3.5	0.1	315	19	2.7	14	
12019C	9/6/01	14906323ADBB3	7	12		78	21	1.3	5	0.2	284	37	0	10	
12019C	9/6/06	14906323ADBB3	7	12		62.2	17.7	1.62	3.5	0.139	269	21.9	1.64	14.7	3.31
12020A	9/1/87	14906314DACD1	212	217	31	20	6	12	640	0.5	752	430	360	0.6	
12020A	10/23/91	14906314DACD1	212	217	30	13	4	9.5	510	0.6	772	340	160	3.7	
12020A	9/11/96	14906314DACD1	212	217		9.3	4	10	490	0.7	782	330	140	2.3	
12020A	9/5/06	14906314DACD1	212	217		10	3.6	7.95	542	0.66	761	331	145	<0.09	<0.02
12020A	10/9/13	14906314DACD1	212	217	30.4					0.68	855	328	141		<0.03
12020B	9/1/87	14906314DACD2	151	156	31	14	4	8.4	310	0.7	659	200	20	0.5	
12020B	10/23/91	14906314DACD2	151	156	29	15	3	7.9	320	0.6	671	190	23	1.8	
12020B	9/11/96	14906314DACD2	151	156		11	4	9	310	0.6	693	190	19	0.2	
12020B	9/5/06	14906314DACD2	151	156		11.6	3.1	7.01	352	0.649	664	190	18.2	<0.09	<0.02
12020B	10/9/13	14906314DACD2	151	156	32					0.71	740	193	20.4		<0.03
12020C	9/1/87	14906314DACD3	38	43	32	73	23	6.8	18	0.2	341	35	3.9	2.4	
12020C	10/23/91	14906314DACD3	38	43	29	70	23	5.8	15	0.2	335	35	5.6	1.4	
12020C	9/10/96	14906314DACD3	38	43		73	23	5.5	15	0.2	353	31	4.5	1.8	
12020C	9/6/01	14906314DACD3	38	43		74	23	4.9	16	0.3	338	32	9.7	2.7	
12020C	9/5/06	14906314DACD3	38	43		64.4	22	5.21	12.1	0.19	318	22.6	1.4	3.14	0.71
12020C	10/9/13	14906314DACD3	38	43	32.6					0.29	375	55.8	7.69		1.21

Table 4 (cont.) General chemistry (anions and cations) for water samples from the WS-1 well set, CGS. Red=2013 sampling.

Well No.	Date Sampled	Location	Top Screen Feet	Bottom Screen Feet	Silica mg/L	Calcium mg/L	Magnesium mg/L	Potassium mg/L	Sodium mg/L	Fluoride mg/L	Bicarbonate mg/L	Sulfate mg/L	Chloride mg/L	Nitrate mg/L	Nitrate + Nitrite mg/L
12021A	9/1/87	14906313BAAB1	96	101	25	64	18	17	470	0.4	633	140	490	5.5	
12021A	10/23/91	14906313BAAB1	96	101	26	110	30	20	820	0.3	755	79	1100	0.1	
12021A	9/11/96	14906313BAAB1	96	101		110	30	25	830	0.3	782	77	1100	17	
12021A	9/6/01	14906313BAAB1	96	101		120	33	25	900	0.3	765	67	1100	0.2	
12021A	9/6/06	14906313BAAB1	96	101		104	28.6	21.8	974	0.32	730	88.5	1070	0.09	0.02
12021A	10/9/13	14906313BAAB1	96	101	18.6					0.35	696	70.1	955		1.87
12022	9/1/87	14906327DDDC2	158	163	10	29	8.5	14	2.5	0.1	161	61	1.8	1	
12022	11/19/91	14906327DDDC2	158	163	28	53	15	9.2	64	0.3	299	89	15	1.2	
12022	9/11/96	14906327DDDC2	158	163		57	15	8.6	65	0.3	308	94	41	0.2	
12023A	9/2/87	14906336DDBC1	131	136	31	30	8	7.5	130	0.5	399	49	18	2	
12023A	10/22/91	14906336DDBC1	131	136	27	28	7	6.9	140	0.3	413	48	20	0	
12023A	9/11/96	14906336DDBC1	131	136		29	7	6.9	130	0.3	403	47	18	0.6	
12023A	9/5/06	14906336DDBC1	131	136		26.1	7	5.94	138	0.3	408	44.5	17.5	<0.09	<0.02
12023A	10/7/13	14906336DDBC1	131	136	30.4					0.35	419	45.7	17.8		<0.03
12023B	9/2/87	14906336DDBC2	83	88	32	55	15	7.6	61	0.3	353	38	9.4	0.4	
12023B	10/22/91	14906336DDBC2	83	88	29	56	16	7.6	52	0.2	353	35	9.2	0.4	
12023B	9/11/96	14906336DDBC2	83	88		59	16	7.3	52	0.2	360	41	9.9	0.1	
12023B	9/5/06	14906336DDBC2	83	88		52.5	15.5	6.56	53.2	0.196	347	37.1	8.3	<0.09	<0.02
12023B	10/7/13	14906336DDBC2	83	88	30.2					0.29	366	39.1	8.96		<0.03
12023C	9/2/87	14906336DDBC3	46	51	30	77	22	4.4	8	0.2	329	28	3.3	0.5	
12023C	10/22/91	14906336DDBC3	46	51	27	72	21	5.6	16	0.2	339	30	5.5	3.7	
12023C	9/10/96	14906336DDBC3	46	51		75	22	4.1	11	0.2	345	27	5.3	0.1	
12023C	9/6/01	14906336DDBC3	46	51		78	23	2.9	8.5	0.2	355	20	4.5	0.1	
12023C	9/5/06	14906336DDBC3	46	51		68.1	22.1	4.39	8.9	0.15	347	25.5	3.9	<0.09	<0.02
12023C	10/7/13	14906336DDBC3	46	51	28.9					0.21	374	28.1	4.27		<0.03
12024B	9/1/83	14806301CBBC2	151	156	30	40	11	7.9	75	0.3	339	40	4.8	1.7	
12024B	10/22/87	14806301CBBC2	151	156	30	37	11	9.1	80	0.3	341	42	7.3	0	
12024B	9/10/92	14806301CBBC2	151	156		38	11	7.5	82	0.2	344	44	6.7	0.1	
12024B	9/4/02	14806301CBBC2	151	156		32.7	10.6	7.03	86.4	0.22	339	41.9	5.4	<0.09	<0.02
12024B	10/6/09	14806301CBBC2	151	156	30.6					0.3	354	45.8	6.48		<0.03
12024B	10/7/13	14806301CBBC2	151	156	30.6					0.3	354	45.8	6.48		<0.03

Table 4 (cont.) General chemistry (anions and cations) for water samples from the WS-1 well set, CGS. Red=2013 sampling..

Well No.	Date Sampled	Location	Top Screen Feet	Bottom Screen Feet	Silica mg/L	Calcium mg/L	Magnesium mg/L	Potassium mg/L	Sodium mg/L	Fluoride mg/L	Bicarbonate mg/L	Carbonate mg/L	Sulfate mg/L	Chloride mg/L	Nitrate mg/L
12025	9/1/87	14906326DCA	38	43	28	71	46	12	83	0.3	444	170	14	2	
12025	10/24/91	14906326DCA	38	43	27	73	53	14	82	0.3	476	190	14	0	
12025	9/12/96	14906326DCA	38	43		87	58	14	83	0.2	500	230	20	0.4	
12025	9/6/01	14906326DCA	38	43		80	54	13	90	0.2	511	190	17	0.2	
12025	9/6/06	14906326DCA	38	43		71.6	52.1	12.8	103	0.176	567	154	16.3	0.09	0.02
12025	10/7/13	14906326DCA	38	43	30					0.32	753	222	22.1		<0.03
12026A	9/1/87	14906334BBB1	251	256	27	47	23	14	120	0.5	428	110	23	1	
12026A	11/19/91	14906334BBB1	251	256	30	49	15	7.7	59	0.5	328	47	13	0	
12026A	9/12/96	14906334BBB1	251	256		52	14	7.2	50	0.5	318	48	10	0.3	
12026A	9/6/06	14906334BBB1	251	256		45.6	13.4	6.14	52.7	0.451	305	44.7	8	<0.09	<0.02
12026A	10/7/13	14906334BBB1	251	256	34.7					0.5	327	50.5	9.15		<0.03
12026B	9/1/87	14906334BBB2	27	32	27	74	25	4.7	28	0.2	298	89	8.5	1	
12026B	10/24/91	14906334BBB2	27	32	25	71	23	3.6	18	0.2	289	72	8	5.1	
12026B	10/22/92	14906334BBB2	27	32	25	70	23	3.1	16	0.1	281	66	5.6	7.6	
12026B	9/12/96	14906334BBB2	27	32		75	24	3.5	18	0.2	305	63	5.5	17	
12026B	9/6/06	14906334BBB2	27	32		71.9	24.9	2.94	11	0.089	316	43	4.44	30.3	6.84
12026B	10/7/13	14906334BBB2	27	32	28.6					0.2	333	52.6	4.94		4.43

Table 5. Dissolved minor and trace element concentrations in the WS-1 well set. Yellow highlight indicates elevated arsenic. Yellow highlight indicates elevated arsenic. Red=2013 sampling.

Well No.	Location	Top Screen	Bottom Screen	Date Sampled	B	Fe	Mn	Al	Sb	As	Ba	Be	Cd	Cr	Cu	Pb	Li	Hg	Mo	Ni	Se	Ag	Sr	Tl	Zn
					mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
12011B	14906335ABBD2	45	50	9/1/87	0.3	0.76	0.29			22						0	79	0	5		0		410		
12011B	14906335ABBD2	45	50	10/24/91	0.24	0.37	0.34			16						0	80	0.1	4		0		450		
12011B	14906335ABBD2	45	50	9/10/96		1.2	0.29			20						0	80	0	3		0		460		
12011B	14906335ABBD2	45	50	9/6/01		1	0.27			24						2	100	0	4		3		470		
12011B	14906335ABBD2	45	50	9/6/06	0.299	1.03	0.241	<50		25.9	42.9	<1	<1	<1	1.35	<1				4.15	<1	<1		<1	13
12011B	14906335ABBD2	45	50	10/7/13	0.259			<50	<5	27.8	41.8	<5	<5		<5	<5				<5	<5	<5		<5	9.24
12013B	14906336BBDA2	22	27	9/1/87	0.23	0.01	0.11			20						0	48	0	13		0		380		
12013B	14906336BBDA2	22	27	10/24/91	0.19	0.01	0.34			12						0	50	0.1	11		0		400		
12013B	14906336BBDA2	22	27	9/11/96		0.03	0.36			22						0	40	0	10		0		360		
12013B	14906336BBDA2	22	27	9/6/06	0.25	0.051	0.392	<50		22.6	72.5	<1	<1	<1	1.2	<1				6.01	<1	<1		<1	7.17
12013B	14906336BBDA2	22	27	10/7/13	0.228			<50	<5	22	58	<5	<5		<5	<5				<5	<5	<5		<5	8.37
12014B	14906336AACB2	181	186	9/2/87	0.5	0.03	1.1			1						0	120	0	9		1		480		
12014B	14906336AACB2	181	186	10/22/91	0.48	0.03	1			1						0	100	0	5		0		500		
12014B	14906336AACB2	181	186	9/11/96		0.02	1.1			0						0	110	0	8		0		430		
12014B	14906336AACB2	181	186	9/5/06	0.577	<0.01	0.94	<50		2.01	57.5	<1	<1	1.23	2.53	1.58				5.2	<1	<1		1.57	31.1
12014B	14906336AACB2	181	186	10/7/13	0.565			<50	<5	<5	52.5	<5	<5		<5	<5				<5	<5	<5		<5	23.3
12014C	14906336AACB3	64	69	9/2/87	0.06	0.18	0.81			13						0	30	0.1	2		1		420		
12014C	14906336AACB3	64	69	10/22/91	0.04	0.23	0.61			11						0	30	0	2		0		460		
12014C	14906336AACB3	64	69	9/11/96		0.37	0.6			8						0	30	0	4		0		370		
12014C	14906336AACB3	64	69	9/5/06	0.084	0.358	0.548	<50		12.4	180	<1	<1	1.26	1.46	1.52				5.72	<1	<1		1.55	46.2
12014C	14906336AACB3	64	69	10/7/13	0.057			<50	<5	12	161	<5	<5		<5	<5				<5	<5	<5		<5	17.8
12014D	14906336AACB4	24	29	9/2/87	0.03	0.02	0.03									0	14	0	3		1		220		
12014D	14906336AACB4	24	29	10/22/91	0.03	0.01	0.02			0						0	10	0	1		0		250		
12014D	14906336AACB4	24	29	9/10/96		0.01	0.02			0						0	20	0	0		0		220		
12014D	14906336AACB4	24	29	9/6/01		0.08	0.04			2						2	100	0	2		3		220		
12014D	14906336AACB4	24	29	9/5/06	0.061	0.013	0.034	<50		<1	92.3	<1	<1	1.08	1.96	1.53				5.72	<1	<1		1.55	15.8
12014D	14906336AACB4	24	29	10/7/13	0.055			<50	<5	<5	78.8	<5	<5		<5	<5				<5	<5	<5		<5	5.92

Table 5 (cont.) Dissolved minor and trace element concentrations in the WS-1 well set. Yellow highlight indicates elevated arsenic. Red=2013 sampling.

Well No.	Location	Top Screen	Bottom Screen	Date Sampled	B	Fe	Mn	Al	Sb	As	Ba	Be	Cd	Cr	Cu	Pb	Li	Hg	Mo	Ni	Se	Ag	Sr	Tl	Zn
					mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
12015B	14906231ABBC2	162	167	9/1/87	0.28	0.04	0.27			42						1	79	0	26		0		330		
12015B	14906231ABBC2	162	167	10/23/91	0.26	0.02	0.2			-						0	80	0	18		0		390		
12015B	14906231ABBC2	162	167	9/11/96		0.15	0.21			47						0	70	0	19		0		320		
12015B	14906231ABBC2	162	167	9/5/06	0.326	0.169	0.22	<50		54	47.9	<1	<1	<1	1.16	<1				2.55	<1	<1		<1	12.7
12015B	14906231ABBC2	162	167	10/7/13	0.315			<50	<5	55.9	46.4	<5	<5		<5	<5				<5	<5	<5		<5	5.51
12015C	14906231ABBC3	78	83	10/23/91	0.01	0.02	1.1			10						0	20	0	4		0		350		
12015C	14906231ABBC3	78	83	9/11/96		0.3	0.64			10						0	20	0	1		0		290		
12015C	14906231ABBC3	78	83	9/6/01		0.08	0.46			11						2	100	0	3		3		300		
12015C	14906231ABBC3	78	83	9/5/06	0.052	0.068	0.435	<50		11.2	121	<1	<1	<1	<1	<1				3.81	<1	<1		<1	15.1
12015C	14906231ABBC3	78	83	10/7/13	0.054			<50	<5	15.4	121	<5	<5		<5	<5				<5	<5	<5		<5	6.38
12017A	14906325DBBC1	263	268	9/1/87	0.65	0.01	0.24			5						0	99	0	200		0		170		
12017A	14906325DBBC1	263	268	10/24/91	0.71	0	0.24			2						1	100	0.1	4		0		200		
12017A	14906325DBBC1	263	268	9/11/96		0.02	0.28			4						0	100	0	20		0		190		
12017A	14906325DBBC1	263	268	9/5/06	0.826	<0.01	0.253	<50		4.7	25.7	<1	<1	1.03	3.45	<1				1.82	1.83	<1		<1	7.35
12017A	14906325DBBC1	263	268	10/7/13	0.778			<50	<5	<5	26.5	<5	<5		<5	<5				<5	<5	<5		<5	<5
12017B	14906325DBBC2	78	83	9/2/87	0.55	0.01	0.15			13						0	87	0	300		0		270		
12017B	14906325DBBC2	78	83	10/24/91	0.47	0.01	0.11			19						0	80	0.1	12		0		260		
12017B	14906325DBBC2	78	83	9/11/96		0.15	0.13			25						0	70	0	15		0		270		
12017B	14906325DBBC2	78	83	9/5/06	0.465	0.152	0.137	<50		45.5	44.6	<1	<1	<1	1.63	<1				1.5	<1	<1		<1	7.46
12017B	14906325DBBC2	78	83	10/7/13	0.468			<50	<5	38.6	37.2	<5	<5		<5	<5				<5	<5	<5		<5	<5
12017C	14906325DBBC3	51	56	9/2/87	0.06	0.09	0.5			6						0	21	0.3	4		0		270		
12017C	14906325DBBC3	51	56	10/24/91	0.03	0	0.03			3						0	20	0.1	2		0		260		
12017C	14906325DBBC3	51	56	9/10/96		0.08	0.25			3						0	20	0	2		0		260		
12017C	14906325DBBC3	51	56	9/5/06	0.065	0.077	0.423	<50		6.23	105	<1	<1	<1	<1	<1				2.78	<1	<1		<1	7.71
12017C	14906325DBBC3	51	56	10/7/13	0.063			<50	<5	6.88	103	<5	<5		<5	<5				<5	<5	<5		<5	13.2
12017D	14906325DBBC4	23	28	9/2/87	0.07	1.1	0.93			8						0	21	0	4		0		290		
12017D	14906325DBBC4	23	28	10/24/91	0.04	1.8	0.74			2						0	20	0.1	1		0		320		
12017D	14906325DBBC4	23	28	9/10/96		1.8	0.69			3						0	20	0	0		0		300		
12017D	14906325DBBC4	23	28	9/6/01		2	0.61			6						2	100	0	3		3		280		
12017D	14906325DBBC4	23	28	9/5/06	0.069	1.25	0.543	<50		5.26	127	<1	<1	<1	<1	<1				3.28	<1	<1		<1	11.6

Table 5 (cont.) Dissolved minor and trace element concentrations in the WS-1 well set. Yellow highlight indicates elevated arsenic. Red=2013 sampling.

Well No.	Location	Top Screen	Bottom Screen	Date Sampled	B	Fe	Mn	Al	Sb	As	Ba	Be	Cd	Cr	Cu	Pb	Li	Hg	Mo	Ni	Se	Ag	Sr	Tl	Zn
					mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
12019A	14906323ADBB1	218	223	9/1/87	0.15	0.09	0.43			5							45		9		1		400		
12019A	14906323ADBB1	218	223	10/23/91	0.14	0.11	0.41			3						0	50	0	7		0		450		
12019A	14906323ADBB1	218	223	9/11/96		0.12	0.42			3						0	40	0	4		0		380		
12019A	14906323ADBB1	218	223	9/6/06	0.214	0.039	0.392	<50		3.77	165	<1	<1	<1	5.04	<1				4.28	<1	<1		<1	129
12019B	14906323ADBB2	32	37	9/1/87	0.04	0.21	0.44			3							17	0.1	1		1		230		
12019B	14906323ADBB2	32	37	10/23/91	0.05	0.05	0.35			2						1	20	0.1	1		1		260		
12019B	14906323ADBB2	32	37	9/10/96		0.25	0.4			0						0	20	0	0		0		250		
12019B	14906323ADBB2	32	37	9/6/06	0.073	0.031	0.332	<50		2.43	145	<1	<1	<1	1.11	<1				5.26	<1	<1		<1	204
12019C	14906323ADBB3	7	12	9/1/87	0.05	0.11	0.33			1							8	0.1			2		170		
12019C	14906323ADBB3	7	12	10/23/91	0.03	0	0.05			1						1	7	0.1	1		3		190		
12019C	14906323ADBB3	7	12	9/10/96		1.7	1.3			0						0	10	0	0		1		200		
12019C	14906323ADBB3	7	12	9/6/01		0.84	0.45			2						2	100	0	3		3		180		
12019C	14906323ADBB3	7	12	9/6/06	0.061	0.268	0.289	<50		<1	118	<1	<1	<1	<1	<1				4.38	1.54	<1		<1	10.1
12020A	14906314DACD1	212	217	9/1/87	3.4	0.03	0.39			4						1	180		8				280		
12020A	14906314DACD1	212	217	10/23/91	2	0.02	0.16			6						0	140	0	6		0		230		
12020A	14906314DACD1	212	217	9/11/96		0.01	0.17			6						0	130	0	47		0		190		
12020A	14906314DACD1	212	217	9/5/06	2.22	<0.01	0.172	<50		9.33	13.8	<1	<1	1.82	7.06	<1				2.21	2.52	<1		<1	34.5
12020A	14906314DACD1	212	217	10/9/13	3.17			<50	<5	7.72	13.3	<5	<5		<5	<5				<5	<5	<5		<5	8.48
12020B	14906314DACD2	151	156	9/1/87	1.1	0.01	0.22			4						1	120		200		1		160		
12020B	14906314DACD2	151	156	10/23/91	1.3	0.02	0.17			4						0	110	0	10		0		190		
12020B	14906314DACD2	151	156	9/11/96		0.05	0.18			4						0	110	0	69		0		170		
12020B	14906314DACD2	151	156	9/5/06	1.47	0.011	0.174	<50		4.89	19.7	<1	<1	1.38	4.45	<1				2.46	<1	<1		<1	13.4
12020B	14906314DACD2	151	156	10/9/13	2.22			<50	<5	5.12	19.8	<5	<5		<5	<5				<5	<5	<5		<5	<5
12020C	14906314DACD3	38	43	9/1/87	0.06	0.01	0.06			14							29		5				290		
12020C	14906314DACD3	38	43	10/23/91	0.05	0.08	0.07			8						0	30	0	4		0		330		
12020C	14906314DACD3	38	43	9/10/96		0.09	0.07			6						0	30	0	2		2		280		
12020C	14906314DACD3	38	43	9/6/01		0.02	0.02			11						2	100	0	4		6		280		
12020C	14906314DACD3	38	43	9/5/06	0.079	<0.01	0.041	<50		9.84	73.8	<1	<1	<1	<1	<1				2.9	3.79	<1		<1	3.49
12020C	14906314DACD3	38	43	10/9/13	0.13			<50	<5	11.9	76.8	<5	<5		<5	<5				<5	5.29	<5		<5	<5

Table 5 (cont.) Dissolved minor and trace element concentrations in the WS-1 well set. Yellow highlight indicates elevated arsenic. Red=2013 sampling.

Well No.	Location	Top Screen	Bottom Screen	Date Sampled	B	Fe	Mn	Al	Sb	As	Ba	Be	Cd	Cr	Cu	Pb	Li	Hg	Mo	Ni	Se	Ag	Sr	Tl	Zn
					mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
12021A	14906313BAAB1	96	101	9/1/87	1.2	0.02	0.22			24						0	160	0.1	16		0		510		
12021A	14906313BAAB1	96	101	10/23/91	2.4	0.03	0.44			25						0	250	0	18		4		980		
12021A	14906313BAAB1	96	101	9/11/96		0.43	0.42			36						0	240	0	19		0		890		
12021A	14906313BAAB1	96	101	9/6/01		0.05	0.39			38						2	240	0	15		16		960		
12021A	14906313BAAB1	96	101	9/6/06	3.2	0.705	0.348	<50		49.5	241	<1	<1	1.47	13.7	<1				5.39	24.7	<1		<1	22.2
12021A	14906313BAAB1	96	101	10/9/13	3.42			51	<5	17.5	142	<5	<5		5.89	<5				<5	<5	<5		<5	114
12022	14906327DDDC2	158	163	9/1/87	0.07	0.15	0.24			7						0	5	0.1	0		2		140		
12022	14906327DDDC2	158	163	11/19/91	0.31	0.01	1.1			1						0	80	0	9		1		390		
12022	14906327DDDC2	158	163	9/11/96		0.02	1.1			1						0	80	0	13		0		320		
12023A	14906336DDBC1	131	136	9/2/87	0.38	0.02	0.93			1						0	83	0.2	30		0		230		
12023A	14906336DDBC1	131	136	10/22/91	0.35	0.29	0.77			2						0	80	0	16		0		250		
12023A	14906336DDBC1	131	136	9/11/96		0.1	0.62			1						0	70	0	30		0		200		
12023A	14906336DDBC1	131	136	9/5/06	0.419	0.028	0.6	<50		2.55	47.2	<1	<1	<1	2.36	1.53				2.89	<1	<1		1.55	10.9
12023A	14906336DDBC1	131	136	10/7/13	0.413			<50	<5	<5	38.6	<5	<5		<5	<5				<5	<5	<5		<5	8.22
12023B	14906336DDBC2	83	88	9/2/87	0.22	0.01	1.4			1						0	68	0	20		0		340		
12023B	14906336DDBC2	83	88	10/22/91	0.16	0.02	1.3			1						0	60	0	14		0		400		
12023B	14906336DDBC2	83	88	9/11/96		0.01	1.3			1						0	60	0	14		0		350		
12023B	14906336DDBC2	83	88	9/5/06	0.22	<0.01	1.19	<50		1.71	62.9	<1	<1	1.17	1.2	1.53				6.03	<1	<1		1.55	13.7
12023B	14906336DDBC2	83	88	10/7/13	0.206			<50	<5	<5	59.5	<5	<5		<5	<5				<5	<5	<5		<5	24.2
12023C	14906336DDBC3	46	51	9/2/87	0.08	0.4	0.32			5						0	23	0	2		0		240		
12023C	14906336DDBC3	46	51	10/22/91	0.05	0.31	0.3			9						0	30	0	4		0		340		
12023C	14906336DDBC3	46	51	9/10/96		0.55	0.31			5						0	20	0	1		0		260		
12023C	14906336DDBC3	46	51	9/6/01		0.62	0.27			4						2	100	0	2		3		240		
12023C	14906336DDBC3	46	51	9/5/06	0.077	0.531	0.265	<50		5.78	133	<1	<1	1.05	<1	1.53				4.07	<1	<1		1.55	6.71
12023C	14906336DDBC3	46	51	10/7/13	0.056			<50	<5	<5	122	<5	<5		<5	<5				<5	<5	<5		<5	5.45
12024B	14806301CBBC2	151	156	9/1/83	0.27	0.01	0.79			1						0	84	0	10		0		330		
12024B	14806301CBBC2	151	156	10/22/87	0.3	0.02	0.68			0						0	90	0	6		0		380		
12024B	14806301CBBC2	151	156	9/10/92		0.04	0.79			0						0	80	0	10		0		300		
12024B	14806301CBBC2	151	156	9/4/02	0.348	<0.01	0.677	<50		1.24	53.9	<1	<1	<1	1.25	<1				3.09	<1	<1		<1	11
12024B	14806301CBBC2	151	156	10/6/09	0.332			<50	<5	<5	47.8	<5	<5		<5	<5				<5	<5	<5		<5	6.07
12024B	14806301CBBC2	151	156	10/7/13	***0.332***			***<50***	***<5***	***<5***	***47.8***	***<5***	***<5***		***<5***	***<5***				***<5***	***<5***	***<5***		***<5***	***6.07***

Table 5 (cont.) Dissolved minor and trace element concentrations in the WS-1 well set. Yellow highlight indicates elevated arsenic. Red=2013 sampling.

Well No.	Location	Top Screen	Bottom Screen	Date Sampled	B	Fe	Mn	Al	Sb	As	Ba	Be	Cd	Cr	Cu	Pb	Li	Hg	Mo	Ni	Se	Ag	Sr	Tl	Zn
					mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
12025	14906326DCA	38	43	9/1/87	0.26	0.61	0.34			15						0	82	0.1	6		0		460		
12025	14906326DCA	38	43	10/24/91	0.21	0.49	0.28			13						0	80	0.1	3		0		510		
12025	14906326DCA	38	43	9/12/96		1.4	0.31			19						0	80	0.1	2		0		510		
12025	14906326DCA	38	43	9/6/01		1.1	0.3			19						2	100	0	5		3		500		
12025	14906326DCA	38	43	9/6/06	0.313	1.06	0.291	<50		19	52.9	<1	<1	<1	2.02	<1				5.82	1.54	<1		<1	25.4
12025	14906326DCA	38	43	10/7/13	0.331			<50	<5	20.8	65.6	<5	<5		<5	<5				<5	<5	<5		<5	9.46
12026A	14906334BBB1	251	256	9/1/87	0.28	0.03	0.68			2						0	94	0	12		0		320		
12026A	14906334BBB1	251	256	11/19/91	0.2	0.01	0.73			4						0	60	0	10		1		390		
12026A	14906334BBB1	251	256	9/12/96		0.07	0.72			3						0	50	0.1	9		0		310		
12026A	14906334BBB1	251	256	9/6/06	0.25	0.039	0.707	<50		2.9	51.1	<1	<1	<1	1.31	<1				4.05	<1	<1		<1	30.5
12026A	14906334BBB1	251	256	10/7/13	0.242			<50	<5	<5	54.4	<5	<5		<5	<5				<5	<5	<5		<5	7.42
12026B	14906334BBB2	27	32	9/1/87	0.1	0.01	0.34			1						0	30	0	0		0		170		
12026B	14906334BBB2	27	32	10/24/91	0.05	0.01	0.04			1						0	20	0.1	0		2		170		
12026B	14906334BBB2	27	32	10/22/92	0	0.02	0.01																		
12026B	14906334BBB2	27	32	9/12/96		0.01	0.33			1						0	20	0	0		1		160		
12026B	14906334BBB2	27	32	9/6/06	0.086	<0.01	0.028	<50		1.55	35.8	<1	<1	<1	<1	<1				6.34	2.48	<1		<1	7.57
12026B	14906334BBB2	27	32	10/7/13	0.073			<50	<5	<5	37.1	<5	<5		<5	<5				<5	<5	<5		<5	5.9

Table 6. Well location and water chemistry parameters for the WS-2 monitoring well set, CGS. Red=2013 sampling.

Well No.	Site	Location	Top Screen Feet	Bottom Screen Feet	Longitude	Latitude	x-coord	y-coord	Date Sampled	Water Level Feet bls	Field Cond. µS/cm	Lab Cond. µS/cm	Field pH	Lab pH	Field Temp °C	TDS Det. mg/L	TDS Calc. mg/L	SAR
13085	12	14806302BABC2	12	17	-98.66510688	47.67110223	2420574	736316	8/26/93		746	744	7.56	7.59	8	461	484	0.2
13085	12	14806302BABC2	12	17	-98.66510688	47.67110223	2420574	736316	9/6/06		831	878	8.17	7.58			544	0.27
13085	12	14806302BABC2	12	17	-98.66510688	47.67110223	2420574	736316	10/8/13		630	671		7.52			408	0.2
13085	12	14806302BABC2	12	17	-98.66510688	47.67110223	2420574	736316	10/14/13		561	575		7.61			337	0.39
13086	7	14806302ACA1	97	102	-98.65637549	47.66854269	2422747	735433	10/22/92	5.8	623	614	6.42	7.03	8	369	384	0.6
13086	7	14806302ACA1	97	102	-98.65637549	47.66854269	2422747	735433	9/3/96		524	586		7.52	8.5	377	348	0.6
13086	7	14806302ACA1	97	102	-98.65637549	47.66854269	2422747	735433	9/5/01		547	626		7.36		366	350	0.6
13086	7	14806302ACA1	97	102	-98.65637549	47.66854269	2422747	735433	9/11/06		367	377	7.9	7.42			234	0.09
13086	7	14806302ACA1	97	102	-98.65637549	47.66854269	2422747	735433	10/8/13		362	385		7.8			223	0.09
13087	7	14806302ACA2	18	23	-98.65637549	47.66854269	2422747	735433	10/22/92	7.6	464	360	6.6	6.86	10	214	222	0.1
13087	7	14806302ACA2	18	23	-98.65637549	47.66854269	2422747	735433	9/3/96		337	363		7.58	7.7	235	201	0.1
13087	7	14806302ACA2	18	23	-98.65637549	47.66854269	2422747	735433	9/5/01		347	362		7.65		219	194	0.1
13087	7	14806302ACA2	18	23	-98.65637549	47.66854269	2422747	735433	9/11/06		593	617	8.01	7.4			383	0.58
13087	7	14806302ACA2	18	23	-98.65637549	47.66854269	2422747	735433	10/8/13		63.8	66.5		6.59			46	0.25
13088	9	14906313DAA1	95	100	-98.66220371	47.72232642	2420852	755014	8/25/93		1299	1330	8.13	8.07	9	855	904	19
13088	9	14906313DAA1	95	100	-98.66220371	47.72232642	2420852	755014	9/13/06		1006	1060	8.49	7.93			657	10.3
13088	9	14906313DAA1	95	100	-98.66220371	47.72232642	2420852	755014	10/14/13		579	592		7.62			351	0.28
13089	8	14906313DAA2	30	35	-98.66220371	47.72232642	2420852	755014	8/25/93		776	618	7.69	7.69	11	392	387	0.2
13089	8	14906313DAA2	30	35	-98.66220371	47.72232642	2420852	755014	9/13/06		555	581	9.02	7.3			360	0.13
13089	8	14906313DAA2	30	35	-98.66220371	47.72232642	2420852	755014	10/14/13		1018	1050		8.05			671	11.5
13090	8	14906219DBD1	95	100	-98.64120628	47.70405205	2426177	748471	8/25/93		673	648	7.55	7.51	10	416	410	0.4
13090	8	14906219DBD1	95	100	-98.64120628	47.70405205	2426177	748471	9/13/06	24.5	682	510	8.32	7.55			316	0.12
13090	8	14906219DBD1	95	100	-98.64120628	47.70405205	2426177	748471	10/14/13		584	586		7.67			353	0.44
13092	10	14906312CAC1	105	110	-98.66985835	47.73482973	2418862	759530	8/25/93		867	898	7.23	7.8	11	573	575	5.5
13092	10	14906312CAC1	105	110	-98.66985835	47.73482973	2418862	759530	9/13/06		753	788	8.93	7.78			489	4.79
13093	10	14906312CAC2	45	50	-98.66985835	47.73482973	2418862	759530	8/25/93		581	572	6.35	7.6	12	354	348	0.3
13093	10	14906312CAC2	45	50	-98.66985835	47.73482973	2418862	759530	9/13/06		563	586	8.1	7.17			363	0.3

Table 6 (cont.) Well location and water chemistry parameters for the WS-2 monitoring well set, CGS. Table 6. Well location and water chemistry parameters for the WS-2 monitoring well set, CGS. Red=2013 sampling.

Well No.	Site	Location	Top Screen Feet	Bottom Screen Feet	Longitude	Latitude	x-coord	y-coord	Date Sampled	Water Level Feet bls	Field Cond. µS/cm	Lab Cond. µS/cm	Field pH	Lab pH	Field Temp °C	TDS Det. mg/L	TDS Calc. mg/L	SAR
13094	20	14906314AAB	17	22	-98.68024300	47.73044400	2416314	757830	8/25/93		633	646	7.06	7.5	11	387	401	0.3
13094	20	14906314AAB	17	22	-98.68024300	47.73044400	2416314	757830	9/6/06		647	680	7.63	7.5			422	0.17
13095	17	14806304ABA1	39.67	44.67	-98.70000214	47.67220701	2411969	736520	8/24/93		656	551	7.35	7.56	10	357	353	1.2
13096	17	14806304ABA2	25	30	-98.70000214	47.67220701	2411969	736520	8/26/93		718	735	7.47	7.62	11	469	472	1.1
13097	5	14906336ACA1	41	48	-98.66113372	47.68172516	2421462	740213	10/22/92	3	543	501	6.65	7.02	10	297	307	0.7
13097	5	14906336ACA1	41	48	-98.66113372	47.68172516	2421462	740213	9/3/96		427	483		7.46	7.6	311	280	0.7
13097	5	14906336ACA1	41	48	-98.66113372	47.68172516	2421462	740213	9/4/01		472	519		7.52		300	291	0.8
13097	5	14906336ACA1	41	48	-98.66113372	47.68172516	2421462	740213	9/12/06		491	505	8.02	7.24			313	0.87
13097	5	14906336ACA1	41	48	-98.66113372	47.68172516	2421462	740213	10/8/13		497	510		7.57			309	0.85
13098	5	14906336ACA2	21	27	-98.66113372	47.68172516	2421462	740213	10/22/92	5	491	469	6.63	6.89	10	276	284	0.2
13098	5	14906336ACA2	21	27	-98.66113372	47.68172516	2421462	740213	9/3/96		425	457		7.5	7.2	288	258	0.2
13098	5	14906336ACA2	21	27	-98.66113372	47.68172516	2421462	740213	9/4/01		455	499		7.49		286	263	0.2
13098	5	14906336ACA2	21	27	-98.66113372	47.68172516	2421462	740213	9/12/06		485	500	8.9	7.29			310	0.18
13098	5	14906336ACA2	21	27	-98.66113372	47.68172516	2421462	740213	9/12/06		485	501	8.9	7.32			311	0.18
13098	5	14906336ACA2	21	27	-98.66113372	47.68172516	2421462	740213	10/8/13		479	496		7.59			285	0.21
13099	13	14906335BCBA1	39.5	43.5	-98.69500484	47.68365693	2413104	740724	8/24/93		728	748	7.08	7.42	13	477	468	1
13099	13	14906335BCBA1	39.5	43.5	-98.69500484	47.68365693	2413104	740724	9/6/06	2.82	701	741	6.94	7.59			459	0.47
13100	13	14906335BCBA2	23	28	-98.69500484	47.68365693	2413104	740724	8/24/93		629	634	7	7.32	14	392	410	0.5
13100	13	14906335BCBA2	23	28	-98.69500484	47.68365693	2413104	740724	9/6/06		660	699	7.57	7.38			433	0.39
13101	6	14906325CDC1	110	115	-98.66851649	47.68746005	2419595	742262	10/22/92		1041	1110		6.92	10	733	745	3
13101	6	14906325CDC1	110	115	-98.66851649	47.68746005	2419595	742262	9/5/96		890	1080		7.57	14.6	756	722	3
13101	6	14906325CDC1	110	115	-98.66851649	47.68746005	2419595	742262	9/5/01		1072	1160		7.36		740	716	3
13101	6	14906325CDC2	25	30	-98.66851649	47.68746005	2419595	742262	9/11/06		1117	1180	7.66	7.19			732	2.83

Table 6 (cont.) Well location and water chemistry parameters for the WS-2 monitoring well set, CGS. Red=2013 sampling.

Well No.	Site	Location	Top Screen Feet	Bottom Screen Feet	Longitude	Latitude	x-coord	y-coord	Date Sampled	Water Level Feet bls	Field Cond. µS/cm	Lab Cond. µS/cm	Field pH	Lab pH	Field Temp °C	TDS Det. mg/L	TDS Calc. mg/L	SAR
13102	6	14906325CDC2	25	30	-98.66851649	47.68746005	2419595	742262	10/22/92	1.5	579	574	6.58	6.98	10	349	345	0.3
13102	6	14906325CDC2	25	30	-98.66851649	47.68746005	2419595	742262	9/5/96		471	555		7.66	12.4	347	318	0.3
13102	6	14906325CDC2	25	30	-98.66851649	47.68746005	2419595	742262	9/5/01		614	642		7.39		363	357	0.3
13102	6	14906325CDC1	110	115	-98.66851649	47.68746005	2419595	742262	9/11/06		608	628	7.64	7.35			389	0.25
13103	1	14906228CCC1	139	144	-98.60948722	47.68746434	2434131	742608	10/21/92	9	958	959	7.26	7.24	8	629	631	7.5
13103	1	14906228CCC1	139	144	-98.60948722	47.68746434	2434131	742608	9/5/96		794	924		7.58	9.4	629	599	7.1
13103	1	14906228CCC1	139	144	-98.60948722	47.68746434	2434131	742608	9/4/01		916	996		7.59		622	602	7.1
13103	1	14906228CCC1	139	144	-98.60948722	47.68746434	2434131	742608	9/12/06		922	973	7.75	7.23			603	6.3
13103	**1**	**14906228CCC1**	**139**	**144**	**-98.60948722**	**47.68746434**	**2434131**	**742608**	**10/15/13**		**951**	**971**		**7.78**			**620**	**6.75**
13104	1	14906228CCC2	56	61	-98.60948722	47.68746434	2434131	742608	10/21/92	6	661	636	7.07	7.05	8	386	406	0.7
13104	1	14906228CCC2	56	61	-98.60948722	47.68746434	2434131	742608	9/4/96		515	611		7.51	9.1	394	361	0.7
13104	1	14906228CCC2	56	61	-98.60948722	47.68746434	2434131	742608	9/4/01		619	653		7.26		390	370	0.7
13104	1	14906228CCC2	56	61	-98.60948722	47.68746434	2434131	742608	9/12/06		596	619	8.14	7.24			384	0.59
13104	1	14906228CCC2	56	61	-98.60948722	47.68746434	2434131	742608	10/15/13		628	638		7.63			382	0.78
13105	2	14906229DAD	50	55	-98.61142796	47.69146637	2433618	744056	10/21/92	8.84	608	628	7	6.78	10	395	403	0.3
13105	2	14906229DAD	50	55	-98.61142796	47.69146637	2433618	744056	9/4/96		527	605		7.48	8.5	393	356	0.3
13105	2	14906229DAD	50	55	-98.61142796	47.69146637	2433618	744056	9/4/01		600	656		7.41		400	365	0.3
13105	2	14906229DAD	50	55	-98.61142796	47.69146637	2433618	744056	9/11/06		628	640	7.4	7.23			397	0.26
13105	2	14906229DAD	50	55	-98.61142796	47.69146637	2433618	744056	10/15/13		644	653		7.55			388	0.33
13106	8	14906219DBD3	43	48	-98.64120628	47.70405205	2426177	748471	8/25/93		1109	494	6.87	7.66	10	310	326	0.2
13106	8	14906219DBD3	43	48	-98.64120628	47.70405205	2426177	748471	9/13/06		595	624	9.65	7.42			387	0.38
SPRING	3	14806302DA	0	0	-98.65240810	47.66455430	2423758	734001	9/10/82		540	517		8.19	13	344	316	0.1
SPRING	3	14806302DA	0	0	-98.65240810	47.66455430	2423758	734001	10/21/88		502	501	6.8	7.21	9	313	309	0.2
SPRING	3	14806302DA	0	0	-98.65240810	47.66455430	2423758	734001	9/3/92		424	499		7.93	13.3	332	287	0.1
SPRING	3	14806302DA	0	0	-98.65240810	47.66455430	2423758	734001	9/4/97		469	515		7.8		301	281	0.2
SPRING	3	14806302DA	0	0	-98.65240810	47.66455430	2423758	734001	9/11/02		483	503	8.13	7.72			312	0.11
SPRING	3	14806302DA	0	0	-98.65240810	47.66455430	2423758	734001	10/7/09		474	502		7.79			301	0.2
SPRING	3	14806302DA	0	0	-98.65240810	47.66455430	2423758	734001	10/8/13		474	502		7.79			301	0.2

Table 6 (cont.) Well location and water chemistry parameters for the WS-2 monitoring well set, CGS. Red=2013 sampling.

Well No.	Site	Location	Top Screen Feet	Bottom Screen Feet	Longitude	Latitude	x-coord	y-coord	Date Sampled	Water Level Feet bls	Field Cond. µS/cm	Lab Cond. µS/cm	Field pH	Lab pH	Field Temp °C	TDS Det. mg/L	TDS Calc. mg/L	SAR
RES	4	14806331C	0	0	-98.75064370	47.59117036	2400153	706684	10/22/92		331	293	7.25	6.73	10	175	164	0.1
RES	4	14806331C	0	0	-98.75064370	47.59117036	2400153	706684	9/4/96		224	222		7.32	20.2	155	120	0.1
RES	4	14806331C	0	0	-98.75064370	47.59117036	2400153	706684	9/5/01		303	315		7.44		190	163	0.2
RES	4	14806331C	0	0	-98.75064370	47.59117036	2400153	706684	9/12/06		290	299	8.16	7.62			185	0.19
RES	4	14806331C	0	0	-98.75064370	47.59117036	2400153	706684	10/8/13		334	350		8.04			203	0.23
S.W. L.	11	14906314CA	0	0	-98.68885353	47.72128341	2414302	754481	9/11/86		5400	5160		9.71	15	3660	3410	26
S.W. L.	11	14906314CA	0	0	-98.68885353	47.72128341	2414302	754481	9/12/01		1730	1780		8.91		953	1020	6.2
S.W. L.	11	14906314CA	0	0	-98.68885353	47.72128341	2414302	754481	9/12/06		1809	1860	9	9.05			1150	6.64
S.W. L.	11	14906314CA	0	0	-98.68885353	47.72128341	2414302	754481	10/15/13		1402	1420		8.88			911	5.19
L. Coe	14	14906326ADD	0	0	-98.67659016	47.69502534	2417543	744975	8/24/93		3950	4250	9.2	9.33	27	2820	2910	28
L. Coe	14	14906326ADD	0	0	-98.67659016	47.69502534	2417543	744975	9/5/01		2700	3160		9.2		1930	1910	20
L. Coe	14	14906326ADD	0	0	-98.67659016	47.69502534	2417543	744975	9/12/06		3050	3170	8.32	9.03			1970	17.8
L. Coe	14	14906326ADD	0	0	-98.67659016	47.69502534	2417543	744975	10/15/13		2245	2330		8.67			1490	12
L. Coe	15	14906327CA	0	0	-98.71005457	47.69241026	2409325	743832	9/11/86		6400	6260		9.31	14	4440	4220	43
L. Coe	15	14906327DDB	0	0	-98.70070607	47.68967638	2411650	742887	8/24/93		6430	6570	9.46	9.48	26	4570	4740	47
SPRI	16	14906313BD	0	0	-98.66744446	47.72489326	2419540	755920	9/11/86		620	607		8.14	14	397	374	0.4
SPRI	16	14906313BDA	0	0	-98.66640227	47.72582284	2419789	756265	8/25/93		660	643	7.22	7.01	18	404	411	0.3
SPRI	16	14906313BDA	0	0	-98.66640227	47.72582284	2419789	756265	9/5/96		483	567		7.84	16.3	366	334	0.3
SPRI	16	14906313BDA	0	0	-98.66640227	47.72582284	2419789	756265	9/11/01		400	393		7.23		213	221	0.2
SPRI	16	14906313BDA	0	0	-98.66640227	47.72582284	2419789	756265	9/13/06		616	668	8.88	8.02			414	0.43
SPRI	16	14906313BDA	0	0	-98.66640227	47.72582284	2419789	756265	10/14/13		513	530		7.88			303	0.53

Table 7. General chemistry (anions and cations) for water samples from the WS-2 well set, CGS. Red=2013 sampling.

Well No.	Site	Date Sampled	Location	Top Screen Feet	Bottom Screen Feet	Silica mg/L	Calcium mg/L	Magnesium mg/L	Potassium mg/L	Sodium mg/L	Fluoride mg/L	Bicarbonate mg/L	Sulfate mg/L	Chloride mg/L	Nitrate mg/L	Nitrate + Nitrite mg/L
13085	12	8/26/93	14806302BABC2	12	17	26	110	35	3.2	9.5	0.1	450	65	7.1	5.7	
13085	12	9/6/06	14806302BABC2	12	17		117	36.3	3.46	12.9	0.054	399	61.5	14.1	73.9	16.7
13085	12	10/8/13	14806302BABC2	12	17	28.6					0.14	401	50.6	7.47		3.34
13085	12	10/14/13	14806302BABC2	12	17	30.4					0.23	354	37	3.6		0.04
13086	7	10/22/92	14806302ACA1	97	102	25	83	21	5.1	23	0.2	371	37	3.8	1.1	
13086	7	9/3/96	14806302ACA1	97	102		78	20	5.4	23	0.2	369	37	0.5	0.4	
13086	7	9/5/01	14806302ACA1	97	102		78	20	5.3	24	0.2	370	37	2	0.2	
13086	7	9/11/06	14806302ACA1	97	102		55.5	13.8	1.82	<3	0.091	240	1.98	0.97	0.97	0.22
13086	7	10/8/13	14806302ACA1	97	102	28.8					0.13	275	4.02	<3		0.13
13087	7	10/22/92	14806302ACA2	18	23	26	53	15	1.6	2.5	0.1	236	4.5	2.2	0.8	
13087	7	9/3/96	14806302ACA2	18	23		55	15	1.6	2	0.1	246	4.5	0.2	0.5	
13087	7	9/5/01	14806302ACA2	18	23		51	14	1.7	3.5	0	223	9.1	4.3	0.3	
13087	7	9/11/06	14806302ACA2	18	23		78.5	19.4	5.42	22.2	0.165	359	37	2.69	0.27	0.06
13087	7	10/8/13	14806302ACA2	18	23	6.13					<0.1	40	<3	<3		0.04
13088	9	8/25/93	14906313DAA1	95	100	59	13	4	8.9	300	0.7	716	150	8.4	5	
13088	9	9/13/06	14906313DAA1	95	100		19.6	6.1	5.98	203	0.58	563	92.4	5.17	1.64	0.37
13088	9	10/14/13	14906313DAA1	95	100	29.5					0.18	380	30.1	4.61		0.73
13089	9	8/25/93	14906313DAA2	30	35	28	83	31	4.5	9	0.2	383	35	6.2	1.2	
13089	9	9/13/06	14906313DAA2	30	35		77	26.7	3.95	5.2	0.153	339	27.1	4.28	3.45	0.78
13089	9	10/14/13	14906313DAA2	30	35	27.8					0.63	606	89.6	<15		0.53
13090	8	8/25/93	14906219DBD1	95	100	31	89	21	13	16	0.2	375	45	3.7	5.6	
13090	8	9/13/06	14906219DBD1	95	100		74	17.7	5.87	4.6	0.201	301	19.4	1.49	1.99	0.45
13090	8	10/14/13	14906219DBD1	95	100	44.4					0.24	361	34.7	<3		0.11
13092	10	8/25/93	14906312CAC1	105	110	28	38	11	9.9	150	0.4	453	79	30	5.4	
13092	10	9/13/06	14906312CAC1	105	110		34.6	9.3	6.91	123	0.38	412	58.9	12.6	1.77	0.4
13093	10	8/25/93	14906312CAC2	45	50	26	78	23	5.1	13	0.2	346	27	2.7	1.3	
13093	10	9/13/06	14906312CAC2	45	50		77.7	21.6	5.51	11.7	0.212	339	36.5	2.21	1.24	0.28

Table 7 (cont.) General chemistry (anions and cations) for water samples from the WS-2 well set, CGS. Red=2013 sampling.

Well No.	Site	Date Sampled	Location	Top Screen Feet	Bottom Screen Feet	Silica mg/L	Calcium mg/L	Magnesium mg/L	Potassium mg/L	Sodium mg/L	Fluoride mg/L	Bicarbonate mg/L	Sulfate mg/L	Chloride mg/L	Nitrate mg/L	Nitrate + Nitrite mg/L
13094	20	8/25/93	14906314AAB	17	22	29	88	30	3.9	12	0.2	409	24	7.6	2.3	
13094	20	9/6/06	14906314AAB	17	22		93.1	28.8	3.8	7.4	0.223	387	34.7	8.98	<0.09	<0.02
13095	17	8/24/93	14806304ABA1	39.67	44.67	28	57	16	7	39	0.2	311	41	6.7	4	
13096	17	8/26/93	14806304ABA2	25	30	26	81	25	4.6	46	0.1	369	94	11	1	
13097	5	10/22/92	14906336ACA1	41	48	25	60	15	6.7	23	0.2	302	23	2.6	1.8	
13097	5	9/3/96	14906336ACA1	41	48		60	15	6.4	22	0.2	305	26	0.2	0.1	
13097	5	9/4/01	14906336ACA1	41	48		58	15	6.4	28	0.2	311	30	0	0.3	
13097	5	9/12/06	14906336ACA1	41	48		56.2	13.2	6.63	27.8	0.228	296	25.5	2.22	<0.09	<0.02
13097	5	10/8/13	14906336ACA1	41	48	30.7					0.27	331	27.1	<3		<0.03
13098	5	10/22/92	14906336ACA2	21	27	24	67	16	5.3	8	0.2	288	17	3.5	0	
13098	5	9/3/96	14906336ACA2	21	27		65	16	3.8	7	0.2	300	16	0	0.2	
13098	5	9/4/01	14906336ACA2	21	27		69	17	4	8.5	0.2	296	17	0	0.1	
13098	5	9/12/06	14906336ACA2	21	27		71.6	16.7	4.47	6.5	0.179	307	12.8	1.72	<0.09	<0.02
13098	5	9/12/06	14906336ACA2	21	27		72	17.3	4.22	6.5	0.176	306	12.7	1.76	<0.09	<0.02
13098	5	10/8/13	14906336ACA2	21	27	27.2					0.22	346	13	<3		<0.03
13099	13	8/24/93	14906335BCBA1	39.5	43.5	6.5	83	30	5.7	40	0.1	385	100	7.8	1.5	
13099	13	9/6/06	14906335BCBA1	39.5	43.5		90.8	30.8	3.93	20.4	0.127	376	81.1	5.59	<0.09	<0.02
13100	13	8/24/93	14906335BCBA2	23	28	26	84	27	4.7	19	0.2	364	60	7.7	0.9	
13100	13	9/6/06	14906335BCBA2	23	28		88.7	27.9	4.1	16.4	0.126	367	68.6	5.6	<0.09	<0.02
13101	6	10/22/92	14906325CDC1	110	115	25	94	19	13	120	0.4	250	300	46	2.2	
13101	6	9/5/96	14906325CDC1	110	115		91	19	11	120	0.4	246	310	43	5	
13101	6	9/5/01	14906325CDC1	110	115		94	19	12	120	0.3	245	300	48	0.2	
13101	6	9/11/06	14906325CDC2	25	30		96.6	18.5	10.3	116	0.354	242	321	54.7	<0.09	<0.02

Table 7 (cont.) General chemistry (anions and cations) for water samples from the WS-2 well set, CGS. Red=2013 sampling.

Well No.	Site	Date Sampled	Location	Top Screen Feet	Bottom Screen Feet	Silica mg/L	Calcium mg/L	Magnesium mg/L	Potassium mg/L	Sodium mg/L	Fluoride mg/L	Bicarbonate mg/L	Sulfate mg/L	Chloride mg/L	Nitrate mg/L	Nitrate + Nitrite mg/L
13102	6	10/22/92	14906325CDC2	25	30	25	77	25	4.3	11	0.2	359	22	3.1	0.1	
13102	6	9/5/96	14906325CDC2	25	30		75	24	4.3	10	0.2	366	23	1.2	0.1	
13102	6	9/5/01	14906325CDC2	25	30		84	27	4.5	12	0.2	398	28	4.5	0.1	
13102	6	9/11/06	14906325CDC1	110	115		86.1	25.4	4.59	10.3	0.187	383	24.3	3.44	0.09	0.02
13103	1	10/21/92	14906228CCC1	139	144	25	32	8	8.8	180	0.3	482	130	6.1	2.9	
13103	1	9/5/96	14906228CCC1	139	144		34	8	7.4	180	0.3	481	130	1.4	0.3	
13103	1	9/4/01	14906228CCC1	139	144		35	8	7.1	180	0.4	480	130	4.2	0.2	
13103	1	9/12/06	14906228CCC1	139	144		37.6	8.3	6.87	164	0.316	464	128	3.49	0.09	0.02
13103	**1**	**10/15/13**	**14906228CCC1**	**139**	**144**	**30.1**					**0.36**	**499**	**134**	**4.62**		**<0.03**
13104	1	10/21/92	14906228CCC2	56	61	30	78	20	10	27	0.2	372	49	3.5	4.3	
13104	1	9/4/96	14906228CCC2	56	61		76	19	9.7	25	0.2	376	45	0.3	0.2	
13104	1	9/4/01	14906228CCC2	56	61		78	20	10	27	0.2	380	47	0	0.3	
13104	1	9/12/06	14906228CCC2	56	61		77.5	18.3	9.53	22.3	0.212	348	42.2	1.66	0.35	0.08
13104	1	10/15/13	14906228CCC2	56	61	36.6					0.24	389	45.2	3.31		<0.03
13105	2	10/21/92	14906229DAD	50	55	33	88	24	7.3	12	0.2	365	54	1.7	2	
13105	2	9/4/96	14906229DAD	50	55		84	22	7.8	11	0.2	368	49	0.2	0.2	
13105	2	9/4/01	14906229DAD	50	55		88	23	8	12	0.2	370	51	0	0.1	
13105	2	9/11/06	14906229DAD	50	55		90	22.2	8.23	10.6	0.221	362	47.8	1.73	<0.09	<0.02
13105	2	10/15/13	14906229DAD	50	55	41.4					0.3	392	52.1	3.55		<0.03
13106	8	8/25/93	14906219DBD3	43	48	40	69	18	7.8	8	0.2	311	23	4.7	1.1	
13106	8	9/13/06	14906219DBD3	43	48		85.3	18.3	11.2	14.7	0.223	353	41.5	1.7	0.93	0.21
SPRING	3	9/10/82	14806302DA	0	0	33	72	21	2.2	5.5	0.1	310	27	2.6	0	
SPRING	3	10/21/88	14806302DA	0	0	25	71	21	4	6	0.2	294	34	2.7	0	
SPRING	3	9/3/92	14806302DA	0	0		74	21	3.5	5.5	0.2	337	16	0.3	0.3	
SPRING	3	9/4/97	14806302DA	0	0		73	21	3	6	0.2	323	18	0	0.1	
SPRING	3	9/11/02	14806302DA	0	0		73.4	19.4	2.61	4	0.166	304	18.5	0.88	<0.09	<0.02
SPRING	3	10/7/09	14806302DA	0	0	29.7					0.2	337	23.8	<3		<0.03
SPRING	3	10/8/13	14806302DA	0	0	29.7					0.2	337	23.8	<3		<0.03

Table 7 (cont.) General chemistry (anions and cations) for water samples from the WS-2 well set, CGS. Red=2013 sampling.

Well No.	Site	Date Sampled	Location	Top Screen Feet	Bottom Screen Feet	Silica mg/L	Calcium mg/L	Magnesium mg/L	Potassium mg/L	Sodium mg/L	Fluoride mg/L	Bicarbonate mg/L	Sulfate mg/L	Chloride mg/L	Nitrate mg/L	Nitrate + Nitrite mg/L
RES	4	10/22/92	14806331C	0	0	3	36	9.5	18	3.5	0.1	182	0.8	2.8	0.6	
RES	4	9/4/96	14806331C	0	0		26	8.5	8.8	2	0.1	145	2.9	0	0.8	
RES	4	9/5/01	14806331C	0	0		33	14	11	5	0.1	193	4.1	0	0.5	
RES	4	9/12/06	14806331C	0	0		25.3	16.4	10.8	4.9	0.172	186	0.89	2.07	<0.09	<0.02
RES	4	10/8/13	14806331C	0	0	18.1					0.24	245	5.3	<3		0.16
S. WASH. LAKE	11	9/11/86	14906314CA	0	0	1.4	15	60	280	1000	0.1	737	930	360	1	
S. WASH. LAKE	11	9/12/01	14906314CA	0	0		30	45	68	230	0.1	582	220	91		
S. WASH. LAKE	11	9/12/06	14906314CA	0	0		24.2	59	87.8	266	0.117	574	222	103	<0.09	<0.02
S. WASH. LAKE	11	10/15/13	14906314CA	0	0	38.3					0.17	560	149	71.3		<0.03
L. COE	14	8/24/93	14906326ADD	0	0	9.7	20	33	120	900	0.1	1060	730	370	2	
L. COE	14	9/5/01	14906326ADD	0	0		17	33	81	620	0.2	773	470	210	0.1	
L. COE	14	9/12/06	14906326ADD	0	0		21.4	39.8	72.8	604	0.2	793	454	258	<0.09	<0.02
L. COE	14	10/15/13	14906326ADD	0	0	21.4					0.29	850	288	177		<0.03
L. COE	15	9/11/86	14906327CA	0	0	2.2	15	40	180	1400	0.2	1210	1100	580	0.1	
L. COE	15	8/24/93	14906327DDB	0	0	9.4	20	35	200	1500	0.1	1510	1200	630	0	
SPRING	16	9/11/86	14906313BD	0	0	30	79	25	7	17	0.2	365	31	4.3	0.3	
SPRING	16	8/25/93	14906313BDA	0	0	34	90	30	4.8	15	0.2	428	22	2.9	0	
SPRING	16	9/5/96	14906313BDA	0	0		76	25	6.4	13	0.3	366	32	0.9	0.2	
SPRING	16	9/11/01	14906313BDA	0	0		50	17	8.3	8	0.1	271	3.3	0	0.2	
SPRING	16	9/13/06	14906313BDA	0	0		86.2	28.2	6.54	17.8	0.264	430	24.1	0.61	<0.09	<0.02
SPRING	16	10/14/13	14906313BDA	0	0	22.7					0.3	340	15	7.62		0.05

Table 8. Dissolved minor and trace element concentrations in the WS-2 well set. Yellow highlight indicates elevated arsenic. Red=2013 sampling.

Well No.	Site	Location	Top Screen	Bottom Screen	Date Sampled	B	Fe	Mn	Al	Sb	As	Ba	Be	Cd	Cr	Cu	Pb	Li	Hg	Mo	Ni	Se	Ag	Sr	Tl	Zn
						mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
13085	12	14806302BABC2	12	17	8/26/93	0.04	0.02	0.04			2			0			1	20	0	0		0		200		
13085	12	14806302BABC2	12	17	9/6/06	<0.050	<0.01	0.011	<50		3.95	86.6	<1	<1	<1	1.32	<1				6.22	1.09	<1		<1	3.98
13085	12	14806302BABC2	12	17	10/8/13	0.053			<50	<5	<5	79.6	<5	<5		<5	<5				<5	<5	<5		<5	<5
13085	12	14806302BABC2	12	17	10/14/13	0.099			<50	<5	8.01	68.6	<5	<5		<5	<5				<5	<5	<5		<5	9.02
13086	7	14806302ACA1	97	102	10/22/92	0.12	0.02	1.3			2						0	40	0	5		0		430		
13086	7	14806302ACA1	97	102	9/3/96		0.03	1.3			0						0	40	0	4		0		350		
13086	7	14806302ACA1	97	102	9/5/01		0.09	1.3			2						2	100	0.1	6		3		350		
13086	7	14806302ACA1	97	102	9/11/06	<0.050	0.197	0.362	<50		<1	66.2	<1	<1	<1	<1	<1				3.59	<1	<1		<1	2.28
13086	7	14806302ACA1	97	102	10/8/13	<0.050			<50	<5	<5	68.2	<5	<5		<5	<5				<5	<5	<5		<5	<5
13087	7	14806302ACA2	18	23	10/22/92	0.03	0.23	0.37			2						0	0	0	0		0		160		
13087	7	14806302ACA2	18	23	9/3/96		0.47	0.28			1						0	3	0	0		0		110		
13087	7	14806302ACA2	18	23	9/5/01		0.26	0.28			2						2	100	0	2		3		68		
13087	7	14806302ACA2	18	23	9/11/06	0.126	0.047	1.06	<50		<1	131	<1	<1	<1	1.8	<1				7.45	<1	<1		<1	4.72
13087	7	14806302ACA2	18	23	10/8/13	<0.050			<50	<5	<5	12.2	<5	<5		<5	<5				<5	<5	<5		<5	<5
13088	9	14906313DAA1	95	100	8/25/93	1.7	0.04	0.07			10			0			0	120	0	28		0		170		
13088	9	14906313DAA1	95	100	9/13/06	1.1	0.043	0.052	<50		21.9		<1	<1	<1	4.59	<1				2.28	<1	<1		<1	22.6
13088	9	14906313DAA1	95	100	10/14/13	1.23			<50	<5	26.6	21.9	<5	<5		<5	<5				<5	<5	<5		<5	5.59
13089	9	14906313DAA2	30	35	8/25/93	0.05	0.02	0.02			2			0			0	10	0	2		0		280		
13089	9	14906313DAA2	30	35	9/13/06	0.062	0.032	<0.01	<50		1.33	94.1	<1	<1	1.28	3.02	<1				5.67	1.71	<1		<1	5.5
13089	9	14906313DAA2	30	35	10/14/13	0.082			<50	<5	<5	89.8	<5	<5		<5	<5				<5	<5	<5		<5	<5
13090	8	14906219DBD1	95	100	8/25/93	0.04	0.18	0.56			51			0			0	50	0	6		0		500		
13090	8	14906219DBD1	95	100	9/13/06	<0.050	0.07	0.42	<50		11.9	102	<1	<1	<1	<1	<1				5.81	<1	<1		<1	8.51
13090	8	14906219DBD1	95	100	10/14/13	0.136			<50	<5	75.4	86.3	<5	<5		<5	<5				<5	<5	<5		<5	5.23
13092	10	14906312CAC1	105	110	8/25/93	0.05	0.18	0.28			14			0			0	110	0	17		0		340		
13092	10	14906312CAC1	105	110	9/13/06	0.775	0.04	0.051	<50		21.1	27.3	<1	<1	<1	3.71	<1				2.59	<1	<1		<1	3.22
13093	10	14906312CAC2	45	50	8/25/93	0.73	0.14	0.48			5			0			0	30	0	1		0		320		
13093	10	14906312CAC2	45	50	9/13/06	0.091	0.23	0.388	<50		6.94	59	<1	<1	<1	1.96	<1				6.93	1.4	<1		<1	51.4

Table 8 (cont.) Dissolved minor and trace element concentrations in the WS-2 well set. Yellow highlight indicates elevated arsenic. Red=2013 sampling.

Well No.	Site	Location	Top Screen	Bottom Screen	Date Sampled	B	Fe	Mn	Al	Sb	As	Ba	Be	Cd	Cr	Cu	Pb	Li	Hg	Mo	Ni	Se	Ag	Sr	Tl	Zn
						mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
13094	20	14906314AAB	17	22	8/25/93	0.06	1.9	0.58			3			0			0	20	0	2		0		280		
13094	20	14906314AAB	17	22	9/6/06	<0.050	1.82	0.502	<50		2.5	173	<1	<1	<1	<1	<1				5.41	<1	<1		<1	4.76
13095	17	14806304ABA1	39.67	44.67	8/24/93	0.13	0.41	0.19			20			0			0	60	0	6		0		430		
13096	17	14806304ABA2	25	30	8/26/93	0.09	0.43	0.68			4			0			0	30	0	4		0		250		
13097	5	14906336ACA1	41	48	10/22/92	0.13	0.12	0.34			26						0	40	0	3		0		410		
13097	5	14906336ACA1	41	48	9/3/96		0.19	0.34			20						0	40	0	4		0		350		
13097	5	14906336ACA1	41	48	9/4/01		0.24	0.3			22						2	100	0	5		3		370		
13097	5	14906336ACA1	41	48	9/12/06	0.223	0.101	0.299	<50		19.5	63	<1	<1	<1	3.02	<1				3.99	1.02	<1		<1	3.24
13097	5	14906336ACA1	41	48	10/8/13	0.195			<50	<5	27.2	76.7	<5	<5		<5	<5				<5	<5	<5		<5	8.6
13098	5	14906336ACA2	21	27	10/22/92	0.05	0.61	0.66			13						0	20	0	2		0		320		
13098	5	14906336ACA2	21	27	9/3/96		0.92	0.61			11						0	20	0	2		0		260		
13098	5	14906336ACA2	21	27	9/4/01		0.49	0.71			11						2	100	0	4		3		260		
13098	5	14906336ACA2	21	27	9/12/06	0.051	0.592	0.754	<50		11.3	134	<1	<1	<1	<1	<1				4.97	<1	<1		<1	2.5
13098	5	14906336ACA2	21	27	9/12/06	<0.050	0.997	0.648	<50		11.5	133	<1	<1	<1	<1	<1				4.85	<1	<1		<1	3.54
13098	5	14906336ACA2	21	27	10/8/13	0.056			<50	<5	12.1	125	<5	<5		<5	<5				<5	<5	<5		<5	<5
13099	13	14906335BCBA1	39.5	43.5	8/24/93	2.3	0.18	0.5			2			0			0	40	0	1		0		280		
13099	13	14906335BCBA1	39.5	43.5	9/6/06	0.062	0.595	0.481	<50		4.94	118	<1	<1	<1	1.1	<1				5.2	<1	<1		<1	4.6
13100	13	14906335BCBA2	23	28	8/24/93	0.08	0.71	0.79			10			0			0	20	0	3		0		330		
13100	13	14906335BCBA2	23	28	9/6/06	0.065	0.834	0.57	<50		11.3	104	<1	<1	<1	<1	<1				4.82	<1	<1		<1	4.65
13101	6	14906325CDC1	110	115	10/22/92	0.47	0.04	1.5			4						0	130	0	14		0		580		
13101	6	14906325CDC1	110	115	9/5/96		0.02	1.8			1						0	120	0	2		0		470		
13101	6	14906325CDC1	110	115	9/5/01		0.07	1.8			3						2	120	0	48		3		540		
13101	6	14906325CDC2	25	30	9/11/06	0.622	0.033	1.89	<50		2.55	25.7	<1	<1	<1	2.76	<1				7.01	4.27	<1		<1	6.68

Table 8 (cont.) Dissolved minor and trace element concentrations in the WS-2 well set. Yellow highlight indicates elevated arsenic. Red=2013 sampling.

Well No.	Site	Location	Top Screen	Bottom Screen	Date Sampled	B	Fe	Mn	Al	Sb	As	Ba	Be	Cd	Cr	Cu	Pb	Li	Hg	Mo	Ni	Se	Ag	Sr	Tl	Zn
						mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
13102	6	14906325CDC2	25	30	10/22/92	0.06	0.27	0.46			7						0	20	0	5		0		380		
13102	6	14906325CDC2	25	30	9/5/96		0.23	0.42			6						0	20	0	0		0		300		
13102	6	14906325CDC2	25	30	9/5/01		0.31	0.49			7						2	100	0.1	4		3		350		
13102	6	14906325CDC1	110	115	9/11/06	0.07	0.351	0.49	<50		6.2	124	<1	<1	<1	<1	<1				5.94	<1	<1		<1	5.2
13103	1	14906228CCC1	139	144	10/21/92	0.58	0.06	0.55			4						0	90	0	21		0		300		
13103	1	14906228CCC1	139	144	9/5/96		0.06	0.61			4						0	90	0	19		0		220		
13103	1	14906228CCC1	139	144	9/4/01		0.21	0.59			6						2	100	0	26		3		210		
13103	1	14906228CCC1	139	144	9/12/06	0.695	0.178	0.618	<50		3.69	28.8	<1	<1	<1	9.57	<1				3.45	3.86	<1		<1	4.21
13103	**1**	**14906228CCC1**	**139**	**144**	**10/15/13**	**0.696**			**<50**	**<5**	**<5**	**24.9**	**<5**	**<5**		**<5**	**<5**				**<5**	**<5**	**<5**		**<5**	**<5**
13104	1	14906228CCC2	56	61	10/21/92	0.15	0.3	0.4			52						0	70	0	8		0		550		
13104	1	14906228CCC2	56	61	9/4/96		0.47	0.37			47						0	60	0	6		0		440		
13104	1	14906228CCC2	56	61	9/4/01		0.38	0.37			62						2	100	0	9		3		470		
13104	1	14906228CCC2	56	61	9/12/06	0.139	0.321	0.352	<50		58.7	56.4	<1	<1	<1	1.07	<1				5.3	<1	<1		<1	3.48
13104	1	14906228CCC2	56	61	10/15/13	0.175			<50	<5	70.8	54.6	<5	<5		<5	<5				<5	<5	<5		<5	<5
13105	2	14906229DAD	50	55	10/21/92	0.11	0.1	0.52			25						0	40	0	3		0		500		
13105	2	14906229DAD	50	55	9/4/96		0.13	0.52			26						0	40	0	3		0		410		
13105	2	14906229DAD	50	55	9/4/01		0.18	0.5			28						2	100	0.1	5		3		430		
13105	2	14906229DAD	50	55	9/11/06	0.063	0.17	0.538	<50		30.3	104	<1	<1	<1	1.01	<1				4.79	<1	<1		<1	4.42
13105	2	14906229DAD	50	55	10/15/13	0.08			<50	<5	36.4	113	<5	<5		<5	<5				<5	<5	<5		<5	<5
13106	8	14906219DBD3	43	48	8/25/93	0.09	0.04	0.71			6			0			0	20	0	4		0		360		
13106	8	14906219DBD3	43	48	9/13/06	0.106	0.069	0.492	<50		65.5	93.3	<1	<1	<1	1.07	<1				6.87	<1	<1		<1	25.4
SPRING	3	14806302DA	0	0	9/10/82	0.03	0.02	0.04			1						1	21	0.1	1		1		200		
SPRING	3	14806302DA	0	0	10/21/88	0.03	0.06	0.03			2			0			0	20	0	0		0		260		
SPRING	3	14806302DA	0	0	9/3/92		0.05	0.29			1	82					0	20	0	0		0		200		
SPRING	3	14806302DA	0	0	9/4/97		0.1	0.17			2						2	100	0.1	2		3		190		
SPRING	3	14806302DA	0	0	9/11/02	<0.050	0.063	0.151	<50		1.6	71.1	<1	<1	<1	<1	<1				5.05	<1	<1		<1	1.41
SPRING	3	14806302DA	0	0	10/7/09	<0.050			<50	<5	<5	60.8	<5	<5		<5	<5				<5	<5	<5		<5	<5
SPRING	3	14806302DA	0	0	10/8/13	<0.050			<50	<5	<5	60.8	<5	<5		<5	<5				<5	<5	<5		<5	<5

Table 8 (cont.) Dissolved minor and trace element concentrations in the WS-2 well set. Yellow highlight indicates elevated arsenic. Red=2013 sampling.

Well No.	Site	Location	Top Screen	Bottom Screen	Date Sampled	B	Fe	Mn	Al	Sb	As	Ba	Be	Cd	Cr	Cu	Pb	Li	Hg	Mo	Ni	Se	Ag	Sr	Tl	Zn
						mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
RES	4	14806331C	0	0	10/22/92	0.02	0.12	0.01			2			0			0	10	0	0		0		170		
RES	4	14806331C	0	0	9/4/96		0.09	0.14			4	93					0	5	0	0		0		110		
RES	4	14806331C	0	0	9/5/01		0.12	0.25			5						2	100	0	2		3		94		
RES	4	14806331C	0	0	9/12/06	<0.050	0.043	0.017	<50		3.91	51	<1	<1	<1	<1	<1				4.26	<1	<1		<1	<1
RES	4	14806331C	0	0	10/8/13	<0.050			<50	<5	<5	59.3	<5	<5		<5	<5				<5	<5	<5		<5	<5
S. WASH. LAKE	11	14906314CA	0	0	9/11/86	2.7	0.04				52						2	410	0.2	1		2		100		
S. WASH. LAKE	11	14906314CA	0	0	9/12/01		2	0.45			30						320	120	0	3		3		130		
S. WASH. LAKE	11	14906314CA	0	0	9/12/06	0.882	0.049	<0.01	<50		16.7	42.1	<1	<1	<1	4.33	<1				2.09	6.31	<1		<1	1.46
S. WASH. LAKE	11	14906314CA	0	0	10/15/13	0.6			<50	<5	10.4	47.5	<5	<5		<5	<5				<5	<5	<5		<5	<5
L. COE	14	14906326ADD	0	0	8/24/93	3.8	0.05	0.01			10			0			0	230	0	4		0		180		
L. COE	14	14906326ADD	0	0	9/5/01		0.15	0.03			16						2	150	0	5		8		150		
L. COE	14	14906326ADD	0	0	9/12/06	2.05	0.074	0.015	<50		19.3	62.3	<1	<1	<1	8.26	<1				2.12	11.2	<1		<1	1.54
L. COE	14	14906326ADD	0	0	10/15/13	1.44			<50	<5	12.6	62.2	<5	<5		<5	<5				<5	<5	<5		<5	<5
L. COE	15	14906327CA	0	0	9/11/86	4.8	0.18	0.01			19						2	310	0.2	2		2		200		
L. COE	15	14906327DDB	0	0	8/24/93	1.5	0.13	0.01			24			0			1	320	0.1	8		0		140		
SPRING	16	14906313BD	0	0	9/11/86	0.06	0.03	0.13			2						1	39	0.1	1		0		320		
SPRING	16	14906313BDA	0	0	8/25/93	0.07	0.09	1			2			0			0	40	0	0		0		360		
SPRING	16	14906313BDA	0	0	9/5/96		0.04	0.17			3	91					0	30	0	0		0		280		
SPRING	16	14906313BDA	0	0	9/11/01		0.3	0.43			4						2	100	0	2		3		120		
SPRING	16	14906313BDA	0	0	9/13/06	0.109	0.065	0.154	<50		3.66	97.5	<1	<1	<1	<1	<1				6.68	<1	<1		<1	1.78
SPRING	16	14906313BDA	0	0	10/14/13	<0.050			<50	<5	<5	47.6	<5	<5		<5	<5				<5	<5	<5		<5	<5

RESULTS

General Chemistry and Trace Elements

General Chemistry - A summary of well locations and field parameters for all samples take from beginning of the monitoring program is provided on Table 3 (WS-1) and Table 6 (WS-2). Historical and present general chemistry are summarized on Table 4 (WS-1) and Table 7 (WS-2). Trace metal concentrations historical and present sample sets are provided Table 5 (WS-1) and Table 8 (WS-2). Both WS-1 and WS-2 well set water samples consisted of predominantly calcium-bicarbonate type of water, having a low sodium adsorption ratio (SAR) in the shallow and middle aquifer units. pH values are generally circumneutral to about 8, indicating approximate saturation with respect to calcium bicarbonate. However, several of the wells placed in the deep aquifer unit (generally screened at deeper than 150 feet) have very high SAR values, resulting from elevated sodium, chloride and sulfate, likely influenced by the underlying Pierre Fm. shale bedrock. Deep wells generally have slightly elevated pH approaching ~ 8.2. pH values in the designated ranges should generally discourage mobilization of metal lead, particularly where groundwater is well oxidized.

The median specific conductance (EC) for combined well sets is 608 mS/cm, with an order of magnitude range from 64 to 6430 ms/cm - higher conductances in the deeper wells, similar to SAR. The median calculated total dissolved solids (TDS) is 383 mg/L, with a range of 46 to 4740 mg/L. Combined well set TDS is ~0.65 x EC (Figure 6).

There are no major trends of change indicated from 1987 through the present sampling.

Nutrients - Nitrate concentrations are all low, often near detection levels, but never much exceeding the level of 3 mg/L generally characterized as a normal low background concentration (Harker and others 1997, Burkart and Kolpin 1993).

Trace Metals - A group of 21 trace metals were determined for all sites. In 2013 total concentrations were measured rather than total dissolved concentrations, a measurement which would include an unfiltered suspended fraction – for comparison with previous dissolved measurements. There was no discernible difference between "total" trace metals and "dissolved" trace metals previously sampled. With a few exceptions, there were no indications of elevated trace metals at concentrations of toxicological concern, or substantial upward trends.

Arsenic is one exception, and has had characteristically high values throughout the sampling record in both local lakes and in some of the sample wells – generally the deeper wells. The EPA-MCL (Maximum Contaminant Level) for arsenic is 10 µg/L. South Washington Lake and Lake Coe initially (1986) had very high (2x to 5x the EPA-MCL) arsenic concentrations, likely because they are evaporative discharge zones for local groundwater, have gradually decreased with successive samplings, likely due to the recent wet climate, which has freshened local surface waters. There is no simple relationship between arsenic and depth or location, but about half of the well sites have elevated arsenic at one or more of the nested depths - and most high arsenic concentrations are at depths of 50 feet or greater. Sites having elevated arsenic are highlighted for WS-1 wells on Table 5, and for WS-2 wells on Table 8.

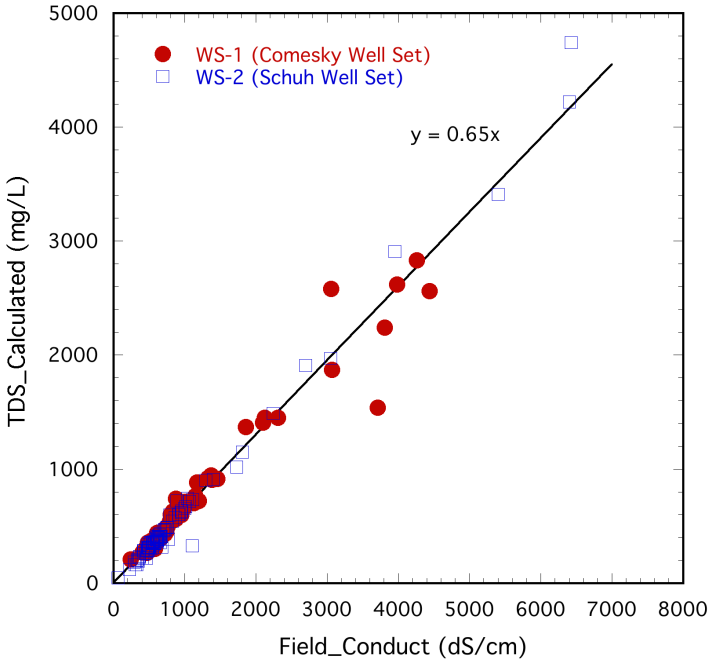

Figure 6. Total Dissolved Solids vs. Specific Conductance relationship for WS-1 and WS-2 wells (all sample dates).

Generally, the long-term trend of arsenic concentrations has been increasing, although the most recent sample set has indicated a slight decrease in some wells. Causes for spatial variability and temporal fluctuations are unknown, but in North Dakota elevated arsenic is usually associated with weathered high-organic shales, either through proximity to a bedrock contact or through the weathered shale composition of the aquifer matrix. Arsenic, along with sulfate and iron is oxidized through exposure of arsenopyrite and other reduced minerals, mobilizing arsenic in as an anionic complex of As III. Usually the oxidized arsenic is immobilized through adsorption to iron oxides. But if subsequent conditions are sufficiently reducing to mobilize iron, without reducing the arsenic,

arsenic may remain in mobile form (Erickson and Barnes 2005ab). In many cases, arsenic sources are in the low-permeability boundary materials which slowly release the arsenic into the aquifer (Erickson and Barnes 2005, Schuh and Bottrell 2014).

The CGS Reservation is now serviced by a rural water system, which eliminates the problem of long-term exposure to arsenic in drinking water. The only remaining practical concern would be the use of groundwater or surface water for military exercises which require the water membrane filtration and subsequent concentration of salts. For example, water purification exercises using reverse osmosis would result in a substantial concentration of salts in the filtrate which could be many times the EPA-MCL. In such a case, most of the filtrate should be remixed with the filtered water before returning the filtrate to the source, so as to avoid local concentrations of high-arsenic water. While relatively high and above the current EPA-MCL, almost all current measured concentrations are below the previous EPA-MCL of 50 μg/L. The new lower standards are related primarily to cancer risk from long-term use. Use of surface water or local groundwater by cattle should not be a problem.

Lead was previously detected in the range of 1 to 2 μg/L in a number of samples collected in 2001 (detection level was 1 μg/L). There were no detections in 2006. There were no detections of lead in 2013 (with a detection level of 5 μg/L). The EPA-MCL for lead is 15 μg/L.

The only other change noted is that lithium increased in several wells in the reservoir near the demolitions and munitions range. The increase occurred between 2001 and 2006. Lithium was not determined in this sampling. There is no current EPA-MCL for lithium, but a current suggested maximum concentration is about 700 μg/L.[6] In South Washington Lake and Lake Coe, lithium concentrations are as high as 400 μg/L, mainly through evaporative concentration. Normally lithium is does not exceed 100 μg/L in CGS monitoring wells. The slight increase in lithium near the demolitions range may be due to range use. However, the concentrations are still very low and there are no indications increasing levels of toxicological concern, or that the increases are likely to be sustained.

Nutrient concentrations show no adverse concentrations or trends. Most trace metals are low, and have shown no discernible trends since 1992. Some increase in lithium concentrations near the demolition and firing ranges has been observed, but levels are very low and below levels of toxicological concern. Arsenic concentrations

[6] Oram, Brian. Lithium in drinking water and brine water Marcellus Shale citizen private well monitoring. B.F. Environmental Consultants Inc. http://www.water-research.net/lithium.html. Accessed May 6, 2016.

are high in local lakes and in many of the monitoring wells. Arsenic causes are natural and not related to CGS facility use. Caution should be exercised in exercises that might require ion filtration of water and subsequent concentration of arsenic in the filtrate. Filtrate should be remixed with filtered water before returning the water to its source. MCLs are based on cancer risk from long-term human consumption, and should not be of concern for livestock water.

More detailed discussion of background research related to nutrient and trace element natural conditions in North Dakota groundwater was presented in the previous North Dakota State Water Commission Water Resources Investigation Report on Camp Grafton South (Schuh 2007), which summarized all previous sampling information, with reference to North Dakota university and agency research. [7]

[7] Download in PDF format as WRI No. 40 the North Dakota State Water Commission Reports and Publications web site:
http://www.swc.nd.gov/4dlink9/4dcgi/GetSubCategoryRecord/Reports%20and%20Publications/Water%20Resource%20Investigations

Table 9. Matrix of laboratory determinations conducted on CGS water samples in 2013.

Site	Well No.	GC/MS cyfuthrin/permethrin	LC/MS glyphosate LC/MS	SW 8151 GC/MS 2,4-D/picloram	DRO	SW8260 GRO	SW8260	SW8270	SW 8330B/ 8332
1	13103				x	x	x	x	x
1	13104			x	x		x	x	x
2	13105		x	x			x	x	x
3	Spring	x	x	x	x	x	x	x	x
4	Reservoir	x	x	x	x	x	x	x	x
5	13097							x	x
5	13098				x	x	x	x	x
5	Field Blank				x	x	x	x	x
7	13086						x	x	x
7	13087						x	x	x
7	Field Blank						x	x	x
8	13106			x					
9	13089			x	x				
11	SW Lake	x							
12	13085			x			x	x	x
12	13085 Rep			x					
12	13085	x							
14	Lake Coe	x					x	x	x
16	Spring 16	x	x	x	x				
16	Spring 16 Rep	x	x	x	x				

Table 10. Matrix of detections from water samples collected on CGS in 2013.

Site	Well No.	acetone	butyl-benzyl phthalate	benzyl alcohol	DEHP	carbon disulfide	PETN	vinyl chloride
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
1	13103	-	11	-	3.3	2.5	-	0.45
1	13104	-	1.9	-	-	0.31	-	-
2	13105	-	-	-	-	-	-	-
3	Spring	-	-	-	-	-	-	-
4	Reservoir	-	-	-	-	-	1.3	-
5	13097	-	2.1	-	-	-	-	-
5	13098	-	-	-	-	-	-	-
5	Field Blank	3.7	-	-	-	-	-	-
7	13086	-	2.4	-	-	-	-	-
7	13087	-	-	-	-	0.47	3.7	-
7	Field Blank	3.6	-	1.8	-	-	-	-
8	13106	-	-	-	-	-	-	-
9	13089	-	-	-	-	-	-	-
11	SW Lake	-	-	-	-	-	-	-
12	13085	-	-	1.9	-	-	-	-
12	13085 Rep	-	-	-	-	-	-	-
12	13085	-	-	-	-	-	-	-
14	Lake Coe	-	-	-	-	-	-	-
16	Spring 16	-	-	-	-	-	-	-
16	Spring 16 Rep	-	-	-	-	-	-	-

Organic Analytical Results

A summary of analytical procedures for each of the sample sites for which water samples were obtained is provided on Table 9. A list of organic detections is provided on Table 10. All laboratory determinations organic compounds are provided in Appendix D. Analytes detected include the following, with use descriptions and assessment of toxicological risk factors. Standards discussed below will include LOAEL (Lowest-observed-adverse effect level), NOAEL (no-observed-adverse-effect-level), Rfd (reference-dose, the amount of daily exposure likely to be without appreciable risk), and EPA-MCL (maximum allowable contaminant level – a regulatory drinking water standard).

Acetone (CASRN 67-64-1)

Acetone is a common organic compound that serves as a common solvent for cleaning laboratory equipment, and as a component of paint thinners and nail polish remover. Acetone is also produced and disposed of in the human body through normal metabolic process.[8] The oral NOAEL and LOAEL have been listed as 900 mg/kg/day and 1,700 mg/kg/day, respectively, and the oral RfD has been listed as 0.9 mg/kg/day.[9] No inhalation RfD has been recommended at this time. The concentrations detected are several orders of magnitude below toxicological standards. Common laboratory usage for cleaning equipment and sample bottles for organic contaminants would suggest that the Acetone detections were inadvertent (and inconsequential) byproducts of laboratory procedures rather than CGS operational residues. The detection of acetone in two field blank water samples (distilled water poured into the clean polyethylene bailer and then directly into a laboratory cleaned amber bottle under field conditions) would indicate that detections were residuals from glassware cleaning, detectable because of lower analytical interference in distilled water, compared with unfiltered groundwater.

BBP (Butyl-benzyl phthalate - CASRN 85-68-7)

Butyl-benzyl phthalate (BBP) is a plasticizer used for production of PVC and vinyl foams. BBP was listed by California's Office of Environmental Health Hazard Assessment as a developmental toxicant with an approved Maximum Allowable Dose of 1,200 micrograms (μg) per day.[10] EPA's Integrated Risk Information System (IRIS) lists BBP (CASRN 85-68-7) having an NOEL of 159 mg/kg/day at 2,800 ppm, and an LOEL of 470 mg/kg/day) at 8,300 ppm. The oral reference dosage (Rfd), after incorporating risk, is listed at 0.2 mg/kg/day.[11] All detected concentrations are in the low μg/L (ppb) range. Given the role of BBP as a plasticizer for PVC, detections are

[8] http://www.epa.gov/iris/toxreviews/0128tr.pdf

[9] http://www.epa.gov/iris/subst/0128.htm

[10] http://prop65news.com/StoryDetails/tabid/101/ArticleID/7502/OEHHA-Adopts-BBP-MADL.aspx

[11] http://www.epa.gov/iris/subst/0293.htm

considered to be most probably a result of the PVC well casing, laboratory tubing, or the new vinyl tubing used in the first phase of well evacuation prior to sampling. Although the each well was evacuated for an additional full well volume using a dedicated clean polyethylene bailer after initial evacuation through the vinyl tubing using a screw pump, the tubing is suspected rather than the PVC, given that the PVC has been in place for more than 20 years, and outgassing of volatile plasticizers seems unlikely. In any case, all detections are far below levels of toxicological concern, and are not likely related to CGS operational contaminants.

BA (Benzyl Alcohol)

Benzyl Alcohol is a general solvent used in many industrial products. It is also a natural product contained in many plants. It has a relatively low toxicity, having an LD50 of about 1.2 g/kg body weight in rats. It is not considered to be a carcinogen or teratogenic. It also breaks down (oxidizes) relatively quickly. Detection levels are about one million times lower than the LD50. [12]

DEHP (Bis(2-ethylhexyl) phthalate - CASRN 117-81-7)

Bis(2-ethylhexyl) phthalate (DEHP) is described by as "the most common of the class of phthalates which are used as plasticizers," accounting for an almost 54% market share in 2010. DEHP has a low vapor pressure, but the temperatures for processing PVC articles are often high, leading to release of elevated levels, raising concerns about health risks. The acute toxicity of DEHP is low in animal models: 30 g/kg in rats (oral) and 24 g/kg in rabbits (dermal).[2] Concerns instead focus on its potential as an endocrine disruptor." DEHP can also leach into a liquid that comes into contact with the plastic. DEHP is listed as (CASRN 117-81-7) in the IRIS database, where it is assigned an oral RFD of 0.02 mg/kg/day. As with BBP, detections are considered to be most probably a result of the PVC well casing, laboratory tubing, or the new vinyl tubing used in the first phase of well evacuation prior to sampling. Although the each well was evacuated for an additional full well volume using a dedicated clean polyethylene bailer after initial evacuation through the vinyl tubing using a screw pump, the tubing is suspected rather than the PVC, given that the PVC has been in place for more than 20 years, and outgassing of volatile plasticizers seems unlikely. In any case, all detections are far below levels of toxicological concern, and are not likely related to CGS operational contaminants.

CDS (Carbon Disulfide CASRN 75-15-0)

Carbon disulfide is a volatile (at room temperature) organic compound used industrially to produce rayon, cellophane, carbon tetrachloride, and other similar products, to dissolve rubber in tire production, and as a raw material in some pesticides. However, it is also

[12] http://www.epa.gov/safewater/pdfs/factsheets/soc/phthalat.pdf

naturally produced by soil microbes. [13] It is listed as CASRN 75-15-0[14] in EPAs IRIS and is assigned a NOEL of 20 ppm (11 mg/kg/day), and an oral RFD of 0.1 mg/kg/d and an inhalation Rfd of 0.7 mg/cu.m. Carbon disulfide has been detected in a previous sampling of CGS in 2006. Given the very low detected concentrations, detections are below levels of toxicological concern and a CGS operational source could not likely be separated from natural microbial sources.

PETN (Pentaerythritol tetranitrate)

Pentaerythritol tetranitrate (PETN), is one of the listed explosives used on the demolitions range at CGS (Appendix A). Toxicology studies (Bucher et al. 1990)[15] have indicated that rats fed PETN at very high dosages (as high as 10,000 ppm) over 13 to 14 weeks showed no signs of toxicity or carcinogenicity. Another study (Quinn et al. 2009)[16] indicated "No adverse effects on development or reproduction from PETN exposure were observed. Water solubility, octanol water partition coefficient, and water suspension and biodegradation rates suggest PETN is unlikely to transport or bioaccumulate in the environment to any appreciable extent. Additionally, biotic processes are most likely faster in breaking down PETN than the abiotic processes involved in dissolving PETN in water." A summary report published by the U.S. Army Center for Health Promotion and Preventative Medicine (UASCHPPM 2001)[17] reviewed the literature on potential effects of PETN on wildlife toxicity and reported that suggested maximum mammalian doses in the range of 200 to 2,000 mg/kg/d (where kg indicates body weight) based on a "no observable adverse effect limit" (NOAEL) over 14 and 104 week exposures" and a slightly higher dosage using a "lowest observable adverse effect limit" (LOAEL) standard using rodents. Earlier studys on dogs indicated a somewhat lower

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[13] U.S. Department of Health and Human Services Public Health Service. 1996. Toxicological Profile for Carbon Disulfide. 252 pp. http://www.atsdr.cdc.gov/toxprofiles/tp82.pdf

[14] http://www.epa.gov/iris/subst/0217.htm.

[15] Bucher JR, Huff J, Haseman JK, Eustis SL, Lilja HS, Jurthy AS. 1999. No evidence of toxicity or carcinogenicity of pentaerythritol tetranitrate givent eh diet of F344 rats and B6C3F1 mice for up to two years. J Appl Toxicol. 10(5):353-7.

[16] Quinn, JR Jr, Crouse LC, McFarland CA, LaFiandra EM, Johnson MS. 2009. Reproductive and development effects and physical and chemical properties of pentaerythritol tetranitrate (PETN) in rat. Birth Defects Res. B Dev. Reprod. Tocicol. 86:1)65-71.

[17] USACHPPM. 2001. Wildlife Toxicity Assessment for Pentaerythritol Tetranitrate (PETN). USACHPPM Doc. NO. 37-EJ1138-01G. 19 pp.

CASRN 85-68-7

NOAEL of about 5 mg/kg/d. All of these are more than a million times higher than the measured concentrations in the reservoir water. In general, trace quantities indicated in samples are not of environmental or toxicological concern for humans or livestock based on current knowledge.

VC (Vinyl chloride – CASRN 75-01-4)

Vinyl chloride (VC) is described in Wikipedia as an important industrial chemical chiefly used to produce the polymer polyvinyl chloride (PVC). Vinyl chloride has been identified as a liver toxin and carcinogen. According to an EPA toxicological review (2000) the Estimated lifetime cancer risk from oral exposure to VC is 7.2×10^{-1} per mg/kg-day.[18] The human oral RfD for non-cancer effects is 0.003 mg/kg/day (3μg/kg/day). Assessment of VC for CGS is similar to that of BBP and DEHP: i.e. it is considered to be a most probably leachate or degassed product of the rigid PVC well casing, laboratory tubing, or - most probably – the vinyl tubing used in initial evacuation of the wells. Measured levels are below toxicological concern and are very unlikely to have been a result of CGS operational activities.

Summary / Organic Contaminants – Pesticides

Insecticides – Water samples were analyzed for cyfuthrin and permethrin, both used for insect control on livestock, at exposed surface water sites likely to be frequented by cattle. Sampled sites include the reservoir and spring in the area of the demolitions and firing ranges, Lake Coe, South Washington Lake, and the spring on the CGS area north of HWY 15, northwest of the previously used Engineering Training Site.

There were no detections of insecticides.

Herbicides – In early sampling years, through 2001, picloram, which is used with 2,4-D on CGS lands for control of leafy spurge, was detected in surface water samples from South Washington Lake and Lake Coe. These herbicides were analyzed in surface water samples, including both north and south springs (Sites 3 and 16), both of the Lakes, and from shallow sample wells outside of CGS and in drainageways east and north of the CGS facility (Sites 1, 2 and 12). The springs, reservoir and the sample well on Site 2 were also sampled for glyphosate.

There were no detections of herbicides.

[18] EPA. May, 2000. Toxicological Review of Vinyl Chloride. CAS No. 75-01-4. USEPA, Washington, DC. http://www.epa.gov/iris/toxreviews/1001tr.pdf

Munitions and Explosives Residues – Water samples from shallow and deep wells on Site 5 (drainageway northwest area of the demolitions range) and Site 7 (south end of the demolitions range near the causeway to the Pinkerton Farm), from the shallow well on Site 12, across the wetland from the demolitions range near the Pinkerton Farm site, from all wells covering the drainageways east of the CGS facility (Sites 1 and 2), from the reservoir between the demolitions range and the firing ranges, and from Lake Coe (Table 9) were analyzed for munitions and explosives residues. Of several munitions and explosives residues explicitly identified as used on the CGS demolitions range (Appendix D) and explicitly sampled for in this evaluation (Table 9) only one, PETN, was detected. PETN was detected on two sites: in the shallow well on Site 7 and from the reservoir (Table 10). Both sites are in close proximity to demolitions range uses. PETN detections were at trace levels and were far below levels of human, livestock or environmental toxicological concern. The solvent carbon disulfide was detected with PETN on Site 7 (far below levels of toxicological concern) and may or may not be associated with range use. Carbon disulfide is used in many industrial processes and is also produced naturally in the soil. Other detected solvents on Table 10, such as DEHP and butyl-benzyl phathalate may also have been associated with munitions and explosives use, but have multiple uses. All are below levels of toxicological concern.

PETN was detected in the reservoir (Site 4) and in a shallow well on the south end of the demolitions range area. Detections levels are miniscule and below levels of concern.

Other Residues – Several other residues were also detected sporadically – all at very low levels and below levels of toxicological concern. Of these, acetone is most likely associated with the cleaning of the glassware rather than having a field source. The single vinyl chloride detection is likely from the flexible vinyl tubing used in purging the wells. Multiple detections of butyl-benzyl phthalate and the single detection of DEHP likely resulted in outgassing from PVC well casing and flexible tubing for which both are used as a plasticizer. The solvent carbon disulfide is naturally produced in the environment, and cannot be tied to range use with any reasonable level of certainty.

Other than PETN, none of the detections of other organic substances reported here can be tied with reasonable certainty to range use – all of them are known to have association with substances used in sampling or are produced naturally. All detections are well below levels of human, livestock, or environmental toxicological concern.

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APPENDIX A

LETTER OF 3/23/2000, LTC DAVID ANDERSON TO W.M. SCHUH, RE: LOCATIONS, USES, AND COMPOSITION OF MUNITIONS AND EXPLOSIVES USED ON THE CGS MILITARY RESERVATION

OFFICE OF THE ADJUTANT GENERAL
DIVISION OF
INSTALLATIONS, RESOURCES AND ENVIRONMENTAL
NORTH DAKOTA NATIONAL GUARD
PO BOX 5511, BISMARCK, ND 58506-5511

AGND-IRE-ENV 23 March 2000

MEMORANDUM FOR Mr. W. M. Schuh, ND State Water Commission, 900 East Boulevard Ave., Dept. 770, Bismarck, ND 58505-0850

SUBJECT: Information regarding pesticides, ammunition and petroleum products at Camp Grafton

1. Reference your memo dated 7 January 2000.

2. Attached you will find information regarding the types of pesticides, petroleum products, ammunition and explosives used by the NDARNG at the Camp Grafton Training Site. Also attached is a map of the training site indicating the range locations.

3. As we discussed on the phone, the use of the pesticides and the petroleum products is generally throughout the training site. The use of some of the munitions, such as blanks, smoke, and simulators would also be used throughout the site. The use of explosives and live ammunition is limited to the ranges marked on the attached map.

4. Please call me at 224-5244 should you have any questions.

DAVID B. ANDERSON
LTC, EN, NDARNG
Environmental Chief

Encl
as

Munitions:

Type	Principle Ingredients	Location
5.56mm (ball & blank) (ball = live ammunition with bullet, fired only on ranges) (blank = ammunition without bullet fired throughout camp)	NC Graphite Nitroglycerin Ethyl Centralite K Sulfate Primer: SB Sulfide BA Nitrate PB Styphnate Tetracene PETN AL powder	Ball –MRF range blank – throughout camp
7.62mm	Graphite NA Sulfate CA Carbonate Nitroglycerin Diphenylamine Dibutylphthalate NC	MPMG Range
50 cal	Graphite K Nitrate NA Sulfate CA Carbonate Nitroglycerin Diphenylamine Dibutylphthalate NC	MPMG Range
40mm (practice)	Silica Basonyl Red Isobenzofurandione Formaldehyde/melamin Tetrachlorozincate	M203 range

NOTE:
Key for Range acronyms –
MPMG = Multi Purpose Machine Gun range
MICLIC = Mine Clearing LIne Charge
CPQL = Combat Pistol Qualification range
MRF = Modified Record Fire range
AT4, MK19, M203 = nomenclature for weapons (anti tank, & grenade) which fire only practice (non high-explosive) rounds at the range
Demo range = Demolitions range – location where live explosives are used for training

Explosives:

Type	Principle Ingredients	Location
Bangalor Torpedo	Toluene Triethylamine Phosphorus Xylene Methyl Ethyl Ketone Lead Nickel Copper Antimony Zinc Compounds Chromium Compounds	Demo range
Primacord Detonating Cord	Pentaerythritol Tetranitrate (PETN) Cyclonite Cyclotetramethylene Tetranitramine (HMX) Cyclonite 2,6-BIS(Picrylamino)-3,5-Dinitropyridine (PYX)	Demo range
C4	Toluene	Demo range
TNT	2,4,6-trinitrotoluene	Demo range
Cratering Charge	Toluene Xylene Nickel Lead Cobalt Zinc Compounds Chromium Compounds	Demo range
Artillery simulator	Methyl Isobutyl Ketone Methanol K Nitrate S Charcoal	Throughout camp
Smoke grenade	Ethylbenzene Cadmium Manganese Chromium Methyl Isobutyl Ketone Methanol Chromium Compound Lead Barium	Throughout camp
Claymore Mine	Styrene Phosphorus Nickel Chromium Methanol Triethylamine Lead Antimony Zinc compounds Lead compounds	Demo Range
CS Grenade	O-Chlorobenzylidene Malononitrile Potassium Chlorate	Throughout camp

Pesticides:

Pesticide	Principle Ingredients	Application Method	Location
Tordon 22K	Picloram: 4-Amino-3,5,6-trichloropicolinic Acid Potassium salt Polyglycol 26-2	Ground application (Have not used Aerial application since 1997) (Generally applied once every year at selected locations)	Throughout South Camp
2,4 –D	Dimethylamine Salt of 2, 4 –Dichlorophenoxyacetic Acid	Ground (Have not used Aerial application since 1997) (Generally applied once every year at selected locations	Throughout South Camp
Pramitol 25E	2,4-bis(isopropylamino)-6-methoxy-s-triazine	Ground (Selected locations, once every year)	Throughout South Camp
Malathion 55	O,O-Dimethyl phosphorodithioate of diethyl mercapotosuccinate	Ground (Selected locations, bivouac and work sites, with repeated applications – approx 6 applications per site - depending on troop use)	Throughout South Camp

Petroleum products:

Type	Principle Ingredients	Location
Diesel Fuel	Naphthalene Complex mixture of Paraffinic Olefinic, Naphthenic and Aromatic Hydrocarbons	Throughout South Camp
Unleaded Gasoline	Gasoline Benzene	Throughout South Camp
Leaded Gasoline	Gasoline Benzene	Throughout South Camp
Motor Oil	Refined heavy Paraffinic Distillates (solvent refined paraffinic petroleum oil) PEL/TLV as Oil Mist	Throughout South Camp
Jet fuel JP-8	2-Methoxyethanol (EGME)	Throughout South Camp

APPENDIX B

WORK ORDERS/CUSTODY TO SHIPMENT
AND
LAB RECEIPT CUSTODY AND CONDITION REPORTS

B-1

September 9, 2013 Water Samples

W 1328455

11338/1-7

1328455

(1)

ALS Environmental
Field Chain-of-Custody Record

Page _____ of _____

Client Name & Address: C/o William Schuh
ND State Water Commission
900 East Blvd Ave
Bismarck ND 58505

Phone: 701-328-2734

FAX:

e-mail: bschuh@nd.gov

Project No.: 1859

Project Name: Camp Cvadron South
Proxy for ND Nat. Guard

Sampler: *(Signature)*

Field Sample Number	Site ID	Date	Time	Depth	ALS Sample Number	Preservation Code	Sample Matrix Code	Sample for Matrix QC	8270 (SIM/Vol)	8260	8332	BTEX DTEX CLO	8330	Permethrin cyfluthrin	Glyphosate LCMS	Prc1224D 8151	No. of Containers	Remarks
SPR3	Site 3	10/8	Cooler 4		4 & 5				X	X	X	X	X	X	X	X		14 x 1L + 3 x 40 VOC
Res 4	Site 4	10/8	Cooler		7 & 8				X	X	X	X	X	X	X	X		14 x 1L + 3 x 40 VOC
13097	Site 5	10/8	Cooler 2						X	X	X		X					8L liter
13098	Site 5	10/8		Cooler 3					X	X	X	X	X					8L + 3 x 40 VOC
5.5	Site 5	10/8	Coolers		9 & 8				X	X	X	X	X					8 x 1L + 3 x 40 VOC
13085	Site 7	10/8	Cooler 6						X	X	X		X					6 Liter + 3 x 40 VOC
13087	Site 7	10/8	Cooler		9 & 10				X	X	X		X					6 Liter + 3 x 40 VOC
57	Site 7	10/8	Cooler 6		4 & 5				X	X	X		X					6 Liter + 3 x 40 VOC

Possible Hazard Identification
☐ Non-Hazard ☐ Skin Irritant ☐ Rad
☐ Flammable ☐ Poison ☐ Unknown

Sample Disposal
☐ Return to Client ☐ Archive for _____ Months
☐ Disposal by Lab
(fees may be assessed if samples are retained longer than 3 months)

Requested Turn Around Time
☐ 2 Days (Rush) ☐ 7 Days (Rush) ☐ 21 Days
☐ 3 Days (Rush) ☐ 14 Days ☐ Other
(Rush = email data by COB on day due. Surcharges assessed.)

Carrier/Airbill #:

Relinquished by: *(Signature)*	Received by: *(Signature)*	Date	Time
to Fedex	10/10/13 0939	10/9	15:30
Relinquished by: *(Signature)*	Received by: *(Signature)*	Date	Time
Relinquished by: *(Signature)*	Received by: *(Signature)*	Date	Time

Shipped to:
ALS Environmental
960 West LeVoy Drive
Salt Lake City, UT 84123
Phone: (800) 356-9135
Phone: (801) 266-7700
FAX: (801) 268-9992
WEB:www.alsglobal.com

Matrix Codes: W) Water B) Bulk L) Liquid F) Filter S) Soil G) Wipe C) Solid M) Media

Preservation Codes: 1) Cool to 4°C 2) HCl to pH<2, 4°C 3) H_2SO_4 to pH<2, 4°C 4) HNO_3 to pH<2, 4°C 5) NaOH to pH>12, 4°C 6) ZnOAc/NaOH to pH>9, 4°C

White - Laboratory Copy *Yellow - Client Copy*

ALS Environmental
Field Chain-of-Custody Record

Client Name & Address:	c/o William Schuh & ND State Water Comm. 900 E Boulevard Ave Bismarck ND 58505
Phone:	701-328-2739
FAX:	
e-mail:	bschuh@nd.gov
Project No.:	1859
Project Name:	Camp Crafton South Injury Area
Sampler: *(Signature)*	William Schuh

Field Sample Number	Site ID	Date	Time	Depth	ALS Sample Number	Preservation Code	Sample Matrix Code	Sample for Matrix QC	8270	8260	8332	8330	BTEX+MTBE+Naphthalene	Picloram+2,4-D			No. of Containers	Remarks
~~13084~~	~~site 12~~	~~10/8~~																
13085	site 12	10/8	Cooler 6 of 1						X	X	X	X		X				8L x 3x40mL
512P	site 12	10/8	Cooler 1 of 3											X				2 x 1L

Matrix Codes:
W) Water B) Bulk
L) Liquid F) Filter
S) Soil G) Wipe
C) Solid M) Media

Preservation Codes:
1) Cool to 4°C
2) HCl to pH<2, 4°C
3) H_2SO_4 to pH<2, 4°C
4) HNO_3 to pH<2, 4°C
5) NaOH to pH>12, 4°C
6) ZnOAc/NaOH to pH>9, 4°C

Possible Hazard Identification
☐ Non-Hazard ☐ Skin Irritant ☐ Rad
☐ Flammable ☐ Poison ☐ Unknown

Sample Disposal
☐ Return to Client ☐ Archive for _____ Months
☐ Disposal by Lab
(fees may be assessed if samples are retained longer than 3 months)

Requested Turn Around Time
☐ 2 Days (Rush) ☐ 7 Days (Rush) ☐ 21 Days
☐ 3 Days (Rush) ☐ 14 Days ☐ Other
(Rush = email data by COB on day due. Surcharges assessed.)

Carrier/Airbill #:

		Date	Time
Relinquished by: *(Signature)* William Schuh + to FedEx	**Received by:** *(Signature)* Angie Ulstrom 10/10/13 0939	10/9	15:45
Relinquished by: *(Signature)*	**Received by:** *(Signature)*	Date	Time
Relinquished by: *(Signature)*	**Received by:** *(Signature)*	Date	Time

Shipped to:
ALS Environmental
960 West LeVoy Drive
Salt Lake City, UT 84123
Phone: (800) 356-9135
Phone: (801) 266-7700
FAX: (801) 268-9992
WEB:www.alsglobal.com

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ALS Environmental
Field Chain-of-Custody Record

Page _____ of _____

Client Name & Address: William Schuh
ND State Water Comm
900 East Boulevard
Bismarck ND 58505

Phone: 701-328-2731

FAX:

e-mail: bschuh@nd.gov

Project No.: 1857

Project Name: Camp Crafton 5.1

Sampler: *(Signature)* W Schuh

Field Sample Number	Site ID	Date	Time	Depth	ALS Sample Number	Preservation Code	Sample Matrix Code	Sample for Matrix QC	Analyses Requested	No. of Containers	Remarks
13045				7 x 14 +3 x 40 ft							
		See									
				Sheet 1							

Matrix Codes: W) Water B) Bulk L) Liquid F) Filter S) Soil G) Wipe C) Solid M) Media

Preservation Codes: 1) Cool to 4°C 2) HCl to pH<2, 4°C 3) H_2SO_4 to pH<2, 4°C 4) HNO_3 to pH<2, 4°C 5) NaOH to pH>12, 4°C 6) ZnOAc/NaOH to pH>9, 4°C

Possible Hazard Identification
☐ Non-Hazard ☐ Skin Irritant ☐ Rad
☐ Flammable ☐ Poison ☐ Unknown

Sample Disposal
☐ Return to Client ☐ Archive for _____ Months
☐ Disposal by Lab
(fees may be assessed if samples are retained longer than 3 months)

Requested Turn Around Time
☐ 2 Days (Rush) ☐ 7 Days (Rush) ☐ 21 Days
☐ 3 Days (Rush) ☐ 14 Days ☐ Other
(Rush = email data by COB on day due. Surcharges assessed.)

Carrier/Airbill #:

Relinquished by: *(Signature)*	Received by: *(Signature)*	Date	Time
W Schuh	Angela Strom 10/10/13 0939	10/9	15:00
Relinquished by: *(Signature)*	Received by: *(Signature)*	Date	Time
Relinquished by: *(Signature)*	Received by: *(Signature)*	Date	Time

Shipped to:
ALS Environmental
960 West LeVoy Drive
Salt Lake City, UT 84123
Phone: (800) 356-9135
Phone: (801) 266-7700
FAX: (801) 268-9992
WEB:www.alsglobal.com

White - Laboratory Copy *Yellow - Client Copy*

ALS - SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ND State Water Commission Project/Task/Site: 132845

Date/Time of Receipt: 10/10/13 0939 Number of Coolers Received: 10

Condition of Coolers:	(Acceptable)/Unacceptable	Temperature Control:	Present/(Not Included)
Custody Seals:	Present/(Absent)/NA	Location Temp Taken:	Control/(Between Samples)
	Intact/Broken/(NA)	Are all temperatures within	
Tamper Evident:	Yes/(No)/NA	project specific guidelines?	Yes/(No)/NA
Ice Present:	(Yes)/No/NA	VOA Headspace Present?	Yes/(No)/NA
	~~Frozen~~/Melted/NA		

pH Check Performed:						
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	TOC Preserved	Yes/No/NA
					Gross A B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C13 4427	8 °C	4	C13 4430	8 °C	7	C13 4433	8 °C
2	C13 4428	8 °C	5	C13 4431	8 °C	8	C13 4434	8 °C
3	C13 4429	8 °C	6	C13 4432	8 °C	9	C13 4435	8 °C

Taken By: Ay Ahlstrom (Signature) Ay Ahlstrom (Printed Name) 10/10/13 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☒ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	EPA Custody Seal:

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Sample 13097 listed for 8260 but no containers received for 8260 on this sample.
Sample 13085 listed twice on COC.
(1) 1000 mL bottle received broken for 13087

Response Required Within 24 Hours

PROJECT MANAGEMENT

E-MAILED TO CLIENT? YES ☒ NO ☐

PROJECT MANAGER COMMENTS:

Client made aware, proceed w/ analysis.

ALS Project Manager: Jessica Helland (Printed Name) Returned to Sample Receipt by: (Signature) Date: 10/10/13

ALS - SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ND State Water Commission

Project/Task/Site: 132453

Date/Time of Receipt: 10/10/13 0939

Number of Coolers Received: 10

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Custody Seals:	Present/Absent/NA	Location Temp Taken:	Control/Between Samples
	Intact/Broken/NA	Are all temperatures within	
Tamper Evident:	Yes/No/NA	project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA	VOA Headspace Present?	Yes/No/NA
	Frozen/Melted/NA		

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	TOC Preserved	Yes/No/NA
					Gross A B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C13 4436	8 °C	4	C13	°C	7	C13	°C
2	C13	°C	5	C13	°C	8	C13	°C
3	C13	°C	6	C13	°C	9	C13	°C

Taken By: Amy Kvistrom (Signature) Amy Kvistrom (Printed Name) 10/10/13 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☒ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	EPA Custody Seal:

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

(1) 1000 mL bottle received broken for 13087

Response Required Within 24 Hours

PROJECT MANAGEMENT

E-MAILED TO CLIENT? YES ☐ NO ☐

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

B-2

September 16, 2013 Water Samples

W

ALS Environmental

Field Chain-of-Custody Record

11338

1329042

1 2 3 6 7 5 4

Page _____ of _____

Client Name & Address:	C/O Wm Schuh ND State Water Comm 900 East Boulevard Ave Bismarck, ND 58505
Phone:	701-328-2739
FAX:	
e-mail:	bschuh@nd.gov
Project No.:	1859
Project Name:	CCS
Sampler: *(Signature)*	

Field Sample Number	Site ID	Date	Time	Depth	ALS Sample Number	Preservation Code	Sample Matrix Code	Sample for Matrix QC	8270	8260	8332	8330	Picloram+2,4-D	Glyphosate	Acetochlor, Sulfentrazone	BTEX, DRO, DRO	No. of Containers	Remarks
13106	CCS	10/14	12:00	cooler 2									X					3x1L
13055	"	10/14	12:00	cooler #2									X					3x1L
Swash Lk	"	10/15	16:00	cooler #2									X					2x1L
Lake Coe	"	10/15	16:00	cooler #5					X	X	X	X	X					7x1L+3x40ML
SPR-16	"	10/14	13:00	cooler #2, #3									X	X	X	X		8x1L
SPR-16B	"	10/14	13:00	cooler #3, #4					~~X~~	~~X~~	~~X~~		(X)	X	X	X		5x1L
13103	"	10/15	10:00	cooler #6					X	X	X	X				X		9x1L+3x40ML
13104	"	10/15	10:00	cooler #7					X	X	X	X	X			X		9x1L+3x40ML
13105	"	"	10:00	cooler #1, #6					X	X	X	X	X	X				8x1L+3x40ML
13098	"	10/14	15:00	cooler #5, #4									X			X		5x1L

Possible Hazard Identification

☐ Non-Hazard ☐ Skin Irritant ☐ Rad
☐ Flammable ☐ Poison ☐ Unknown

Sample Disposal

☐ Return to Client ☐ Archive for _____ Months
☐ Disposal by Lab
(fees may be assessed if samples are retained longer than 3 months)

Requested Turn Around Time

☐ 2 Days (Rush) ☐ 7 Days (Rush) ☐ 21 Days
☐ 3 Days (Rush) ☐ 14 Days ☐ Other
(Rush = email data by COB on day due. Surcharges assessed.)

Matrix Codes: W) Water, B) Bulk, L) Liquid, F) Filter, S) Soil, G) Wipe, C) Solid, M) Media

Preservation Codes: 1) Cool to 4°C, 2) HCl to pH<2, 4°C, 3) H_2SO_4 to pH<2, 4°C, 4) HNO_3 to pH<2, 4°C, 5) NaOH to pH>12, 4°C, 6) ZnOAc/NaOH to pH>9, 4°C

Carrier/Airbill #:

Relinquished by: *(Signature)*	**Received by:** *(Signature)* To FedEx	**Date** 10/16	**Time** 15:00
Relinquished by: *(Signature)*	**Received by:** *(Signature)*	**Date** 10/17/13	**Time** 938
Relinquished by: *(Signature)*	**Received by:** *(Signature)*	**Date**	**Time**

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ALS Environmental
Field Chain-of-Custody Record

Page _____ of _____

Client Name & Address: c/o Wm Schuh
ND State Water Comm
900 East Boulevard
Bismarck ND 58505

Phone: 701-328-2739

FAX:

e-mail: bschuh@nd.gov

Project No.: 1859
proxy for Nat Quad

Project Name: Camp Crafton South

Sampler: *(Signature)* Wm Schuh

Field Sample Number	Site ID	Date	Time	Depth	ALS Sample Number	Preservation Code	Sample Matrix Code	Sample for Matrix QC	Analyses Requested	No. of Containers	Remarks
SPR-16		10/11/13	13:00						See attached	7 x 1L	
SPR-16B		10/x	13:00							1 x 1L	

Matrix Codes:
W) Water B) Bulk
L) Liquid F) Filter
S) Soil G) Wipe
C) Solid M) Media

Preservation Codes:
1) Cool to 4°C
2) HCl to pH<2, 4°C
3) H_2SO_4 to pH<2, 4°C
4) HNO_3 to pH<2, 4°C
5) NaOH to pH>12, 4°C
6) ZnOAc/NaOH to pH>9, 4°C

Possible Hazard Identification
☐ Non-Hazard ☐ Skin Irritant ☐ Rad
☐ Flammable ☐ Poison ☐ Unknown

Sample Disposal
☐ Return to Client ☐ Archive for _____ Months
☐ Disposal by Lab
(fees may be assessed if samples are retained longer than 3 months)

Requested Turn Around Time
☐ 2 Days (Rush) ☐ 7 Days (Rush) ☐ 21 Days
☐ 3 Days (Rush) ☐ 14 Days ☐ Other
(Rush = email data by COB on day due. Surcharges assessed.)

Carrier/Airbill #:

		Date	Time
Relinquished by: *(Signature)* Wm Schuh	**Received by:** *(Signature)* Fedex		
Relinquished by: *(Signature)* Wm Schuh	**Received by:** *(Signature)* [illegible]	10/17/13	938
Relinquished by: *(Signature)*	**Received by:** *(Signature)*		

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Field Chain-of-Custody Record

Page _____ of _____

Client Name & Address: c/o Wanschuh ND State Water Commission 900 East Boulevard Ave Bismarck ND 58505	Project No.: 1854 Proxy for ND
Phone: 701-328-2739	Project Name: CCS
FAX:	Sampler: *(Signature)* Wanschuh
e-mail: bschuh@nd.gov	

Preservation Codes: 1) Cool to 4°C; 2) HCl to pH<2, 4°C; 3) H_2SO_4 to pH<2, 4°C; 4) HNO_3 to pH<2, 4°C; 5) NaOH to pH>12, 4°C; 6) ZnOAc/NaOH to pH>9, 4°C

Matrix Codes: W) Water, B) Bulk, L) Liquid, F) Filter, S) Soil, G) Wipe, C) Solid, M) Media

Field Sample Number	Site ID	Date	Time	Depth	ALS Sample Number	Preservation Code	Sample Matrix Code	Sample for Matrix QC	Analyses Requested	No. of Containers	Remarks
SPR-16B		10/14	13:00						See Shred Cooler	4x1L	
13089		10/14	15:00							4x1L	

Possible Hazard Identification
☐ Non-Hazard ☐ Skin Irritant ☐ Rad
☐ Flammable ☐ Poison ☐ Unknown

Sample Disposal
☐ Return to Client ☐ Archive for _____ Months
☐ Disposal by Lab
(fees may be assessed if samples are retained longer than 3 months)

Requested Turn Around Time
☐ 2 Days (Rush) ☐ 7 Days (Rush) ☐ 21 Days
☐ 3 Days (Rush) ☐ 14 Days ☐ Other
(Rush = email data by COB on day due. Surcharges assessed.)

Carrier/Airbill #:

		Date	Time
Relinquished by: *(Signature)*	**Received by:** *(Signature)*		
Relinquished by: *(Signature)* FedEx	**Received by:** *(Signature)*	10/17/13	9:38
Relinquished by: *(Signature)*	**Received by:** *(Signature)*	Date	Time

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ALS Environmental
Field Chain-of-Custody Record

Page _____ of _____

Client Name & Address:	c/o Wm Schuh ND State Water Commn 900 East Boulevard Ave Bismarck ND 58505
Phone:	701-328-2739
FAX:	
e-mail:	bschuh@nd.gov
Project No.:	1454 proxy for ND Water Cd
Project Name:	CGS
Sampler: *(Signature)*	Wm Schuh

Field Sample Number	Site ID	Date	Time	Depth	ALS Sample Number	Preservation Code	Sample Matrix Code	Sample for Matrix QC	Analyses Requested	No. of Containers	Remarks
13105	⌀	10/15	11:30						see sheet	1	7X1L +3X40mL

Cooler This Cooler

Matrix Codes: W) Water, B) Bulk, L) Liquid, F) Filter, S) Soil, G) Wipe, C) Solid, M) Media

Preservation Codes: 1) Cool to 4°C; 2) HCl to pH<2, 4°C; 3) H_2SO_4 to pH<2, 4°C; 4) HNO_3 to pH<2, 4°C; 5) NaOH to pH>12, 4°C; 6) ZnOAc/NaOH to pH>9, 4°C

Possible Hazard Identification
☐ Non-Hazard ☐ Skin Irritant ☐ Rad
☐ Flammable ☐ Poison ☐ Unknown

Sample Disposal
☐ Return to Client ☐ Archive for _____ Months
☐ Disposal by Lab
(fees may be assessed if samples are retained longer than 3 months)

Requested Turn Around Time
☐ 2 Days (Rush) ☐ 7 Days (Rush) ☐ 21 Days
☐ 3 Days (Rush) ☐ 14 Days ☐ Other
(Rush = email data by COB on day due. Surcharges assessed.)

Carrier/Airbill #:

		Date	Time
Relinquished by: *(Signature)* Wm Schuh	**Received by:** *(Signature)* Fedex		
Relinquished by: *(Signature)* Fedex	**Received by:** *(Signature)* Meredith Edelen	10/17/13	938
Relinquished by: *(Signature)*	**Received by:** *(Signature)*		

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ALS Environmental
Field Chain-of-Custody Record

Page _____ of _____

Client Name & Address: C/o Wm Schuh
ND State Water Comm
900 East Boulevard
Bismarck ND 58505

Phone: 701-328-2739

FAX:

e-mail: bschuh@nd.gov

Project No.: 1657
P10xy for NDWaterCom

Project Name: CCS

Sampler: *(Signature)* Wm Schuh

Field Sample Number	Site ID	Date	Time	Depth	ALS Sample Number	Preservation Code	Sample Matrix Code	Sample for Matrix QC	Analyses Requested	No. of Containers	Remarks
13103		10/15	10:00						SEE attached	5	5X1L+3X40ML
13104		10/15	11:00							1	1X1L [illegible]

Matrix Codes:
W) Water B) Bulk
L) Liquid F) Filter
S) Soil G) Wipe
C) Solid M) Media

Preservation Codes:
1) Cool to 4°C
2) HCl to pH<2, 4°C
3) H_2SO_4 to pH<2, 4°C
4) HNO_3 to pH<2, 4°C
5) NaOH to pH>12, 4°C
6) ZnOAc/NaOH to pH>9, 4°C

Possible Hazard Identification
☐ Non-Hazard ☐ Skin Irritant ☐ Rad
☐ Flammable ☐ Poison ☐ Unknown

Sample Disposal
☐ Return to Client ☐ Archive for _____ Months
☐ Disposal by Lab
(fees may be assessed if samples are retained longer than 3 months)

Requested Turn Around Time
☐ 2 Days (Rush) ☐ 7 Days (Rush) ☐ 21 Days
☐ 3 Days (Rush) ☐ 14 Days ☐ Other
(Rush = email data by COB on day due. Surcharges assessed.)

Carrier/Airbill #:

Relinquished by: *(Signature)*	Received by: *(Signature)*	Date	Time
Wm Schuh	Fedex		
Fedex	[illegible]	10/17/13	938

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Field Chain-of-Custody Record

Note: all samples [illegible] 9/x 1x W/slay [illegible]

Page ____ of ____

Client Name & Address: c/o W M Schuh, ND State Water Comm, 900 East Boulevard Ave, Bismarck ND 58505

Phone: 701-328-2737

FAX:

e-mail: bsc [illegible]@nd.gov

Project No.: 1859

[illegible]

Project Name: CQ5

Sampler: (Signature) [signature]

Analyses Requested: Cover — see sheet cooler

Field Sample Number	Site ID	Date	Time	Depth	ALS Sample Number	Preservation Code	Sample Matrix Code	Sample for Matrix QC	Analyses Requested								No. of Containers	Remarks
13095	CQ5	~~9/13~~ 10/19	14:00															3x1L
~~13096~~	~~"~~																	~~3x1L~~
13106	CQ5	10/19	12:20															3x1L
S wash cuts	CQ5	10/15	16:00															2x1L
SPR-16	"																	1x1L

Matrix Codes: W) Water B) Bulk L) Liquid F) Filter S) Soil G) Wipe C) Solid M) Media

Preservation Codes:
1) Cool to 4°C
2) HCl to pH<2, 4°C
3) H_2SO_4 to pH<2, 4°C
4) HNO_3 to pH<2, 4°C
5) NaOH to pH>12, 4°C
6) ZnOAc/NaOH to pH>9, 4°C

Possible Hazard Identification
☐ Non-Hazard ☐ Skin Irritant ☐ Rad
☐ Flammable ☐ Poison ☐ Unknown

Sample Disposal
☐ Return to Client ☐ Archive for ____ Months
☐ Disposal by Lab
(fees may be assessed if samples are retained longer than 3 months)

Requested Turn Around Time
☐ 2 Days (Rush) ☐ 7 Days (Rush) ☐ 21 Days
☐ 3 Days (Rush) ☐ 14 Days ☐ Other
(Rush = email data by COB on day due. Surcharges assessed.)

Carrier/Airbill #:

Relinquished by: (Signature)	Received by: (Signature)	Date	Time
[signature]	Fedex see sheet!		
[signature]	[signature]	10/17/13	9:38

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ALS Environmental
Field Chain-of-Custody Record

Page _____ of _____

Client Name & Address: c/o wm schuh ND Oil & Gas Division 600 East Boulevard Ave Bismarck, ND 58505	Project No.: 1859 Proxy for Work Co
Phone: 701-328-2734	Project Name: CCS
FAX:	Sampler: *(Signature)* Wm Schuh
e-mail: bschuh@nd.gov	

Field Sample Number	Site ID	Date	Time	Depth	ALS Sample Number	Preservation Code	Sample Matrix Code	Sample for Matrix QC	Analyses Requested	No. of Containers	Remarks
13104		10/15	10:00						See Attached	9x 1L +3x 40ml	

Matrix Codes: W) Water, B) Bulk, L) Liquid, F) Filter, S) Soil, G) Wipe, C) Solid, M) Media

Preservation Codes: 1) Cool to 4°C; 2) HCl to pH<2, 4°C; 3) H_2SO_4 to pH<2, 4°C; 4) HNO_3 to pH<2, 4°C; 5) NaOH to pH>12, 4°C; 6) ZnOAc/NaOH to pH>9, 4°C

Possible Hazard Identification
☐ Non-Hazard ☐ Skin Irritant ☐ Rad
☐ Flammable ☐ Poison ☐ Unknown

Sample Disposal
☐ Return to Client ☐ Archive for _____ Months
☐ Disposal by Lab
(fees may be assessed if samples are retained longer than 3 months)

Requested Turn Around Time
☐ 2 Days (Rush) ☐ 7 Days (Rush) ☐ 21 Days
☐ 3 Days (Rush) ☐ 14 Days ☐ Other
(Rush = email data by COB on day due. Surcharges assessed.)

Carrier/Airbill #:

Relinquished by: *(Signature)*	Received by: *(Signature)*	Date	Time
Wm Schuh	To Fedex		
Fedex	Meredith Drew	10/16/13	938

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ALS Environmental
Field Chain-of-Custody Record

Page _____ of _____

Client Name & Address: c/o Wm Schuh
ND State Water Comm
900 East Blvd Ave
Bismarck ND 58505

Phone:

FAX:

e-mail:

Project No.: 1859
plus x for Nat. Cross

Project Name:
CCS

Sampler: *(Signature)*
Wm Schuh

Field Sample Number	Site ID	Date	Time	Depth	ALS Sample Number	Preservation Code	Sample Matrix Code	Sample for Matrix QC	Analyses Requested	No. of Containers	Remarks
1304~~09~~9		10/14	15:00						See Sheet 1	4	1L
Lake COE		10/15	16:00							7	1L 8x40mL

Matrix Codes:
W) Water B) Bulk
L) Liquid F) Filter
S) Soil G) Wipe
C) Solid M) Media

Preservation Codes:
1) Cool to 4°C
2) HCl to pH<2, 4°C
3) H_2SO_4 to pH<2, 4°C
4) HNO_3 to pH<2, 4°C
5) NaOH to pH>12, 4°C
6) ZnOAc/NaOH to pH>9, 4°C

Possible Hazard Identification
☐ Non-Hazard ☐ Skin Irritant ☐ Rad
☐ Flammable ☐ Poison ☐ Unknown

Sample Disposal
☐ Return to Client ☐ Archive for _____ Months
☐ Disposal by Lab
(fees may be assessed if samples are retained longer than 3 months)

Requested Turn Around Time
☐ 2 Days (Rush) ☐ 7 Days (Rush) ☐ 21 Days
☐ 3 Days (Rush) ☐ 14 Days ☐ Other
(Rush = email data by COB on day due. Surcharges assessed.)

Carrier/Airbill #:

		Date	Time
Relinquished by: *(Signature)* Wm Schuh	**Received by:** *(Signature)* Fedex		
Relinquished by: *(Signature)* Fedex	**Received by:** *(Signature)* Jerrod Edlund	10/17/15	938
Relinquished by: *(Signature)*	**Received by:** *(Signature)*		

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ALS - SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ND State Water Comm

Project/Task/Site: 1329042

Date/Time of Receipt: 10/17/13 0928

Number of Coolers Received: 7

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Custody Seals:	Present/Absent/NA	Location Temp Taken:	Control/Between Samples
	Intact/Broken/NA	Are all temperatures within	
Tamper Evident:	Yes/No/NA	project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA	VOA Headspace Present?	Yes/No/NA
	Frozen/Melted/NA		

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	TOC Preserved	Yes/No/NA
					Gross A B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C13 4470	6 °C	4	C13 4473	6 °C	7	C13 4476	8 °C
2	C13 4471	12°C	5	C13 4474	8 °C	8	C13	°C
3	C13 4472	7 °C	6	C13 4475	6 °C	9	C13	°C

Taken By: Meredith Edwards (Signature) Meredith Edwards (Printed Name) 10/17/13 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☒ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☑ Cooler Temperatures Out of Range	☐ Head Space in Bottles	EPA Custody Seal:

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Only 2 little bags of ice were used for each cooler. Only 3 coolers received within temp. One container for Ext 1310l was received with the lid off. There was some loss of volume. One container for Ext SPR-11e received broken. There are 7 remaining for Ext. BTEX listed for SPR-11e, SPR-11eB, 13089 but no 40ml vials received for these 3 samples.

Response Required Within 24 Hours

PROJECT MANAGEMENT

E-MAILED TO CLIENT? YES ☒ NO ☐

PROJECT MANAGER COMMENTS:

ALS Project Manager: Jessica Hellauf (Printed Name) Returned to Sample Receipt by: (Signature) Date: 10/17/13

APPENDIX C

LABORATORY QUALITY CONTROL

C-1

Laboratory Quality Control, September 9, 2013 Water Samples

Quality Control Sample Batch Report

Analysis Information

Workorder: 1328455

Limits:	Historical/Performance	**Preparation:**	EPA 3510, Sep Funnel DRO Ext.	**Analysis:**	SW 8015 DRO
Basis:	ALS Laboratory Group	**Batch:**	ENVX/17891 (HBN: 115401)	**Batch:**	EGC/4671 (HBN: 115512)
		Prepared By:	Christopher Ahlers	**Analyzed By:**	Mila V. Potekhin

Blank

MB: 358157
Analyzed: 10/19/2013 00:00
Units: ug/L

Analyte	Result	MDL	RL
Diesel Range Organics	ND	3.16	100

Laboratory Control Sample - Laboratory Control Sample Duplicate

	LCS: 358159	LCSD: 358160
	Analyzed: 10/19/2013 00:00	Analyzed: 10/19/2013 00:00
	Dilution: 1	Dilution: 1
	Units: ug/L	Units: ug/L

Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Diesel Range Organics	1560	2000	78.1	54.1	103.1	1500	75.0	4.05	0.0	20.0

Surrogate Recoveries

Surrogate	n-Pentacosane	
QC Limits	37.7	145.5
Units	ug/L	

Lab ID	Result	Target	% Recovery
1328748001	251	300	83.7
1328455005	246	300	82.0
1328455001	248	300	82.7
358157-MB	264	300	88.0
1328455002	329	300	110
1328455004	237	300	79.0
358159-LCS	259	300	86.3
358160-LCSD	254	300	84.7

Comments

Sample 1328455002 required 5x dilution.

QC Data Approved and Reviewed by

Mila V. Potekhin	Nadjla Borges	10/24/2013
Analyst	**Peer Review**	**Date**

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
● - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

Quality Control Sample Batch Report

Analysis Information

Workorder: 1328455

Limits: Historical/Performance	**Preparation:** SW 8330B, Water Prep	**Analysis:** SW 8330B
Basis: ALS Laboratory Group	**Batch:** ENVX/17890 (HBN: 115398)	**Batch:** ELC/1192 (HBN: 115890)
	Prepared By: Christopher Ahlers	**Analyzed By:** Thomas Bosch

Blank

LMB: 358146
Analyzed: 10/22/2013 14:23
Units: ug/L

Analyte	Result	MDL	RL
Nitroglycerin	ND	0.41	0.970
PETN	ND	0.512	0.970
HMX	ND	0.101	0.260
RDX	ND	0.0972	0.260
1,3,5-Trinitrobenzene	ND	0.361	0.650
1,3-Dinitrobenzene	ND	0.336	0.650
Nitrobenzene	ND	0.0912	0.260
TETRYL	ND	0.149	0.260
2,4,6-Trinitrotoluene	ND	0.108	0.260
2-Amino-4,6-dinitrotoluene	ND	0.133	0.260
4-Amino-2,6-dinitrotoluene	ND	0.129	0.260
2,4-Dinitrotoluene	ND	0.394	0.650
2,6-Dinitrotoluene	ND	0.0924	0.260
2-Nitrotoluene	ND	0.191	0.520
4-Nitrotoluene	ND	0.176	0.520
3-Nitrotoluene	ND	0.198	0.520

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 358147
Analyzed: 10/22/2013 11:48
Dilution: 1
Units: ug/L

LCSD: 358148
Analyzed: 10/22/2013 12:40
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
HMX	8.88	10.0	88.8	75.4	117.2	8.47	84.7	4.69	0.0	24.5
RDX	8.90	10.0	89.0	72.5	124.2	8.70	87.0	2.32	0.0	25.0
1,3,5-Trinitrobenzene	8.16	10.0	81.6	30.4	136.1	8.75	87.5	7.00	0.0	32.4
1,3-Dinitrobenzene	9.39	10.0	93.9	65.8	114.0	9.28	92.8	1.17	0.0	20.0
Nitrobenzene	9.19	10.0	91.9	61.1	111.2	9.10	91.0	1.01	0.0	26.0
TETRYL	5.46	10.0	54.6	8.4	151.1	7.30	73.0	* 28.7	0.0	24.2
2,4,6-Trinitrotoluene	9.70	10.0	97.0	61.9	119.1	9.23	92.3	4.97	0.0	22.5
2-Amino-4,6-dinitrotoluene	9.40	10.0	94.0	73.0	123.5	9.32	93.2	0.844	0.0	20.3
4-Amino-2,6-dinitrotoluene	9.32	10.0	93.2	51.3	155.9	9.30	93.0	0.183	0.0	31.2
2,4-Dinitrotoluene	9.44	10.0	94.4	69.4	116.1	9.44	94.4	0.0318	0.0	33.3
2,6-Dinitrotoluene	9.44	10.0	94.4	64.3	128.5	9.34	93.4	1.09	0.0	20.0
2-Nitrotoluene	9.15	10.0	91.5	70.9	115.0	8.73	87.3	4.73	0.0	25.5
4-Nitrotoluene	9.21	10.0	92.1	70.7	114.9	9.31	93.1	1.09	0.0	26.5
3-Nitrotoluene	9.27	10.0	92.7	72.0	115.1	9.71	97.1	4.65	0.0	25.7
Nitroglycerin	9.90	10.0	99.0	66.7	112.2	10.4	104	5.26	0.0	41.0

Quality Control Sample Batch Report

Analysis Information

Workorder: 1328455

Limits: Historical/Performance	**Preparation:** SW 8330B, Water Prep	**Analysis:** SW 8330B
Basis: ALS Laboratory Group	**Batch:** ENVX/17890 (HBN: 115398)	**Batch:** ELC/1192 (HBN: 115890)
	Prepared By: Christopher Ahlers	**Analyzed By:** Thomas Bosch

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 358147	**LCSD:** 358148
Analyzed: 10/22/2013 11:48	**Analyzed:** 10/22/2013 12:40
Dilution: 1	**Dilution:** 1
Units: ug/L	**Units:** ug/L

Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
PETN	9.96	10.0	99.6	60.1	124.4	9.05	90.5	9.67	0.0	23.9

Surrogate Recoveries

Surrogate	1-Fluoro-4-nitrobenzene	
QC Limits	50.0	150.0
Units	ug/L	

Lab ID	Result	Target	% Recovery
358147-LCS	8.94	10.0	89.4
358148-LCSD	8.61	10.0	86.1
358146-LMB	9.13	10.0	91.3

Surrogate	1-Fluoro-4-nitrobenzene	
QC Limits	50.0	150.0
Units	ug/L	

Lab ID	Result	Target	% Recovery
1328455001	9.01	10.0	90.1
1328455002	7.10	10.0	71.0
1328455003	9.45	10.0	94.5
1328455004	8.76	10.0	87.6
1328455005	9.13	10.0	91.3
1328455006	9.50	10.0	95.0
1328455007	8.90	10.0	89.0
1328455008	9.45	10.0	94.5
1328455009	8.25	10.0	82.5

QC Data Approved and Reviewed by

Thomas Bosch	Thomas T. McKay	10/24/2013
Analyst	**Peer Review**	**Date**

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◆ - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

Quality Control Sample Batch Report

Analysis Information

Workorder: 1328455

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	ENV by LC/MS
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	ELMS/1431 (HBN: 116117)
		Prepared By:	NA	**Analyzed By:**	Thomas T. McKay

Blank

LMB: 360628
Analyzed: 10/28/2013 00:00
Units: ug/L

Analyte	Result	MDL	RL
Glyphosate	ND	NA	50.0

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 360629
Analyzed: 10/28/2013 00:00
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Glyphosate	2400	2000	120	80.0	120.0

Matrix Spike - Matrix Spike Duplicate

Sample: 1328455001	MS: 360630	MSD: 360631
Analyzed: 10/28/2013 00:00	Analyzed: 10/28/2013 00:00	Analyzed: 10/28/2013 00:00
Dilution: 1	Dilution: 1	Dilution: 1
Units: ug/L	Units: ug/L	Units: ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Glyphosate	ND	5140	5000	103	80.0	120.0	5550	111	7.67	0.0	20.0

QC Data Approved and Reviewed by

Thomas T. McKay	Thomas Bosch	10/29/2013
Analyst	**Peer Review**	**Date**

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◓ - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1328455

Limits:	Historical/Performance	**Preparation:**	EPA 3510, Sep Funnel SVOA	**Analysis:**	SW 8270
Basis:	ALS Laboratory Group	**Batch:**	ENVX/17886 (HBN: 115307)	**Batch:**	ESVO/4313 (HBN: 115709)
		Prepared By:	Xiao Y Chiang	**Analyzed By:**	Jessica Helland

Blank

MB: 357826
Analyzed: 10/16/2013 14:57

Units: ug/L

Analyte	Result	MDL	RL
Pyridine	ND	3.1	5.00
Phenol	ND	1.5	5.00
Bis(2-chloroethyl)ether	ND	1.5	5.00
2-Chlorophenol	ND	1.5	5.00
1,3-Dichlorobenzene	ND	1.5	5.00
1,4-Dichlorobenzene	ND	1.5	5.00
Benzyl alcohol	ND	1.5	5.00
1,2-Dichlorobenzene	ND	1.5	5.00
2-Methylphenol	ND	1.5	5.00
bis(2-Chloroisopropyl)ether	ND	1.7	5.00
4-Methylphenol	ND	1.5	5.00
N-Nitrosodi-n-propyl amine	ND	1.5	5.00
Hexachloroethane	ND	1.5	5.00
Nitrobenzene	ND	1.5	5.00
Isophorone	ND	1.5	5.00
2-Nitrophenol	ND	1.56	5.00
2,4-Dimethylphenol	ND	1.5	5.00
Benzoic acid	ND	17.2	50.0
Bis(2-Chloroethoxy)methane	ND	1.5	5.00
2,4-Dichlorophenol	ND	1.5	5.00
1,2,4-Trichlorobenzene	ND	1.5	5.00
Naphthalene	ND	1.5	5.00
4-Chloroaniline	ND	1.5	5.00
Hexachlorobutadiene	ND	1.5	5.00
4-Chloro-3-methylphenol	ND	1.5	5.00
2-Methylnaphthalene	ND	1.5	5.00
Hexachlorocyclopentadiene	ND	2.22	5.00
2,4,6-Trichlorophenol	ND	1.5	5.00
2,4,5-Trichlorophenol	ND	1.5	5.00
2-Chloronaphthalene	ND	1.5	5.00
2-Nitroaniline	ND	1.5	5.00
Dimethylphthalate	ND	1.5	5.00
2,6-Dinitrotoluene	ND	1.5	5.00
Acenaphthylene	ND	1.5	5.00
3-Nitroaniline	ND	2.14	5.00
Acenaphthene	ND	1.5	5.00
2,4-Dinitrophenol	ND	27	60.0

Quality Control Sample Batch Report

Analysis Information

Workorder: 1328455

Limits:	Historical/Performance	**Preparation:**	EPA 3510, Sep Funnel SVOA	**Analysis:**	SW 8270
Basis:	ALS Laboratory Group	**Batch:**	ENVX/17886 (HBN: 115307)	**Batch:**	ESVO/4313 (HBN: 115709)
		Prepared By:	Xiao Y Chiang	**Analyzed By:**	Jessica Helland

Blank

MB: 357826
Analyzed: 10/16/2013 14:57
Units: ug/L

Analyte	Result	MDL	RL
4-Nitrophenol	ND	15.1	50.0
Dibenzofuran	ND	1.5	5.00
2,4-Dinitrotoluene	ND	1.5	5.00
Diethylphthalate	ND	1.5	5.00
4-Chlorophenyl phenyl ether	ND	1.5	5.00
Fluorene	ND	1.5	5.00
4-Nitroaniline	ND	1.97	5.00
4,6-Dinitro-2-methylphenol	ND	31.6	60.0
N-Nitrosodiphenylamine	ND	1.5	5.00
4-Bromophenyl phenyl ether	ND	1.5	5.00
Hexachlorobenzene	ND	1.5	5.00
Pentachlorophenol	ND	28.8	60.0
Phenanthrene	ND	1.5	5.00
Anthracene	ND	1.5	5.00
Carbazole	ND	1.5	5.00
Di-n-butylphthalate	ND	1.5	5.00
Fluoranthene	ND	1.5	5.00
Pyrene	ND	1.5	5.00
Butylbenzylphthalate	ND	1.5	5.00
3,3'-Dichlorobenzidine	ND	1.69	5.00
Benzo(a)anthracene	ND	1.5	5.00
Chrysene	ND	1.5	5.00
Bis(2-ethylhexyl)phthalate	ND	1.5	5.00
Di-n-octylphthalate	ND	1.5	5.00
Benzo(b)fluoranthene	ND	1.5	5.00
Benzo(k)fluoranthene	ND	1.5	5.00
Benzo(a)pyrene	ND	1.5	5.00
Indeno(1,2,3-c,d)pyrene	ND	1.5	5.00
Dibenz(a,h)anthracene	ND	1.5	5.00
Benzo(g,h,i)perylene	ND	1.5	5.00

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 357828
Analyzed: 10/16/2013 15:31
Dilution: 1
Units: ug/L

LCSD: 357829
Analyzed: 10/16/2013 16:05
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Pyridine	9.08	40.0	22.7	0.0	50.3	6.14	15.4	38.5	0.0	40.0

Quality Control Sample Batch Report

Analysis Information

Workorder: 1328455

Limits: Historical/Performance	**Preparation:** EPA 3510, Sep Funnel SVOA	**Analysis:** SW 8270
Basis: ALS Laboratory Group	**Batch:** ENVX/17886 (HBN: 115307)	**Batch:** ESVO/4313 (HBN: 115709)
	Prepared By: Xiao Y Chiang	**Analyzed By:** Jessica Helland

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 357828	**LCSD:** 357829
Analyzed: 10/16/2013 15:31	**Analyzed:** 10/16/2013 16:05
Dilution: 1	**Dilution:** 1
Units: ug/L	**Units:** ug/L

Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Phenol	12.2	40.0	30.6	13.4	46.3	11.6	29.0	5.28	0.0	20.0
Bis(2-chloroethyl)ether	31.0	40.0	77.6	37.6	101.2	27.3	68.2	12.9	0.0	20.0
2-Chlorophenol	29.9	40.0	74.8	33.5	91.8	27.4	68.5	8.72	0.0	20.0
1,3-Dichlorobenzene	25.4	40.0	63.5	19.2	79.3	21.2	53.1	17.8	0.0	20.0
1,4-Dichlorobenzene	25.6	40.0	64.0	20.6	80.8	21.5	53.7	17.6	0.0	20.0
Benzyl alcohol	28.5	40.0	71.2	8.9	116.8	28.6	71.5	0.427	0.0	40.0
1,2-Dichlorobenzene	26.4	40.0	66.1	24.0	83.4	22.8	57.0	14.8	0.0	20.0
2-Methylphenol	26.4	40.0	65.9	37.2	87.7	26.0	64.9	1.46	0.0	20.0
bis(2-Chloroisopropyl)ether	30.6	40.0	76.5	34.3	103.6	27.8	69.5	9.61	0.0	40.0
4-Methylphenol	24.4	40.0	61.0	35.0	81.3	24.5	61.3	0.433	0.0	20.0
N-Nitrosodi-n-propyl amine	33.0	40.0	82.6	44.9	116.3	32.0	80.0	3.23	0.0	20.0
Hexachloroethane	24.5	40.0	61.3	9.2	74.9	20.6	51.6	17.3	0.0	20.0
Nitrobenzene	31.4	40.0	78.6	44.4	99.1	28.7	71.7	9.17	0.0	20.0
Isophorone	32.2	40.0	80.5	48.7	103.4	31.0	77.6	3.71	0.0	20.0
2-Nitrophenol	31.2	40.0	77.9	40.5	96.7	30.5	76.2	2.24	0.0	20.0
2,4-Dimethylphenol	29.0	40.0	72.5	31.8	101.8	29.3	73.2	0.978	0.0	20.0
Benzoic acid	9.77	40.0	24.4	2.1	63.2	9.36	23.4	4.28	0.0	40.0
Bis(2-Chloroethoxy)methane	32.5	40.0	81.3	47.3	108.1	31.2	78.1	4.02	0.0	20.0
2,4-Dichlorophenol	30.7	40.0	76.6	45.1	100.0	30.5	76.1	0.648	0.0	40.0
1,2,4-Trichlorobenzene	26.9	40.0	67.1	32.2	87.6	24.9	62.3	7.51	0.0	20.0
Naphthalene	29.0	40.0	72.5	41.7	92.5	27.2	68.0	6.35	0.0	20.0
4-Chloroaniline	28.1	40.0	70.3	28.7	136.8	32.4	80.9	14.0	0.0	40.0
Hexachlorobutadiene	24.9	40.0	62.3	14.1	85.5	22.7	56.7	9.42	0.0	40.0
4-Chloro-3-methylphenol	30.6	40.0	76.5	50.0	108.0	31.7	79.4	3.63	0.0	20.0
2-Methylnaphthalene	30.1	40.0	75.1	44.2	100.2	29.2	73.0	2.97	0.0	20.0
Hexachlorocyclopentadiene	25.0	40.0	62.6	0.0	83.4	24.4	61.1	2.48	0.0	40.0
2,4,6-Trichlorophenol	31.5	40.0	78.7	44.8	114.6	32.4	81.1	2.96	0.0	20.0
2,4,5-Trichlorophenol	32.3	40.0	80.6	46.5	120.9	33.2	83.0	2.90	0.0	20.0
2-Chloronaphthalene	31.7	40.0	79.3	48.1	104.8	31.2	78.0	1.62	0.0	20.0
2-Nitroaniline	33.9	40.0	84.7	44.5	130.2	34.3	85.8	1.22	0.0	40.0
Dimethylphthalate	35.1	40.0	87.8	54.6	129.3	34.9	87.2	0.735	0.0	30.0
2,6-Dinitrotoluene	35.8	40.0	89.5	53.1	119.9	36.3	90.7	1.32	0.0	20.0
Acenaphthylene	31.9	40.0	79.7	54.8	105.6	31.5	78.9	1.06	0.0	20.0
3-Nitroaniline	32.6	40.0	81.6	5.3	198.5	35.9	89.7	9.43	0.0	40.0
Acenaphthene	32.2	40.0	80.5	53.9	105.2	32.1	80.3	0.150	0.0	20.0
2,4-Dinitrophenol	32.0	40.0	79.9	0.0	150.6	35.4	88.6	10.2	0.0	20.0
4-Nitrophenol	12.4	40.0	31.0	9.1	64.7	12.4	31.0	0.0162	0.0	40.0

Quality Control Sample Batch Report

Analysis Information

Workorder: 1328455

Limits:	Historical/Performance	**Preparation:**	EPA 3510, Sep Funnel SVOA	**Analysis:**	SW 8270
Basis:	ALS Laboratory Group	**Batch:**	ENVX/17886 (HBN: 115307)	**Batch:**	ESVO/4313 (HBN: 115709)
		Prepared By:	Xiao Y Chiang	**Analyzed By:**	Jessica Helland

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS:	357828					**LCSD:**	357829				
Analyzed:	10/16/2013 15:31					**Analyzed:**	10/16/2013 16:05				
Dilution:	1					**Dilution:**	1				
Units:	ug/L					**Units:**	ug/L				

Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Dibenzofuran	33.1	40.0	82.7	51.0	114.8	33.0	82.6	0.123	0.0	20.0
2,4-Dinitrotoluene	35.9	40.0	89.8	50.5	129.8	37.2	93.1	3.66	0.0	20.0
Diethylphthalate	34.4	40.0	86.1	54.3	132.1	34.9	87.3	1.41	0.0	30.0
4-Chlorophenyl phenyl ether	33.6	40.0	83.9	49.2	124.2	34.0	84.9	1.15	0.0	20.0
Fluorene	33.7	40.0	84.3	56.0	113.0	33.7	84.4	0.137	0.0	20.0
4-Nitroaniline	42.0	40.0	105	-9.9	192.6	46.1	115	9.37	0.0	40.0
4,6-Dinitro-2-methylphenol	33.5	40.0	83.7	12.7	142.0	35.4	88.6	5.63	0.0	40.0
N-Nitrosodiphenylamine	33.3	40.0	83.2	48.8	129.6	33.8	84.5	1.44	0.0	40.0
4-Bromophenyl phenyl ether	34.2	40.0	85.5	54.1	127.8	34.5	86.2	0.825	0.0	20.0
Hexachlorobenzene	32.3	40.0	80.9	53.8	117.7	32.6	81.5	0.818	0.0	20.0
Pentachlorophenol	32.8	40.0	81.9	17.6	136.6	34.1	85.2	3.89	0.0	20.0
Phenanthrene	34.1	40.0	85.2	57.7	114.9	34.4	85.9	0.892	0.0	20.0
Anthracene	34.1	40.0	85.4	57.7	115.4	34.5	86.4	1.18	0.0	20.0
Carbazole	38.2	40.0	95.5	63.9	128.0	38.0	95.1	0.437	0.0	40.0
Di-n-butylphthalate	36.1	40.0	90.2	57.2	130.7	35.7	89.2	1.04	0.0	30.0
Fluoranthene	34.1	40.0	85.2	56.5	119.7	34.2	85.6	0.496	0.0	20.0
Pyrene	34.7	40.0	86.7	57.1	119.0	35.0	87.5	0.962	0.0	20.0
Butylbenzylphthalate	37.8	40.0	94.4	57.3	131.7	38.0	95.1	0.668	0.0	30.0
3,3'-Dichlorobenzidine	42.3	40.0	106	0.0	256.0	47.9	120	12.4	0.0	40.0
Benzo(a)anthracene	34.8	40.0	87.1	58.9	117.8	34.6	86.4	0.761	0.0	20.0
Chrysene	34.8	40.0	87.0	58.1	116.3	35.1	87.7	0.801	0.0	20.0
Bis(2-ethylhexyl)phthalate	37.7	40.0	94.3	54.5	130.5	38.0	95.1	0.884	0.0	30.0
Di-n-octylphthalate	35.1	40.0	87.7	45.3	136.5	35.4	88.5	0.851	0.0	30.0
Benzo(b)fluoranthene	35.1	40.0	87.6	58.9	114.9	34.7	86.8	0.962	0.0	20.0
Benzo(k)fluoranthene	33.2	40.0	83.0	53.9	117.0	33.6	84.0	1.21	0.0	20.0
Benzo(a)pyrene	34.2	40.0	85.5	55.1	116.2	34.2	85.4	0.114	0.0	20.0
Indeno(1,2,3-c,d)pyrene	35.7	40.0	89.3	50.1	127.2	34.9	87.3	2.30	0.0	20.0
Dibenz(a,h)anthracene	34.6	40.0	86.5	46.0	127.2	34.4	86.1	0.463	0.0	20.0
Benzo(g,h,i)perylene	35.7	40.0	89.3	41.7	128.5	35.2	88.0	1.46	0.0	20.0

Surrogate Recoveries

Surrogate	2-Fluorophenol			Phenol-d5			Nitrobenzene-d5		
QC Limits	0.0	121.0		0.0	145.0		22.0	130.3	
Units	ug/L			ug/L			ug/L		
Lab ID	Result	Target	% Recovery	Result	Target	% Recovery	Result	Target	% Recovery
357826-MB	24.2	50.0	48.4	15.3	50.0	30.5	38.4	50.0	76.7
357828-LCS	24.2	50.0	48.5	14.7	50.0	29.5	41.9	50.0	83.9

Quality Control Sample Batch Report

Analysis Information

Workorder: 1328455

Limits: Historical/Performance
Basis: ALS Laboratory Group

Preparation: EPA 3510, Sep Funnel SVOA
Batch: ENVX/17886 (HBN: 115307)
Prepared By: Xiao Y Chiang

Analysis: SW 8270
Batch: ESVO/4313 (HBN: 115709)
Analyzed By: Jessica Helland

Surrogate Recoveries

Surrogate	2-Fluorophenol			Phenol-d5			Nitrobenzene-d5		
QC Limits	0.0	121.0		0.0	145.0		22.0	130.3	
Units	ug/L			ug/L			ug/L		
Lab ID	Result	Target	% Recovery	Result	Target	% Recovery	Result	Target	% Recovery
357829-LCSD	19.3	50.0	38.5	13.1	50.0	26.1	36.4	50.0	72.8
1328455001	13.6	50.0	27.2	9.14	50.0	18.3	28.9	50.0	57.9
1328455003	23.0	50.0	46.0	13.9	50.0	27.9	36.9	50.0	73.7
1328455004	22.2	50.0	44.4	13.5	50.0	26.9	36.4	50.0	72.8
1328455005	19.6	50.0	39.2	12.8	50.0	25.7	33.4	50.0	66.8
1328455006	18.6	50.0	37.2	11.9	50.0	23.9	31.9	50.0	63.8
1328455007	20.8	50.0	41.5	13.5	50.0	27.0	32.6	50.0	65.2
1328455008	9.96	50.0	19.9	9.38	50.0	18.8	24.8	50.0	49.5
1328455009	14.8	50.0	29.5	9.87	50.0	19.7	24.7	50.0	49.4
1328455002	13.2	50.0	26.4	11.1	50.0	22.2	27.8	50.0	55.7

Surrogate	2-Fluorobiphenyl			2,4,6-Tribromophenol			Terphenyl-d14		
QC Limits	35.1	113.6		12.1	139.9		16.2	143.5	
Units	ug/L			ug/L			ug/L		
Lab ID	Result	Target	% Recovery	Result	Target	% Recovery	Result	Target	% Recovery
357826-MB	40.8	50.0	81.6	43.2	50.0	86.4	45.4	50.0	90.7
357828-LCS	41.8	50.0	83.6	46.3	50.0	92.6	44.6	50.0	89.1
357829-LCSD	38.6	50.0	77.2	44.7	50.0	89.3	43.9	50.0	87.8
1328455001	35.4	50.0	70.8	43.2	50.0	86.4	42.2	50.0	84.3
1328455003	40.6	50.0	81.1	47.3	50.0	94.7	42.6	50.0	85.1
1328455004	40.5	50.0	81.0	49.0	50.0	97.9	44.8	50.0	89.6
1328455005	38.0	50.0	76.0	46.2	50.0	92.4	45.8	50.0	91.7
1328455006	36.8	50.0	73.6	42.2	50.0	84.4	37.7	50.0	75.5
1328455007	37.2	50.0	74.4	45.1	50.0	90.2	43.4	50.0	86.8
1328455008	31.1	50.0	62.1	41.5	50.0	83.0	43.8	50.0	87.7
1328455009	28.8	50.0	57.6	33.8	50.0	67.5	34.7	50.0	69.3
1328455002	30.4	50.0	60.9	36.1	50.0	72.2	33.0	50.0	66.0

QC Data Approved and Reviewed by

Jessica Helland	Thomas J. Masoian	10/21/2013
Analyst	**Peer Review**	**Date**

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
● - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

Quality Control Sample Batch Report

Analysis Information

Workorder: 1328455

Limits: Historical/Performance	**Preparation:** EPA 3510, Sep Funnel Herbicides	**Analysis:** SW 8151 by GC/MS
Basis: ALS Laboratory Group	**Batch:** ENVX/17887 (HBN: 115357)	**Batch:** ESVO/4321 (HBN: 116023)
	Prepared By: Xiao Y Chiang	**Analyzed By:** Dustin Calder

Blank

MB: 358054
Analyzed: 10/23/2013 08:02
Units: ug/L

Analyte	Result	MDL	RL
2,4-D	ND	NA	0.210
Picloram	ND	NA	0.210

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 358056
Analyzed: 10/23/2013 08:43
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
2,4-D	4.37	5.00	87.5	30.0	170.0
Picloram	2.19	5.00	43.8	30.0	170.0

Matrix Spike - Matrix Spike Duplicate

Sample: 1328455001	**MS:** 358057	**MSD:** 358058
Analyzed: 10/23/2013 10:07	**Analyzed:** 10/23/2013 10:49	**Analyzed:** 10/23/2013 11:30
Dilution: 1	**Dilution:** 1	**Dilution:** 1
Units: ug/L	**Units:** ug/L	**Units:** ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
2,4-D	ND	5.66	5	113	30.0	170.0	4.75	95.1	17.5	0.0	20.0
Picloram	ND	3.19	5	63.9	30.0	170.0	2.38	47.5	* 29.3	0.0	20.0

Surrogate Recoveries

Surrogate	2,4-Dichlorophenylacetic acid	
QC Limits	30.0	170.0
Units	ug/L	

Lab ID	Result	Target	% Recovery
358054-MB	0.110	10.0	* 1.10
358056-LCS	6.26	10.0	62.6
1328455001	7.32	10.0	73.2
358057-MS	7.48	10.0	74.8
358058-MSD	8.96	10.0	89.6
1328455009	8.72	10.0	87.2
1328455010	7.78	10.0	77.8
1328455002	9.48	10.0	94.8

Comments

8151 by GC/MS: The method blank failed surrogate recovery. The samples were free of target compounds and all the other QC and sample surrogate recoveries are acceptable indicating that the failure is an isolated incident. No re-extraction was performed. NCR-690 was initiated. The RPD for Picloram was outside QC limits. No correction action was required.

Quality Control Sample
Batch Report

Analysis Information

Workorder: **1328455**

Limits: Historical/Performance	**Preparation:** EPA 3510, Sep Funnel Herbicides	**Analysis:** SW 8151 by GC/MS
Basis: ALS Laboratory Group	**Batch:** ENVX/17887 (HBN: 115357)	**Batch:** ESVO/4321 (HBN: 116023)
	Prepared By: Xiao Y Chiang	**Analyzed By:** Dustin Calder

QC Data Approved and Reviewed by

Dustin Calder	Joseph Gress	10/25/2013
Analyst	**Peer Review**	**Date**

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◓ - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

Quality Control Sample Batch Report

Analysis Information

Workorder: 1328455

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	SW 8260
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	EVO/4698 (HBN: 115283)
		Prepared By:	NA	**Analyzed By:**	Christopher Q. Coleman

Blank

MB: 357695
Analyzed: 10/13/2013 02:10
Units: ug/L

Analyte	Result	MDL	RL
Gasoline Range Organics	ND	15	50.0

MB: 359949
Analyzed: 10/14/2013 13:54
Units: ug/L

Analyte	Result	MDL	RL
Gasoline Range Organics	ND	15	50.0

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 357696
Analyzed: 10/13/2013 00:57
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Gasoline Range Organics	566	500	113	83.5	119.3

Matrix Spike - Matrix Spike Duplicate

Sample: 1328455001	MS: 357698	MSD: 357699
Analyzed: 10/13/2013 02:58	Analyzed: 10/14/2013 15:29	Analyzed: 10/14/2013 15:53
Dilution: 1	Dilution: 1	Dilution: 1
Units: ug/L	Units: ug/L	Units: ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Gasoline Range Organics	ND	590	500	118	83.5	119.3	545	109	8.06	0.0	50.0

Surrogate Recoveries

Surrogate	1,2-Dichloroethane-d4			Toluene-d8			4-Bromofluorobenzene		
QC Limits	76.0	124.4		77.8	115.6		72.7	120.5	
Units	ug/L			ug/L			ug/L		
Lab ID	Result	Target	% Recovery	Result	Target	% Recovery	Result	Target	% Recovery
357696-LCS	49.7	50.0	99.3	46.6	50.0	93.1	49.9	50.0	99.8
357695-MB	50.5	50.0	101	45.9	50.0	91.8	50.3	50.0	101
1328455001	51.7	50.0	103	46.0	50.0	92.0	50.2	50.0	100
1328455002	51.3	50.0	103	46.3	50.0	92.6	50.1	50.0	100
1328455004	51.5	50.0	103	46.2	50.0	92.5	50.8	50.0	102
1328455005	51.3	50.0	103	46.1	50.0	92.2	49.8	50.0	99.6
359949-MB	51.5	50.0	103	45.2	50.0	90.3	50.8	50.0	102
357698-MS	52.2	50.0	104	44.7	50.0	89.5	50.4	50.0	101
357699-MSD	52.5	50.0	105	44.8	50.0	89.5	50.3	50.0	101

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1328455

Limits: Historical/Performance	**Preparation:** NA	**Analysis:** SW 8260
Basis: ALS Laboratory Group	**Batch:** NA	**Batch:** EVO/4698 (HBN: 115283)
	Prepared By: NA	**Analyzed By:** Christopher Q. Coleman

QC Data Approved and Reviewed by

Christopher Q. Coleman	Thomas J. Masoian	10/23/2013
Analyst	**Peer Review**	**Date**

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◓ - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1328455

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	SW 8260
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	EVO/4701 (HBN: 115286)
		Prepared By:	NA	**Analyzed By:**	Christopher Q. Coleman

Blank

MB: 357707
Analyzed: 10/13/2013 02:10

Units: ug/L

Analyte	Result	MDL	RL
Dichlorodifluoromethane	ND	0.3	1.00
Chloromethane	ND	0.3	1.00
Vinyl chloride	ND	0.3	1.00
Bromomethane	ND	0.3	1.00
Chloroethane	ND	0.3	1.00
Dichlorofluoromethane	ND	0.3	1.00
Trichlorofluoromethane	ND	0.3	1.00
Ethyl ether	ND	0.3	1.00
1,1-Dichloroethene	ND	0.3	1.00
Freon 113	ND	0.3	1.00
Acetone	ND	3.17	5.00
Iodomethane	ND	0.3	1.00
Carbon disulfide	ND	0.3	1.00
Methyl Acetate	ND	0.3	1.00
Allyl chloride	ND	0.3	1.00
Methylene chloride	ND	0.3	1.00
trans-1,2-Dichloroethene	ND	0.3	1.00
Methyl-t-butyl ether	ND	0.3	1.00
cis-1,2-Dichloroethene	ND	0.3	1.00
1,1-Dichloroethane	ND	0.3	1.00
2,2-Dichloropropane	ND	0.3	1.00
2-Butanone	ND	3.87	5.00
Ethyl acetate	ND	3.69	5.00
Bromochloromethane	ND	0.3	1.00
Tetrahydrofuran	ND	3.45	5.00
Chloroform	ND	0.3	1.00
1,1,1-Trichloroethane	ND	0.3	1.00
Cyclohexane	ND	0.3	1.00
1,1-Dichloropropene	ND	0.3	1.00
1,2-Dichloroethane	ND	0.3	1.00
Carbon tetrachloride	ND	0.3	1.00
Benzene	ND	0.3	1.00
Trichloroethene	ND	0.3	1.00
Methylcyclohexane	ND	0.3	1.00
1,2-Dichloropropane	ND	0.3	1.00
Dibromomethane	ND	0.3	1.00
Bromodichloromethane	ND	0.3	1.00

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1328455

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	SW 8260
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	EVO/4701 (HBN: 115286)
		Prepared By:	NA	**Analyzed By:**	Christopher Q. Coleman

Blank

MB: 357707
Analyzed: 10/13/2013 02:10

Units: ug/L

Analyte	Result	MDL	RL
cis-1,3-Dichloropropene	ND	0.3	1.00
4-Methyl-2-pentanone	ND	4.12	5.00
trans-1,3-Dichloropropene	ND	0.3	1.00
Ethyl methacrylate	ND	0.318	1.00
1,1,2-Trichloroethane	ND	0.3	1.00
2-Hexanone	ND	4.03	5.00
1,2-Dibromoethane	ND	0.3	1.00
Toluene	ND	0.3	1.00
1,3-Dichloropropane	ND	0.3	1.00
Dibromochloromethane	ND	0.3	1.00
Bromoform	ND	0.3	1.00
Tetrachloroethene	ND	0.3	1.00
1-Chlorohexane	ND	0.33	1.00
Chlorobenzene	ND	0.3	1.00
1,1,1,2-Tetrachloroethane	ND	0.3	1.00
Ethylbenzene	ND	0.3	1.00
m,p-Xylene	ND	0.3	2.00
o-Xylene	ND	0.3	1.00
Styrene	ND	0.3	1.00
Isopropylbenzene	ND	0.3	1.00
1,1,2,2-Tetrachloroethane	ND	0.3	1.00
Bromobenzene	ND	0.3	1.00
1,2,3-Trichloropropane	ND	0.3	1.00
trans-1,4-Dichloro-2-butene	ND	3.85	5.00
Pentachloroethane	ND	0.33	1.00
n-Propylbenzene	ND	0.3	1.00
1,3,5-Trimethylbenzene	ND	0.3	1.00
2-Chlorotoluene	ND	0.3	1.00
4-Chlorotoluene	ND	0.3	1.00
tert-Butylbenzene	ND	0.3	1.00
1,2,4-Trimethylbenzene	ND	0.3	1.00
sec-Butylbenzene	ND	0.3	1.00
p-Isopropyltoluene	ND	0.3	1.00
1,3-Dichlorobenzene	ND	0.3	1.00
1,4-Dichlorobenzene	ND	0.3	1.00
n-Butylbenzene	ND	0.3	1.00
1,2-Dichlorobenzene	ND	0.3	1.00

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1328455

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	SW 8260
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	EVO/4701 (HBN: 115286)
		Prepared By:	NA	**Analyzed By:**	Christopher Q. Coleman

Blank

MB: 357707
Analyzed: 10/13/2013 02:10
Units: ug/L

Analyte	Result	MDL	RL
1,2-Dibromo-3-Chloropropane	ND	0.3	1.00
1,2,4-Trichlorobenzene	ND	0.3	1.00
Hexachlorobutadiene	ND	0.3	1.00
Naphthalene	ND	0.31	1.00
1,2,3-Trichlorobenzene	ND	0.3	1.00

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 357708
Analyzed: 10/13/2013 00:28
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Dichlorodifluoromethane	43.6	50.0	87.1	36.8	178.6
Chloromethane	55.7	50.0	111	62.5	136.0
Vinyl chloride	54.6	50.0	109	72.4	126.7
Bromomethane	44.6	50.0	89.1	58.3	137.0
Chloroethane	57.6	50.0	115	73.3	132.7
Dichlorofluoromethane	56.2	50.0	112	67.9	137.3
Trichlorofluoromethane	54.5	50.0	109	65.9	136.7
Ethyl ether	64.8	50.0	* 130	69.0	126.3
1,1-Dichloroethene	55.6	50.0	111	88.5	128.6
Freon 113	54.1	50.0	108	60.8	129.2
Acetone	48.6	50.0	97.2	40.7	131.9
Iodomethane	46.1	50.0	92.3	56.7	136.7
Carbon disulfide	54.6	50.0	109	71.6	131.8
Methyl Acetate	50.9	50.0	102	40.7	115.9
Allyl chloride	62.3	50.0	125	69.4	129.0
Methylene chloride	60.0	50.0	120	78.5	120.4
trans-1,2-Dichloroethene	57.5	50.0	115	79.6	123.1
Methyl-t-butyl ether	61.3	50.0	123	66.2	129.3
cis-1,2-Dichloroethene	58.4	50.0	117	77.0	120.5
1,1-Dichloroethane	58.4	50.0	117	80.4	122.3
2,2-Dichloropropane	57.0	50.0	114	66.2	130.5
2-Butanone	56.0	50.0	112	63.6	123.5
Ethyl acetate	77.3	50.0	155	63.7	228.9
Bromochloromethane	56.0	50.0	112	74.6	126.6
Tetrahydrofuran	58.9	50.0	118	61.5	138.1
Chloroform	57.4	50.0	115	78.5	119.4

Quality Control Sample Batch Report

Analysis Information

Workorder: 1328455

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	SW 8260
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	EVO/4701 (HBN: 115286)
		Prepared By:	NA	**Analyzed By:**	Christopher Q. Coleman

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 357708
Analyzed: 10/13/2013 00:28
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec		QC Limits	
1,1,1-Trichloroethane	53.9	50.0	108		76.6	123.7
Cyclohexane	64.2	50.0	128		70.6	132.0
1,1-Dichloropropene	56.8	50.0	114		80.9	118.1
1,2-Dichloroethane	58.9	50.0	118		74.1	130.1
Carbon tetrachloride	55.4	50.0	111		74.0	132.3
Benzene	56.3	50.0	113		85.8	116.9
Trichloroethene	54.9	50.0	110		77.7	120.4
Methylcyclohexane	58.5	50.0	117		75.5	126.8
1,2-Dichloropropane	62.2	50.0	124	*	78.6	120.2
Dibromomethane	55.6	50.0	111		76.3	123.7
Bromodichloromethane	57.4	50.0	115		74.7	121.7
cis-1,3-Dichloropropene	61.9	50.0	124		71.9	132.2
4-Methyl-2-pentanone	58.7	50.0	117		64.5	140.5
trans-1,3-Dichloropropene	51.7	50.0	103		65.9	136.8
Ethyl methacrylate	50.1	50.0	100		53.2	148.3
1,1,2-Trichloroethane	47.3	50.0	94.6		75.9	117.0
2-Hexanone	47.8	50.0	95.6		52.0	138.4
1,2-Dibromoethane	47.3	50.0	94.5		76.5	123.9
Toluene	45.9	50.0	91.8		84.2	118.6
1,3-Dichloropropane	48.7	50.0	97.5		73.2	120.8
Dibromochloromethane	49.8	50.0	99.7		75.0	139.2
Bromoform	45.5	50.0	91.1		66.3	122.5
Tetrachloroethene	43.5	50.0	87.0		71.4	126.5
1-Chlorohexane	49.8	50.0	99.5		73.1	126.4
Chlorobenzene	47.1	50.0	94.2		83.3	115.9
1,1,1,2-Tetrachloroethane	47.8	50.0	95.6		73.5	125.6
Ethylbenzene	46.1	50.0	92.3		85.7	121.0
m,p-Xylene	94.8	100	94.8		83.9	120.3
o-Xylene	48.7	50.0	97.3		81.5	120.9
Styrene	47.3	50.0	94.6		84.7	123.1
Isopropylbenzene	47.1	50.0	94.2		78.5	135.6
1,1,2,2-Tetrachloroethane	45.9	50.0	91.8		70.2	129.1
Bromobenzene	44.6	50.0	89.2		79.7	119.2
1,2,3-Trichloropropane	43.4	50.0	86.8		69.2	123.2
trans-1,4-Dichloro-2-butene	41.1	50.0	82.1		58.6	133.9
Pentachloroethane	47.6	50.0	95.1		56.2	144.1
n-Propylbenzene	46.1	50.0	92.2		79.9	128.1

Quality Control Sample Batch Report

Analysis Information

Workorder: 1328455

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	SW 8260
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	EVO/4701 (HBN: 115286)
		Prepared By:	NA	**Analyzed By:**	Christopher Q. Coleman

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 357708
Analyzed: 10/13/2013 00:28
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
1,3,5-Trimethylbenzene	44.2	50.0	88.5	80.3	123.4
2-Chlorotoluene	45.8	50.0	91.6	78.6	121.0
4-Chlorotoluene	45.2	50.0	90.4	78.7	121.7
tert-Butylbenzene	45.6	50.0	91.3	79.8	123.2
1,2,4-Trimethylbenzene	44.5	50.0	89.0	81.6	121.3
sec-Butylbenzene	44.9	50.0	89.7	80.1	124.9
p-Isopropyltoluene	44.6	50.0	89.1	79.9	118.7
1,3-Dichlorobenzene	45.0	50.0	90.1	81.2	116.1
1,4-Dichlorobenzene	44.2	50.0	88.5	80.1	115.2
n-Butylbenzene	46.4	50.0	92.8	78.0	125.9
1,2-Dichlorobenzene	45.9	50.0	91.8	79.4	117.3
1,2-Dibromo-3-Chloropropane	42.8	50.0	85.6	55.4	131.8
1,2,4-Trichlorobenzene	44.5	50.0	89.0	59.0	135.6
Hexachlorobutadiene	43.3	50.0	86.7	52.6	135.3
Naphthalene	41.6	50.0	83.3	42.6	145.9
1,2,3-Trichlorobenzene	42.2	50.0	84.3	50.9	140.0

Matrix Spike - Matrix Spike Duplicate

Sample: 1327726001
Analyzed: 10/13/2013 06:12
Dilution: 1
Units: ug/L

MS: 357710
Analyzed: 10/13/2013 07:25
Dilution: 1
Units: ug/L

MSD: 357711
Analyzed: 10/13/2013 07:50
Dilution: 1
Units: ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
1,1-Dichloroethene	ND	56.9	50	114	88.5	128.6	51.8	104	9.44	0.0	20.0
cis-1,2-Dichloroethene	ND	58.8	50	118	77.0	120.5	53.7	107	9.06	0.0	20.0
1,1-Dichloroethane	ND	62.3	50	* 125	80.4	122.3	57.4	115	8.16	0.0	20.0
1,1,1-Trichloroethane	ND	58	50	116	76.6	123.7	53.3	107	8.37	0.0	20.0
1,2-Dichloroethane	ND	58.9	50	118	74.1	130.1	55.3	111	6.33	0.0	20.0
Trichloroethene	2.40	59.5	50	114	77.7	120.4	54.5	104	8.81	0.0	20.0
Tetrachloroethene	ND	43.4	50	86.8	71.4	126.5	40.5	81.0	6.92	0.0	20.0

Surrogate Recoveries

Surrogate	1,2-Dichloroethane-d4			Toluene-d8			4-Bromofluorobenzene		
QC Limits	72.2	123.4		77.5	116.4		78.5	121.6	
Units	ug/L			ug/L			ug/L		
Lab ID	Result	Target	% Recovery	Result	Target	% Recovery	Result	Target	% Recovery
357708-LCS	49.4	50.0	98.9	45.9	50.0	91.7	50.3	50.0	101
357707-MB	50.5	50.0	101	46.1	50.0	92.2	50.8	50.0	102

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1328455

Limits: Historical/Performance
Basis: ALS Laboratory Group

Preparation: NA
Batch: NA
Prepared By: NA

Analysis: SW 8260
Batch: EVO/4701 (HBN: 115286)
Analyzed By: Christopher Q. Coleman

Surrogate Recoveries

Surrogate	1,2-Dichloroethane-d4			Toluene-d8			4-Bromofluorobenzene		
QC Limits	72.2	123.4		77.5	116.4		78.5	121.6	
Units	ug/L			ug/L			ug/L		
Lab ID	Result	Target	% Recovery	Result	Target	% Recovery	Result	Target	% Recovery
1328455001	51.6	50.0	103	46.2	50.0	92.4	50.7	50.0	101
1328455002	51.3	50.0	103	46.6	50.0	93.1	50.5	50.0	101
1328455004	51.4	50.0	103	46.4	50.0	92.9	51.3	50.0	103
1328455005	51.3	50.0	103	46.3	50.0	92.7	50.3	50.0	101
1328455006	51.7	50.0	103	45.8	50.0	91.5	50.7	50.0	101
1328455007	51.3	50.0	103	45.8	50.0	91.6	50.7	50.0	101
1328455008	51.6	50.0	103	46.3	50.0	92.7	50.7	50.0	101
1328455009	51.6	50.0	103	46.2	50.0	92.3	50.6	50.0	101
1327726001	51.6	50.0	103	45.8	50.0	91.6	50.5	50.0	101
357710-MS	50.3	50.0	101	45.8	50.0	91.5	50.4	50.0	101
357711-MSD	49.3	50.0	98.6	46.3	50.0	92.6	49.8	50.0	99.5
1327726002	51.0	50.0	102	46.3	50.0	92.6	50.3	50.0	101
1327726004-TRIPB	50.9	50.0	102	45.9	50.0	91.8	50.2	50.0	100
1327726003	50.5	50.0	101	45.8	50.0	91.6	50.7	50.0	102

Comments

8260 Comments: A small number of compounds failed in the LCS/MS/MSD. Not all compounds are required to pass. Per ALS SOP OV-SW-8260C section 14.3.1 “Since the CVS is utilized as the LCS, if the CVS passes method criteria then the LCS is deemed also to have passed.” It is possible that the spike volume added was slightly high.

QC Data Approved and Reviewed by

Christopher Q. Coleman	Thomas J. Masoian	10/23/2013
Analyst	**Peer Review**	**Date**

Symbols and Definitions

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▲ - Sample result is greater than 4 times the spike added
◓ - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

C-2

Laboratory Quality Control, September 16, 2013 Water Samples

Quality Control Sample Batch Report

Analysis Information

Workorder: 1329042

Limits:	Historical/Performance	**Preparation:**	EPA 3510, Sep Funnel DRO Ext.	**Analysis:**	SW 8015 DRO
Basis:	ALS Laboratory Group	**Batch:**	ENVX/17902 (HBN: 115689)	**Batch:**	EGC/4687 (HBN: 116076)
		Prepared By:	Lyle Edwards	**Analyzed By:**	Mila V. Potekhin

Blank

MB: 359162
Analyzed: 10/30/2013 00:00
Units: ug/L

Analyte	Result	MDL	RL
Diesel Range Organics	ND	3.16	100

Laboratory Control Sample - Laboratory Control Sample Duplicate

	LCS: 359163	LCSD: 359164
Analyzed:	10/30/2013 00:00	10/30/2013 00:00
Dilution:	1	1
Units:	ug/L	ug/L

Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Diesel Range Organics	1440	2000	72.2	54.1	103.1	1480	74.0	2.46	0.0	20.0

Surrogate Recoveries

Surrogate	n-Pentacosane	
QC Limits	37.7	145.5
Units	ug/L	

Lab ID	Result	Target	% Recovery
359163-LCS	243	300	81.0
1329042008	253	300	84.3
1329042005	171	300	57.0
359164-LCSD	254	300	84.7
1329042007	218	300	72.7
359162-MB	258	300	86.0
1329042006	218	300	72.7
1329042010	209	300	69.7

QC Data Approved and Reviewed by

Mila V. Potekhin	Nadjla Borges	10/31/2013
Analyst	**Peer Review**	**Date**

Symbols and Definitions

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▲ - Sample result is greater than 4 times the spike added
◓ - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

Quality Control Sample Batch Report

Analysis Information

Workorder: 1329042

Limits: Historical/Performance	**Preparation:** SW 8330B, Water Prep	**Analysis:** SW 8330B
Basis: ALS Laboratory Group	**Batch:** ENVX/17907 (HBN: 115812)	**Batch:** ELC/1193 (HBN: 116014)
	Prepared By: Lyle Edwards	**Analyzed By:** Thomas Bosch

Blank

LMB: 359581
Analyzed: 10/24/2013 12:30

Units: ug/L

Analyte	Result	MDL	RL
Nitroglycerin	ND	0.41	0.970
PETN	ND	0.512	0.970
HMX	ND	0.101	0.260
RDX	ND	0.0972	0.260
1,3,5-Trinitrobenzene	ND	0.361	0.650
1,3-Dinitrobenzene	ND	0.336	0.650
Nitrobenzene	ND	0.0912	0.260
TETRYL	ND	0.149	0.260
2,4,6-Trinitrotoluene	ND	0.108	0.260
2-Amino-4,6-dinitrotoluene	ND	0.133	0.260
4-Amino-2,6-dinitrotoluene	ND	0.129	0.260
2,4-Dinitrotoluene	ND	0.394	0.650
2,6-Dinitrotoluene	ND	0.0924	0.260
2-Nitrotoluene	ND	0.191	0.520
4-Nitrotoluene	ND	0.176	0.520
3-Nitrotoluene	ND	0.198	0.520

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 359582
Analyzed: 10/24/2013 10:47
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
HMX	8.87	10.0	88.7	75.4	117.2
RDX	8.75	10.0	87.5	72.5	124.2
1,3,5-Trinitrobenzene	6.65	10.0	66.5	30.4	136.1
1,3-Dinitrobenzene	9.44	10.0	94.4	65.8	114.0
Nitrobenzene	8.98	10.0	89.8	61.1	111.2
TETRYL	0.543	10.0	* 5.43	8.4	151.1
2,4,6-Trinitrotoluene	11.8	10.0	118	61.9	119.1
2-Amino-4,6-dinitrotoluene	9.72	10.0	97.2	73.0	123.5
4-Amino-2,6-dinitrotoluene	9.53	10.0	95.3	51.3	155.9
2,4-Dinitrotoluene	9.28	10.0	92.8	69.4	116.1
2,6-Dinitrotoluene	9.40	10.0	94.0	64.3	128.5
2-Nitrotoluene	9.78	10.0	97.8	70.9	115.0
4-Nitrotoluene	9.17	10.0	91.7	70.7	114.9
3-Nitrotoluene	9.52	10.0	95.2	72.0	115.1
Nitroglycerin	9.69	10.0	96.9	66.7	112.2

Quality Control Sample Batch Report

Analysis Information

Workorder: 1329042

Limits:	Historical/Performance	**Preparation:**	SW 8330B, Water Prep	**Analysis:**	SW 8330B
Basis:	ALS Laboratory Group	**Batch:**	ENVX/17907 (HBN: 115812)	**Batch:**	ELC/1193 (HBN: 116014)
		Prepared By:	Lyle Edwards	**Analyzed By:**	Thomas Bosch

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 359582
Analyzed: 10/24/2013 10:47
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
PETN	10.3	10.0	103	60.1	124.4

Matrix Spike - Matrix Spike Duplicate

Sample:	1329042009		**MS:**	359584			**MSD:**	359585			
Analyzed:	10/24/2013 15:56		**Analyzed:**	10/24/2013 16:47			**Analyzed:**	10/24/2013 17:39			
Dilution:	1		**Dilution:**	1			**Dilution:**	1			
Units:	ug/L		**Units:**	ug/L			**Units:**	ug/L			
Analyte	**Result**	**Result**	**Target**	**% Rec**	**QC Limits**		**Result**	**% Rec**	**RPD**	**QC Limits**	
HMX	ND	7.91	10	79.1	75.4	117.2	8.39	83.9	5.92	0.0	24.5
RDX	ND	8.27	10	82.7	72.5	124.2	9.03	90.3	8.78	0.0	25.0
1,3,5-Trinitrobenzene	ND	8.25	10	82.5	30.4	136.1	7.14	71.4	14.3	0.0	32.4
1,3-Dinitrobenzene	ND	8.84	10	88.4	65.8	114.0	9.6	96.0	8.24	0.0	20.0
Nitrobenzene	ND	7.58	10	75.8	61.1	111.2	6.43	64.3	16.4	0.0	26.0
TETRYL	ND	4.85	10	48.5	8.4	151.1	1.38	13.8	* 111	0.0	24.2
2,4,6-Trinitrotoluene	ND	8.49	10	84.9	61.9	119.1	11.1	111	* 27.0	0.0	22.5
2-Amino-4,6-dinitrotoluene	ND	9.07	10	90.7	73.0	123.5	10.1	101	10.7	0.0	20.3
4-Amino-2,6-dinitrotoluene	ND	9.16	10	91.6	51.3	155.9	10	100	8.75	0.0	31.2
2,4-Dinitrotoluene	ND	8.71	10	87.1	69.4	116.1	9.79	97.9	11.7	0.0	33.3
2,6-Dinitrotoluene	ND	8.82	10	88.2	64.3	128.5	9.36	93.6	5.90	0.0	20.0
2-Nitrotoluene	ND	6.97	10	* 69.7	70.9	115.0	6.3	* 63.0	10.1	0.0	25.5
4-Nitrotoluene	ND	7.43	10	74.3	70.7	114.9	7.44	74.4	0.188	0.0	26.5
3-Nitrotoluene	ND	7.69	10	76.9	72.0	115.1	6.53	* 65.3	16.2	0.0	25.7
Nitroglycerin	ND	8.47	10	84.7	66.7	112.2	9.53	95.3	11.8	0.0	41.0
PETN	ND	9.46	10	94.6	60.1	124.4	9.98	99.8	5.30	0.0	23.9

Surrogate Recoveries

Surrogate	1-Fluoro-4-nitrobenzene	
QC Limits	50.0	150.0
Units	ug/L	

Lab ID	Result	Target	% Recovery
359582-LCS	8.39	10.0	83.9
359581-LMB	8.24	10.0	82.4
359584-MS	6.14	10.0	61.4
359585-MSD	5.88	10.0	58.8

Quality Control Sample
Batch Report

Analysis Information

Workorder: **1329042**

Limits:	Historical/Performance	**Preparation:**	SW 8330B, Water Prep	**Analysis:**	SW 8330B
Basis:	ALS Laboratory Group	**Batch:**	ENVX/17907 (HBN: 115812)	**Batch:**	ELC/1193 (HBN: 116014)
		Prepared By:	Lyle Edwards	**Analyzed By:**	Thomas Bosch

Surrogate Recoveries

Surrogate	1-Fluoro-4-nitrobenzene		
QC Limits	50.0	150.0	
Units	ug/L		
Lab ID	**Result**	**Target**	**% Recovery**
1329042004	4.91	10.0	* 49.1
1329042007	9.28	10.0	92.8
1329042008	7.15	10.0	71.5
1329042009	6.86	10.0	68.6

Comments

Tetryl failed percent recovery in the Laboratory Control Sample (LCS). 2-Nitrotoluene failed percent recovery in the Matrix Spike (MS) sample. The Relative Percent Differences for the MS/MSD failed QC acceptance criteria for Tetryl and 2,4,6-TNT. The surrogate recovery was low for sample 1329042004.

QC Data Approved and Reviewed by

Thomas Bosch	Thomas T. McKay	10/29/2013
Analyst	**Peer Review**	**Date**

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RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

Quality Control Sample Batch Report

Analysis Information

Workorder: 1329042

Limits:	Historical/Performance	**Preparation:**	NA
Basis:	ALS Laboratory Group	**Batch:**	NA
		Prepared By:	NA
Analysis:	ENV by LC/MS		
Batch:	ELMS/1431 (HBN: 116117)		
Analyzed By:	Thomas T. McKay		

Blank

LMB: 360628
Analyzed: 10/28/2013 00:00
Units: ug/L

Analyte	Result	MDL	RL
Glyphosate	ND	NA	50.0

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 360629
Analyzed: 10/28/2013 00:00
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Glyphosate	2400	2000	120	80.0	120.0

Matrix Spike - Matrix Spike Duplicate

Sample:	1328455001	**MS:**	360630			**MSD:**	360631			
Analyzed:	10/28/2013 00:00	**Analyzed:**	10/28/2013 00:00			**Analyzed:**	10/28/2013 00:00			
Dilution:	1	**Dilution:**	1			**Dilution:**	1			
Units:	ug/L	**Units:**	ug/L			**Units:**	ug/L			

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Glyphosate	ND	5140	5000	103	80.0	120.0	5550	111	7.67	0.0	20.0

QC Data Approved and Reviewed by

Thomas T. McKay	Thomas Bosch	10/29/2013
Analyst	**Peer Review**	**Date**

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RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1329042

Limits:	Historical/Performance	**Preparation:**	EPA 3510, Sep Funnel SVOA	**Analysis:**	SW 8270
Basis:	ALS Laboratory Group	**Batch:**	ENVX/17903 (HBN: 115691)	**Batch:**	ESVO/4324 (HBN: 116273)
		Prepared By:	Christopher Ahlers	**Analyzed By:**	Jessica Helland

Blank

MB: 359184
Analyzed: 10/23/2013 09:33

Units: ug/L

Analyte	Result	MDL	RL
Pyridine	ND	3.1	5.00
Phenol	ND	1.5	5.00
Bis(2-chloroethyl)ether	ND	1.5	5.00
2-Chlorophenol	ND	1.5	5.00
1,3-Dichlorobenzene	ND	1.5	5.00
1,4-Dichlorobenzene	ND	1.5	5.00
Benzyl alcohol	ND	1.5	5.00
1,2-Dichlorobenzene	ND	1.5	5.00
2-Methylphenol	ND	1.5	5.00
bis(2-Chloroisopropyl)ether	ND	1.7	5.00
4-Methylphenol	ND	1.5	5.00
N-Nitrosodi-n-propyl amine	ND	1.5	5.00
Hexachloroethane	ND	1.5	5.00
Nitrobenzene	ND	1.5	5.00
Isophorone	ND	1.5	5.00
2-Nitrophenol	ND	1.56	5.00
2,4-Dimethylphenol	ND	1.5	5.00
Benzoic acid	ND	17.2	50.0
Bis(2-Chloroethoxy)methane	ND	1.5	5.00
2,4-Dichlorophenol	ND	1.5	5.00
1,2,4-Trichlorobenzene	ND	1.5	5.00
Naphthalene	ND	1.5	5.00
4-Chloroaniline	ND	1.5	5.00
Hexachlorobutadiene	ND	1.5	5.00
4-Chloro-3-methylphenol	ND	1.5	5.00
2-Methylnaphthalene	ND	1.5	5.00
Hexachlorocyclopentadiene	ND	2.22	5.00
2,4,6-Trichlorophenol	ND	1.5	5.00
2,4,5-Trichlorophenol	ND	1.5	5.00
2-Chloronaphthalene	ND	1.5	5.00
2-Nitroaniline	ND	1.5	5.00
Dimethylphthalate	ND	1.5	5.00
2,6-Dinitrotoluene	ND	1.5	5.00
Acenaphthylene	ND	1.5	5.00
3-Nitroaniline	ND	2.14	5.00
Acenaphthene	ND	1.5	5.00
2,4-Dinitrophenol	ND	27	60.0

Quality Control Sample Batch Report

Analysis Information

Workorder: 1329042

Limits: Historical/Performance	**Preparation:** EPA 3510, Sep Funnel SVOA	**Analysis:** SW 8270
Basis: ALS Laboratory Group	**Batch:** ENVX/17903 (HBN: 115691)	**Batch:** ESVO/4324 (HBN: 116273)
	Prepared By: Christopher Ahlers	**Analyzed By:** Jessica Helland

Blank

MB: 359184
Analyzed: 10/23/2013 09:33
Units: ug/L

Analyte	Result	MDL	RL
4-Nitrophenol	ND	15.1	50.0
Dibenzofuran	ND	1.5	5.00
2,4-Dinitrotoluene	ND	1.5	5.00
Diethylphthalate	ND	1.5	5.00
4-Chlorophenyl phenyl ether	ND	1.5	5.00
Fluorene	ND	1.5	5.00
4-Nitroaniline	ND	1.97	5.00
4,6-Dinitro-2-methylphenol	ND	31.6	60.0
N-Nitrosodiphenylamine	ND	1.5	5.00
4-Bromophenyl phenyl ether	ND	1.5	5.00
Hexachlorobenzene	ND	1.5	5.00
Pentachlorophenol	ND	28.8	60.0
Phenanthrene	ND	1.5	5.00
Anthracene	ND	1.5	5.00
Carbazole	ND	1.5	5.00
Di-n-butylphthalate	ND	1.5	5.00
Fluoranthene	ND	1.5	5.00
Pyrene	ND	1.5	5.00
Butylbenzylphthalate	ND	1.5	5.00
3,3'-Dichlorobenzidine	ND	1.69	5.00
Benzo(a)anthracene	ND	1.5	5.00
Chrysene	ND	1.5	5.00
Bis(2-ethylhexyl)phthalate	ND	1.5	5.00
Di-n-octylphthalate	ND	1.5	5.00
Benzo(b)fluoranthene	ND	1.5	5.00
Benzo(k)fluoranthene	ND	1.5	5.00
Benzo(a)pyrene	ND	1.5	5.00
Indeno(1,2,3-c,d)pyrene	ND	1.5	5.00
Dibenz(a,h)anthracene	ND	1.5	5.00
Benzo(g,h,i)perylene	ND	1.5	5.00

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 359185
Analyzed: 10/23/2013 10:35
Dilution: 1
Units: ug/L

LCSD: 359186
Analyzed: 10/23/2013 11:05
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Pyridine	12.3	40.0	30.8	0.0	50.3	9.95	24.9	21.3	0.0	40.0

Quality Control Sample Batch Report

Analysis Information

Workorder: 1329042

Limits:	Historical/Performance	**Preparation:**	EPA 3510, Sep Funnel SVOA	**Analysis:**	SW 8270
Basis:	ALS Laboratory Group	**Batch:**	ENVX/17903 (HBN: 115691)	**Batch:**	ESVO/4324 (HBN: 116273)
		Prepared By:	Christopher Ahlers	**Analyzed By:**	Jessica Helland

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 359185 **Analyzed:** 10/23/2013 10:35 **Dilution:** 1 **Units:** ug/L						**LCSD:** 359186 **Analyzed:** 10/23/2013 11:05 **Dilution:** 1 **Units:** ug/L				
Analyte	**Result**	**Target**	**% Rec**	**QC Limits**		**Result**	**% Rec**	**RPD**	**QC Limits**	
Phenol	11.8	40.0	29.4	13.4	46.3	12.7	31.7	7.66	0.0	20.0
Bis(2-chloroethyl)ether	29.1	40.0	72.7	37.6	101.2	31.1	77.6	6.60	0.0	20.0
2-Chlorophenol	27.2	40.0	67.9	33.5	91.8	29.0	72.5	6.50	0.0	20.0
1,3-Dichlorobenzene	21.7	40.0	54.3	19.2	79.3	23.1	57.7	5.98	0.0	20.0
1,4-Dichlorobenzene	22.2	40.0	55.6	20.6	80.8	23.6	59.0	5.97	0.0	20.0
Benzyl alcohol	27.2	40.0	68.1	8.9	116.8	29.7	74.3	8.75	0.0	40.0
1,2-Dichlorobenzene	22.9	40.0	57.4	24.0	83.4	24.6	61.4	6.78	0.0	20.0
2-Methylphenol	26.0	40.0	65.1	37.2	87.7	27.7	69.1	6.08	0.0	20.0
bis(2-Chloroisopropyl)ether	29.2	40.0	73.0	34.3	103.6	31.6	79.0	7.89	0.0	40.0
4-Methylphenol	24.4	40.0	60.9	35.0	81.3	26.1	65.2	6.84	0.0	20.0
N-Nitrosodi-n-propyl amine	30.4	40.0	76.0	44.9	116.3	33.8	84.5	10.5	0.0	20.0
Hexachloroethane	21.3	40.0	53.1	9.2	74.9	22.7	56.7	6.56	0.0	20.0
Nitrobenzene	29.9	40.0	74.8	44.4	99.1	32.0	80.1	6.86	0.0	20.0
Isophorone	32.1	40.0	80.2	48.7	103.4	34.6	86.4	7.49	0.0	20.0
2-Nitrophenol	29.1	40.0	72.7	40.5	96.7	31.2	78.0	7.08	0.0	20.0
2,4-Dimethylphenol	30.5	40.0	76.2	31.8	101.8	32.9	82.2	7.53	0.0	20.0
Benzoic acid	8.49	40.0	21.2	2.1	63.2	10.7	26.7	23.0	0.0	40.0
Bis(2-Chloroethoxy)methane	31.6	40.0	79.1	47.3	108.1	34.2	85.6	7.86	0.0	20.0
2,4-Dichlorophenol	30.1	40.0	75.3	45.1	100.0	32.1	80.2	6.30	0.0	40.0
1,2,4-Trichlorobenzene	24.7	40.0	61.7	32.2	87.6	26.7	66.6	7.78	0.0	20.0
Naphthalene	27.1	40.0	67.7	41.7	92.5	29.1	72.8	7.15	0.0	20.0
4-Chloroaniline	33.7	40.0	84.2	28.7	136.8	36.1	90.2	6.95	0.0	40.0
Hexachlorobutadiene	22.6	40.0	56.6	14.1	85.5	24.6	61.6	8.50	0.0	40.0
4-Chloro-3-methylphenol	31.8	40.0	79.5	50.0	108.0	33.7	84.2	5.77	0.0	20.0
2-Methylnaphthalene	29.0	40.0	72.6	44.2	100.2	31.2	78.0	7.14	0.0	20.0
Hexachlorocyclopentadiene	22.5	40.0	56.2	0.0	83.4	24.6	61.4	8.88	0.0	40.0
2,4,6-Trichlorophenol	32.1	40.0	80.3	44.8	114.6	34.4	86.0	6.90	0.0	20.0
2,4,5-Trichlorophenol	33.2	40.0	82.9	46.5	120.9	35.3	88.2	6.25	0.0	20.0
2-Chloronaphthalene	30.5	40.0	76.2	48.1	104.8	32.9	82.2	7.61	0.0	20.0
2-Nitroaniline	34.3	40.0	85.6	44.5	130.2	36.4	91.0	6.05	0.0	40.0
Dimethylphthalate	34.7	40.0	86.8	54.6	129.3	36.8	92.0	5.79	0.0	30.0
2,6-Dinitrotoluene	34.4	40.0	86.1	53.1	119.9	36.2	90.4	4.94	0.0	20.0
Acenaphthylene	31.7	40.0	79.2	54.8	105.6	34.4	86.0	8.15	0.0	20.0
3-Nitroaniline	36.4	40.0	91.0	5.3	198.5	37.5	93.8	3.03	0.0	40.0
Acenaphthene	32.4	40.0	81.1	53.9	105.2	34.7	86.7	6.64	0.0	20.0
2,4-Dinitrophenol	32.0	40.0	80.0	0.0	150.6	33.6	83.9	4.74	0.0	20.0
4-Nitrophenol	13.2	40.0	33.1	9.1	64.7	13.4	33.6	1.67	0.0	40.0

Quality Control Sample Batch Report

Analysis Information

Workorder: 1329042

Limits:	Historical/Performance	**Preparation:**	EPA 3510, Sep Funnel SVOA	**Analysis:**	SW 8270
Basis:	ALS Laboratory Group	**Batch:**	ENVX/17903 (HBN: 115691)	**Batch:**	ESVO/4324 (HBN: 116273)
		Prepared By:	Christopher Ahlers	**Analyzed By:**	Jessica Helland

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 359185 **Analyzed:** 10/23/2013 10:35 **Dilution:** 1 **Units:** ug/L						**LCSD:** 359186 **Analyzed:** 10/23/2013 11:05 **Dilution:** 1 **Units:** ug/L				
Analyte	**Result**	**Target**	**% Rec**	**QC Limits**		**Result**	**% Rec**	**RPD**	**QC Limits**	
Dibenzofuran	33.5	40.0	83.7	51.0	114.8	35.7	89.1	6.26	0.0	20.0
2,4-Dinitrotoluene	34.9	40.0	87.3	50.5	129.8	36.6	91.6	4.72	0.0	20.0
Diethylphthalate	35.7	40.0	89.3	54.3	132.1	37.2	93.0	4.01	0.0	30.0
4-Chlorophenyl phenyl ether	33.7	40.0	84.2	49.2	124.2	35.9	89.8	6.46	0.0	20.0
Fluorene	34.0	40.0	85.0	56.0	113.0	35.7	89.3	4.93	0.0	20.0
4-Nitroaniline	36.3	40.0	90.9	-9.9	192.6	36.6	91.4	0.603	0.0	40.0
4,6-Dinitro-2-methylphenol	34.1	40.0	85.1	12.7	142.0	35.4	88.5	3.84	0.0	40.0
N-Nitrosodiphenylamine	36.5	40.0	91.2	48.8	129.6	37.8	94.4	3.47	0.0	40.0
4-Bromophenyl phenyl ether	35.3	40.0	88.3	54.1	127.8	37.4	93.6	5.82	0.0	20.0
Hexachlorobenzene	35.0	40.0	87.4	53.8	117.7	36.0	90.1	2.96	0.0	20.0
Pentachlorophenol	35.5	40.0	88.7	17.6	136.6	36.6	91.6	3.23	0.0	20.0
Phenanthrene	35.6	40.0	89.1	57.7	114.9	36.7	91.6	2.81	0.0	20.0
Anthracene	35.8	40.0	89.5	57.7	115.4	37.2	92.9	3.73	0.0	20.0
Carbazole	37.1	40.0	92.9	63.9	128.0	37.3	93.4	0.511	0.0	40.0
Di-n-butylphthalate	38.1	40.0	95.2	57.2	130.7	38.9	97.4	2.27	0.0	30.0
Fluoranthene	36.6	40.0	91.6	56.5	119.7	37.2	93.0	1.49	0.0	20.0
Pyrene	36.3	40.0	90.8	57.1	119.0	38.1	95.3	4.75	0.0	20.0
Butylbenzylphthalate	38.7	40.0	96.8	57.3	131.7	40.1	100	3.61	0.0	30.0
3,3'-Dichlorobenzidine	41.0	40.0	103	0.0	256.0	40.3	101	1.77	0.0	40.0
Benzo(a)anthracene	36.2	40.0	90.4	58.9	117.8	37.9	94.7	4.66	0.0	20.0
Chrysene	36.4	40.0	90.9	58.1	116.3	38.1	95.2	4.59	0.0	20.0
Bis(2-ethylhexyl)phthalate	38.6	40.0	96.4	54.5	130.5	39.8	99.4	3.02	0.0	30.0
Di-n-octylphthalate	37.8	40.0	94.5	45.3	136.5	39.8	99.6	5.25	0.0	30.0
Benzo(b)fluoranthene	36.2	40.0	90.5	58.9	114.9	37.3	93.4	3.14	0.0	20.0
Benzo(k)fluoranthene	36.0	40.0	90.0	53.9	117.0	37.3	93.2	3.56	0.0	20.0
Benzo(a)pyrene	36.1	40.0	90.3	55.1	116.2	37.2	93.0	3.03	0.0	20.0
Indeno(1,2,3-c,d)pyrene	37.4	40.0	93.5	50.1	127.2	38.3	95.6	2.29	0.0	20.0
Dibenz(a,h)anthracene	37.9	40.0	94.8	46.0	127.2	38.7	96.8	2.07	0.0	20.0
Benzo(g,h,i)perylene	38.1	40.0	95.2	41.7	128.5	38.6	96.5	1.38	0.0	20.0

Surrogate Recoveries

Surrogate	2-Fluorophenol			Phenol-d5			Nitrobenzene-d5		
QC Limits	0.0	121.0		0.0	145.0		22.0	130.3	
Units	ug/L			ug/L			ug/L		
Lab ID	**Result**	**Target**	**% Recovery**	**Result**	**Target**	**% Recovery**	**Result**	**Target**	**% Recovery**
359184-MB	12.5	50.0	25.1	16.3	50.0	32.7	40.0	50.0	80.1
359185-LCS	22.2	50.0	44.4	14.8	50.0	29.7	38.7	50.0	77.4

Quality Control Sample Batch Report

Analysis Information

Workorder: 1329042

Limits: Historical/Performance
Basis: ALS Laboratory Group

Preparation: EPA 3510, Sep Funnel SVOA
Batch: ENVX/17903 (HBN: 115691)
Prepared By: Christopher Ahlers

Analysis: SW 8270
Batch: ESVO/4324 (HBN: 116273)
Analyzed By: Jessica Helland

Surrogate Recoveries

Surrogate	2-Fluorophenol			Phenol-d5			Nitrobenzene-d5		
QC Limits	0.0	121.0		0.0	145.0		22.0	130.3	
Units	ug/L			ug/L			ug/L		
Lab ID	Result	Target	% Recovery	Result	Target	% Recovery	Result	Target	% Recovery
359186-LCSD	22.3	50.0	44.5	15.4	50.0	30.8	39.9	50.0	79.8
1329042007	17.4	50.0	34.8	13.1	50.0	26.2	32.9	50.0	65.9
1329042008	20.4	50.0	40.9	13.9	50.0	27.7	36.0	50.0	71.9
1329042009	18.8	50.0	37.7	12.7	50.0	25.3	34.9	50.0	69.8
1329042004	21.8	50.0	43.7	15.0	50.0	29.9	36.6	50.0	73.2

Surrogate	2-Fluorobiphenyl			2,4,6-Tribromophenol			Terphenyl-d14		
QC Limits	35.1	113.6		12.1	139.9		16.2	143.5	
Units	ug/L			ug/L			ug/L		
Lab ID	Result	Target	% Recovery	Result	Target	% Recovery	Result	Target	% Recovery
359184-MB	39.2	50.0	78.3	45.1	50.0	90.1	46.1	50.0	92.1
359185-LCS	40.1	50.0	80.2	47.6	50.0	95.1	48.3	50.0	96.6
359186-LCSD	42.3	50.0	84.6	47.9	50.0	95.8	48.6	50.0	97.2
1329042007	35.3	50.0	70.6	43.5	50.0	87.0	35.5	50.0	71.1
1329042008	36.9	50.0	73.9	43.9	50.0	87.8	38.6	50.0	77.1
1329042009	36.0	50.0	72.0	41.0	50.0	82.0	37.0	50.0	74.0
1329042004	36.9	50.0	73.7	42.2	50.0	84.4	42.0	50.0	84.0

Comments

Sample 004 was diluted by 5x due to sample matrix.

QC Data Approved and Reviewed by

Jessica Helland	Dustin Calder	10/30/2013
Analyst	**Peer Review**	**Date**

Symbols and Definitions

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▲ - Sample result is greater than 4 times the spike added
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RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

Quality Control Sample Batch Report

Analysis Information

Workorder: 1329042

Limits: Historical/Performance
Basis: ALS Laboratory Group

Preparation: EPA 3510, Sep Funnel Herbicides
Batch: ENVX/17901 (HBN: 115687)
Prepared By: Christopher Ahlers

Analysis: SW 8151 by GC/MS
Batch: ESVO/4328 (HBN: 116292)
Analyzed By: Jessica Helland

Blank

MB: 359143
Analyzed: 10/24/2013 14:40

Units: ug/L

Analyte	Result	MDL	RL
2,4-D	ND	NA	0.525
Picloram	ND	NA	0.525

Surrogate Recoveries

Surrogate	2,4-Dichlorophenylacetic acid		
QC Limits	30.0	170.0	
Units	ug/L		
Lab ID	**Result**	**Target**	**% Recovery**
359577-MB	7.18	10.0	71.8
359143-MB	6.86	10.0	68.6
359578-LCS	6.89	10.0	68.9
1329042001	9.29	10.0	92.9
1329042002	8.93	10.0	89.3
1329042003	9.80	10.0	98.0
1329042004	9.13	10.0	91.3
359579-MS	9.71	10.0	97.1
359580-MSD	10.4	10.0	104
1329042005	9.65	10.0	96.5
1329042006	8.94	10.0	89.4
1329042008	9.59	10.0	95.9
1329042009	9.09	10.0	90.9
1329042010	7.76	10.0	77.6

Comments

Original LCS and LCSD were spiked with the wrong solution. A second MB LCS and parent MS/MSD were prepped with the correct solution. The method is deemed valid.

QC Data Approved and Reviewed by

Jessica Helland	Dustin Calder	10/31/2013
Analyst	**Peer Review**	**Date**

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Quality Control Sample Batch Report

Analysis Information

Workorder: 1329042

Limits: Historical/Performance	**Preparation:** EPA 3510, Sep Funnel Herbicides	**Analysis:** SW 8151 by GC/MS
Basis: ALS Laboratory Group	**Batch:** ENVX/17906 (HBN: 115807)	**Batch:** ESVO/4328 (HBN: 116292)
	Prepared By: Christopher Ahlers	**Analyzed By:** Jessica Helland

Blank

MB: 359577
Analyzed: 10/24/2013 13:58
Units: ug/L

Analyte	Result	MDL	RL
2,4-D	ND	NA	0.525
Picloram	ND	NA	0.525

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 359578
Analyzed: 10/24/2013 15:21
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
2,4-D	4.79	5.00	95.8	30.0	170.0
Picloram	3.10	5.00	62.0	30.0	170.0

Matrix Spike - Matrix Spike Duplicate

Sample: 1329042004	**MS:** 359579	**MSD:** 359580
Analyzed: 10/24/2013 18:09	**Analyzed:** 10/24/2013 18:51	**Analyzed:** 10/24/2013 19:33
Dilution: 1	**Dilution:** 1	**Dilution:** 1
Units: ug/L	**Units:** ug/L	**Units:** ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
2,4-D	ND	5.03	5	101	30.0	170.0	5.4	108	7.09	0.0	20.0
Picloram	ND	3.2	5	64.1	30.0	170.0	3.48	69.7	8.38	0.0	20.0

Surrogate Recoveries

Surrogate	2,4-Dichlorophenylacetic acid	
QC Limits	30.0	170.0
Units	ug/L	

Lab ID	Result	Target	% Recovery
359577-MB	7.18	10.0	71.8
359143-MB	6.86	10.0	68.6
359578-LCS	6.89	10.0	68.9
1329042001	9.29	10.0	92.9
1329042002	8.93	10.0	89.3
1329042003	9.80	10.0	98.0
1329042004	9.13	10.0	91.3
359579-MS	9.71	10.0	97.1
359580-MSD	10.4	10.0	104
1329042005	9.65	10.0	96.5
1329042006	8.94	10.0	89.4
1329042008	9.59	10.0	95.9
1329042009	9.09	10.0	90.9

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1329042

Limits: Historical/Performance
Basis: ALS Laboratory Group

Preparation: EPA 3510, Sep Funnel Herbicides
Batch: ENVX/17906 (HBN: 115807)
Prepared By: Christopher Ahlers

Analysis: SW 8151 by GC/MS
Batch: ESVO/4328 (HBN: 116292)
Analyzed By: Jessica Helland

Surrogate Recoveries

Surrogate	2,4-Dichlorophenylacetic acid		
QC Limits	30.0	170.0	
Units	ug/L		
Lab ID	Result	Target	% Recovery
1329042010	7.76	10.0	77.6

Comments

Original LCS and LCSD were spiked with the wrong solution. A second MB LCS and parent MS/MSD were prepped with the correct solution. The method is deemed valid.

QC Data Approved and Reviewed by

Jessica Helland	Dustin Calder	10/31/2013
Analyst	Peer Review	Date

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Quality Control Sample Batch Report

Analysis Information

Workorder: 1329042

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	SW 8260
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	EVO/4709 (HBN: 115987)
		Prepared By:	NA	**Analyzed By:**	Christopher Q. Coleman

Blank

MB: 360225
Analyzed: 10/23/2013 19:08
Units: ug/L

Analyte	Result	MDL	RL
Gasoline Range Organics	ND	15	50.0

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 360226
Analyzed: 10/23/2013 17:54
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Gasoline Range Organics	490	500	98.0	83.5	119.3

Matrix Spike - Matrix Spike Duplicate

Sample: 1328910001	MS: 360228	MSD: 360229
Analyzed: 10/23/2013 19:32	Analyzed: 10/23/2013 22:05	Analyzed: 10/23/2013 22:29
Dilution: 1	Dilution: 1	Dilution: 1
Units: ug/L	Units: ug/L	Units: ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Gasoline Range Organics	ND	570	500	114	83.5	119.3	555	111	2.74	0.0	50.0

Surrogate Recoveries

Surrogate	1,2-Dichloroethane-d4			Toluene-d8			4-Bromofluorobenzene		
QC Limits	76.0	124.4		77.8	115.6		72.7	120.5	
Units	ug/L			ug/L			ug/L		
Lab ID	Result	Target	% Recovery	Result	Target	% Recovery	Result	Target	% Recovery
360226-LCS	51.7	50.0	103	53.2	50.0	106	52.0	50.0	104
360225-MB	53.2	50.0	106	53.4	50.0	107	51.5	50.0	103
1328910001	52.8	50.0	106	53.2	50.0	106	52.7	50.0	105
1329042007	52.5	50.0	105	53.6	50.0	107	52.3	50.0	105
1329042008	52.5	50.0	105	53.6	50.0	107	51.8	50.0	104
360228-MS	51.7	50.0	103	53.8	50.0	108	51.9	50.0	104
360229-MSD	52.1	50.0	104	53.7	50.0	107	51.9	50.0	104

QC Data Approved and Reviewed by

Christopher Q. Coleman	Thomas J. Masoian	10/25/2013
Analyst	**Peer Review**	**Date**

Symbols and Definitions

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NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1329042

Limits:	Historical/Performance	**Preparation:**	NA
Basis:	ALS Laboratory Group	**Batch:**	NA
		Prepared By:	NA
Analysis:	SW 8260		
Batch:	EVO/4710 (HBN: 115988)		
Analyzed By:	Christopher Q. Coleman		

Blank

MB: 360230
Analyzed: 10/23/2013 19:08

Units: ug/L

Analyte	Result	MDL	RL
Dichlorodifluoromethane	ND	0.3	1.00
Chloromethane	ND	0.3	1.00
Vinyl chloride	ND	0.3	1.00
Bromomethane	ND	0.3	1.00
Chloroethane	ND	0.3	1.00
Dichlorofluoromethane	ND	0.3	1.00
Trichlorofluoromethane	ND	0.3	1.00
Ethyl ether	ND	0.3	1.00
1,1-Dichloroethene	ND	0.3	1.00
Freon 113	ND	0.3	1.00
Acetone	ND	3.17	5.00
Iodomethane	ND	0.3	1.00
Carbon disulfide	ND	0.3	1.00
Methyl Acetate	ND	0.3	1.00
Allyl chloride	ND	0.3	1.00
Methylene chloride	ND	0.3	1.00
trans-1,2-Dichloroethene	ND	0.3	1.00
Methyl-t-butyl ether	ND	0.3	1.00
cis-1,2-Dichloroethene	ND	0.3	1.00
1,1-Dichloroethane	ND	0.3	1.00
2,2-Dichloropropane	ND	0.3	1.00
2-Butanone	ND	3.87	5.00
Ethyl acetate	ND	3.69	5.00
Bromochloromethane	ND	0.3	1.00
Tetrahydrofuran	ND	3.45	5.00
Chloroform	ND	0.3	1.00
1,1,1-Trichloroethane	ND	0.3	1.00
Cyclohexane	ND	0.3	1.00
1,1-Dichloropropene	ND	0.3	1.00
1,2-Dichloroethane	ND	0.3	1.00
Carbon tetrachloride	ND	0.3	1.00
Benzene	ND	0.3	1.00
Trichloroethene	ND	0.3	1.00
Methylcyclohexane	ND	0.3	1.00
1,2-Dichloropropane	ND	0.3	1.00
Dibromomethane	ND	0.3	1.00
Bromodichloromethane	ND	0.3	1.00

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1329042

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	SW 8260
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	EVO/4710 (HBN: 115988)
		Prepared By:	NA	**Analyzed By:**	Christopher Q. Coleman

Blank

MB: 360230
Analyzed: 10/23/2013 19:08

Units: ug/L

Analyte	Result	MDL	RL
cis-1,3-Dichloropropene	ND	0.3	1.00
4-Methyl-2-pentanone	ND	4.12	5.00
trans-1,3-Dichloropropene	ND	0.3	1.00
Ethyl methacrylate	ND	0.318	1.00
1,1,2-Trichloroethane	ND	0.3	1.00
2-Hexanone	ND	4.03	5.00
1,2-Dibromoethane	ND	0.3	1.00
Toluene	ND	0.3	1.00
1,3-Dichloropropane	ND	0.3	1.00
Dibromochloromethane	ND	0.3	1.00
Bromoform	ND	0.3	1.00
Tetrachloroethene	ND	0.3	1.00
1-Chlorohexane	ND	0.33	1.00
Chlorobenzene	ND	0.3	1.00
1,1,1,2-Tetrachloroethane	ND	0.3	1.00
Ethylbenzene	ND	0.3	1.00
m,p-Xylene	ND	0.3	2.00
o-Xylene	ND	0.3	1.00
Styrene	ND	0.3	1.00
Isopropylbenzene	ND	0.3	1.00
1,1,2,2-Tetrachloroethane	ND	0.3	1.00
Bromobenzene	ND	0.3	1.00
1,2,3-Trichloropropane	ND	0.3	1.00
trans-1,4-Dichloro-2-butene	ND	3.85	5.00
Pentachloroethane	ND	0.33	1.00
n-Propylbenzene	ND	0.3	1.00
1,3,5-Trimethylbenzene	ND	0.3	1.00
2-Chlorotoluene	ND	0.3	1.00
4-Chlorotoluene	ND	0.3	1.00
tert-Butylbenzene	ND	0.3	1.00
1,2,4-Trimethylbenzene	ND	0.3	1.00
sec-Butylbenzene	ND	0.3	1.00
p-Isopropyltoluene	ND	0.3	1.00
1,3-Dichlorobenzene	ND	0.3	1.00
1,4-Dichlorobenzene	ND	0.3	1.00
n-Butylbenzene	ND	0.3	1.00
1,2-Dichlorobenzene	ND	0.3	1.00

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1329042

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	SW 8260
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	EVO/4710 (HBN: 115988)
		Prepared By:	NA	**Analyzed By:**	Christopher Q. Coleman

Blank

MB: 360230
Analyzed: 10/23/2013 19:08

Units: ug/L

Analyte	Result	MDL	RL
1,2-Dibromo-3-Chloropropane	ND	0.3	1.00
1,2,4-Trichlorobenzene	ND	0.3	1.00
Hexachlorobutadiene	ND	0.3	1.00
Naphthalene	ND	0.31	1.00
1,2,3-Trichlorobenzene	ND	0.3	1.00

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 360231
Analyzed: 10/23/2013 17:26
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Dichlorodifluoromethane	32.6	50.0	65.3	36.8	178.6
Chloromethane	45.0	50.0	89.9	62.5	136.0
Vinyl chloride	39.2	50.0	78.4	72.4	126.7
Bromomethane	32.6	50.0	65.1	58.3	137.0
Chloroethane	42.0	50.0	83.9	73.3	132.7
Dichlorofluoromethane	41.0	50.0	82.0	67.9	137.3
Trichlorofluoromethane	39.1	50.0	78.2	65.9	136.7
Ethyl ether	48.1	50.0	96.3	69.0	126.3
1,1-Dichloroethene	40.6	50.0	* 81.1	88.5	128.6
Freon 113	39.1	50.0	78.3	60.8	129.2
Acetone	44.8	50.0	89.6	40.7	131.9
Iodomethane	34.1	50.0	68.3	56.7	136.7
Carbon disulfide	40.9	50.0	81.9	71.6	131.8
Methyl Acetate	43.0	50.0	86.1	40.7	115.9
Allyl chloride	48.3	50.0	96.7	69.4	129.0
Methylene chloride	43.3	50.0	86.7	78.5	120.4
trans-1,2-Dichloroethene	42.5	50.0	85.0	79.6	123.1
Methyl-t-butyl ether	44.4	50.0	88.9	66.2	129.3
cis-1,2-Dichloroethene	42.5	50.0	85.0	77.0	120.5
1,1-Dichloroethane	43.0	50.0	86.0	80.4	122.3
2,2-Dichloropropane	42.8	50.0	85.6	66.2	130.5
2-Butanone	45.5	50.0	91.1	63.6	123.5
Ethyl acetate	65.7	50.0	131	63.7	228.9
Bromochloromethane	40.0	50.0	79.9	74.6	126.6
Tetrahydrofuran	46.1	50.0	92.1	61.5	138.1
Chloroform	42.3	50.0	84.6	78.5	119.4

Quality Control Sample Batch Report

Analysis Information

Workorder: 1329042

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	SW 8260
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	EVO/4710 (HBN: 115988)
		Prepared By:	NA	**Analyzed By:**	Christopher Q. Coleman

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 360231
Analyzed: 10/23/2013 17:26
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
1,1,1-Trichloroethane	40.4	50.0	80.8	76.6	123.7
Cyclohexane	48.5	50.0	97.0	70.6	132.0
1,1-Dichloropropene	42.1	50.0	84.1	80.9	118.1
1,2-Dichloroethane	44.2	50.0	88.3	74.1	130.1
Carbon tetrachloride	40.8	50.0	81.7	74.0	132.3
Benzene	41.3	50.0	* 82.6	85.8	116.9
Trichloroethene	40.2	50.0	80.5	77.7	120.4
Methylcyclohexane	43.5	50.0	87.0	75.5	126.8
1,2-Dichloropropane	45.6	50.0	91.2	78.6	120.2
Dibromomethane	41.1	50.0	82.2	76.3	123.7
Bromodichloromethane	42.7	50.0	85.4	74.7	121.7
cis-1,3-Dichloropropene	45.7	50.0	91.4	71.9	132.2
4-Methyl-2-pentanone	47.5	50.0	95.1	64.5	140.5
trans-1,3-Dichloropropene	49.6	50.0	99.2	65.9	136.8
Ethyl methacrylate	48.5	50.0	96.9	53.2	148.3
1,1,2-Trichloroethane	45.1	50.0	90.3	75.9	117.0
2-Hexanone	53.3	50.0	107	52.0	138.4
1,2-Dibromoethane	45.7	50.0	91.3	76.5	123.9
Toluene	44.1	50.0	88.2	84.2	118.6
1,3-Dichloropropane	46.5	50.0	93.0	73.2	120.8
Dibromochloromethane	47.0	50.0	94.1	75.0	139.2
Bromoform	48.7	50.0	97.4	66.3	122.5
Tetrachloroethene	41.2	50.0	82.4	71.4	126.5
1-Chlorohexane	47.5	50.0	95.0	73.1	126.4
Chlorobenzene	44.5	50.0	89.0	83.3	115.9
1,1,1,2-Tetrachloroethane	45.5	50.0	91.0	73.5	125.6
Ethylbenzene	44.0	50.0	88.0	85.7	121.0
m,p-Xylene	89.2	100	89.2	83.9	120.3
o-Xylene	45.8	50.0	91.7	81.5	120.9
Styrene	44.7	50.0	89.4	84.7	123.1
Isopropylbenzene	44.8	50.0	89.6	78.5	135.6
1,1,2,2-Tetrachloroethane	50.2	50.0	100	70.2	129.1
Bromobenzene	46.0	50.0	92.0	79.7	119.2
1,2,3-Trichloropropane	48.0	50.0	96.1	69.2	123.2
trans-1,4-Dichloro-2-butene	46.3	50.0	92.5	58.6	133.9
Pentachloroethane	49.2	50.0	98.3	56.2	144.1
n-Propylbenzene	49.3	50.0	98.6	79.9	128.1

Quality Control Sample Batch Report

Analysis Information

Workorder: 1329042

Limits:	Historical/Performance	**Preparation:**	NA	**Analysis:**	SW 8260
Basis:	ALS Laboratory Group	**Batch:**	NA	**Batch:**	EVO/4710 (HBN: 115988)
		Prepared By:	NA	**Analyzed By:**	Christopher Q. Coleman

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 360231
Analyzed: 10/23/2013 17:26
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
1,3,5-Trimethylbenzene	46.8	50.0	93.6	80.3	123.4
2-Chlorotoluene	48.0	50.0	96.1	78.6	121.0
4-Chlorotoluene	47.6	50.0	95.3	78.7	121.7
tert-Butylbenzene	47.7	50.0	95.5	79.8	123.2
1,2,4-Trimethylbenzene	46.6	50.0	93.2	81.6	121.3
sec-Butylbenzene	47.2	50.0	94.5	80.1	124.9
p-Isopropyltoluene	46.6	50.0	93.3	79.9	118.7
1,3-Dichlorobenzene	47.5	50.0	95.0	81.2	116.1
1,4-Dichlorobenzene	46.9	50.0	93.8	80.1	115.2
n-Butylbenzene	49.4	50.0	98.8	78.0	125.9
1,2-Dichlorobenzene	48.0	50.0	96.1	79.4	117.3
1,2-Dibromo-3-Chloropropane	50.8	50.0	102	55.4	131.8
1,2,4-Trichlorobenzene	45.9	50.0	91.8	59.0	135.6
Hexachlorobutadiene	44.9	50.0	89.7	52.6	135.3
Naphthalene	45.9	50.0	91.8	42.6	145.9
1,2,3-Trichlorobenzene	44.0	50.0	87.9	50.9	140.0

Matrix Spike - Matrix Spike Duplicate

Sample: 1329042009
Analyzed: 10/23/2013 21:41
Dilution: 1
Units: ug/L

MS: 360233
Analyzed: 10/23/2013 22:53
Dilution: 1
Units: ug/L

MSD: 360234
Analyzed: 10/23/2013 23:16
Dilution: 1
Units: ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Dichlorodifluoromethane	ND	42.8	50	85.6	36.8	178.6	40.4	80.7	5.82	0.0	20.0
Chloromethane	ND	53	50	106	62.5	136.0	50.4	101	4.97	0.0	20.0
Vinyl chloride	ND	47	50	93.9	72.4	126.7	44.3	88.7	5.75	0.0	20.0
Bromomethane	ND	28.7	50	* 57.3	58.3	137.0	32.5	64.9	12.5	0.0	20.0
Chloroethane	ND	49.5	50	99.1	73.3	132.7	47.1	94.2	5.04	0.0	20.0
Dichlorofluoromethane	ND	50.1	50	100	67.9	137.3	47.8	95.6	4.77	0.0	20.0
Trichlorofluoromethane	ND	47.3	50	94.5	65.9	136.7	44.8	89.6	5.35	0.0	20.0
Ethyl ether	ND	49.5	50	99.0	69.0	126.3	50.3	101	1.60	0.0	20.0
1,1-Dichloroethene	ND	48.7	50	97.4	88.5	128.6	46.3	92.6	5.09	0.0	20.0
Freon 113	ND	46.8	50	93.6	60.8	129.2	43.7	87.5	6.75	0.0	20.0
Acetone	ND	31	50	62.1	40.7	131.9	34.1	68.3	9.47	0.0	20.0
Iodomethane	ND	33.6	50	67.2	56.7	136.7	37.1	74.2	9.94	0.0	20.0
Carbon disulfide	ND	51.2	50	102	71.6	131.8	47.8	95.5	6.83	0.0	20.0
Methyl Acetate	ND	45.6	50	91.2	40.7	115.9	47.2	94.5	3.51	0.0	20.0
Allyl chloride	ND	58.3	50	117	69.4	129.0	55.7	111	4.56	0.0	20.0

Quality Control Sample Batch Report

Analysis Information

Workorder: 1329042

Limits: Historical/Performance
Basis: ALS Laboratory Group

Preparation: NA
Batch: NA
Prepared By: NA

Analysis: SW 8260
Batch: EVO/4710 (HBN: 115988)
Analyzed By: Christopher Q. Coleman

Matrix Spike - Matrix Spike Duplicate

Sample: 1329042009
Analyzed: 10/23/2013 21:41
Dilution: 1
Units: ug/L

MS: 360233
Analyzed: 10/23/2013 22:53
Dilution: 1
Units: ug/L

MSD: 360234
Analyzed: 10/23/2013 23:16
Dilution: 1
Units: ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Methylene chloride	ND	46.9	50	93.7	78.5	120.4	45.5	91.1	2.84	0.0	20.0
trans-1,2-Dichloroethene	ND	48.9	50	97.8	79.6	123.1	46.5	92.9	5.13	0.0	20.0
Methyl-t-butyl ether	ND	44.1	50	88.3	66.2	129.3	44.7	89.5	1.32	0.0	20.0
cis-1,2-Dichloroethene	ND	47.5	50	95.1	77.0	120.5	45.5	91.0	4.39	0.0	20.0
1,1-Dichloroethane	ND	51.2	50	102	80.4	122.3	49.4	98.9	3.57	0.0	20.0
2,2-Dichloropropane	ND	47	50	94.0	66.2	130.5	45.2	90.3	3.99	0.0	20.0
2-Butanone	ND	39	50	78.0	63.6	123.5	39.7	79.5	1.80	0.0	20.0
Ethyl acetate	ND	42.5	50	85.1	63.7	228.9	43.7	87.5	2.77	0.0	20.0
Bromochloromethane	ND	46.4	50	92.9	74.6	126.6	45	90.1	3.08	0.0	20.0
Tetrahydrofuran	ND	39.4	50	78.7	61.5	138.1	40.1	80.1	1.81	0.0	20.0
Chloroform	ND	48	50	95.9	78.5	119.4	46	92.0	4.14	0.0	20.0
1,1,1-Trichloroethane	ND	48.1	50	96.2	76.6	123.7	45.6	91.2	5.35	0.0	20.0
Cyclohexane	ND	55.7	50	111	70.6	132.0	53.3	107	4.36	0.0	20.0
1,1-Dichloropropene	ND	50.1	50	100	80.9	118.1	47.9	95.7	4.59	0.0	20.0
1,2-Dichloroethane	ND	48.1	50	96.1	74.1	130.1	47.5	95.0	1.12	0.0	20.0
Carbon tetrachloride	ND	48.7	50	97.4	74.0	132.3	46.6	93.2	4.36	0.0	20.0
Benzene	ND	48.1	50	96.2	85.8	116.9	46.4	92.7	3.67	0.0	20.0
Trichloroethene	ND	46.9	50	93.9	77.7	120.4	44.6	89.2	5.08	0.0	20.0
Methylcyclohexane	ND	48.7	50	97.4	75.5	126.8	47.9	95.7	1.74	0.0	20.0
1,2-Dichloropropane	ND	51.1	50	102	78.6	120.2	49.6	99.1	3.05	0.0	20.0
Dibromomethane	ND	44.9	50	89.8	76.3	123.7	44.8	89.6	0.235	0.0	20.0
Bromodichloromethane	ND	46.9	50	93.9	74.7	121.7	46	92.0	2.00	0.0	20.0
cis-1,3-Dichloropropene	ND	47.4	50	94.7	71.9	132.2	46.6	93.2	1.65	0.0	20.0
4-Methyl-2-pentanone	ND	41.2	50	82.4	64.5	140.5	43.8	87.5	5.98	0.0	20.0
trans-1,3-Dichloropropene	ND	50.9	50	102	65.9	136.8	50.6	101	0.635	0.0	20.0
Ethyl methacrylate	ND	47.7	50	95.4	53.2	148.3	48.5	97.0	1.73	0.0	20.0
1,1,2-Trichloroethane	ND	48.2	50	96.4	75.9	117.0	48	96.0	0.437	0.0	20.0
2-Hexanone	ND	45.6	50	91.2	52.0	138.4	48.3	96.6	5.66	0.0	20.0
1,2-Dibromoethane	ND	47.3	50	94.7	76.5	123.9	47.6	95.2	0.524	0.0	20.0
Toluene	ND	51.6	50	103	84.2	118.6	49.4	98.8	4.38	0.0	20.0
1,3-Dichloropropane	ND	49.7	50	99.5	73.2	120.8	49.3	98.6	0.946	0.0	20.0
Dibromochloromethane	ND	49	50	97.9	75.0	139.2	48.6	97.2	0.754	0.0	20.0
Bromoform	ND	49.2	50	98.5	66.3	122.5	49.6	99.2	0.679	0.0	20.0
Tetrachloroethene	ND	47.7	50	95.3	71.4	126.5	45	89.9	5.85	0.0	20.0
1-Chlorohexane	ND	52.4	50	105	73.1	126.4	51.2	102	2.36	0.0	20.0
Chlorobenzene	ND	50.6	50	101	83.3	115.9	48.6	97.2	3.99	0.0	20.0
1,1,1,2-Tetrachloroethane	ND	49.3	50	98.6	73.5	125.6	47.9	95.8	2.93	0.0	20.0

Quality Control Sample Batch Report

Analysis Information

Workorder: 1329042

Limits:	Historical/Performance	**Preparation:**	NA
Basis:	ALS Laboratory Group	**Batch:**	NA
		Prepared By:	NA
Analysis:	SW 8260		
Batch:	EVO/4710 (HBN: 115988)		
Analyzed By:	Christopher Q. Coleman		

Matrix Spike - Matrix Spike Duplicate

Sample: 1329042009		**MS:** 360233					**MSD:** 360234				
Analyzed: 10/23/2013 21:41		**Analyzed:** 10/23/2013 22:53					**Analyzed:** 10/23/2013 23:16				
Dilution: 1		**Dilution:** 1					**Dilution:** 1				
Units: ug/L		**Units:** ug/L					**Units:** ug/L				
Analyte	**Result**	**Result**	**Target**	**% Rec**	**QC Limits**		**Result**	**% Rec**	**RPD**	**QC Limits**	
Ethylbenzene	ND	51	50	102	85.7	121.0	49.2	98.5	3.55	0.0	20.0
m,p-Xylene	ND	103	100	103	83.9	120.3	99.4	99.4	3.91	0.0	20.0
o-Xylene	ND	51.5	50	103	81.5	120.9	49.7	99.5	3.47	0.0	20.0
Styrene	ND	51.2	50	102	84.7	123.1	49.4	98.7	3.64	0.0	20.0
Isopropylbenzene	ND	51.1	50	102	78.5	135.6	49.6	99.3	2.96	0.0	20.0
1,1,2,2-Tetrachloroethane	ND	48.5	50	97.0	70.2	129.1	49.3	98.7	1.73	0.0	20.0
Bromobenzene	ND	52.5	50	105	79.7	119.2	50.6	101	3.72	0.0	20.0
1,2,3-Trichloropropane	ND	46.8	50	93.7	69.2	123.2	46.9	93.8	0.151	0.0	20.0
trans-1,4-Dichloro-2-butene	ND	49.3	50	98.5	58.6	133.9	50.6	101	2.72	0.0	20.0
Pentachloroethane	ND	54.4	50	109	56.2	144.1	52.7	105	3.05	0.0	20.0
n-Propylbenzene	ND	56.2	50	112	79.9	128.1	53.9	108	4.20	0.0	20.0
1,3,5-Trimethylbenzene	ND	54.6	50	109	80.3	123.4	52.6	105	3.76	0.0	20.0
2-Chlorotoluene	ND	54.2	50	108	78.6	121.0	52	104	4.13	0.0	20.0
4-Chlorotoluene	ND	54.3	50	109	78.7	121.7	51.4	103	5.39	0.0	20.0
tert-Butylbenzene	ND	54.1	50	108	79.8	123.2	52.7	105	2.71	0.0	20.0
1,2,4-Trimethylbenzene	ND	54.3	50	109	81.6	121.3	52	104	4.21	0.0	20.0
sec-Butylbenzene	ND	54	50	108	80.1	124.9	53.2	106	1.66	0.0	20.0
p-Isopropyltoluene	ND	54	50	108	79.9	118.7	53.3	107	1.34	0.0	20.0
1,3-Dichlorobenzene	ND	52.4	50	105	81.2	116.1	50.6	101	3.52	0.0	20.0
1,4-Dichlorobenzene	ND	52	50	104	80.1	115.2	49.9	99.7	4.27	0.0	20.0
n-Butylbenzene	ND	54.8	50	110	78.0	125.9	54.7	109	0.203	0.0	20.0
1,2-Dichlorobenzene	ND	50.9	50	102	79.4	117.3	49.4	98.8	2.90	0.0	20.0
1,2-Dibromo-3-Chloropropane	ND	43.8	50	87.6	55.4	131.8	44.5	89.1	1.73	0.0	20.0
1,2,4-Trichlorobenzene	ND	49	50	97.9	59.0	135.6	49.3	98.6	0.660	0.0	20.0
Hexachlorobutadiene	ND	46.3	50	92.5	52.6	135.3	45.2	90.3	2.44	0.0	20.0
Naphthalene	ND	44.5	50	89.1	42.6	145.9	45.3	90.5	1.60	0.0	20.0
1,2,3-Trichlorobenzene	ND	45.6	50	91.2	50.9	140.0	46.4	92.8	1.74	0.0	20.0

Surrogate Recoveries

Surrogate	1,2-Dichloroethane-d4			Toluene-d8			4-Bromofluorobenzene		
QC Limits	72.2	123.4		77.5	116.4		78.5	121.6	
Units	ug/L			ug/L			ug/L		
Lab ID	**Result**	**Target**	**% Recovery**	**Result**	**Target**	**% Recovery**	**Result**	**Target**	**% Recovery**
360231-LCS	51.2	50.0	102	53.5	50.0	107	52.0	50.0	104
360230-MB	53.2	50.0	106	53.6	50.0	107	52.0	50.0	104
1328914001	52.8	50.0	106	53.9	50.0	108	52.4	50.0	105
1329042004	52.9	50.0	106	53.2	50.0	106	52.8	50.0	106

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1329042

Limits:	Historical/Performance	**Preparation:**	NA
Basis:	ALS Laboratory Group	**Batch:**	NA
		Prepared By:	NA
Analysis:	SW 8260		
Batch:	EVO/4710 (HBN: 115988)		
Analyzed By:	Christopher Q. Coleman		

Surrogate Recoveries

Surrogate	1,2-Dichloroethane-d4			Toluene-d8			4-Bromofluorobenzene		
QC Limits	72.2	123.4		77.5	116.4		78.5	121.6	
Units	ug/L			ug/L			ug/L		
Lab ID	Result	Target	% Recovery	Result	Target	% Recovery	Result	Target	% Recovery
1329042007	52.5	50.0	105	53.8	50.0	108	52.7	50.0	105
1329042008	52.4	50.0	105	53.9	50.0	108	52.3	50.0	105
1329042009	52.2	50.0	105	53.8	50.0	108	52.2	50.0	104
360233-MS	50.8	50.0	102	54.3	50.0	109	52.1	50.0	104
360234-MSD	50.6	50.0	101	54.4	50.0	109	52.2	50.0	104

Comments

Not all compounds passed percent recovery limits in the LCS but this is not a method requirement. Per ALS SOP OV-SW-8260C section 14.3.1 “Since the CVS is utilized as the LCS, if the CVS passes method criteria then the LCS is deemed also to have passed.” It is unclear what caused the two LCS failures and the lone MS compound failure.

QC Data Approved and Reviewed by

Christopher Q. Coleman	Thomas Bosch	10/29/2013
Analyst	**Peer Review**	**Date**

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◓ - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

APPENDIX D

LAB REPORTS

D-1

Analysis Report, September 9, 2013 Water Samples

ANALYTICAL REPORT

Report Date: October 29, 2013

Bill Schuh
North Dakota State Water Commission
900 East BUD Ave
Bismarck, ND 58505

Phone: 701-328-2739

E-mail: bschuh@nd.gov

Workorder: **34-1328455**
Project ID: 1859 Camp Crafton South Proxy
Purchase Order: 1859

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
SPR3	1328455001	10/08/13	10/10/13	Camp Crafton S. Prox
Res 4	1328455002	10/08/13	10/10/13	Camp Crafton S. Prox
13097	1328455003	10/08/13	10/10/13	Camp Crafton S. Prox
13098	1328455004	10/08/13	10/10/13	Camp Crafton S. Prox
S5	1328455005	10/08/13	10/10/13	Camp Crafton S. Prox
13086	1328455006	10/08/13	10/10/13	Camp Crafton S. Prox
13087	1328455007	10/08/13	10/10/13	Camp Crafton S. Prox
S7	1328455008	10/08/13	10/10/13	Camp Crafton S. Prox
13085	1328455009	10/08/13	10/10/13	Camp Crafton S. Prox
S12P	1328455010	10/08/13	10/10/13	Camp Crafton S. Prox

ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: SPR3 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455001 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - ENV by GC-MS Specialty

Preparation:	ENV by GC-MS Spec. Prep, Water	Weight/Volume	**Analysis:**	ENV by GC-MS Specialty, Water	**Instrument ID:** 5972-Q
Batch:	ISVO/2088 (HBN: 115595)	**Initial:** 1000 mL	**Batch:**	ISVO/2089 (HBN: 115596)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 1 mL	**Analyzed:**	10/24/2013 00:00	**Report Basis:** Wet

Analyte	ug/L	RL (ug/L)	Dilution	Qual.
Cyfluthrin	ND	1.0	1	
Permethrin	ND	1.0	1	

Analysis Method - ENV by LC/MS

Preparation:	Not Applicable		**Analysis:**	ENV by LC/MS, Water	**Instrument ID:** LCMS03
			Batch:	ELMS/1431 (HBN: 116117)	**Percent Solid:** NA
			Analyzed:	10/28/2013 00:00	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Glyphosate	ND	NA	50	1	

Analysis Method - SW 8015 DRO

Preparation:	EPA 3510, Sep Funnel DRO Ext.	Weight/Volume	**Analysis:**	SW 8015B DRO, Water	**Instrument ID:** GCE22
Batch:	ENVX/17891 (HBN: 115401)	**Initial:** 1000 mL	**Batch:**	EGC/4671 (HBN: 115512)	**Percent Solid:** NA
Prepared:	10/15/2013	**Final:** 1 mL	**Analyzed:**	10/19/2013 00:00	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Diesel Range Organics	ND	3.2	100	1	U

Analysis Method - SW 8151 by GC/MS

Preparation:	EPA 3510, Sep Funnel Herbicides	Weight/Volume	**Analysis:**	SW 8151A by GC/MS, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17887 (HBN: 115357)	**Initial:** 1000 mL	**Batch:**	ESVO/4321 (HBN: 116023)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 5 mL	**Analyzed:**	10/23/2013 10:07	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
2,4-D	ND	NA	0.21	1	
Picloram	ND	NA	0.21	1	

Analysis Method - SW 8260

Preparation:	Not Applicable		**Analysis:**	SW 8260C GRO, Water	**Instrument ID:** 5975-J
			Batch:	EVO/4698 (HBN: 115283)	**Percent Solid:** NA
			Analyzed:	10/13/2013 02:58	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Gasoline Range Organics	ND	15	50	1	U

Analysis Method - SW 8260

Preparation:	Not Applicable		**Analysis:**	SW 8260C, Water	**Instrument ID:** 5975-J
			Batch:	EVO/4701 (HBN: 115286)	**Percent Solid:** NA
			Analyzed:	10/13/2013 02:58	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Dichlorodifluoromethane	ND	0.30	1.0	1	U
Chloromethane	ND	0.30	1.0	1	U
Vinyl chloride	ND	0.30	1.0	1	U
Bromomethane	ND	0.30	1.0	1	U
Chloroethane	ND	0.30	1.0	1	U
Dichlorofluoromethane	ND	0.30	1.0	1	U
Trichlorofluoromethane	ND	0.30	1.0	1	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: SPR3 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455001 | Media: 40 mL Amber Glass VOA | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water | **Instrument ID:** 5975-J
Batch: EVO/4701 (HBN: 115286) | **Percent Solid:** NA
Analyzed: 10/13/2013 02:58 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Ethyl ether	ND	0.30	1.0	1	U
1,1-Dichloroethene	ND	0.30	1.0	1	U
Freon 113	ND	0.30	1.0	1	U
Acetone	ND	3.2	5.0	1	U
Iodomethane	ND	0.30	1.0	1	U
Carbon disulfide	ND	0.30	1.0	1	U
Methyl Acetate	ND	0.30	1.0	1	U
Allyl chloride	ND	0.30	1.0	1	U
Methylene chloride	ND	0.30	1.0	1	U
trans-1,2-Dichloroethene	ND	0.30	1.0	1	U
Methyl-t-butyl ether	ND	0.30	1.0	1	U
cis-1,2-Dichloroethene	ND	0.30	1.0	1	U
1,1-Dichloroethane	ND	0.30	1.0	1	U
2,2-Dichloropropane	ND	0.30	1.0	1	U
2-Butanone	ND	3.9	5.0	1	U
Ethyl acetate	ND	3.7	5.0	1	U
Bromochloromethane	ND	0.30	1.0	1	U
Tetrahydrofuran	ND	3.5	5.0	1	U
Chloroform	ND	0.30	1.0	1	U
1,1,1-Trichloroethane	ND	0.30	1.0	1	U
Cyclohexane	ND	0.30	1.0	1	U
1,1-Dichloropropene	ND	0.30	1.0	1	U
1,2-Dichloroethane	ND	0.30	1.0	1	U
Carbon tetrachloride	ND	0.30	1.0	1	U
Benzene	ND	0.30	1.0	1	U
Trichloroethene	ND	0.30	1.0	1	U
Methylcyclohexane	ND	0.30	1.0	1	U
1,2-Dichloropropane	ND	0.30	1.0	1	U
Dibromomethane	ND	0.30	1.0	1	U
Bromodichloromethane	ND	0.30	1.0	1	U
cis-1,3-Dichloropropene	ND	0.30	1.0	1	U
4-Methyl-2-pentanone	ND	4.1	5.0	1	U
trans-1,3-Dichloropropene	ND	0.30	1.0	1	U
Ethyl methacrylate	ND	0.32	1.0	1	U
1,1,2-Trichloroethane	ND	0.30	1.0	1	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: SPR3 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455001 | Media: 40 mL Amber Glass VOA | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water
Batch: EVO/4701 (HBN: 115286)
Analyzed: 10/13/2013 02:58
Instrument ID: 5975-J
Percent Solid: NA
Report Basis: Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
2-Hexanone	ND	4.0	5.0	1	U
1,2-Dibromoethane	ND	0.30	1.0	1	U
Toluene	ND	0.30	1.0	1	U
1,3-Dichloropropane	ND	0.30	1.0	1	U
Dibromochloromethane	ND	0.30	1.0	1	U
Bromoform	ND	0.30	1.0	1	U
Tetrachloroethene	ND	0.30	1.0	1	U
1-Chlorohexane	ND	0.33	1.0	1	U
Chlorobenzene	ND	0.30	1.0	1	U
1,1,1,2-Tetrachloroethane	ND	0.30	1.0	1	U
Ethylbenzene	ND	0.30	1.0	1	U
m,p-Xylene	ND	0.30	2.0	1	U
o-Xylene	ND	0.30	1.0	1	U
Styrene	ND	0.30	1.0	1	U
Isopropylbenzene	ND	0.30	1.0	1	U
1,1,2,2-Tetrachloroethane	ND	0.30	1.0	1	U
Bromobenzene	ND	0.30	1.0	1	U
1,2,3-Trichloropropane	ND	0.30	1.0	1	U
trans-1,4-Dichloro-2-butene	ND	3.8	5.0	1	U
Pentachloroethane	ND	0.33	1.0	1	U
n-Propylbenzene	ND	0.30	1.0	1	U
1,3,5-Trimethylbenzene	ND	0.30	1.0	1	U
2-Chlorotoluene	ND	0.30	1.0	1	U
4-Chlorotoluene	ND	0.30	1.0	1	U
tert-Butylbenzene	ND	0.30	1.0	1	U
1,2,4-Trimethylbenzene	ND	0.30	1.0	1	U
sec-Butylbenzene	ND	0.30	1.0	1	U
p-Isopropyltoluene	ND	0.30	1.0	1	U
1,3-Dichlorobenzene	ND	0.30	1.0	1	U
1,4-Dichlorobenzene	ND	0.30	1.0	1	U
n-Butylbenzene	ND	0.30	1.0	1	U
1,2-Dichlorobenzene	ND	0.30	1.0	1	U
1,2-Dibromo-3-Chloropropane	ND	0.30	1.0	1	U
1,2,4-Trichlorobenzene	ND	0.30	1.0	1	U
Hexachlorobutadiene	ND	0.30	1.0	1	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: SPR3 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455001 | Media: 40 mL Amber Glass VOA | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water | **Instrument ID:** 5975-J
Batch: EVO/4701 (HBN: 115286) | **Percent Solid:** NA
Analyzed: 10/13/2013 02:58 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Naphthalene	ND	0.31	1.0	1	U
1,2,3-Trichlorobenzene	ND	0.30	1.0	1	U

Analysis Method - SW 8270

Preparation: EPA 3510, Sep Funnel SVOA | **Weight/Volume**
Batch: ENVX/17886 (HBN: 115307) | **Initial:** 1000 mL
Prepared: 10/14/2013 | **Final:** 1 mL
Analysis: SW 8270D, Water | **Instrument ID:** 5975-H
Batch: ESVO/4313 (HBN: 115709) | **Percent Solid:** NA
Analyzed: 10/16/2013 17:14 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Pyridine	ND	3.1	5.0	1	U
Phenol	ND	1.5	5.0	1	U
Bis(2-chloroethyl)ether	ND	1.5	5.0	1	U
2-Chlorophenol	ND	1.5	5.0	1	U
1,3-Dichlorobenzene	ND	1.5	5.0	1	U
1,4-Dichlorobenzene	ND	1.5	5.0	1	U
Benzyl alcohol	ND	1.5	5.0	1	U
1,2-Dichlorobenzene	ND	1.5	5.0	1	U
2-Methylphenol	ND	1.5	5.0	1	U
bis(2-Chloroisopropyl)ether	ND	1.7	5.0	1	U
4-Methylphenol	ND	1.5	5.0	1	U
N-Nitrosodi-n-propyl amine	ND	1.5	5.0	1	U
Hexachloroethane	ND	1.5	5.0	1	U
Nitrobenzene	ND	1.5	5.0	1	U
Isophorone	ND	1.5	5.0	1	U
2-Nitrophenol	ND	1.6	5.0	1	U
2,4-Dimethylphenol	ND	1.5	5.0	1	U
Benzoic acid	ND	17	50	1	U
Bis(2-Chloroethoxy)methane	ND	1.5	5.0	1	U
2,4-Dichlorophenol	ND	1.5	5.0	1	U
1,2,4-Trichlorobenzene	ND	1.5	5.0	1	U
Naphthalene	ND	1.5	5.0	1	U
4-Chloroaniline	ND	1.5	5.0	1	U
Hexachlorobutadiene	ND	1.5	5.0	1	U
4-Chloro-3-methylphenol	ND	1.5	5.0	1	U
2-Methylnaphthalene	ND	1.5	5.0	1	U
Hexachlorocyclopentadiene	ND	2.2	5.0	1	U
2,4,6-Trichlorophenol	ND	1.5	5.0	1	U
2,4,5-Trichlorophenol	ND	1.5	5.0	1	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: SPR3 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455001 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17886 (HBN: 115307)	**Initial:** 1000 mL	**Batch:**	ESVO/4313 (HBN: 115709)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 1 mL	**Analyzed:**	10/16/2013 17:14	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
2-Chloronaphthalene	ND	1.5	5.0	1	U
2-Nitroaniline	ND	1.5	5.0	1	U
Dimethylphthalate	ND	1.5	5.0	1	U
2,6-Dinitrotoluene	ND	1.5	5.0	1	U
Acenaphthylene	ND	1.5	5.0	1	U
3-Nitroaniline	ND	2.1	5.0	1	U
Acenaphthene	ND	1.5	5.0	1	U
2,4-Dinitrophenol	ND	27	60	1	U
4-Nitrophenol	ND	15	50	1	U
Dibenzofuran	ND	1.5	5.0	1	U
2,4-Dinitrotoluene	ND	1.5	5.0	1	U
Diethylphthalate	ND	1.5	5.0	1	U
4-Chlorophenyl phenyl ether	ND	1.5	5.0	1	U
Fluorene	ND	1.5	5.0	1	U
4-Nitroaniline	ND	2.0	5.0	1	U
4,6-Dinitro-2-methylphenol	ND	32	60	1	U
N-Nitrosodiphenylamine	ND	1.5	5.0	1	U
4-Bromophenyl phenyl ether	ND	1.5	5.0	1	U
Hexachlorobenzene	ND	1.5	5.0	1	U
Pentachlorophenol	ND	29	60	1	U
Phenanthrene	ND	1.5	5.0	1	U
Anthracene	ND	1.5	5.0	1	U
Carbazole	ND	1.5	5.0	1	U
Di-n-butylphthalate	ND	1.5	5.0	1	U
Fluoranthene	ND	1.5	5.0	1	U
Pyrene	ND	1.5	5.0	1	U
Butylbenzylphthalate	ND	1.5	5.0	1	U
3,3'-Dichlorobenzidine	ND	1.7	5.0	1	U
Benzo(a)anthracene	ND	1.5	5.0	1	U
Chrysene	ND	1.5	5.0	1	U
Bis(2-ethylhexyl)phthalate	ND	1.5	5.0	1	U
Di-n-octylphthalate	ND	1.5	5.0	1	U
Benzo(b)fluoranthene	ND	1.5	5.0	1	U
Benzo(k)fluoranthene	ND	1.5	5.0	1	U
Benzo(a)pyrene	ND	1.5	5.0	1	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: **SPR3** | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455001 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17886 (HBN: 115307)	**Initial:** 1000 mL	**Batch:**	ESVO/4313 (HBN: 115709)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 1 mL	**Analyzed:**	10/16/2013 17:14	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Indeno(1,2,3-c,d)pyrene	ND	1.5	5.0	1	U
Dibenz(a,h)anthracene	ND	1.5	5.0	1	U
Benzo(g,h,i)perylene	ND	1.5	5.0	1	U

Analysis Method - SW 8330B

Preparation:	SW 8330B, Water Prep	**Weight/Volume**	**Analysis:**	SW 8330B, Water	**Instrument ID:** HPLC08
Batch:	ENVX/17890 (HBN: 115398)	**Initial:** 1000 mL	**Batch:**	ELC/1192 (HBN: 115890)	**Percent Solid:** NA
Prepared:	10/15/2013	**Final:** 5 mL	**Analyzed:**	10/22/2013 15:14	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Nitroglycerin	ND	0.41	0.97	1	U
PETN	ND	0.51	0.97	1	U
HMX	ND	0.10	0.26	1	U
RDX	ND	0.097	0.26	1	U
1,3,5-Trinitrobenzene	ND	0.36	0.65	1	U
1,3-Dinitrobenzene	ND	0.34	0.65	1	U
Nitrobenzene	ND	0.091	0.26	1	U
TETRYL	ND	0.15	0.26	1	U
2,4,6-Trinitrotoluene	ND	0.11	0.26	1	U
2-Amino-4,6-dinitrotoluene	ND	0.13	0.26	1	U
4-Amino-2,6-dinitrotoluene	ND	0.13	0.26	1	U
2,4-Dinitrotoluene	ND	0.39	0.65	1	U
2,6-Dinitrotoluene	ND	0.092	0.26	1	U
2-Nitrotoluene	ND	0.19	0.52	1	U
4-Nitrotoluene	ND	0.18	0.52	1	U
3-Nitrotoluene	ND	0.20	0.52	1	U

Sample ID: **Res 4** | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455002 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - ENV by GC-MS Specialty

Preparation:	ENV by GC-MS Spec. Prep, Water	**Weight/Volume**	**Analysis:**	ENV by GC-MS Specialty, Water	**Instrument ID:** 5972-Q
Batch:	ISVO/2088 (HBN: 115595)	**Initial:** 1000 mL	**Batch:**	ISVO/2089 (HBN: 115596)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 1 mL	**Analyzed:**	10/24/2013 00:00	**Report Basis:** Wet

Analyte	ug/L	RL (ug/L)	Dilution	Qual.
Cyfluthrin	ND	1.0	1	
Permethrin	ND	1.0	1	

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: **Res 4** | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455002 | Media: Liquid | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - ENV by LC/MS

Preparation: Not Applicable	**Analysis:** ENV by LC/MS, Water	**Instrument ID:** LCMS03
	Batch: ELMS/1431 (HBN: 116117)	**Percent Solid:** NA
	Analyzed: 10/28/2013 00:00	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Glyphosate	ND	NA	50	1	

Analysis Method - SW 8015 DRO

Preparation: EPA 3510, Sep Funnel DRO Ext.	Weight/Volume	**Analysis:** SW 8015B DRO, Water	**Instrument ID:** GCE22
Batch: ENVX/17891 (HBN: 115401)	**Initial:** 1000 mL	**Batch:** EGC/4671 (HBN: 115512)	**Percent Solid:** NA
Prepared: 10/15/2013	**Final:** 5 mL	**Analyzed:** 10/19/2013 00:00	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Diesel Range Organics	ND	16	500	5	U

Analysis Method - SW 8151 by GC/MS

Preparation: EPA 3510, Sep Funnel Herbicides	Weight/Volume	**Analysis:** SW 8151A by GC/MS, Water	**Instrument ID:** 5975-H
Batch: ENVX/17887 (HBN: 115357)	**Initial:** 1000 mL	**Batch:** ESVO/4321 (HBN: 116023)	**Percent Solid:** NA
Prepared: 10/14/2013	**Final:** 5 mL	**Analyzed:** 10/23/2013 14:18	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
2,4-D	ND	NA	0.21	1	
Picloram	ND	NA	0.21	1	

Analysis Method - SW 8260

Preparation: Not Applicable	**Analysis:** SW 8260C GRO, Water	**Instrument ID:** 5975-J
	Batch: EVO/4698 (HBN: 115283)	**Percent Solid:** NA
	Analyzed: 10/13/2013 03:23	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Gasoline Range Organics	ND	15	50	1	U

Analysis Method - SW 8260

Preparation: Not Applicable	**Analysis:** SW 8260C, Water	**Instrument ID:** 5975-J
	Batch: EVO/4701 (HBN: 115286)	**Percent Solid:** NA
	Analyzed: 10/13/2013 03:23	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Dichlorodifluoromethane	ND	0.30	1.0	1	U
Chloromethane	ND	0.30	1.0	1	U
Vinyl chloride	ND	0.30	1.0	1	U
Bromomethane	ND	0.30	1.0	1	U
Chloroethane	ND	0.30	1.0	1	U
Dichlorofluoromethane	ND	0.30	1.0	1	U
Trichlorofluoromethane	ND	0.30	1.0	1	U
Ethyl ether	ND	0.30	1.0	1	U
1,1-Dichloroethene	ND	0.30	1.0	1	U
Freon 113	ND	0.30	1.0	1	U
Acetone	ND	3.2	5.0	1	U
Iodomethane	ND	0.30	1.0	1	U
Carbon disulfide	ND	0.30	1.0	1	U
Methyl Acetate	ND	0.30	1.0	1	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: **Res 4** | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455002 | Media: 40 mL Amber Glass VOA | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water
Batch: EVO/4701 (HBN: 115286)
Analyzed: 10/13/2013 03:23
Instrument ID: 5975-J
Percent Solid: NA
Report Basis: Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Allyl chloride	ND	0.30	1.0	1	U
Methylene chloride	ND	0.30	1.0	1	U
trans-1,2-Dichloroethene	ND	0.30	1.0	1	U
Methyl-t-butyl ether	ND	0.30	1.0	1	U
cis-1,2-Dichloroethene	ND	0.30	1.0	1	U
1,1-Dichloroethane	ND	0.30	1.0	1	U
2,2-Dichloropropane	ND	0.30	1.0	1	U
2-Butanone	ND	3.9	5.0	1	U
Ethyl acetate	ND	3.7	5.0	1	U
Bromochloromethane	ND	0.30	1.0	1	U
Tetrahydrofuran	ND	3.5	5.0	1	U
Chloroform	ND	0.30	1.0	1	U
1,1,1-Trichloroethane	ND	0.30	1.0	1	U
Cyclohexane	ND	0.30	1.0	1	U
1,1-Dichloropropene	ND	0.30	1.0	1	U
1,2-Dichloroethane	ND	0.30	1.0	1	U
Carbon tetrachloride	ND	0.30	1.0	1	U
Benzene	ND	0.30	1.0	1	U
Trichloroethene	ND	0.30	1.0	1	U
Methylcyclohexane	ND	0.30	1.0	1	U
1,2-Dichloropropane	ND	0.30	1.0	1	U
Dibromomethane	ND	0.30	1.0	1	U
Bromodichloromethane	ND	0.30	1.0	1	U
cis-1,3-Dichloropropene	ND	0.30	1.0	1	U
4-Methyl-2-pentanone	ND	4.1	5.0	1	U
trans-1,3-Dichloropropene	ND	0.30	1.0	1	U
Ethyl methacrylate	ND	0.32	1.0	1	U
1,1,2-Trichloroethane	ND	0.30	1.0	1	U
2-Hexanone	ND	4.0	5.0	1	U
1,2-Dibromoethane	ND	0.30	1.0	1	U
Toluene	ND	0.30	1.0	1	U
1,3-Dichloropropane	ND	0.30	1.0	1	U
Dibromochloromethane	ND	0.30	1.0	1	U
Bromoform	ND	0.30	1.0	1	U
Tetrachloroethene	ND	0.30	1.0	1	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: **Res 4** | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455002 | Media: 40 mL Amber Glass VOA | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water | **Instrument ID:** 5975-J
Batch: EVO/4701 (HBN: 115286) | **Percent Solid:** NA
Analyzed: 10/13/2013 03:23 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
1-Chlorohexane	ND	0.33	1.0	1	U
Chlorobenzene	ND	0.30	1.0	1	U
1,1,1,2-Tetrachloroethane	ND	0.30	1.0	1	U
Ethylbenzene	ND	0.30	1.0	1	U
m,p-Xylene	ND	0.30	2.0	1	U
o-Xylene	ND	0.30	1.0	1	U
Styrene	ND	0.30	1.0	1	U
Isopropylbenzene	ND	0.30	1.0	1	U
1,1,2,2-Tetrachloroethane	ND	0.30	1.0	1	U
Bromobenzene	ND	0.30	1.0	1	U
1,2,3-Trichloropropane	ND	0.30	1.0	1	U
trans-1,4-Dichloro-2-butene	ND	3.8	5.0	1	U
Pentachloroethane	ND	0.33	1.0	1	U
n-Propylbenzene	ND	0.30	1.0	1	U
1,3,5-Trimethylbenzene	ND	0.30	1.0	1	U
2-Chlorotoluene	ND	0.30	1.0	1	U
4-Chlorotoluene	ND	0.30	1.0	1	U
tert-Butylbenzene	ND	0.30	1.0	1	U
1,2,4-Trimethylbenzene	ND	0.30	1.0	1	U
sec-Butylbenzene	ND	0.30	1.0	1	U
p-Isopropyltoluene	ND	0.30	1.0	1	U
1,3-Dichlorobenzene	ND	0.30	1.0	1	U
1,4-Dichlorobenzene	ND	0.30	1.0	1	U
n-Butylbenzene	ND	0.30	1.0	1	U
1,2-Dichlorobenzene	ND	0.30	1.0	1	U
1,2-Dibromo-3-Chloropropane	ND	0.30	1.0	1	U
1,2,4-Trichlorobenzene	ND	0.30	1.0	1	U
Hexachlorobutadiene	ND	0.30	1.0	1	U
Naphthalene	ND	0.31	1.0	1	U
1,2,3-Trichlorobenzene	ND	0.30	1.0	1	U

Analysis Method - SW 8270

Preparation: EPA 3510, Sep Funnel SVOA | **Weight/Volume**
Batch: ENVX/17886 (HBN: 115307) | **Initial:** 1000 mL
Prepared: 10/14/2013 | **Final:** 1 mL
Analysis: SW 8270D, Water | **Instrument ID:** 5975-H
Batch: ESVO/4313 (HBN: 115709) | **Percent Solid:** NA
Analyzed: 10/16/2013 22:18 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Pyridine	ND	3.1	5.0	1	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: **Res 4** | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455002 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17886 (HBN: 115307)	**Initial:** 1000 mL	**Batch:**	ESVO/4313 (HBN: 115709)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 1 mL	**Analyzed:**	10/16/2013 22:18	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Phenol	ND	1.5	5.0	1	U
Bis(2-chloroethyl)ether	ND	1.5	5.0	1	U
2-Chlorophenol	ND	1.5	5.0	1	U
1,3-Dichlorobenzene	ND	1.5	5.0	1	U
1,4-Dichlorobenzene	ND	1.5	5.0	1	U
Benzyl alcohol	ND	1.5	5.0	1	U
1,2-Dichlorobenzene	ND	1.5	5.0	1	U
2-Methylphenol	ND	1.5	5.0	1	U
bis(2-Chloroisopropyl)ether	ND	1.7	5.0	1	U
4-Methylphenol	ND	1.5	5.0	1	U
N-Nitrosodi-n-propyl amine	ND	1.5	5.0	1	U
Hexachloroethane	ND	1.5	5.0	1	U
Nitrobenzene	ND	1.5	5.0	1	U
Isophorone	ND	1.5	5.0	1	U
2-Nitrophenol	ND	1.6	5.0	1	U
2,4-Dimethylphenol	ND	1.5	5.0	1	U
Benzoic acid	ND	17	50	1	U
Bis(2-Chloroethoxy)methane	ND	1.5	5.0	1	U
2,4-Dichlorophenol	ND	1.5	5.0	1	U
1,2,4-Trichlorobenzene	ND	1.5	5.0	1	U
Naphthalene	ND	1.5	5.0	1	U
4-Chloroaniline	ND	1.5	5.0	1	U
Hexachlorobutadiene	ND	1.5	5.0	1	U
4-Chloro-3-methylphenol	ND	1.5	5.0	1	U
2-Methylnaphthalene	ND	1.5	5.0	1	U
Hexachlorocyclopentadiene	ND	2.2	5.0	1	U
2,4,6-Trichlorophenol	ND	1.5	5.0	1	U
2,4,5-Trichlorophenol	ND	1.5	5.0	1	U
2-Chloronaphthalene	ND	1.5	5.0	1	U
2-Nitroaniline	ND	1.5	5.0	1	U
Dimethylphthalate	ND	1.5	5.0	1	U
2,6-Dinitrotoluene	ND	1.5	5.0	1	U
Acenaphthylene	ND	1.5	5.0	1	U
3-Nitroaniline	ND	2.1	5.0	1	U
Acenaphthene	ND	1.5	5.0	1	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: **Res 4** | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455002 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17886 (HBN: 115307)	**Initial:** 1000 mL	**Batch:**	ESVO/4313 (HBN: 115709)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 1 mL	**Analyzed:**	10/16/2013 22:18	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
2,4-Dinitrophenol	ND	27	60	1	U
4-Nitrophenol	ND	15	50	1	U
Dibenzofuran	ND	1.5	5.0	1	U
2,4-Dinitrotoluene	ND	1.5	5.0	1	U
Diethylphthalate	ND	1.5	5.0	1	U
4-Chlorophenyl phenyl ether	ND	1.5	5.0	1	U
Fluorene	ND	1.5	5.0	1	U
4-Nitroaniline	ND	2.0	5.0	1	U
4,6-Dinitro-2-methylphenol	ND	32	60	1	U
N-Nitrosodiphenylamine	ND	1.5	5.0	1	U
4-Bromophenyl phenyl ether	ND	1.5	5.0	1	U
Hexachlorobenzene	ND	1.5	5.0	1	U
Pentachlorophenol	ND	29	60	1	U
Phenanthrene	ND	1.5	5.0	1	U
Anthracene	ND	1.5	5.0	1	U
Carbazole	ND	1.5	5.0	1	U
Di-n-butylphthalate	ND	1.5	5.0	1	U
Fluoranthene	ND	1.5	5.0	1	U
Pyrene	ND	1.5	5.0	1	U
Butylbenzylphthalate	ND	1.5	5.0	1	U
3,3'-Dichlorobenzidine	ND	1.7	5.0	1	U
Benzo(a)anthracene	ND	1.5	5.0	1	U
Chrysene	ND	1.5	5.0	1	U
Bis(2-ethylhexyl)phthalate	ND	1.5	5.0	1	U
Di-n-octylphthalate	ND	1.5	5.0	1	U
Benzo(b)fluoranthene	ND	1.5	5.0	1	U
Benzo(k)fluoranthene	ND	1.5	5.0	1	U
Benzo(a)pyrene	ND	1.5	5.0	1	U
Indeno(1,2,3-c,d)pyrene	ND	1.5	5.0	1	U
Dibenz(a,h)anthracene	ND	1.5	5.0	1	U
Benzo(g,h,i)perylene	ND	1.5	5.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: **Res 4** | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455002 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8330B

Preparation:	SW 8330B, Water Prep	**Weight/Volume**	**Analysis:**	SW 8330B, Water	**Instrument ID:** HPLC08
Batch:	ENVX/17890 (HBN: 115398)	**Initial:** 1000 mL	**Batch:**	ELC/1192 (HBN: 115890)	**Percent Solid:** NA
Prepared:	10/15/2013	**Final:** 5 mL	**Analyzed:**	10/22/2013 16:06	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Nitroglycerin	ND	0.41	0.97	1	U
PETN	**1.3**	0.51	0.97	1	
HMX	ND	0.10	0.26	1	U
RDX	ND	0.097	0.26	1	U
1,3,5-Trinitrobenzene	ND	0.36	0.65	1	U
1,3-Dinitrobenzene	ND	0.34	0.65	1	U
Nitrobenzene	ND	0.091	0.26	1	U
TETRYL	ND	0.15	0.26	1	U
2,4,6-Trinitrotoluene	ND	0.11	0.26	1	U
2-Amino-4,6-dinitrotoluene	ND	0.13	0.26	1	U
4-Amino-2,6-dinitrotoluene	ND	0.13	0.26	1	U
2,4-Dinitrotoluene	ND	0.39	0.65	1	U
2,6-Dinitrotoluene	ND	0.092	0.26	1	U
2-Nitrotoluene	ND	0.19	0.52	1	U
4-Nitrotoluene	ND	0.18	0.52	1	U
3-Nitrotoluene	ND	0.20	0.52	1	U

Sample ID: **13097** | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455003 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17886 (HBN: 115307)	**Initial:** 1000 mL	**Batch:**	ESVO/4313 (HBN: 115709)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 1 mL	**Analyzed:**	10/16/2013 18:22	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Pyridine	ND	3.1	5.0	1	U
Phenol	ND	1.5	5.0	1	U
Bis(2-chloroethyl)ether	ND	1.5	5.0	1	U
2-Chlorophenol	ND	1.5	5.0	1	U
1,3-Dichlorobenzene	ND	1.5	5.0	1	U
1,4-Dichlorobenzene	ND	1.5	5.0	1	U
Benzyl alcohol	ND	1.5	5.0	1	U
1,2-Dichlorobenzene	ND	1.5	5.0	1	U
2-Methylphenol	ND	1.5	5.0	1	U
bis(2-Chloroisopropyl)ether	ND	1.7	5.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13097 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455003 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17886 (HBN: 115307)	**Initial:** 1000 mL	**Batch:**	ESVO/4313 (HBN: 115709)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 1 mL	**Analyzed:**	10/16/2013 18:22	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
4-Methylphenol	ND	1.5	5.0	1	U
N-Nitrosodi-n-propyl amine	ND	1.5	5.0	1	U
Hexachloroethane	ND	1.5	5.0	1	U
Nitrobenzene	ND	1.5	5.0	1	U
Isophorone	ND	1.5	5.0	1	U
2-Nitrophenol	ND	1.6	5.0	1	U
2,4-Dimethylphenol	ND	1.5	5.0	1	U
Benzoic acid	ND	17	50	1	U
Bis(2-Chloroethoxy)methane	ND	1.5	5.0	1	U
2,4-Dichlorophenol	ND	1.5	5.0	1	U
1,2,4-Trichlorobenzene	ND	1.5	5.0	1	U
Naphthalene	ND	1.5	5.0	1	U
4-Chloroaniline	ND	1.5	5.0	1	U
Hexachlorobutadiene	ND	1.5	5.0	1	U
4-Chloro-3-methylphenol	ND	1.5	5.0	1	U
2-Methylnaphthalene	ND	1.5	5.0	1	U
Hexachlorocyclopentadiene	ND	2.2	5.0	1	U
2,4,6-Trichlorophenol	ND	1.5	5.0	1	U
2,4,5-Trichlorophenol	ND	1.5	5.0	1	U
2-Chloronaphthalene	ND	1.5	5.0	1	U
2-Nitroaniline	ND	1.5	5.0	1	U
Dimethylphthalate	ND	1.5	5.0	1	U
2,6-Dinitrotoluene	ND	1.5	5.0	1	U
Acenaphthylene	ND	1.5	5.0	1	U
3-Nitroaniline	ND	2.1	5.0	1	U
Acenaphthene	ND	1.5	5.0	1	U
2,4-Dinitrophenol	ND	27	60	1	U
4-Nitrophenol	ND	15	50	1	U
Dibenzofuran	ND	1.5	5.0	1	U
2,4-Dinitrotoluene	ND	1.5	5.0	1	U
Diethylphthalate	ND	1.5	5.0	1	U
4-Chlorophenyl phenyl ether	ND	1.5	5.0	1	U
Fluorene	ND	1.5	5.0	1	U
4-Nitroaniline	ND	2.0	5.0	1	U
4,6-Dinitro-2-methylphenol	ND	32	60	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13097 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455003 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17886 (HBN: 115307)	**Initial:** 1000 mL	**Batch:**	ESVO/4313 (HBN: 115709)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 1 mL	**Analyzed:**	10/16/2013 18:22	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
N-Nitrosodiphenylamine	ND	1.5	5.0	1	U
4-Bromophenyl phenyl ether	ND	1.5	5.0	1	U
Hexachlorobenzene	ND	1.5	5.0	1	U
Pentachlorophenol	ND	29	60	1	U
Phenanthrene	ND	1.5	5.0	1	U
Anthracene	ND	1.5	5.0	1	U
Carbazole	ND	1.5	5.0	1	U
Di-n-butylphthalate	ND	1.5	5.0	1	U
Fluoranthene	ND	1.5	5.0	1	U
Pyrene	ND	1.5	5.0	1	U
Butylbenzylphthalate	ND	1.5	5.0	1	U
3,3'-Dichlorobenzidine	ND	1.7	5.0	1	U
Benzo(a)anthracene	ND	1.5	5.0	1	U
Chrysene	ND	1.5	5.0	1	U
Bis(2-ethylhexyl)phthalate	2.1	1.5	5.0	1	J
Di-n-octylphthalate	ND	1.5	5.0	1	U
Benzo(b)fluoranthene	ND	1.5	5.0	1	U
Benzo(k)fluoranthene	ND	1.5	5.0	1	U
Benzo(a)pyrene	ND	1.5	5.0	1	U
Indeno(1,2,3-c,d)pyrene	ND	1.5	5.0	1	U
Dibenz(a,h)anthracene	ND	1.5	5.0	1	U
Benzo(g,h,i)perylene	ND	1.5	5.0	1	U

Analysis Method - SW 8330B

Preparation:	SW 8330B, Water Prep	**Weight/Volume**	**Analysis:**	SW 8330B, Water	**Instrument ID:** HPLC08
Batch:	ENVX/17890 (HBN: 115398)	**Initial:** 1000 mL	**Batch:**	ELC/1192 (HBN: 115890)	**Percent Solid:** NA
Prepared:	10/15/2013	**Final:** 5 mL	**Analyzed:**	10/22/2013 16:57	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Nitroglycerin	ND	0.41	0.97	1	U
PETN	ND	0.51	0.97	1	U
HMX	ND	0.10	0.26	1	U
RDX	ND	0.097	0.26	1	U
1,3,5-Trinitrobenzene	ND	0.36	0.65	1	U
1,3-Dinitrobenzene	ND	0.34	0.65	1	U
Nitrobenzene	ND	0.091	0.26	1	U
TETRYL	ND	0.15	0.26	1	U
2,4,6-Trinitrotoluene	ND	0.11	0.26	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13097 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455003 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8330B

Preparation: SW 8330B, Water Prep	**Weight/Volume**	**Analysis:** SW 8330B, Water	**Instrument ID:** HPLC08
Batch: ENVX/17890 (HBN: 115398)	**Initial:** 1000 mL	**Batch:** ELC/1192 (HBN: 115890)	**Percent Solid:** NA
Prepared: 10/15/2013	**Final:** 5 mL	**Analyzed:** 10/22/2013 16:57	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
2-Amino-4,6-dinitrotoluene	ND	0.13	0.26	1	U
4-Amino-2,6-dinitrotoluene	ND	0.13	0.26	1	U
2,4-Dinitrotoluene	ND	0.39	0.65	1	U
2,6-Dinitrotoluene	ND	0.092	0.26	1	U
2-Nitrotoluene	ND	0.19	0.52	1	U
4-Nitrotoluene	ND	0.18	0.52	1	U
3-Nitrotoluene	ND	0.20	0.52	1	U

Sample ID: 13098 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455004 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8015 DRO

Preparation: EPA 3510, Sep Funnel DRO Ext.	**Weight/Volume**	**Analysis:** SW 8015B DRO, Water	**Instrument ID:** GCE22
Batch: ENVX/17891 (HBN: 115401)	**Initial:** 1000 mL	**Batch:** EGC/4671 (HBN: 115512)	**Percent Solid:** NA
Prepared: 10/15/2013	**Final:** 1 mL	**Analyzed:** 10/19/2013 00:00	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Diesel Range Organics	ND	3.2	100	1	U

Analysis Method - SW 8260

Preparation: Not Applicable		**Analysis:** SW 8260C GRO, Water	**Instrument ID:** 5975-J
		Batch: EVO/4698 (HBN: 115283)	**Percent Solid:** NA
		Analyzed: 10/13/2013 03:47	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Gasoline Range Organics	ND	15	50	1	U

Analysis Method - SW 8260

Preparation: Not Applicable		**Analysis:** SW 8260C, Water	**Instrument ID:** 5975-J
		Batch: EVO/4701 (HBN: 115286)	**Percent Solid:** NA
		Analyzed: 10/13/2013 03:47	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Dichlorodifluoromethane	ND	0.30	1.0	1	U
Chloromethane	ND	0.30	1.0	1	U
Vinyl chloride	ND	0.30	1.0	1	U
Bromomethane	ND	0.30	1.0	1	U
Chloroethane	ND	0.30	1.0	1	U
Dichlorofluoromethane	ND	0.30	1.0	1	U
Trichlorofluoromethane	ND	0.30	1.0	1	U
Ethyl ether	ND	0.30	1.0	1	U
1,1-Dichloroethene	ND	0.30	1.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13098 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455004 | Media: 40 mL Amber Glass VOA | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water
Batch: EVO/4701 (HBN: 115286)
Analyzed: 10/13/2013 03:47
Instrument ID: 5975-J
Percent Solid: NA
Report Basis: Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Freon 113	ND	0.30	1.0	1	U
Acetone	ND	3.2	5.0	1	U
Iodomethane	ND	0.30	1.0	1	U
Carbon disulfide	0.31	0.30	1.0	1	J
Methyl Acetate	ND	0.30	1.0	1	U
Allyl chloride	ND	0.30	1.0	1	U
Methylene chloride	ND	0.30	1.0	1	U
trans-1,2-Dichloroethene	ND	0.30	1.0	1	U
Methyl-t-butyl ether	ND	0.30	1.0	1	U
cis-1,2-Dichloroethene	ND	0.30	1.0	1	U
1,1-Dichloroethane	ND	0.30	1.0	1	U
2,2-Dichloropropane	ND	0.30	1.0	1	U
2-Butanone	ND	3.9	5.0	1	U
Ethyl acetate	ND	3.7	5.0	1	U
Bromochloromethane	ND	0.30	1.0	1	U
Tetrahydrofuran	ND	3.5	5.0	1	U
Chloroform	ND	0.30	1.0	1	U
1,1,1-Trichloroethane	ND	0.30	1.0	1	U
Cyclohexane	ND	0.30	1.0	1	U
1,1-Dichloropropene	ND	0.30	1.0	1	U
1,2-Dichloroethane	ND	0.30	1.0	1	U
Carbon tetrachloride	ND	0.30	1.0	1	U
Benzene	ND	0.30	1.0	1	U
Trichloroethene	ND	0.30	1.0	1	U
Methylcyclohexane	ND	0.30	1.0	1	U
1,2-Dichloropropane	ND	0.30	1.0	1	U
Dibromomethane	ND	0.30	1.0	1	U
Bromodichloromethane	ND	0.30	1.0	1	U
cis-1,3-Dichloropropene	ND	0.30	1.0	1	U
4-Methyl-2-pentanone	ND	4.1	5.0	1	U
trans-1,3-Dichloropropene	ND	0.30	1.0	1	U
Ethyl methacrylate	ND	0.32	1.0	1	U
1,1,2-Trichloroethane	ND	0.30	1.0	1	U
2-Hexanone	ND	4.0	5.0	1	U
1,2-Dibromoethane	ND	0.30	1.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13098 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455004 | Media: 40 mL Amber Glass VOA | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water | **Instrument ID:** 5975-J
Batch: EVO/4701 (HBN: 115286) | **Percent Solid:** NA
Analyzed: 10/13/2013 03:47 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Toluene	ND	0.30	1.0	1	U
1,3-Dichloropropane	ND	0.30	1.0	1	U
Dibromochloromethane	ND	0.30	1.0	1	U
Bromoform	ND	0.30	1.0	1	U
Tetrachloroethene	ND	0.30	1.0	1	U
1-Chlorohexane	ND	0.33	1.0	1	U
Chlorobenzene	ND	0.30	1.0	1	U
1,1,1,2-Tetrachloroethane	ND	0.30	1.0	1	U
Ethylbenzene	ND	0.30	1.0	1	U
m,p-Xylene	ND	0.30	2.0	1	U
o-Xylene	ND	0.30	1.0	1	U
Styrene	ND	0.30	1.0	1	U
Isopropylbenzene	ND	0.30	1.0	1	U
1,1,2,2-Tetrachloroethane	ND	0.30	1.0	1	U
Bromobenzene	ND	0.30	1.0	1	U
1,2,3-Trichloropropane	ND	0.30	1.0	1	U
trans-1,4-Dichloro-2-butene	ND	3.8	5.0	1	U
Pentachloroethane	ND	0.33	1.0	1	U
n-Propylbenzene	ND	0.30	1.0	1	U
1,3,5-Trimethylbenzene	ND	0.30	1.0	1	U
2-Chlorotoluene	ND	0.30	1.0	1	U
4-Chlorotoluene	ND	0.30	1.0	1	U
tert-Butylbenzene	ND	0.30	1.0	1	U
1,2,4-Trimethylbenzene	ND	0.30	1.0	1	U
sec-Butylbenzene	ND	0.30	1.0	1	U
p-Isopropyltoluene	ND	0.30	1.0	1	U
1,3-Dichlorobenzene	ND	0.30	1.0	1	U
1,4-Dichlorobenzene	ND	0.30	1.0	1	U
n-Butylbenzene	ND	0.30	1.0	1	U
1,2-Dichlorobenzene	ND	0.30	1.0	1	U
1,2-Dibromo-3-Chloropropane	ND	0.30	1.0	1	U
1,2,4-Trichlorobenzene	ND	0.30	1.0	1	U
Hexachlorobutadiene	ND	0.30	1.0	1	U
Naphthalene	ND	0.31	1.0	1	U
1,2,3-Trichlorobenzene	ND	0.30	1.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13098 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455004 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17886 (HBN: 115307)	**Initial:** 1000 mL	**Batch:**	ESVO/4313 (HBN: 115709)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 1 mL	**Analyzed:**	10/16/2013 18:55	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Pyridine	ND	3.1	5.0	1	U
Phenol	ND	1.5	5.0	1	U
Bis(2-chloroethyl)ether	ND	1.5	5.0	1	U
2-Chlorophenol	ND	1.5	5.0	1	U
1,3-Dichlorobenzene	ND	1.5	5.0	1	U
1,4-Dichlorobenzene	ND	1.5	5.0	1	U
Benzyl alcohol	ND	1.5	5.0	1	U
1,2-Dichlorobenzene	ND	1.5	5.0	1	U
2-Methylphenol	ND	1.5	5.0	1	U
bis(2-Chloroisopropyl)ether	ND	1.7	5.0	1	U
4-Methylphenol	ND	1.5	5.0	1	U
N-Nitrosodi-n-propyl amine	ND	1.5	5.0	1	U
Hexachloroethane	ND	1.5	5.0	1	U
Nitrobenzene	ND	1.5	5.0	1	U
Isophorone	ND	1.5	5.0	1	U
2-Nitrophenol	ND	1.6	5.0	1	U
2,4-Dimethylphenol	ND	1.5	5.0	1	U
Benzoic acid	ND	17	50	1	U
Bis(2-Chloroethoxy)methane	ND	1.5	5.0	1	U
2,4-Dichlorophenol	ND	1.5	5.0	1	U
1,2,4-Trichlorobenzene	ND	1.5	5.0	1	U
Naphthalene	ND	1.5	5.0	1	U
4-Chloroaniline	ND	1.5	5.0	1	U
Hexachlorobutadiene	ND	1.5	5.0	1	U
4-Chloro-3-methylphenol	ND	1.5	5.0	1	U
2-Methylnaphthalene	ND	1.5	5.0	1	U
Hexachlorocyclopentadiene	ND	2.2	5.0	1	U
2,4,6-Trichlorophenol	ND	1.5	5.0	1	U
2,4,5-Trichlorophenol	ND	1.5	5.0	1	U
2-Chloronaphthalene	ND	1.5	5.0	1	U
2-Nitroaniline	ND	1.5	5.0	1	U
Dimethylphthalate	ND	1.5	5.0	1	U
2,6-Dinitrotoluene	ND	1.5	5.0	1	U
Acenaphthylene	ND	1.5	5.0	1	U
3-Nitroaniline	ND	2.1	5.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13098 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455004 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17886 (HBN: 115307)	**Initial:** 1000 mL	**Batch:**	ESVO/4313 (HBN: 115709)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 1 mL	**Analyzed:**	10/16/2013 18:55	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Acenaphthene	ND	1.5	5.0	1	U
2,4-Dinitrophenol	ND	27	60	1	U
4-Nitrophenol	ND	15	50	1	U
Dibenzofuran	ND	1.5	5.0	1	U
2,4-Dinitrotoluene	ND	1.5	5.0	1	U
Diethylphthalate	ND	1.5	5.0	1	U
4-Chlorophenyl phenyl ether	ND	1.5	5.0	1	U
Fluorene	ND	1.5	5.0	1	U
4-Nitroaniline	ND	2.0	5.0	1	U
4,6-Dinitro-2-methylphenol	ND	32	60	1	U
N-Nitrosodiphenylamine	ND	1.5	5.0	1	U
4-Bromophenyl phenyl ether	ND	1.5	5.0	1	U
Hexachlorobenzene	ND	1.5	5.0	1	U
Pentachlorophenol	ND	29	60	1	U
Phenanthrene	ND	1.5	5.0	1	U
Anthracene	ND	1.5	5.0	1	U
Carbazole	ND	1.5	5.0	1	U
Di-n-butylphthalate	ND	1.5	5.0	1	U
Fluoranthene	ND	1.5	5.0	1	U
Pyrene	ND	1.5	5.0	1	U
Butylbenzylphthalate	ND	1.5	5.0	1	U
3,3'-Dichlorobenzidine	ND	1.7	5.0	1	U
Benzo(a)anthracene	ND	1.5	5.0	1	U
Chrysene	ND	1.5	5.0	1	U
Bis(2-ethylhexyl)phthalate	ND	1.5	5.0	1	U
Di-n-octylphthalate	ND	1.5	5.0	1	U
Benzo(b)fluoranthene	ND	1.5	5.0	1	U
Benzo(k)fluoranthene	ND	1.5	5.0	1	U
Benzo(a)pyrene	ND	1.5	5.0	1	U
Indeno(1,2,3-c,d)pyrene	ND	1.5	5.0	1	U
Dibenz(a,h)anthracene	ND	1.5	5.0	1	U
Benzo(g,h,i)perylene	ND	1.5	5.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: **13098** | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455004 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8330B

Preparation:	SW 8330B, Water Prep	**Weight/Volume**	**Analysis:**	SW 8330B, Water	**Instrument ID:** HPLC08
Batch:	ENVX/17890 (HBN: 115398)	**Initial:** 1000 mL	**Batch:**	ELC/1192 (HBN: 115890)	**Percent Solid:** NA
Prepared:	10/15/2013	**Final:** 5 mL	**Analyzed:**	10/22/2013 17:48	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Nitroglycerin	ND	0.41	0.97	1	U
PETN	ND	0.51	0.97	1	U
HMX	ND	0.10	0.26	1	U
RDX	ND	0.097	0.26	1	U
1,3,5-Trinitrobenzene	ND	0.36	0.65	1	U
1,3-Dinitrobenzene	ND	0.34	0.65	1	U
Nitrobenzene	ND	0.091	0.26	1	U
TETRYL	ND	0.15	0.26	1	U
2,4,6-Trinitrotoluene	ND	0.11	0.26	1	U
2-Amino-4,6-dinitrotoluene	ND	0.13	0.26	1	U
4-Amino-2,6-dinitrotoluene	ND	0.13	0.26	1	U
2,4-Dinitrotoluene	ND	0.39	0.65	1	U
2,6-Dinitrotoluene	ND	0.092	0.26	1	U
2-Nitrotoluene	ND	0.19	0.52	1	U
4-Nitrotoluene	ND	0.18	0.52	1	U
3-Nitrotoluene	ND	0.20	0.52	1	U

Sample ID: **S5** | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455005 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8015 DRO

Preparation:	EPA 3510, Sep Funnel DRO Ext.	**Weight/Volume**	**Analysis:**	SW 8015B DRO, Water	**Instrument ID:** GCE22
Batch:	ENVX/17891 (HBN: 115401)	**Initial:** 1000 mL	**Batch:**	EGC/4671 (HBN: 115512)	**Percent Solid:** NA
Prepared:	10/15/2013	**Final:** 1 mL	**Analyzed:**	10/19/2013 00:00	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Diesel Range Organics	ND	3.2	100	1	U

Analysis Method - SW 8260

Preparation:	Not Applicable		**Analysis:**	SW 8260C GRO, Water	**Instrument ID:** 5975-J
			Batch:	EVO/4698 (HBN: 115283)	**Percent Solid:** NA
			Analyzed:	10/13/2013 04:11	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Gasoline Range Organics	ND	15	50	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: S5
Lab ID: 1328455005
Matrix: Water
Sampling Site: Camp Crafton S. Prox
Media: 40 mL Amber Glass VOA
Sampling Parameter: NA
Collected: 10/08/2013
Received: 10/10/2013

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water
Batch: EVO/4701 (HBN: 115286)
Analyzed: 10/13/2013 04:11
Instrument ID: 5975-J
Percent Solid: NA
Report Basis: Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Dichlorodifluoromethane	ND	0.30	1.0	1	U
Chloromethane	ND	0.30	1.0	1	U
Vinyl chloride	ND	0.30	1.0	1	U
Bromomethane	ND	0.30	1.0	1	U
Chloroethane	ND	0.30	1.0	1	U
Dichlorofluoromethane	ND	0.30	1.0	1	U
Trichlorofluoromethane	ND	0.30	1.0	1	U
Ethyl ether	ND	0.30	1.0	1	U
1,1-Dichloroethene	ND	0.30	1.0	1	U
Freon 113	ND	0.30	1.0	1	U
Acetone	3.7	3.2	5.0	1	J
Iodomethane	ND	0.30	1.0	1	U
Carbon disulfide	ND	0.30	1.0	1	U
Methyl Acetate	ND	0.30	1.0	1	U
Allyl chloride	ND	0.30	1.0	1	U
Methylene chloride	ND	0.30	1.0	1	U
trans-1,2-Dichloroethene	ND	0.30	1.0	1	U
Methyl-t-butyl ether	ND	0.30	1.0	1	U
cis-1,2-Dichloroethene	ND	0.30	1.0	1	U
1,1-Dichloroethane	ND	0.30	1.0	1	U
2,2-Dichloropropane	ND	0.30	1.0	1	U
2-Butanone	ND	3.9	5.0	1	U
Ethyl acetate	ND	3.7	5.0	1	U
Bromochloromethane	ND	0.30	1.0	1	U
Tetrahydrofuran	ND	3.5	5.0	1	U
Chloroform	ND	0.30	1.0	1	U
1,1,1-Trichloroethane	ND	0.30	1.0	1	U
Cyclohexane	ND	0.30	1.0	1	U
1,1-Dichloropropene	ND	0.30	1.0	1	U
1,2-Dichloroethane	ND	0.30	1.0	1	U
Carbon tetrachloride	ND	0.30	1.0	1	U
Benzene	ND	0.30	1.0	1	U
Trichloroethene	ND	0.30	1.0	1	U
Methylcyclohexane	ND	0.30	1.0	1	U
1,2-Dichloropropane	ND	0.30	1.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: S5 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455005 | Media: 40 mL Amber Glass VOA | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water | **Instrument ID:** 5975-J
Batch: EVO/4701 (HBN: 115286) | **Percent Solid:** NA
Analyzed: 10/13/2013 04:11 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Dibromomethane	ND	0.30	1.0	1	U
Bromodichloromethane	ND	0.30	1.0	1	U
cis-1,3-Dichloropropene	ND	0.30	1.0	1	U
4-Methyl-2-pentanone	ND	4.1	5.0	1	U
trans-1,3-Dichloropropene	ND	0.30	1.0	1	U
Ethyl methacrylate	ND	0.32	1.0	1	U
1,1,2-Trichloroethane	ND	0.30	1.0	1	U
2-Hexanone	ND	4.0	5.0	1	U
1,2-Dibromoethane	ND	0.30	1.0	1	U
Toluene	ND	0.30	1.0	1	U
1,3-Dichloropropane	ND	0.30	1.0	1	U
Dibromochloromethane	ND	0.30	1.0	1	U
Bromoform	ND	0.30	1.0	1	U
Tetrachloroethene	ND	0.30	1.0	1	U
1-Chlorohexane	ND	0.33	1.0	1	U
Chlorobenzene	ND	0.30	1.0	1	U
1,1,1,2-Tetrachloroethane	ND	0.30	1.0	1	U
Ethylbenzene	ND	0.30	1.0	1	U
m,p-Xylene	ND	0.30	2.0	1	U
o-Xylene	ND	0.30	1.0	1	U
Styrene	ND	0.30	1.0	1	U
Isopropylbenzene	ND	0.30	1.0	1	U
1,1,2,2-Tetrachloroethane	ND	0.30	1.0	1	U
Bromobenzene	ND	0.30	1.0	1	U
1,2,3-Trichloropropane	ND	0.30	1.0	1	U
trans-1,4-Dichloro-2-butene	ND	3.8	5.0	1	U
Pentachloroethane	ND	0.33	1.0	1	U
n-Propylbenzene	ND	0.30	1.0	1	U
1,3,5-Trimethylbenzene	ND	0.30	1.0	1	U
2-Chlorotoluene	ND	0.30	1.0	1	U
4-Chlorotoluene	ND	0.30	1.0	1	U
tert-Butylbenzene	ND	0.30	1.0	1	U
1,2,4-Trimethylbenzene	ND	0.30	1.0	1	U
sec-Butylbenzene	ND	0.30	1.0	1	U
p-Isopropyltoluene	ND	0.30	1.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: S5 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455005 | Media: 40 mL Amber Glass VOA | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water | Instrument ID: 5975-J
Batch: EVO/4701 (HBN: 115286) | Percent Solid: NA
Analyzed: 10/13/2013 04:11 | Report Basis: Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
1,3-Dichlorobenzene	ND	0.30	1.0	1	U
1,4-Dichlorobenzene	ND	0.30	1.0	1	U
n-Butylbenzene	ND	0.30	1.0	1	U
1,2-Dichlorobenzene	ND	0.30	1.0	1	U
1,2-Dibromo-3-Chloropropane	ND	0.30	1.0	1	U
1,2,4-Trichlorobenzene	ND	0.30	1.0	1	U
Hexachlorobutadiene	ND	0.30	1.0	1	U
Naphthalene	ND	0.31	1.0	1	U
1,2,3-Trichlorobenzene	ND	0.30	1.0	1	U

Analysis Method - SW 8270

Preparation: EPA 3510, Sep Funnel SVOA | Weight/Volume
Batch: ENVX/17886 (HBN: 115307) | Initial: 1000 mL
Prepared: 10/14/2013 | Final: 1 mL
Analysis: SW 8270D, Water | Instrument ID: 5975-H
Batch: ESVO/4313 (HBN: 115709) | Percent Solid: NA
Analyzed: 10/16/2013 19:29 | Report Basis: Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Pyridine	ND	3.1	5.0	1	U
Phenol	ND	1.5	5.0	1	U
Bis(2-chloroethyl)ether	ND	1.5	5.0	1	U
2-Chlorophenol	ND	1.5	5.0	1	U
1,3-Dichlorobenzene	ND	1.5	5.0	1	U
1,4-Dichlorobenzene	ND	1.5	5.0	1	U
Benzyl alcohol	ND	1.5	5.0	1	U
1,2-Dichlorobenzene	ND	1.5	5.0	1	U
2-Methylphenol	ND	1.5	5.0	1	U
bis(2-Chloroisopropyl)ether	ND	1.7	5.0	1	U
4-Methylphenol	ND	1.5	5.0	1	U
N-Nitrosodi-n-propyl amine	ND	1.5	5.0	1	U
Hexachloroethane	ND	1.5	5.0	1	U
Nitrobenzene	ND	1.5	5.0	1	U
Isophorone	ND	1.5	5.0	1	U
2-Nitrophenol	ND	1.6	5.0	1	U
2,4-Dimethylphenol	ND	1.5	5.0	1	U
Benzoic acid	ND	17	50	1	U
Bis(2-Chloroethoxy)methane	ND	1.5	5.0	1	U
2,4-Dichlorophenol	ND	1.5	5.0	1	U
1,2,4-Trichlorobenzene	ND	1.5	5.0	1	U
Naphthalene	ND	1.5	5.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: S5
Lab ID: 1328455005
Matrix: Water
Sampling Site: Camp Crafton S. Prox
Media: 1000 mL Amber Glass
Sampling Parameter: NA
Collected: 10/08/2013
Received: 10/10/2013

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17886 (HBN: 115307)	**Initial:** 1000 mL	**Batch:**	ESVO/4313 (HBN: 115709)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 1 mL	**Analyzed:**	10/16/2013 19:29	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
4-Chloroaniline	ND	1.5	5.0	1	U
Hexachlorobutadiene	ND	1.5	5.0	1	U
4-Chloro-3-methylphenol	ND	1.5	5.0	1	U
2-Methylnaphthalene	ND	1.5	5.0	1	U
Hexachlorocyclopentadiene	ND	2.2	5.0	1	U
2,4,6-Trichlorophenol	ND	1.5	5.0	1	U
2,4,5-Trichlorophenol	ND	1.5	5.0	1	U
2-Chloronaphthalene	ND	1.5	5.0	1	U
2-Nitroaniline	ND	1.5	5.0	1	U
Dimethylphthalate	ND	1.5	5.0	1	U
2,6-Dinitrotoluene	ND	1.5	5.0	1	U
Acenaphthylene	ND	1.5	5.0	1	U
3-Nitroaniline	ND	2.1	5.0	1	U
Acenaphthene	ND	1.5	5.0	1	U
2,4-Dinitrophenol	ND	27	60	1	U
4-Nitrophenol	ND	15	50	1	U
Dibenzofuran	ND	1.5	5.0	1	U
2,4-Dinitrotoluene	ND	1.5	5.0	1	U
Diethylphthalate	ND	1.5	5.0	1	U
4-Chlorophenyl phenyl ether	ND	1.5	5.0	1	U
Fluorene	ND	1.5	5.0	1	U
4-Nitroaniline	ND	2.0	5.0	1	U
4,6-Dinitro-2-methylphenol	ND	32	60	1	U
N-Nitrosodiphenylamine	ND	1.5	5.0	1	U
4-Bromophenyl phenyl ether	ND	1.5	5.0	1	U
Hexachlorobenzene	ND	1.5	5.0	1	U
Pentachlorophenol	ND	29	60	1	U
Phenanthrene	ND	1.5	5.0	1	U
Anthracene	ND	1.5	5.0	1	U
Carbazole	ND	1.5	5.0	1	U
Di-n-butylphthalate	ND	1.5	5.0	1	U
Fluoranthene	ND	1.5	5.0	1	U
Pyrene	ND	1.5	5.0	1	U
Butylbenzylphthalate	ND	1.5	5.0	1	U
3,3'-Dichlorobenzidine	ND	1.7	5.0	1	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: S5 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455005 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17886 (HBN: 115307)	**Initial:** 1000 mL	**Batch:**	ESVO/4313 (HBN: 115709)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 1 mL	**Analyzed:**	10/16/2013 19:29	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Benzo(a)anthracene	ND	1.5	5.0	1	U
Chrysene	ND	1.5	5.0	1	U
Bis(2-ethylhexyl)phthalate	ND	1.5	5.0	1	U
Di-n-octylphthalate	ND	1.5	5.0	1	U
Benzo(b)fluoranthene	ND	1.5	5.0	1	U
Benzo(k)fluoranthene	ND	1.5	5.0	1	U
Benzo(a)pyrene	ND	1.5	5.0	1	U
Indeno(1,2,3-c,d)pyrene	ND	1.5	5.0	1	U
Dibenz(a,h)anthracene	ND	1.5	5.0	1	U
Benzo(g,h,i)perylene	ND	1.5	5.0	1	U

Analysis Method - SW 8330B

Preparation:	SW 8330B, Water Prep	**Weight/Volume**	**Analysis:**	SW 8330B, Water	**Instrument ID:** HPLC08
Batch:	ENVX/17890 (HBN: 115398)	**Initial:** 1000 mL	**Batch:**	ELC/1192 (HBN: 115890)	**Percent Solid:** NA
Prepared:	10/15/2013	**Final:** 5 mL	**Analyzed:**	10/22/2013 18:40	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Nitroglycerin	ND	0.41	0.97	1	U
PETN	ND	0.51	0.97	1	U
HMX	ND	0.10	0.26	1	U
RDX	ND	0.097	0.26	1	U
1,3,5-Trinitrobenzene	ND	0.36	0.65	1	U
1,3-Dinitrobenzene	ND	0.34	0.65	1	U
Nitrobenzene	ND	0.091	0.26	1	U
TETRYL	ND	0.15	0.26	1	U
2,4,6-Trinitrotoluene	ND	0.11	0.26	1	U
2-Amino-4,6-dinitrotoluene	ND	0.13	0.26	1	U
4-Amino-2,6-dinitrotoluene	ND	0.13	0.26	1	U
2,4-Dinitrotoluene	ND	0.39	0.65	1	U
2,6-Dinitrotoluene	ND	0.092	0.26	1	U
2-Nitrotoluene	ND	0.19	0.52	1	U
4-Nitrotoluene	ND	0.18	0.52	1	U
3-Nitrotoluene	ND	0.20	0.52	1	U

ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13086 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455006 | Media: 40 mL Amber Glass VOA | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water
Batch: EVO/4701 (HBN: 115286)
Analyzed: 10/13/2013 04:35
Instrument ID: 5975-J
Percent Solid: NA
Report Basis: Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Dichlorodifluoromethane	ND	0.30	1.0	1	U
Chloromethane	ND	0.30	1.0	1	U
Vinyl chloride	ND	0.30	1.0	1	U
Bromomethane	ND	0.30	1.0	1	U
Chloroethane	ND	0.30	1.0	1	U
Dichlorofluoromethane	ND	0.30	1.0	1	U
Trichlorofluoromethane	ND	0.30	1.0	1	U
Ethyl ether	ND	0.30	1.0	1	U
1,1-Dichloroethene	ND	0.30	1.0	1	U
Freon 113	ND	0.30	1.0	1	U
Acetone	ND	3.2	5.0	1	U
Iodomethane	ND	0.30	1.0	1	U
Carbon disulfide	ND	0.30	1.0	1	U
Methyl Acetate	ND	0.30	1.0	1	U
Allyl chloride	ND	0.30	1.0	1	U
Methylene chloride	ND	0.30	1.0	1	U
trans-1,2-Dichloroethene	ND	0.30	1.0	1	U
Methyl-t-butyl ether	ND	0.30	1.0	1	U
cis-1,2-Dichloroethene	ND	0.30	1.0	1	U
1,1-Dichloroethane	ND	0.30	1.0	1	U
2,2-Dichloropropane	ND	0.30	1.0	1	U
2-Butanone	ND	3.9	5.0	1	U
Ethyl acetate	ND	3.7	5.0	1	U
Bromochloromethane	ND	0.30	1.0	1	U
Tetrahydrofuran	ND	3.5	5.0	1	U
Chloroform	ND	0.30	1.0	1	U
1,1,1-Trichloroethane	ND	0.30	1.0	1	U
Cyclohexane	ND	0.30	1.0	1	U
1,1-Dichloropropene	ND	0.30	1.0	1	U
1,2-Dichloroethane	ND	0.30	1.0	1	U
Carbon tetrachloride	ND	0.30	1.0	1	U
Benzene	ND	0.30	1.0	1	U
Trichloroethene	ND	0.30	1.0	1	U
Methylcyclohexane	ND	0.30	1.0	1	U
1,2-Dichloropropane	ND	0.30	1.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13086 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455006 | Media: 40 mL Amber Glass VOA | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water
Batch: EVO/4701 (HBN: 115286)
Analyzed: 10/13/2013 04:35
Instrument ID: 5975-J
Percent Solid: NA
Report Basis: Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Dibromomethane	ND	0.30	1.0	1	U
Bromodichloromethane	ND	0.30	1.0	1	U
cis-1,3-Dichloropropene	ND	0.30	1.0	1	U
4-Methyl-2-pentanone	ND	4.1	5.0	1	U
trans-1,3-Dichloropropene	ND	0.30	1.0	1	U
Ethyl methacrylate	ND	0.32	1.0	1	U
1,1,2-Trichloroethane	ND	0.30	1.0	1	U
2-Hexanone	ND	4.0	5.0	1	U
1,2-Dibromoethane	ND	0.30	1.0	1	U
Toluene	ND	0.30	1.0	1	U
1,3-Dichloropropane	ND	0.30	1.0	1	U
Dibromochloromethane	ND	0.30	1.0	1	U
Bromoform	ND	0.30	1.0	1	U
Tetrachloroethene	ND	0.30	1.0	1	U
1-Chlorohexane	ND	0.33	1.0	1	U
Chlorobenzene	ND	0.30	1.0	1	U
1,1,1,2-Tetrachloroethane	ND	0.30	1.0	1	U
Ethylbenzene	ND	0.30	1.0	1	U
m,p-Xylene	ND	0.30	2.0	1	U
o-Xylene	ND	0.30	1.0	1	U
Styrene	ND	0.30	1.0	1	U
Isopropylbenzene	ND	0.30	1.0	1	U
1,1,2,2-Tetrachloroethane	ND	0.30	1.0	1	U
Bromobenzene	ND	0.30	1.0	1	U
1,2,3-Trichloropropane	ND	0.30	1.0	1	U
trans-1,4-Dichloro-2-butene	ND	3.8	5.0	1	U
Pentachloroethane	ND	0.33	1.0	1	U
n-Propylbenzene	ND	0.30	1.0	1	U
1,3,5-Trimethylbenzene	ND	0.30	1.0	1	U
2-Chlorotoluene	ND	0.30	1.0	1	U
4-Chlorotoluene	ND	0.30	1.0	1	U
tert-Butylbenzene	ND	0.30	1.0	1	U
1,2,4-Trimethylbenzene	ND	0.30	1.0	1	U
sec-Butylbenzene	ND	0.30	1.0	1	U
p-Isopropyltoluene	ND	0.30	1.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13086 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455006 | Media: 40 mL Amber Glass VOA | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water | **Instrument ID:** 5975-J
Batch: EVO/4701 (HBN: 115286) | **Percent Solid:** NA
Analyzed: 10/13/2013 04:35 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
1,3-Dichlorobenzene	ND	0.30	1.0	1	U
1,4-Dichlorobenzene	ND	0.30	1.0	1	U
n-Butylbenzene	ND	0.30	1.0	1	U
1,2-Dichlorobenzene	ND	0.30	1.0	1	U
1,2-Dibromo-3-Chloropropane	ND	0.30	1.0	1	U
1,2,4-Trichlorobenzene	ND	0.30	1.0	1	U
Hexachlorobutadiene	ND	0.30	1.0	1	U
Naphthalene	ND	0.31	1.0	1	U
1,2,3-Trichlorobenzene	ND	0.30	1.0	1	U

Analysis Method - SW 8270

Preparation: EPA 3510, Sep Funnel SVOA | **Weight/Volume**
Batch: ENVX/17886 (HBN: 115307) | **Initial:** 1000 mL
Prepared: 10/14/2013 | **Final:** 1 mL
Analysis: SW 8270D, Water | **Instrument ID:** 5975-H
Batch: ESVO/4313 (HBN: 115709) | **Percent Solid:** NA
Analyzed: 10/16/2013 20:03 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Pyridine	ND	3.1	5.0	1	U
Phenol	ND	1.5	5.0	1	U
Bis(2-chloroethyl)ether	ND	1.5	5.0	1	U
2-Chlorophenol	ND	1.5	5.0	1	U
1,3-Dichlorobenzene	ND	1.5	5.0	1	U
1,4-Dichlorobenzene	ND	1.5	5.0	1	U
Benzyl alcohol	ND	1.5	5.0	1	U
1,2-Dichlorobenzene	ND	1.5	5.0	1	U
2-Methylphenol	ND	1.5	5.0	1	U
bis(2-Chloroisopropyl)ether	ND	1.7	5.0	1	U
4-Methylphenol	ND	1.5	5.0	1	U
N-Nitrosodi-n-propyl amine	ND	1.5	5.0	1	U
Hexachloroethane	ND	1.5	5.0	1	U
Nitrobenzene	ND	1.5	5.0	1	U
Isophorone	ND	1.5	5.0	1	U
2-Nitrophenol	ND	1.6	5.0	1	U
2,4-Dimethylphenol	ND	1.5	5.0	1	U
Benzoic acid	ND	17	50	1	U
Bis(2-Chloroethoxy)methane	ND	1.5	5.0	1	U
2,4-Dichlorophenol	ND	1.5	5.0	1	U
1,2,4-Trichlorobenzene	ND	1.5	5.0	1	U
Naphthalene	ND	1.5	5.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13086 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455006 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17886 (HBN: 115307)	**Initial:** 1000 mL	**Batch:**	ESVO/4313 (HBN: 115709)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 1 mL	**Analyzed:**	10/16/2013 20:03	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
4-Chloroaniline	ND	1.5	5.0	1	U
Hexachlorobutadiene	ND	1.5	5.0	1	U
4-Chloro-3-methylphenol	ND	1.5	5.0	1	U
2-Methylnaphthalene	ND	1.5	5.0	1	U
Hexachlorocyclopentadiene	ND	2.2	5.0	1	U
2,4,6-Trichlorophenol	ND	1.5	5.0	1	U
2,4,5-Trichlorophenol	ND	1.5	5.0	1	U
2-Chloronaphthalene	ND	1.5	5.0	1	U
2-Nitroaniline	ND	1.5	5.0	1	U
Dimethylphthalate	ND	1.5	5.0	1	U
2,6-Dinitrotoluene	ND	1.5	5.0	1	U
Acenaphthylene	ND	1.5	5.0	1	U
3-Nitroaniline	ND	2.1	5.0	1	U
Acenaphthene	ND	1.5	5.0	1	U
2,4-Dinitrophenol	ND	27	60	1	U
4-Nitrophenol	ND	15	50	1	U
Dibenzofuran	ND	1.5	5.0	1	U
2,4-Dinitrotoluene	ND	1.5	5.0	1	U
Diethylphthalate	ND	1.5	5.0	1	U
4-Chlorophenyl phenyl ether	ND	1.5	5.0	1	U
Fluorene	ND	1.5	5.0	1	U
4-Nitroaniline	ND	2.0	5.0	1	U
4,6-Dinitro-2-methylphenol	ND	32	60	1	U
N-Nitrosodiphenylamine	ND	1.5	5.0	1	U
4-Bromophenyl phenyl ether	ND	1.5	5.0	1	U
Hexachlorobenzene	ND	1.5	5.0	1	U
Pentachlorophenol	ND	29	60	1	U
Phenanthrene	ND	1.5	5.0	1	U
Anthracene	ND	1.5	5.0	1	U
Carbazole	ND	1.5	5.0	1	U
Di-n-butylphthalate	ND	1.5	5.0	1	U
Fluoranthene	ND	1.5	5.0	1	U
Pyrene	ND	1.5	5.0	1	U
Butylbenzylphthalate	ND	1.5	5.0	1	U
3,3'-Dichlorobenzidine	ND	1.7	5.0	1	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13086 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455006 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17886 (HBN: 115307)	**Initial:** 1000 mL	**Batch:**	ESVO/4313 (HBN: 115709)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 1 mL	**Analyzed:**	10/16/2013 20:03	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Benzo(a)anthracene	ND	1.5	5.0	1	U
Chrysene	ND	1.5	5.0	1	U
Bis(2-ethylhexyl)phthalate	2.4	1.5	5.0	1	J
Di-n-octylphthalate	ND	1.5	5.0	1	U
Benzo(b)fluoranthene	ND	1.5	5.0	1	U
Benzo(k)fluoranthene	ND	1.5	5.0	1	U
Benzo(a)pyrene	ND	1.5	5.0	1	U
Indeno(1,2,3-c,d)pyrene	ND	1.5	5.0	1	U
Dibenz(a,h)anthracene	ND	1.5	5.0	1	U
Benzo(g,h,i)perylene	ND	1.5	5.0	1	U

Analysis Method - SW 8330B

Preparation:	SW 8330B, Water Prep	**Weight/Volume**	**Analysis:**	SW 8330B, Water	**Instrument ID:** HPLC08
Batch:	ENVX/17890 (HBN: 115398)	**Initial:** 1000 mL	**Batch:**	ELC/1192 (HBN: 115890)	**Percent Solid:** NA
Prepared:	10/15/2013	**Final:** 5 mL	**Analyzed:**	10/22/2013 19:31	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Nitroglycerin	ND	0.41	0.97	1	U
PETN	ND	0.51	0.97	1	U
HMX	ND	0.10	0.26	1	U
RDX	ND	0.097	0.26	1	U
1,3,5-Trinitrobenzene	ND	0.36	0.65	1	U
1,3-Dinitrobenzene	ND	0.34	0.65	1	U
Nitrobenzene	ND	0.091	0.26	1	U
TETRYL	ND	0.15	0.26	1	U
2,4,6-Trinitrotoluene	ND	0.11	0.26	1	U
2-Amino-4,6-dinitrotoluene	ND	0.13	0.26	1	U
4-Amino-2,6-dinitrotoluene	ND	0.13	0.26	1	U
2,4-Dinitrotoluene	ND	0.39	0.65	1	U
2,6-Dinitrotoluene	ND	0.092	0.26	1	U
2-Nitrotoluene	ND	0.19	0.52	1	U
4-Nitrotoluene	ND	0.18	0.52	1	U
3-Nitrotoluene	ND	0.20	0.52	1	U

ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13087 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455007 | Media: 40 mL Amber Glass VOA | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water
Batch: EVO/4701 (HBN: 115286)
Analyzed: 10/13/2013 05:00
Instrument ID: 5975-J
Percent Solid: NA
Report Basis: Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Dichlorodifluoromethane	ND	0.30	1.0	1	U
Chloromethane	ND	0.30	1.0	1	U
Vinyl chloride	ND	0.30	1.0	1	U
Bromomethane	ND	0.30	1.0	1	U
Chloroethane	ND	0.30	1.0	1	U
Dichlorofluoromethane	ND	0.30	1.0	1	U
Trichlorofluoromethane	ND	0.30	1.0	1	U
Ethyl ether	ND	0.30	1.0	1	U
1,1-Dichloroethene	ND	0.30	1.0	1	U
Freon 113	ND	0.30	1.0	1	U
Acetone	ND	3.2	5.0	1	U
Iodomethane	ND	0.30	1.0	1	U
Carbon disulfide	0.47	0.30	1.0	1	J
Methyl Acetate	ND	0.30	1.0	1	U
Allyl chloride	ND	0.30	1.0	1	U
Methylene chloride	ND	0.30	1.0	1	U
trans-1,2-Dichloroethene	ND	0.30	1.0	1	U
Methyl-t-butyl ether	ND	0.30	1.0	1	U
cis-1,2-Dichloroethene	ND	0.30	1.0	1	U
1,1-Dichloroethane	ND	0.30	1.0	1	U
2,2-Dichloropropane	ND	0.30	1.0	1	U
2-Butanone	ND	3.9	5.0	1	U
Ethyl acetate	ND	3.7	5.0	1	U
Bromochloromethane	ND	0.30	1.0	1	U
Tetrahydrofuran	ND	3.5	5.0	1	U
Chloroform	ND	0.30	1.0	1	U
1,1,1-Trichloroethane	ND	0.30	1.0	1	U
Cyclohexane	ND	0.30	1.0	1	U
1,1-Dichloropropene	ND	0.30	1.0	1	U
1,2-Dichloroethane	ND	0.30	1.0	1	U
Carbon tetrachloride	ND	0.30	1.0	1	U
Benzene	ND	0.30	1.0	1	U
Trichloroethene	ND	0.30	1.0	1	U
Methylcyclohexane	ND	0.30	1.0	1	U
1,2-Dichloropropane	ND	0.30	1.0	1	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13087 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455007 | Media: 40 mL Amber Glass VOA | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water
Batch: EVO/4701 (HBN: 115286)
Analyzed: 10/13/2013 05:00
Instrument ID: 5975-J
Percent Solid: NA
Report Basis: Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Dibromomethane	ND	0.30	1.0	1	U
Bromodichloromethane	ND	0.30	1.0	1	U
cis-1,3-Dichloropropene	ND	0.30	1.0	1	U
4-Methyl-2-pentanone	ND	4.1	5.0	1	U
trans-1,3-Dichloropropene	ND	0.30	1.0	1	U
Ethyl methacrylate	ND	0.32	1.0	1	U
1,1,2-Trichloroethane	ND	0.30	1.0	1	U
2-Hexanone	ND	4.0	5.0	1	U
1,2-Dibromoethane	ND	0.30	1.0	1	U
Toluene	ND	0.30	1.0	1	U
1,3-Dichloropropane	ND	0.30	1.0	1	U
Dibromochloromethane	ND	0.30	1.0	1	U
Bromoform	ND	0.30	1.0	1	U
Tetrachloroethene	ND	0.30	1.0	1	U
1-Chlorohexane	ND	0.33	1.0	1	U
Chlorobenzene	ND	0.30	1.0	1	U
1,1,1,2-Tetrachloroethane	ND	0.30	1.0	1	U
Ethylbenzene	ND	0.30	1.0	1	U
m,p-Xylene	ND	0.30	2.0	1	U
o-Xylene	ND	0.30	1.0	1	U
Styrene	ND	0.30	1.0	1	U
Isopropylbenzene	ND	0.30	1.0	1	U
1,1,2,2-Tetrachloroethane	ND	0.30	1.0	1	U
Bromobenzene	ND	0.30	1.0	1	U
1,2,3-Trichloropropane	ND	0.30	1.0	1	U
trans-1,4-Dichloro-2-butene	ND	3.8	5.0	1	U
Pentachloroethane	ND	0.33	1.0	1	U
n-Propylbenzene	ND	0.30	1.0	1	U
1,3,5-Trimethylbenzene	ND	0.30	1.0	1	U
2-Chlorotoluene	ND	0.30	1.0	1	U
4-Chlorotoluene	ND	0.30	1.0	1	U
tert-Butylbenzene	ND	0.30	1.0	1	U
1,2,4-Trimethylbenzene	ND	0.30	1.0	1	U
sec-Butylbenzene	ND	0.30	1.0	1	U
p-Isopropyltoluene	ND	0.30	1.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13087 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455007 | Media: 40 mL Amber Glass VOA | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water | **Instrument ID:** 5975-J
Batch: EVO/4701 (HBN: 115286) | **Percent Solid:** NA
Analyzed: 10/13/2013 05:00 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
1,3-Dichlorobenzene	ND	0.30	1.0	1	U
1,4-Dichlorobenzene	ND	0.30	1.0	1	U
n-Butylbenzene	ND	0.30	1.0	1	U
1,2-Dichlorobenzene	ND	0.30	1.0	1	U
1,2-Dibromo-3-Chloropropane	ND	0.30	1.0	1	U
1,2,4-Trichlorobenzene	ND	0.30	1.0	1	U
Hexachlorobutadiene	ND	0.30	1.0	1	U
Naphthalene	ND	0.31	1.0	1	U
1,2,3-Trichlorobenzene	ND	0.30	1.0	1	U

Analysis Method - SW 8270

Preparation: EPA 3510, Sep Funnel SVOA | **Weight/Volume**
Batch: ENVX/17886 (HBN: 115307) | **Initial:** 1000 mL
Prepared: 10/14/2013 | **Final:** 1 mL
Analysis: SW 8270D, Water | **Instrument ID:** 5975-H
Batch: ESVO/4313 (HBN: 115709) | **Percent Solid:** NA
Analyzed: 10/16/2013 20:37 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Pyridine	ND	3.1	5.0	1	U
Phenol	ND	1.5	5.0	1	U
Bis(2-chloroethyl)ether	ND	1.5	5.0	1	U
2-Chlorophenol	ND	1.5	5.0	1	U
1,3-Dichlorobenzene	ND	1.5	5.0	1	U
1,4-Dichlorobenzene	ND	1.5	5.0	1	U
Benzyl alcohol	ND	1.5	5.0	1	U
1,2-Dichlorobenzene	ND	1.5	5.0	1	U
2-Methylphenol	ND	1.5	5.0	1	U
bis(2-Chloroisopropyl)ether	ND	1.7	5.0	1	U
4-Methylphenol	ND	1.5	5.0	1	U
N-Nitrosodi-n-propyl amine	ND	1.5	5.0	1	U
Hexachloroethane	ND	1.5	5.0	1	U
Nitrobenzene	ND	1.5	5.0	1	U
Isophorone	ND	1.5	5.0	1	U
2-Nitrophenol	ND	1.6	5.0	1	U
2,4-Dimethylphenol	ND	1.5	5.0	1	U
Benzoic acid	ND	17	50	1	U
Bis(2-Chloroethoxy)methane	ND	1.5	5.0	1	U
2,4-Dichlorophenol	ND	1.5	5.0	1	U
1,2,4-Trichlorobenzene	ND	1.5	5.0	1	U
Naphthalene	ND	1.5	5.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13087 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455007 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17886 (HBN: 115307)	**Initial:** 1000 mL	**Batch:**	ESVO/4313 (HBN: 115709)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 1 mL	**Analyzed:**	10/16/2013 20:37	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
4-Chloroaniline	ND	1.5	5.0	1	U
Hexachlorobutadiene	ND	1.5	5.0	1	U
4-Chloro-3-methylphenol	ND	1.5	5.0	1	U
2-Methylnaphthalene	ND	1.5	5.0	1	U
Hexachlorocyclopentadiene	ND	2.2	5.0	1	U
2,4,6-Trichlorophenol	ND	1.5	5.0	1	U
2,4,5-Trichlorophenol	ND	1.5	5.0	1	U
2-Chloronaphthalene	ND	1.5	5.0	1	U
2-Nitroaniline	ND	1.5	5.0	1	U
Dimethylphthalate	ND	1.5	5.0	1	U
2,6-Dinitrotoluene	ND	1.5	5.0	1	U
Acenaphthylene	ND	1.5	5.0	1	U
3-Nitroaniline	ND	2.1	5.0	1	U
Acenaphthene	ND	1.5	5.0	1	U
2,4-Dinitrophenol	ND	27	60	1	U
4-Nitrophenol	ND	15	50	1	U
Dibenzofuran	ND	1.5	5.0	1	U
2,4-Dinitrotoluene	ND	1.5	5.0	1	U
Diethylphthalate	ND	1.5	5.0	1	U
4-Chlorophenyl phenyl ether	ND	1.5	5.0	1	U
Fluorene	ND	1.5	5.0	1	U
4-Nitroaniline	ND	2.0	5.0	1	U
4,6-Dinitro-2-methylphenol	ND	32	60	1	U
N-Nitrosodiphenylamine	ND	1.5	5.0	1	U
4-Bromophenyl phenyl ether	ND	1.5	5.0	1	U
Hexachlorobenzene	ND	1.5	5.0	1	U
Pentachlorophenol	ND	29	60	1	U
Phenanthrene	ND	1.5	5.0	1	U
Anthracene	ND	1.5	5.0	1	U
Carbazole	ND	1.5	5.0	1	U
Di-n-butylphthalate	ND	1.5	5.0	1	U
Fluoranthene	ND	1.5	5.0	1	U
Pyrene	ND	1.5	5.0	1	U
Butylbenzylphthalate	ND	1.5	5.0	1	U
3,3'-Dichlorobenzidine	ND	1.7	5.0	1	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13087 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455007 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17886 (HBN: 115307)	**Initial:** 1000 mL	**Batch:**	ESVO/4313 (HBN: 115709)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 1 mL	**Analyzed:**	10/16/2013 20:37	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Benzo(a)anthracene	ND	1.5	5.0	1	U
Chrysene	ND	1.5	5.0	1	U
Bis(2-ethylhexyl)phthalate	2.2	1.5	5.0	1	J
Di-n-octylphthalate	ND	1.5	5.0	1	U
Benzo(b)fluoranthene	ND	1.5	5.0	1	U
Benzo(k)fluoranthene	ND	1.5	5.0	1	U
Benzo(a)pyrene	ND	1.5	5.0	1	U
Indeno(1,2,3-c,d)pyrene	ND	1.5	5.0	1	U
Dibenz(a,h)anthracene	ND	1.5	5.0	1	U
Benzo(g,h,i)perylene	ND	1.5	5.0	1	U

Analysis Method - SW 8330B

Preparation:	SW 8330B, Water Prep	**Weight/Volume**	**Analysis:**	SW 8330B, Water	**Instrument ID:** HPLC08
Batch:	ENVX/17890 (HBN: 115398)	**Initial:** 1000 mL	**Batch:**	ELC/1192 (HBN: 115890)	**Percent Solid:** NA
Prepared:	10/15/2013	**Final:** 5 mL	**Analyzed:**	10/22/2013 20:23	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Nitroglycerin	ND	0.41	0.97	1	U
PETN	**3.7**	0.51	0.97	1	
HMX	ND	0.10	0.26	1	U
RDX	ND	0.097	0.26	1	U
1,3,5-Trinitrobenzene	ND	0.36	0.65	1	U
1,3-Dinitrobenzene	ND	0.34	0.65	1	U
Nitrobenzene	ND	0.091	0.26	1	U
TETRYL	ND	0.15	0.26	1	U
2,4,6-Trinitrotoluene	ND	0.11	0.26	1	U
2-Amino-4,6-dinitrotoluene	ND	0.13	0.26	1	U
4-Amino-2,6-dinitrotoluene	ND	0.13	0.26	1	U
2,4-Dinitrotoluene	ND	0.39	0.65	1	U
2,6-Dinitrotoluene	ND	0.092	0.26	1	U
2-Nitrotoluene	ND	0.19	0.52	1	U
4-Nitrotoluene	ND	0.18	0.52	1	U
3-Nitrotoluene	ND	0.20	0.52	1	U

ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: S7
Lab ID: 1328455008
Matrix: Water
Sampling Site: Camp Crafton S. Prox
Media: 40 mL Amber Glass VOA
Sampling Parameter: NA
Collected: 10/08/2013
Received: 10/10/2013

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water
Batch: EVO/4701 (HBN: 115286)
Analyzed: 10/13/2013 05:24
Instrument ID: 5975-J
Percent Solid: NA
Report Basis: Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Dichlorodifluoromethane	ND	0.30	1.0	1	U
Chloromethane	ND	0.30	1.0	1	U
Vinyl chloride	ND	0.30	1.0	1	U
Bromomethane	ND	0.30	1.0	1	U
Chloroethane	ND	0.30	1.0	1	U
Dichlorofluoromethane	ND	0.30	1.0	1	U
Trichlorofluoromethane	ND	0.30	1.0	1	U
Ethyl ether	ND	0.30	1.0	1	U
1,1-Dichloroethene	ND	0.30	1.0	1	U
Freon 113	ND	0.30	1.0	1	U
Acetone	3.6	3.2	5.0	1	J
Iodomethane	ND	0.30	1.0	1	U
Carbon disulfide	ND	0.30	1.0	1	U
Methyl Acetate	ND	0.30	1.0	1	U
Allyl chloride	ND	0.30	1.0	1	U
Methylene chloride	ND	0.30	1.0	1	U
trans-1,2-Dichloroethene	ND	0.30	1.0	1	U
Methyl-t-butyl ether	ND	0.30	1.0	1	U
cis-1,2-Dichloroethene	ND	0.30	1.0	1	U
1,1-Dichloroethane	ND	0.30	1.0	1	U
2,2-Dichloropropane	ND	0.30	1.0	1	U
2-Butanone	ND	3.9	5.0	1	U
Ethyl acetate	ND	3.7	5.0	1	U
Bromochloromethane	ND	0.30	1.0	1	U
Tetrahydrofuran	ND	3.5	5.0	1	U
Chloroform	ND	0.30	1.0	1	U
1,1,1-Trichloroethane	ND	0.30	1.0	1	U
Cyclohexane	ND	0.30	1.0	1	U
1,1-Dichloropropene	ND	0.30	1.0	1	U
1,2-Dichloroethane	ND	0.30	1.0	1	U
Carbon tetrachloride	ND	0.30	1.0	1	U
Benzene	ND	0.30	1.0	1	U
Trichloroethene	ND	0.30	1.0	1	U
Methylcyclohexane	ND	0.30	1.0	1	U
1,2-Dichloropropane	ND	0.30	1.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: S7 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455008 | Media: 40 mL Amber Glass VOA | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water | **Instrument ID:** 5975-J
Batch: EVO/4701 (HBN: 115286) | **Percent Solid:** NA
Analyzed: 10/13/2013 05:24 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Dibromomethane	ND	0.30	1.0	1	U
Bromodichloromethane	ND	0.30	1.0	1	U
cis-1,3-Dichloropropene	ND	0.30	1.0	1	U
4-Methyl-2-pentanone	ND	4.1	5.0	1	U
trans-1,3-Dichloropropene	ND	0.30	1.0	1	U
Ethyl methacrylate	ND	0.32	1.0	1	U
1,1,2-Trichloroethane	ND	0.30	1.0	1	U
2-Hexanone	ND	4.0	5.0	1	U
1,2-Dibromoethane	ND	0.30	1.0	1	U
Toluene	ND	0.30	1.0	1	U
1,3-Dichloropropane	ND	0.30	1.0	1	U
Dibromochloromethane	ND	0.30	1.0	1	U
Bromoform	ND	0.30	1.0	1	U
Tetrachloroethene	ND	0.30	1.0	1	U
1-Chlorohexane	ND	0.33	1.0	1	U
Chlorobenzene	ND	0.30	1.0	1	U
1,1,1,2-Tetrachloroethane	ND	0.30	1.0	1	U
Ethylbenzene	ND	0.30	1.0	1	U
m,p-Xylene	ND	0.30	2.0	1	U
o-Xylene	ND	0.30	1.0	1	U
Styrene	ND	0.30	1.0	1	U
Isopropylbenzene	ND	0.30	1.0	1	U
1,1,2,2-Tetrachloroethane	ND	0.30	1.0	1	U
Bromobenzene	ND	0.30	1.0	1	U
1,2,3-Trichloropropane	ND	0.30	1.0	1	U
trans-1,4-Dichloro-2-butene	ND	3.8	5.0	1	U
Pentachloroethane	ND	0.33	1.0	1	U
n-Propylbenzene	ND	0.30	1.0	1	U
1,3,5-Trimethylbenzene	ND	0.30	1.0	1	U
2-Chlorotoluene	ND	0.30	1.0	1	U
4-Chlorotoluene	ND	0.30	1.0	1	U
tert-Butylbenzene	ND	0.30	1.0	1	U
1,2,4-Trimethylbenzene	ND	0.30	1.0	1	U
sec-Butylbenzene	ND	0.30	1.0	1	U
p-Isopropyltoluene	ND	0.30	1.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: S7 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455008 | Media: 40 mL Amber Glass VOA | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water | Instrument ID: 5975-J
Batch: EVO/4701 (HBN: 115286) | Percent Solid: NA
Analyzed: 10/13/2013 05:24 | Report Basis: Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
1,3-Dichlorobenzene	ND	0.30	1.0	1	U
1,4-Dichlorobenzene	ND	0.30	1.0	1	U
n-Butylbenzene	ND	0.30	1.0	1	U
1,2-Dichlorobenzene	ND	0.30	1.0	1	U
1,2-Dibromo-3-Chloropropane	ND	0.30	1.0	1	U
1,2,4-Trichlorobenzene	ND	0.30	1.0	1	U
Hexachlorobutadiene	ND	0.30	1.0	1	U
Naphthalene	ND	0.31	1.0	1	U
1,2,3-Trichlorobenzene	ND	0.30	1.0	1	U

Analysis Method - SW 8270

Preparation: EPA 3510, Sep Funnel SVOA | Weight/Volume
Batch: ENVX/17886 (HBN: 115307) | Initial: 1000 mL
Prepared: 10/14/2013 | Final: 1 mL
Analysis: SW 8270D, Water | Instrument ID: 5975-H
Batch: ESVO/4313 (HBN: 115709) | Percent Solid: NA
Analyzed: 10/16/2013 21:11 | Report Basis: Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Pyridine	ND	3.1	5.0	1	U
Phenol	ND	1.5	5.0	1	U
Bis(2-chloroethyl)ether	ND	1.5	5.0	1	U
2-Chlorophenol	ND	1.5	5.0	1	U
1,3-Dichlorobenzene	ND	1.5	5.0	1	U
1,4-Dichlorobenzene	ND	1.5	5.0	1	U
Benzyl alcohol	1.8	1.5	5.0	1	J
1,2-Dichlorobenzene	ND	1.5	5.0	1	U
2-Methylphenol	ND	1.5	5.0	1	U
bis(2-Chloroisopropyl)ether	ND	1.7	5.0	1	U
4-Methylphenol	ND	1.5	5.0	1	U
N-Nitrosodi-n-propyl amine	ND	1.5	5.0	1	U
Hexachloroethane	ND	1.5	5.0	1	U
Nitrobenzene	ND	1.5	5.0	1	U
Isophorone	ND	1.5	5.0	1	U
2-Nitrophenol	ND	1.6	5.0	1	U
2,4-Dimethylphenol	ND	1.5	5.0	1	U
Benzoic acid	ND	17	50	1	U
Bis(2-Chloroethoxy)methane	ND	1.5	5.0	1	U
2,4-Dichlorophenol	ND	1.5	5.0	1	U
1,2,4-Trichlorobenzene	ND	1.5	5.0	1	U
Naphthalene	ND	1.5	5.0	1	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: S7
Lab ID: 1328455008
Matrix: Water
Sampling Site: Camp Crafton S. Prox
Media: 1000 mL Amber Glass
Sampling Parameter: NA
Collected: 10/08/2013
Received: 10/10/2013

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17886 (HBN: 115307)	**Initial:** 1000 mL	**Batch:**	ESVO/4313 (HBN: 115709)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 1 mL	**Analyzed:**	10/16/2013 21:11	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
4-Chloroaniline	ND	1.5	5.0	1	U
Hexachlorobutadiene	ND	1.5	5.0	1	U
4-Chloro-3-methylphenol	ND	1.5	5.0	1	U
2-Methylnaphthalene	ND	1.5	5.0	1	U
Hexachlorocyclopentadiene	ND	2.2	5.0	1	U
2,4,6-Trichlorophenol	ND	1.5	5.0	1	U
2,4,5-Trichlorophenol	ND	1.5	5.0	1	U
2-Chloronaphthalene	ND	1.5	5.0	1	U
2-Nitroaniline	ND	1.5	5.0	1	U
Dimethylphthalate	ND	1.5	5.0	1	U
2,6-Dinitrotoluene	ND	1.5	5.0	1	U
Acenaphthylene	ND	1.5	5.0	1	U
3-Nitroaniline	ND	2.1	5.0	1	U
Acenaphthene	ND	1.5	5.0	1	U
2,4-Dinitrophenol	ND	27	60	1	U
4-Nitrophenol	ND	15	50	1	U
Dibenzofuran	ND	1.5	5.0	1	U
2,4-Dinitrotoluene	ND	1.5	5.0	1	U
Diethylphthalate	ND	1.5	5.0	1	U
4-Chlorophenyl phenyl ether	ND	1.5	5.0	1	U
Fluorene	ND	1.5	5.0	1	U
4-Nitroaniline	ND	2.0	5.0	1	U
4,6-Dinitro-2-methylphenol	ND	32	60	1	U
N-Nitrosodiphenylamine	ND	1.5	5.0	1	U
4-Bromophenyl phenyl ether	ND	1.5	5.0	1	U
Hexachlorobenzene	ND	1.5	5.0	1	U
Pentachlorophenol	ND	29	60	1	U
Phenanthrene	ND	1.5	5.0	1	U
Anthracene	ND	1.5	5.0	1	U
Carbazole	ND	1.5	5.0	1	U
Di-n-butylphthalate	ND	1.5	5.0	1	U
Fluoranthene	ND	1.5	5.0	1	U
Pyrene	ND	1.5	5.0	1	U
Butylbenzylphthalate	ND	1.5	5.0	1	U
3,3'-Dichlorobenzidine	ND	1.7	5.0	1	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: S7 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455008 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17886 (HBN: 115307)	**Initial:** 1000 mL	**Batch:**	ESVO/4313 (HBN: 115709)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 1 mL	**Analyzed:**	10/16/2013 21:11	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Benzo(a)anthracene	ND	1.5	5.0	1	U
Chrysene	ND	1.5	5.0	1	U
Bis(2-ethylhexyl)phthalate	ND	1.5	5.0	1	U
Di-n-octylphthalate	ND	1.5	5.0	1	U
Benzo(b)fluoranthene	ND	1.5	5.0	1	U
Benzo(k)fluoranthene	ND	1.5	5.0	1	U
Benzo(a)pyrene	ND	1.5	5.0	1	U
Indeno(1,2,3-c,d)pyrene	ND	1.5	5.0	1	U
Dibenz(a,h)anthracene	ND	1.5	5.0	1	U
Benzo(g,h,i)perylene	ND	1.5	5.0	1	U

Analysis Method - SW 8330B

Preparation:	SW 8330B, Water Prep	**Weight/Volume**	**Analysis:**	SW 8330B, Water	**Instrument ID:** HPLC08
Batch:	ENVX/17890 (HBN: 115398)	**Initial:** 1000 mL	**Batch:**	ELC/1192 (HBN: 115890)	**Percent Solid:** NA
Prepared:	10/15/2013	**Final:** 5 mL	**Analyzed:**	10/22/2013 21:14	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Nitroglycerin	ND	0.41	0.97	1	U
PETN	ND	0.51	0.97	1	U
HMX	ND	0.10	0.26	1	U
RDX	ND	0.097	0.26	1	U
1,3,5-Trinitrobenzene	ND	0.36	0.65	1	U
1,3-Dinitrobenzene	ND	0.34	0.65	1	U
Nitrobenzene	ND	0.091	0.26	1	U
TETRYL	ND	0.15	0.26	1	U
2,4,6-Trinitrotoluene	ND	0.11	0.26	1	U
2-Amino-4,6-dinitrotoluene	ND	0.13	0.26	1	U
4-Amino-2,6-dinitrotoluene	ND	0.13	0.26	1	U
2,4-Dinitrotoluene	ND	0.39	0.65	1	U
2,6-Dinitrotoluene	ND	0.092	0.26	1	U
2-Nitrotoluene	ND	0.19	0.52	1	U
4-Nitrotoluene	ND	0.18	0.52	1	U
3-Nitrotoluene	ND	0.20	0.52	1	U

ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13085 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455009 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8151 by GC/MS

Preparation:	EPA 3510, Sep Funnel Herbicides	**Weight/Volume**	**Analysis:**	SW 8151A by GC/MS, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17887 (HBN: 115357)	**Initial:** 1000 mL	**Batch:**	ESVO/4321 (HBN: 116023)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 5 mL	**Analyzed:**	10/23/2013 12:12	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
2,4-D	ND	NA	0.21	1	
Picloram	ND	NA	0.21	1	

Analysis Method - SW 8260

Preparation:	Not Applicable		**Analysis:**	SW 8260C, Water	**Instrument ID:** 5975-J
			Batch:	EVO/4701 (HBN: 115286)	**Percent Solid:** NA
			Analyzed:	10/13/2013 05:48	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Dichlorodifluoromethane	ND	0.30	1.0	1	U
Chloromethane	ND	0.30	1.0	1	U
Vinyl chloride	ND	0.30	1.0	1	U
Bromomethane	ND	0.30	1.0	1	U
Chloroethane	ND	0.30	1.0	1	U
Dichlorofluoromethane	ND	0.30	1.0	1	U
Trichlorofluoromethane	ND	0.30	1.0	1	U
Ethyl ether	ND	0.30	1.0	1	U
1,1-Dichloroethene	ND	0.30	1.0	1	U
Freon 113	ND	0.30	1.0	1	U
Acetone	ND	3.2	5.0	1	U
Iodomethane	ND	0.30	1.0	1	U
Carbon disulfide	ND	0.30	1.0	1	U
Methyl Acetate	ND	0.30	1.0	1	U
Allyl chloride	ND	0.30	1.0	1	U
Methylene chloride	ND	0.30	1.0	1	U
trans-1,2-Dichloroethene	ND	0.30	1.0	1	U
Methyl-t-butyl ether	ND	0.30	1.0	1	U
cis-1,2-Dichloroethene	ND	0.30	1.0	1	U
1,1-Dichloroethane	ND	0.30	1.0	1	U
2,2-Dichloropropane	ND	0.30	1.0	1	U
2-Butanone	ND	3.9	5.0	1	U
Ethyl acetate	ND	3.7	5.0	1	U
Bromochloromethane	ND	0.30	1.0	1	U
Tetrahydrofuran	ND	3.5	5.0	1	U
Chloroform	ND	0.30	1.0	1	U
1,1,1-Trichloroethane	ND	0.30	1.0	1	U
Cyclohexane	ND	0.30	1.0	1	U
1,1-Dichloropropene	ND	0.30	1.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13085 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455009 | Media: 40 mL Amber Glass VOA | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water | **Instrument ID:** 5975-J
Batch: EVO/4701 (HBN: 115286) | **Percent Solid:** NA
Analyzed: 10/13/2013 05:48 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
1,2-Dichloroethane	ND	0.30	1.0	1	U
Carbon tetrachloride	ND	0.30	1.0	1	U
Benzene	ND	0.30	1.0	1	U
Trichloroethene	ND	0.30	1.0	1	U
Methylcyclohexane	ND	0.30	1.0	1	U
1,2-Dichloropropane	ND	0.30	1.0	1	U
Dibromomethane	ND	0.30	1.0	1	U
Bromodichloromethane	ND	0.30	1.0	1	U
cis-1,3-Dichloropropene	ND	0.30	1.0	1	U
4-Methyl-2-pentanone	ND	4.1	5.0	1	U
trans-1,3-Dichloropropene	ND	0.30	1.0	1	U
Ethyl methacrylate	ND	0.32	1.0	1	U
1,1,2-Trichloroethane	ND	0.30	1.0	1	U
2-Hexanone	ND	4.0	5.0	1	U
1,2-Dibromoethane	ND	0.30	1.0	1	U
Toluene	ND	0.30	1.0	1	U
1,3-Dichloropropane	ND	0.30	1.0	1	U
Dibromochloromethane	ND	0.30	1.0	1	U
Bromoform	ND	0.30	1.0	1	U
Tetrachloroethene	ND	0.30	1.0	1	U
1-Chlorohexane	ND	0.33	1.0	1	U
Chlorobenzene	ND	0.30	1.0	1	U
1,1,1,2-Tetrachloroethane	ND	0.30	1.0	1	U
Ethylbenzene	ND	0.30	1.0	1	U
m,p-Xylene	ND	0.30	2.0	1	U
o-Xylene	ND	0.30	1.0	1	U
Styrene	ND	0.30	1.0	1	U
Isopropylbenzene	ND	0.30	1.0	1	U
1,1,2,2-Tetrachloroethane	ND	0.30	1.0	1	U
Bromobenzene	ND	0.30	1.0	1	U
1,2,3-Trichloropropane	ND	0.30	1.0	1	U
trans-1,4-Dichloro-2-butene	ND	3.8	5.0	1	U
Pentachloroethane	ND	0.33	1.0	1	U
n-Propylbenzene	ND	0.30	1.0	1	U
1,3,5-Trimethylbenzene	ND	0.30	1.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13085 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455009 | Media: 40 mL Amber Glass VOA | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water | **Instrument ID:** 5975-J
Batch: EVO/4701 (HBN: 115286) | **Percent Solid:** NA
Analyzed: 10/13/2013 05:48 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
2-Chlorotoluene	ND	0.30	1.0	1	U
4-Chlorotoluene	ND	0.30	1.0	1	U
tert-Butylbenzene	ND	0.30	1.0	1	U
1,2,4-Trimethylbenzene	ND	0.30	1.0	1	U
sec-Butylbenzene	ND	0.30	1.0	1	U
p-Isopropyltoluene	ND	0.30	1.0	1	U
1,3-Dichlorobenzene	ND	0.30	1.0	1	U
1,4-Dichlorobenzene	ND	0.30	1.0	1	U
n-Butylbenzene	ND	0.30	1.0	1	U
1,2-Dichlorobenzene	ND	0.30	1.0	1	U
1,2-Dibromo-3-Chloropropane	ND	0.30	1.0	1	U
1,2,4-Trichlorobenzene	ND	0.30	1.0	1	U
Hexachlorobutadiene	ND	0.30	1.0	1	U
Naphthalene	ND	0.31	1.0	1	U
1,2,3-Trichlorobenzene	ND	0.30	1.0	1	U

Analysis Method - SW 8270

Preparation: EPA 3510, Sep Funnel SVOA | **Weight/Volume**
Batch: ENVX/17886 (HBN: 115307) | **Initial:** 1000 mL
Prepared: 10/14/2013 | **Final:** 1 mL
Analysis: SW 8270D, Water | **Instrument ID:** 5975-H
Batch: ESVO/4313 (HBN: 115709) | **Percent Solid:** NA
Analyzed: 10/16/2013 21:45 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Pyridine	ND	3.1	5.0	1	U
Phenol	ND	1.5	5.0	1	U
Bis(2-chloroethyl)ether	ND	1.5	5.0	1	U
2-Chlorophenol	ND	1.5	5.0	1	U
1,3-Dichlorobenzene	ND	1.5	5.0	1	U
1,4-Dichlorobenzene	ND	1.5	5.0	1	U
Benzyl alcohol	1.9	1.5	5.0	1	J
1,2-Dichlorobenzene	ND	1.5	5.0	1	U
2-Methylphenol	ND	1.5	5.0	1	U
bis(2-Chloroisopropyl)ether	ND	1.7	5.0	1	U
4-Methylphenol	ND	1.5	5.0	1	U
N-Nitrosodi-n-propyl amine	ND	1.5	5.0	1	U
Hexachloroethane	ND	1.5	5.0	1	U
Nitrobenzene	ND	1.5	5.0	1	U
Isophorone	ND	1.5	5.0	1	U
2-Nitrophenol	ND	1.6	5.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13085 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455009 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17886 (HBN: 115307)	**Initial:** 1000 mL	**Batch:**	ESVO/4313 (HBN: 115709)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 1 mL	**Analyzed:**	10/16/2013 21:45	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
2,4-Dimethylphenol	ND	1.5	5.0	1	U
Benzoic acid	ND	17	50	1	U
Bis(2-Chloroethoxy)methane	ND	1.5	5.0	1	U
2,4-Dichlorophenol	ND	1.5	5.0	1	U
1,2,4-Trichlorobenzene	ND	1.5	5.0	1	U
Naphthalene	ND	1.5	5.0	1	U
4-Chloroaniline	ND	1.5	5.0	1	U
Hexachlorobutadiene	ND	1.5	5.0	1	U
4-Chloro-3-methylphenol	ND	1.5	5.0	1	U
2-Methylnaphthalene	ND	1.5	5.0	1	U
Hexachlorocyclopentadiene	ND	2.2	5.0	1	U
2,4,6-Trichlorophenol	ND	1.5	5.0	1	U
2,4,5-Trichlorophenol	ND	1.5	5.0	1	U
2-Chloronaphthalene	ND	1.5	5.0	1	U
2-Nitroaniline	ND	1.5	5.0	1	U
Dimethylphthalate	ND	1.5	5.0	1	U
2,6-Dinitrotoluene	ND	1.5	5.0	1	U
Acenaphthylene	ND	1.5	5.0	1	U
3-Nitroaniline	ND	2.1	5.0	1	U
Acenaphthene	ND	1.5	5.0	1	U
2,4-Dinitrophenol	ND	27	60	1	U
4-Nitrophenol	ND	15	50	1	U
Dibenzofuran	ND	1.5	5.0	1	U
2,4-Dinitrotoluene	ND	1.5	5.0	1	U
Diethylphthalate	ND	1.5	5.0	1	U
4-Chlorophenyl phenyl ether	ND	1.5	5.0	1	U
Fluorene	ND	1.5	5.0	1	U
4-Nitroaniline	ND	2.0	5.0	1	U
4,6-Dinitro-2-methylphenol	ND	32	60	1	U
N-Nitrosodiphenylamine	ND	1.5	5.0	1	U
4-Bromophenyl phenyl ether	ND	1.5	5.0	1	U
Hexachlorobenzene	ND	1.5	5.0	1	U
Pentachlorophenol	ND	29	60	1	U
Phenanthrene	ND	1.5	5.0	1	U
Anthracene	ND	1.5	5.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13085 | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455009 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17886 (HBN: 115307)	**Initial:** 1000 mL	**Batch:**	ESVO/4313 (HBN: 115709)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 1 mL	**Analyzed:**	10/16/2013 21:45	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Carbazole	ND	1.5	5.0	1	U
Di-n-butylphthalate	ND	1.5	5.0	1	U
Fluoranthene	ND	1.5	5.0	1	U
Pyrene	ND	1.5	5.0	1	U
Butylbenzylphthalate	ND	1.5	5.0	1	U
3,3'-Dichlorobenzidine	ND	1.7	5.0	1	U
Benzo(a)anthracene	ND	1.5	5.0	1	U
Chrysene	ND	1.5	5.0	1	U
Bis(2-ethylhexyl)phthalate	ND	1.5	5.0	1	U
Di-n-octylphthalate	ND	1.5	5.0	1	U
Benzo(b)fluoranthene	ND	1.5	5.0	1	U
Benzo(k)fluoranthene	ND	1.5	5.0	1	U
Benzo(a)pyrene	ND	1.5	5.0	1	U
Indeno(1,2,3-c,d)pyrene	ND	1.5	5.0	1	U
Dibenz(a,h)anthracene	ND	1.5	5.0	1	U
Benzo(g,h,i)perylene	ND	1.5	5.0	1	U

Analysis Method - SW 8330B

Preparation:	SW 8330B, Water Prep	**Weight/Volume**	**Analysis:**	SW 8330B, Water	**Instrument ID:** HPLC08
Batch:	ENVX/17890 (HBN: 115398)	**Initial:** 1000 mL	**Batch:**	ELC/1192 (HBN: 115890)	**Percent Solid:** NA
Prepared:	10/15/2013	**Final:** 5 mL	**Analyzed:**	10/22/2013 22:05	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Nitroglycerin	ND	0.41	0.97	1	U
PETN	ND	0.51	0.97	1	U
HMX	ND	0.10	0.26	1	U
RDX	ND	0.097	0.26	1	U
1,3,5-Trinitrobenzene	ND	0.36	0.65	1	U
1,3-Dinitrobenzene	ND	0.34	0.65	1	U
Nitrobenzene	ND	0.091	0.26	1	U
TETRYL	ND	0.15	0.26	1	U
2,4,6-Trinitrotoluene	ND	0.11	0.26	1	U
2-Amino-4,6-dinitrotoluene	ND	0.13	0.26	1	U
4-Amino-2,6-dinitrotoluene	ND	0.13	0.26	1	U
2,4-Dinitrotoluene	ND	0.39	0.65	1	U
2,6-Dinitrotoluene	ND	0.092	0.26	1	U
2-Nitrotoluene	ND	0.19	0.52	1	U
4-Nitrotoluene	ND	0.18	0.52	1	U

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ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: **13085** | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455009 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8330B

Preparation:	SW 8330B, Water Prep	**Weight/Volume**	**Analysis:**	SW 8330B, Water	**Instrument ID:** HPLC08
Batch:	ENVX/17890 (HBN: 115398)	**Initial:** 1000 mL	**Batch:**	ELC/1192 (HBN: 115890)	**Percent Solid:** NA
Prepared:	10/15/2013	**Final:** 5 mL	**Analyzed:**	10/22/2013 22:05	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
3-Nitrotoluene	ND	0.20	0.52	1	U

Sample ID: **S12P** | Sampling Site: Camp Crafton S. Prox | Collected: 10/08/2013
Lab ID: 1328455010 | Media: 1000 mL Amber Glass | Received: 10/10/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8151 by GC/MS

Preparation:	EPA 3510, Sep Funnel Herbicides	**Weight/Volume**	**Analysis:**	SW 8151A by GC/MS, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17887 (HBN: 115357)	**Initial:** 1000 mL	**Batch:**	ESVO/4321 (HBN: 116023)	**Percent Solid:** NA
Prepared:	10/14/2013	**Final:** 5 mL	**Analyzed:**	10/23/2013 12:54	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
2,4-D	ND	NA	0.21	1	
Picloram	ND	NA	0.21	1	

Comments

Quality Control: SW 8015 DRO - (HBN: 115512)

Sample 1328455002 required 5x dilution.

Quality Control: SW 8151 by GC/MS - (HBN: 116023)

8151 by GC/MS: The method blank failed surrogate recovery. The samples were free of target compounds and all the other QC and sample surrogate recoveries are acceptable indicating that the failure is an isolated incident. No re-extraction was performed. NCR-690 was initiated. The RPD for Picloram was outside QC limits. No correction action was required.

Quality Control: SW 8260 - (HBN: 115286)

8260 Comments: A small number of compounds failed in the LCS/MS/MSD. Not all compounds are required to pass. Per ALS SOP OV-SW-8260C section 14.3.1 “Since the CVS is utilized as the LCS, if the CVS passes method criteria then the LCS is deemed also to have passed.” It is possible that the spike volume added was slightly high.

Report Authorization

Method	Analyst	Peer Review
ENV by GC-MS Specialty	Pooreun Lim	Thomas J. Masoian
ENV by LC/MS	Thomas T. McKay	Thomas Bosch
SW 8015 DRO	Mila V. Potekhin	Nadjla Borges
SW 8151 by GC/MS	Dustin Calder	Joseph Gress
SW 8260	Christopher Q. Coleman	Thomas J. Masoian
SW 8270	Jessica Helland	Thomas J. Masoian
SW 8330B	Thomas Bosch	Thomas T. McKay

ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ACLASS (DoD ELAP)	ADE-1420	http://www.aclasscorp.com
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx
	Florida (TNI)	E871067	http://www.dep.state.fl.us/labs/bars/sas/qa/
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Lead Testing:			
CPSC	ACLASS (ISO 17025, CPSC)	ADE-1420	http://www.aclasscorp.com
Soil, Dust, Paint ,Air	AIHA (ISO 17025, AIHA ELLAP and NLLAP)	101574	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.com

ANALYTICAL REPORT

Workorder: 34-1328455
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

D-2

Analysis Report, September 16, 2013 Water Samples

ANALYTICAL REPORT

Report Date: October 31, 2013

Bill Schuh
North Dakota State Water Commission
900 East BUD Ave
Bismarck, ND 58505

Phone: 701-328-2739

E-mail: bschuh@nd.gov

Workorder: **34-1329042**
Project ID: 1859 CCS
Purchase Order: 1859

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
13106	1329042001	10/14/13	10/17/13	CCS
13085	1329042002	10/14/13	10/17/13	CCS
S Wash Lk	1329042003	10/15/13	10/17/13	CCS
Lake Coe	1329042004	10/15/13	10/17/13	CCS
SPR-16	1329042005	10/14/13	10/17/13	CCS
SPR-16B	1329042006	10/14/13	10/17/13	CCS
13103	1329042007	10/15/13	10/17/13	
13104	1329042008	10/15/13	10/17/13	
13105	1329042009	10/15/13	10/17/13	
13089	1329042010	10/14/13	10/17/13	CCS

ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: **13106** | Sampling Site: CCS | Collected: 10/14/2013
Lab ID: 1329042001 | Media: 1000 mL Amber Glass | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8151 by GC/MS

Preparation:	EPA 3510, Sep Funnel Herbicides	**Weight/Volume**	**Analysis:**	SW 8151A by GC/MS, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17901 (HBN: 115687)	**Initial:** 1000 mL	**Batch:**	ESVO/4328 (HBN: 116292)	**Percent Solid:** NA
Prepared:	10/21/2013	**Final:** 5 mL	**Analyzed:**	10/24/2013 16:03	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
2,4-D	ND	NA	0.53	1	
Picloram	ND	NA	0.53	1	

Sample ID: **13085** | Sampling Site: CCS | Collected: 10/14/2013
Lab ID: 1329042002 | Media: 1000 mL Amber Glass | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8151 by GC/MS

Preparation:	EPA 3510, Sep Funnel Herbicides	**Weight/Volume**	**Analysis:**	SW 8151A by GC/MS, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17901 (HBN: 115687)	**Initial:** 1000 mL	**Batch:**	ESVO/4328 (HBN: 116292)	**Percent Solid:** NA
Prepared:	10/21/2013	**Final:** 5 mL	**Analyzed:**	10/24/2013 16:46	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
2,4-D	ND	NA	0.53	1	
Picloram	ND	NA	0.53	1	

Sample ID: **S Wash Lk** | Sampling Site: CCS | Collected: 10/15/2013
Lab ID: 1329042003 | Media: 1000 mL Amber Glass | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8151 by GC/MS

Preparation:	EPA 3510, Sep Funnel Herbicides	**Weight/Volume**	**Analysis:**	SW 8151A by GC/MS, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17901 (HBN: 115687)	**Initial:** 1000 mL	**Batch:**	ESVO/4328 (HBN: 116292)	**Percent Solid:** NA
Prepared:	10/21/2013	**Final:** 5 mL	**Analyzed:**	10/24/2013 17:28	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
2,4-D	ND	NA	0.53	1	
Picloram	ND	NA	0.53	1	

Sample ID: **Lake Coe** | Sampling Site: CCS | Collected: 10/15/2013
Lab ID: 1329042004 | Media: 1000 mL Amber Glass | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8151 by GC/MS

Preparation:	EPA 3510, Sep Funnel Herbicides	**Weight/Volume**	**Analysis:**	SW 8151A by GC/MS, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17906 (HBN: 115807)	**Initial:** 1000 mL	**Batch:**	ESVO/4328 (HBN: 116292)	**Percent Solid:** NA
Prepared:	10/21/2013	**Final:** 5 mL	**Analyzed:**	10/24/2013 18:09	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
2,4-D	ND	NA	0.53	1	
Picloram	ND	NA	0.53	1	

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: **Lake Coe** | Sampling Site: CCS | Collected: 10/15/2013
Lab ID: 1329042004 | Media: 40 mL Amber Glass VOA | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water
Batch: EVO/4710 (HBN: 115988)
Analyzed: 10/23/2013 20:21
Instrument ID: 5975-J
Percent Solid: NA
Report Basis: Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Dichlorodifluoromethane	ND	0.30	1.0	1	U
Chloromethane	ND	0.30	1.0	1	U
Vinyl chloride	ND	0.30	1.0	1	U
Bromomethane	ND	0.30	1.0	1	U
Chloroethane	ND	0.30	1.0	1	U
Dichlorofluoromethane	ND	0.30	1.0	1	U
Trichlorofluoromethane	ND	0.30	1.0	1	U
Ethyl ether	ND	0.30	1.0	1	U
1,1-Dichloroethene	ND	0.30	1.0	1	U
Freon 113	ND	0.30	1.0	1	U
Acetone	ND	3.2	5.0	1	U
Iodomethane	ND	0.30	1.0	1	U
Carbon disulfide	ND	0.30	1.0	1	U
Methyl Acetate	ND	0.30	1.0	1	U
Allyl chloride	ND	0.30	1.0	1	U
Methylene chloride	ND	0.30	1.0	1	U
trans-1,2-Dichloroethene	ND	0.30	1.0	1	U
Methyl-t-butyl ether	ND	0.30	1.0	1	U
cis-1,2-Dichloroethene	ND	0.30	1.0	1	U
1,1-Dichloroethane	ND	0.30	1.0	1	U
2,2-Dichloropropane	ND	0.30	1.0	1	U
2-Butanone	ND	3.9	5.0	1	U
Ethyl acetate	ND	3.7	5.0	1	U
Bromochloromethane	ND	0.30	1.0	1	U
Tetrahydrofuran	ND	3.5	5.0	1	U
Chloroform	ND	0.30	1.0	1	U
1,1,1-Trichloroethane	ND	0.30	1.0	1	U
Cyclohexane	ND	0.30	1.0	1	U
1,1-Dichloropropene	ND	0.30	1.0	1	U
1,2-Dichloroethane	ND	0.30	1.0	1	U
Carbon tetrachloride	ND	0.30	1.0	1	U
Benzene	ND	0.30	1.0	1	U
Trichloroethene	ND	0.30	1.0	1	U
Methylcyclohexane	ND	0.30	1.0	1	U
1,2-Dichloropropane	ND	0.30	1.0	1	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: **Lake Coe** | Sampling Site: CCS | Collected: 10/15/2013
Lab ID: 1329042004 | Media: 40 mL Amber Glass VOA | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water
Batch: EVO/4710 (HBN: 115988)
Analyzed: 10/23/2013 20:21
Instrument ID: 5975-J
Percent Solid: NA
Report Basis: Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Dibromomethane	ND	0.30	1.0	1	U
Bromodichloromethane	ND	0.30	1.0	1	U
cis-1,3-Dichloropropene	ND	0.30	1.0	1	U
4-Methyl-2-pentanone	ND	4.1	5.0	1	U
trans-1,3-Dichloropropene	ND	0.30	1.0	1	U
Ethyl methacrylate	ND	0.32	1.0	1	U
1,1,2-Trichloroethane	ND	0.30	1.0	1	U
2-Hexanone	ND	4.0	5.0	1	U
1,2-Dibromoethane	ND	0.30	1.0	1	U
Toluene	ND	0.30	1.0	1	U
1,3-Dichloropropane	ND	0.30	1.0	1	U
Dibromochloromethane	ND	0.30	1.0	1	U
Bromoform	ND	0.30	1.0	1	U
Tetrachloroethene	ND	0.30	1.0	1	U
1-Chlorohexane	ND	0.33	1.0	1	U
Chlorobenzene	ND	0.30	1.0	1	U
1,1,1,2-Tetrachloroethane	ND	0.30	1.0	1	U
Ethylbenzene	ND	0.30	1.0	1	U
m,p-Xylene	ND	0.30	2.0	1	U
o-Xylene	ND	0.30	1.0	1	U
Styrene	ND	0.30	1.0	1	U
Isopropylbenzene	ND	0.30	1.0	1	U
1,1,2,2-Tetrachloroethane	ND	0.30	1.0	1	U
Bromobenzene	ND	0.30	1.0	1	U
1,2,3-Trichloropropane	ND	0.30	1.0	1	U
trans-1,4-Dichloro-2-butene	ND	3.8	5.0	1	U
Pentachloroethane	ND	0.33	1.0	1	U
n-Propylbenzene	ND	0.30	1.0	1	U
1,3,5-Trimethylbenzene	ND	0.30	1.0	1	U
2-Chlorotoluene	ND	0.30	1.0	1	U
4-Chlorotoluene	ND	0.30	1.0	1	U
tert-Butylbenzene	ND	0.30	1.0	1	U
1,2,4-Trimethylbenzene	ND	0.30	1.0	1	U
sec-Butylbenzene	ND	0.30	1.0	1	U
p-Isopropyltoluene	ND	0.30	1.0	1	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: **Lake Coe** | Sampling Site: CCS | Collected: 10/15/2013
Lab ID: 1329042004 | Media: 40 mL Amber Glass VOA | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water | **Instrument ID:** 5975-J
Batch: EVO/4710 (HBN: 115988) | **Percent Solid:** NA
Analyzed: 10/23/2013 20:21 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
1,3-Dichlorobenzene	ND	0.30	1.0	1	U
1,4-Dichlorobenzene	ND	0.30	1.0	1	U
n-Butylbenzene	ND	0.30	1.0	1	U
1,2-Dichlorobenzene	ND	0.30	1.0	1	U
1,2-Dibromo-3-Chloropropane	ND	0.30	1.0	1	U
1,2,4-Trichlorobenzene	ND	0.30	1.0	1	U
Hexachlorobutadiene	ND	0.30	1.0	1	U
Naphthalene	ND	0.31	1.0	1	U
1,2,3-Trichlorobenzene	ND	0.30	1.0	1	U

Analysis Method - SW 8270

Preparation: EPA 3510, Sep Funnel SVOA | **Weight/Volume**
Batch: ENVX/17903 (HBN: 115691) | **Initial:** 1000 mL
Prepared: 10/21/2013 | **Final:** 1 mL
Analysis: SW 8270D, Water | **Instrument ID:** 5975-D
Batch: ESVO/4324 (HBN: 116273) | **Percent Solid:** NA
Analyzed: 10/23/2013 16:41 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Pyridine	ND	15	25	5	U
Phenol	ND	7.5	25	5	U
Bis(2-chloroethyl)ether	ND	7.5	25	5	U
2-Chlorophenol	ND	7.5	25	5	U
1,3-Dichlorobenzene	ND	7.5	25	5	U
1,4-Dichlorobenzene	ND	7.5	25	5	U
Benzyl alcohol	ND	7.5	25	5	U
1,2-Dichlorobenzene	ND	7.5	25	5	U
2-Methylphenol	ND	7.5	25	5	U
bis(2-Chloroisopropyl)ether	ND	8.5	25	5	U
4-Methylphenol	ND	7.5	25	5	U
N-Nitrosodi-n-propyl amine	ND	7.5	25	5	U
Hexachloroethane	ND	7.5	25	5	U
Nitrobenzene	ND	7.5	25	5	U
Isophorone	ND	7.5	25	5	U
2-Nitrophenol	ND	7.8	25	5	U
2,4-Dimethylphenol	ND	7.5	25	5	U
Benzoic acid	ND	86	250	5	U
Bis(2-Chloroethoxy)methane	ND	7.5	25	5	U
2,4-Dichlorophenol	ND	7.5	25	5	U
1,2,4-Trichlorobenzene	ND	7.5	25	5	U
Naphthalene	ND	7.5	25	5	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: **Lake Coe** | Sampling Site: CCS | Collected: 10/15/2013
Lab ID: 1329042004 | Media: 1000 mL Amber Glass | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-D
Batch:	ENVX/17903 (HBN: 115691)	**Initial:** 1000 mL	**Batch:**	ESVO/4324 (HBN: 116273)	**Percent Solid:** NA
Prepared:	10/21/2013	**Final:** 1 mL	**Analyzed:**	10/23/2013 16:41	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
4-Chloroaniline	ND	7.5	25	5	U
Hexachlorobutadiene	ND	7.5	25	5	U
4-Chloro-3-methylphenol	ND	7.5	25	5	U
2-Methylnaphthalene	ND	7.5	25	5	U
Hexachlorocyclopentadiene	ND	11	25	5	U
2,4,6-Trichlorophenol	ND	7.5	25	5	U
2,4,5-Trichlorophenol	ND	7.5	25	5	U
2-Chloronaphthalene	ND	7.5	25	5	U
2-Nitroaniline	ND	7.5	25	5	U
Dimethylphthalate	ND	7.5	25	5	U
2,6-Dinitrotoluene	ND	7.5	25	5	U
Acenaphthylene	ND	7.5	25	5	U
3-Nitroaniline	ND	11	25	5	U
Acenaphthene	ND	7.5	25	5	U
2,4-Dinitrophenol	ND	140	300	5	U
4-Nitrophenol	ND	75	250	5	U
Dibenzofuran	ND	7.5	25	5	U
2,4-Dinitrotoluene	ND	7.5	25	5	U
Diethylphthalate	ND	7.5	25	5	U
4-Chlorophenyl phenyl ether	ND	7.5	25	5	U
Fluorene	ND	7.5	25	5	U
4-Nitroaniline	ND	9.9	25	5	U
4,6-Dinitro-2-methylphenol	ND	160	300	5	U
N-Nitrosodiphenylamine	ND	7.5	25	5	U
4-Bromophenyl phenyl ether	ND	7.5	25	5	U
Hexachlorobenzene	ND	7.5	25	5	U
Pentachlorophenol	ND	140	300	5	U
Phenanthrene	ND	7.5	25	5	U
Anthracene	ND	7.5	25	5	U
Carbazole	ND	7.5	25	5	U
Di-n-butylphthalate	ND	7.5	25	5	U
Fluoranthene	ND	7.5	25	5	U
Pyrene	ND	7.5	25	5	U
Butylbenzylphthalate	ND	7.5	25	5	U
3,3'-Dichlorobenzidine	ND	8.4	25	5	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: **Lake Coe** | Sampling Site: CCS | Collected: 10/15/2013
Lab ID: 1329042004 | Media: 1000 mL Amber Glass | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-D
Batch:	ENVX/17903 (HBN: 115691)	**Initial:** 1000 mL	**Batch:**	ESVO/4324 (HBN: 116273)	**Percent Solid:** NA
Prepared:	10/21/2013	**Final:** 1 mL	**Analyzed:**	10/23/2013 16:41	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Benzo(a)anthracene	ND	7.5	25	5	U
Chrysene	ND	7.5	25	5	U
Bis(2-ethylhexyl)phthalate	ND	7.5	25	5	U
Di-n-octylphthalate	ND	7.5	25	5	U
Benzo(b)fluoranthene	ND	7.5	25	5	U
Benzo(k)fluoranthene	ND	7.5	25	5	U
Benzo(a)pyrene	ND	7.5	25	5	U
Indeno(1,2,3-c,d)pyrene	ND	7.5	25	5	U
Dibenz(a,h)anthracene	ND	7.5	25	5	U
Benzo(g,h,i)perylene	ND	7.5	25	5	U

Analysis Method - SW 8330B

Preparation:	SW 8330B, Water Prep	**Weight/Volume**	**Analysis:**	SW 8330B, Water	**Instrument ID:** HPLC14
Batch:	ENVX/17907 (HBN: 115812)	**Initial:** 1000 mL	**Batch:**	ELC/1193 (HBN: 116014)	**Percent Solid:** NA
Prepared:	10/22/2013	**Final:** 5 mL	**Analyzed:**	10/24/2013 13:21	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Nitroglycerin	ND	0.41	0.97	1	U
PETN	ND	0.51	0.97	1	U
HMX	ND	0.10	0.26	1	U
RDX	ND	0.097	0.26	1	U
1,3,5-Trinitrobenzene	ND	0.36	0.65	1	U
1,3-Dinitrobenzene	ND	0.34	0.65	1	U
Nitrobenzene	ND	0.091	0.26	1	U
TETRYL	ND	0.15	0.26	1	U
2,4,6-Trinitrotoluene	ND	0.11	0.26	1	U
2-Amino-4,6-dinitrotoluene	ND	0.13	0.26	1	U
4-Amino-2,6-dinitrotoluene	ND	0.13	0.26	1	U
2,4-Dinitrotoluene	ND	0.39	0.65	1	U
2,6-Dinitrotoluene	ND	0.092	0.26	1	U
2-Nitrotoluene	ND	0.19	0.52	1	U
4-Nitrotoluene	ND	0.18	0.52	1	U
3-Nitrotoluene	ND	0.20	0.52	1	U

ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: **SPR-16** | Sampling Site: CCS | Collected: 10/14/2013
Lab ID: 1329042005 | Media: 1000 mL Amber Glass | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - ENV by GC-MS Specialty

Preparation: ENV by GC-MS Spec. Prep, Water	**Weight/Volume**	**Analysis:** ENV by GC-MS Specialty, Water	**Instrument ID:** 5972-Q
Batch: ISVO/2095 (HBN: 115999)	**Initial:** 1000 mL	**Batch:** ISVO/2096 (HBN: 116003)	**Percent Solid:** NA
Prepared: 10/18/2013	**Final:** 1 mL	**Analyzed:** 10/24/2013 00:00	**Report Basis:** Wet

Analyte	ug/L	RL (ug/L)	Dilution	Qual.
Cyfluthrin	ND	1.0	1	
Permethrin	ND	1.0	1	

Analysis Method - ENV by LC/MS

Preparation: Not Applicable		**Analysis:** ENV by LC/MS, Water	**Instrument ID:** LCMS03
		Batch: ELMS/1431 (HBN: 116117)	**Percent Solid:** NA
		Analyzed: 10/28/2013 00:00	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Glyphosate	ND	NA	50	1	

Analysis Method - SW 8015 DRO

Preparation: EPA 3510, Sep Funnel DRO Ext.	**Weight/Volume**	**Analysis:** SW 8015B DRO, Water	**Instrument ID:** GCE22
Batch: ENVX/17902 (HBN: 115689)	**Initial:** 1000 mL	**Batch:** EGC/4687 (HBN: 116076)	**Percent Solid:** NA
Prepared: 10/18/2013	**Final:** 1 mL	**Analyzed:** 10/30/2013 00:00	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Diesel Range Organics	33	3.2	100	1	J

Analysis Method - SW 8151 by GC/MS

Preparation: EPA 3510, Sep Funnel Herbicides	**Weight/Volume**	**Analysis:** SW 8151A by GC/MS, Water	**Instrument ID:** 5975-H
Batch: ENVX/17901 (HBN: 115687)	**Initial:** 1000 mL	**Batch:** ESVO/4328 (HBN: 116292)	**Percent Solid:** NA
Prepared: 10/21/2013	**Final:** 5 mL	**Analyzed:** 10/24/2013 20:14	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
2,4-D	ND	NA	0.53	1	
Picloram	ND	NA	0.53	1	

Sample ID: **SPR-16B** | Sampling Site: CCS | Collected: 10/14/2013
Lab ID: 1329042006 | Media: 1000 mL Amber Glass | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - ENV by GC-MS Specialty

Preparation: ENV by GC-MS Spec. Prep, Water	**Weight/Volume**	**Analysis:** ENV by GC-MS Specialty, Water	**Instrument ID:** 5972-Q
Batch: ISVO/2095 (HBN: 115999)	**Initial:** 1000 mL	**Batch:** ISVO/2096 (HBN: 116003)	**Percent Solid:** NA
Prepared: 10/18/2013	**Final:** 1 mL	**Analyzed:** 10/24/2013 00:00	**Report Basis:** Wet

Analyte	ug/L	RL (ug/L)	Dilution	Qual.
Cyfluthrin	ND	1.0	1	
Permethrin	ND	1.0	1	

Analysis Method - ENV by LC/MS

Preparation: Not Applicable		**Analysis:** ENV by LC/MS, Water	**Instrument ID:** LCMS03
		Batch: ELMS/1431 (HBN: 116117)	**Percent Solid:** NA
		Analyzed: 10/28/2013 00:00	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Glyphosate	ND	NA	50	1	

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ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: **SPR-16B** | Sampling Site: CCS | Collected: 10/14/2013
Lab ID: 1329042006 | Media: 1000 mL Amber Glass | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8015 DRO

Preparation: EPA 3510, Sep Funnel DRO Ext.	**Weight/Volume**	**Analysis:** SW 8015B DRO, Water	**Instrument ID:** GCE22
Batch: ENVX/17902 (HBN: 115689)	**Initial:** 1000 mL	**Batch:** EGC/4687 (HBN: 116076)	**Percent Solid:** NA
Prepared: 10/18/2013	**Final:** 1 mL	**Analyzed:** 10/30/2013 00:00	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Diesel Range Organics	39	3.2	100	1	J

Analysis Method - SW 8151 by GC/MS

Preparation: EPA 3510, Sep Funnel Herbicides	**Weight/Volume**	**Analysis:** SW 8151A by GC/MS, Water	**Instrument ID:** 5975-H
Batch: ENVX/17901 (HBN: 115687)	**Initial:** 1000 mL	**Batch:** ESVO/4328 (HBN: 116292)	**Percent Solid:** NA
Prepared: 10/21/2013	**Final:** 5 mL	**Analyzed:** 10/24/2013 20:56	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
2,4-D	ND	NA	0.53	1	
Picloram	ND	NA	0.53	1	

Sample ID: **13103** | Sampling Site: NA | Collected: 10/15/2013
Lab ID: 1329042007 | Media: 1000 mL Amber Glass | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8015 DRO

Preparation: EPA 3510, Sep Funnel DRO Ext.	**Weight/Volume**	**Analysis:** SW 8015B DRO, Water	**Instrument ID:** GCE22
Batch: ENVX/17902 (HBN: 115689)	**Initial:** 1000 mL	**Batch:** EGC/4687 (HBN: 116076)	**Percent Solid:** NA
Prepared: 10/18/2013	**Final:** 1 mL	**Analyzed:** 10/30/2013 00:00	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Diesel Range Organics	60	3.2	100	1	J

Analysis Method - SW 8260

Preparation: Not Applicable	**Analysis:** SW 8260C GRO, Water	**Instrument ID:** 5975-J
	Batch: EVO/4709 (HBN: 115987)	**Percent Solid:** NA
	Analyzed: 10/23/2013 20:46	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Gasoline Range Organics	ND	15	50	1	U

Analysis Method - SW 8260

Preparation: Not Applicable	**Analysis:** SW 8260C, Water	**Instrument ID:** 5975-J
	Batch: EVO/4710 (HBN: 115988)	**Percent Solid:** NA
	Analyzed: 10/23/2013 20:46	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Dichlorodifluoromethane	ND	0.30	1.0	1	U
Chloromethane	ND	0.30	1.0	1	U
Vinyl chloride	0.45	0.30	1.0	1	J
Bromomethane	ND	0.30	1.0	1	U
Chloroethane	ND	0.30	1.0	1	U
Dichlorofluoromethane	ND	0.30	1.0	1	U
Trichlorofluoromethane	ND	0.30	1.0	1	U
Ethyl ether	ND	0.30	1.0	1	U
1,1-Dichloroethene	ND	0.30	1.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13103 | Sampling Site: NA | Collected: 10/15/2013
Lab ID: 1329042007 | Media: 40 mL Amber Glass VOA | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water
Batch: EVO/4710 (HBN: 115988)
Analyzed: 10/23/2013 20:46
Instrument ID: 5975-J
Percent Solid: NA
Report Basis: Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Freon 113	ND	0.30	1.0	1	U
Acetone	ND	3.2	5.0	1	U
Iodomethane	ND	0.30	1.0	1	U
Carbon disulfide	**2.5**	0.30	1.0	1	
Methyl Acetate	ND	0.30	1.0	1	U
Allyl chloride	ND	0.30	1.0	1	U
Methylene chloride	ND	0.30	1.0	1	U
trans-1,2-Dichloroethene	ND	0.30	1.0	1	U
Methyl-t-butyl ether	ND	0.30	1.0	1	U
cis-1,2-Dichloroethene	ND	0.30	1.0	1	U
1,1-Dichloroethane	ND	0.30	1.0	1	U
2,2-Dichloropropane	ND	0.30	1.0	1	U
2-Butanone	ND	3.9	5.0	1	U
Ethyl acetate	ND	3.7	5.0	1	U
Bromochloromethane	ND	0.30	1.0	1	U
Tetrahydrofuran	ND	3.5	5.0	1	U
Chloroform	ND	0.30	1.0	1	U
1,1,1-Trichloroethane	ND	0.30	1.0	1	U
Cyclohexane	ND	0.30	1.0	1	U
1,1-Dichloropropene	ND	0.30	1.0	1	U
1,2-Dichloroethane	ND	0.30	1.0	1	U
Carbon tetrachloride	ND	0.30	1.0	1	U
Benzene	ND	0.30	1.0	1	U
Trichloroethene	ND	0.30	1.0	1	U
Methylcyclohexane	ND	0.30	1.0	1	U
1,2-Dichloropropane	ND	0.30	1.0	1	U
Dibromomethane	ND	0.30	1.0	1	U
Bromodichloromethane	ND	0.30	1.0	1	U
cis-1,3-Dichloropropene	ND	0.30	1.0	1	U
4-Methyl-2-pentanone	ND	4.1	5.0	1	U
trans-1,3-Dichloropropene	ND	0.30	1.0	1	U
Ethyl methacrylate	ND	0.32	1.0	1	U
1,1,2-Trichloroethane	ND	0.30	1.0	1	U
2-Hexanone	ND	4.0	5.0	1	U
1,2-Dibromoethane	ND	0.30	1.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13103 | Sampling Site: NA | Collected: 10/15/2013
Lab ID: 1329042007 | Media: 40 mL Amber Glass VOA | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water
Batch: EVO/4710 (HBN: 115988)
Analyzed: 10/23/2013 20:46
Instrument ID: 5975-J
Percent Solid: NA
Report Basis: Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Toluene	ND	0.30	1.0	1	U
1,3-Dichloropropane	ND	0.30	1.0	1	U
Dibromochloromethane	ND	0.30	1.0	1	U
Bromoform	ND	0.30	1.0	1	U
Tetrachloroethene	ND	0.30	1.0	1	U
1-Chlorohexane	ND	0.33	1.0	1	U
Chlorobenzene	ND	0.30	1.0	1	U
1,1,1,2-Tetrachloroethane	ND	0.30	1.0	1	U
Ethylbenzene	ND	0.30	1.0	1	U
m,p-Xylene	ND	0.30	2.0	1	U
o-Xylene	ND	0.30	1.0	1	U
Styrene	ND	0.30	1.0	1	U
Isopropylbenzene	ND	0.30	1.0	1	U
1,1,2,2-Tetrachloroethane	ND	0.30	1.0	1	U
Bromobenzene	ND	0.30	1.0	1	U
1,2,3-Trichloropropane	ND	0.30	1.0	1	U
trans-1,4-Dichloro-2-butene	ND	3.8	5.0	1	U
Pentachloroethane	ND	0.33	1.0	1	U
n-Propylbenzene	ND	0.30	1.0	1	U
1,3,5-Trimethylbenzene	ND	0.30	1.0	1	U
2-Chlorotoluene	ND	0.30	1.0	1	U
4-Chlorotoluene	ND	0.30	1.0	1	U
tert-Butylbenzene	ND	0.30	1.0	1	U
1,2,4-Trimethylbenzene	ND	0.30	1.0	1	U
sec-Butylbenzene	ND	0.30	1.0	1	U
p-Isopropyltoluene	ND	0.30	1.0	1	U
1,3-Dichlorobenzene	ND	0.30	1.0	1	U
1,4-Dichlorobenzene	ND	0.30	1.0	1	U
n-Butylbenzene	ND	0.30	1.0	1	U
1,2-Dichlorobenzene	ND	0.30	1.0	1	U
1,2-Dibromo-3-Chloropropane	ND	0.30	1.0	1	U
1,2,4-Trichlorobenzene	ND	0.30	1.0	1	U
Hexachlorobutadiene	ND	0.30	1.0	1	U
Naphthalene	ND	0.31	1.0	1	U
1,2,3-Trichlorobenzene	ND	0.30	1.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13103 | Sampling Site: NA | Collected: 10/15/2013
Lab ID: 1329042007 | Media: 1000 mL Amber Glass | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-D
Batch:	ENVX/17903 (HBN: 115691)	**Initial:** 1000 mL	**Batch:**	ESVO/4324 (HBN: 116273)	**Percent Solid:** NA
Prepared:	10/21/2013	**Final:** 1 mL	**Analyzed:**	10/23/2013 13:08	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Pyridine	ND	3.1	5.0	1	U
Phenol	ND	1.5	5.0	1	U
Bis(2-chloroethyl)ether	ND	1.5	5.0	1	U
2-Chlorophenol	ND	1.5	5.0	1	U
1,3-Dichlorobenzene	ND	1.5	5.0	1	U
1,4-Dichlorobenzene	ND	1.5	5.0	1	U
Benzyl alcohol	ND	1.5	5.0	1	U
1,2-Dichlorobenzene	ND	1.5	5.0	1	U
2-Methylphenol	ND	1.5	5.0	1	U
bis(2-Chloroisopropyl)ether	ND	1.7	5.0	1	U
4-Methylphenol	ND	1.5	5.0	1	U
N-Nitrosodi-n-propyl amine	ND	1.5	5.0	1	U
Hexachloroethane	ND	1.5	5.0	1	U
Nitrobenzene	ND	1.5	5.0	1	U
Isophorone	ND	1.5	5.0	1	U
2-Nitrophenol	ND	1.6	5.0	1	U
2,4-Dimethylphenol	ND	1.5	5.0	1	U
Benzoic acid	ND	17	50	1	U
Bis(2-Chloroethoxy)methane	ND	1.5	5.0	1	U
2,4-Dichlorophenol	ND	1.5	5.0	1	U
1,2,4-Trichlorobenzene	ND	1.5	5.0	1	U
Naphthalene	ND	1.5	5.0	1	U
4-Chloroaniline	ND	1.5	5.0	1	U
Hexachlorobutadiene	ND	1.5	5.0	1	U
4-Chloro-3-methylphenol	ND	1.5	5.0	1	U
2-Methylnaphthalene	ND	1.5	5.0	1	U
Hexachlorocyclopentadiene	ND	2.2	5.0	1	U
2,4,6-Trichlorophenol	ND	1.5	5.0	1	U
2,4,5-Trichlorophenol	ND	1.5	5.0	1	U
2-Chloronaphthalene	ND	1.5	5.0	1	U
2-Nitroaniline	ND	1.5	5.0	1	U
Dimethylphthalate	ND	1.5	5.0	1	U
2,6-Dinitrotoluene	ND	1.5	5.0	1	U
Acenaphthylene	ND	1.5	5.0	1	U
3-Nitroaniline	ND	2.1	5.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13103 | Sampling Site: NA | Collected: 10/15/2013
Lab ID: 1329042007 | Media: 1000 mL Amber Glass | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-D
Batch:	ENVX/17903 (HBN: 115691)	**Initial:** 1000 mL	**Batch:**	ESVO/4324 (HBN: 116273)	**Percent Solid:** NA
Prepared:	10/21/2013	**Final:** 1 mL	**Analyzed:**	10/23/2013 13:08	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Acenaphthene	ND	1.5	5.0	1	U
2,4-Dinitrophenol	ND	27	60	1	U
4-Nitrophenol	ND	15	50	1	U
Dibenzofuran	ND	1.5	5.0	1	U
2,4-Dinitrotoluene	ND	1.5	5.0	1	U
Diethylphthalate	ND	1.5	5.0	1	U
4-Chlorophenyl phenyl ether	ND	1.5	5.0	1	U
Fluorene	ND	1.5	5.0	1	U
4-Nitroaniline	ND	2.0	5.0	1	U
4,6-Dinitro-2-methylphenol	ND	32	60	1	U
N-Nitrosodiphenylamine	ND	1.5	5.0	1	U
4-Bromophenyl phenyl ether	ND	1.5	5.0	1	U
Hexachlorobenzene	ND	1.5	5.0	1	U
Pentachlorophenol	ND	29	60	1	U
Phenanthrene	ND	1.5	5.0	1	U
Anthracene	ND	1.5	5.0	1	U
Carbazole	ND	1.5	5.0	1	U
Di-n-butylphthalate	ND	1.5	5.0	1	U
Fluoranthene	ND	1.5	5.0	1	U
Pyrene	ND	1.5	5.0	1	U
Butylbenzylphthalate	**11**	1.5	5.0	1	
3,3'-Dichlorobenzidine	ND	1.7	5.0	1	U
Benzo(a)anthracene	ND	1.5	5.0	1	U
Chrysene	ND	1.5	5.0	1	U
Bis(2-ethylhexyl)phthalate	3.3	1.5	5.0	1	J
Di-n-octylphthalate	ND	1.5	5.0	1	U
Benzo(b)fluoranthene	ND	1.5	5.0	1	U
Benzo(k)fluoranthene	ND	1.5	5.0	1	U
Benzo(a)pyrene	ND	1.5	5.0	1	U
Indeno(1,2,3-c,d)pyrene	ND	1.5	5.0	1	U
Dibenz(a,h)anthracene	ND	1.5	5.0	1	U
Benzo(g,h,i)perylene	ND	1.5	5.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: **13103** | Sampling Site: NA | Collected: 10/15/2013
Lab ID: 1329042007 | Media: 1000 mL Amber Glass | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8330B

Preparation:	SW 8330B, Water Prep	**Weight/Volume**	**Analysis:**	SW 8330B, Water	**Instrument ID:** HPLC14
Batch:	ENVX/17907 (HBN: 115812)	**Initial:** 1000 mL	**Batch:**	ELC/1193 (HBN: 116014)	**Percent Solid:** NA
Prepared:	10/22/2013	**Final:** 5 mL	**Analyzed:**	10/24/2013 14:13	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Nitroglycerin	ND	0.41	0.97	1	U
PETN	ND	0.51	0.97	1	U
HMX	ND	0.10	0.26	1	U
RDX	ND	0.097	0.26	1	U
1,3,5-Trinitrobenzene	ND	0.36	0.65	1	U
1,3-Dinitrobenzene	ND	0.34	0.65	1	U
Nitrobenzene	ND	0.091	0.26	1	U
TETRYL	ND	0.15	0.26	1	U
2,4,6-Trinitrotoluene	ND	0.11	0.26	1	U
2-Amino-4,6-dinitrotoluene	ND	0.13	0.26	1	U
4-Amino-2,6-dinitrotoluene	ND	0.13	0.26	1	U
2,4-Dinitrotoluene	ND	0.39	0.65	1	U
2,6-Dinitrotoluene	ND	0.092	0.26	1	U
2-Nitrotoluene	ND	0.19	0.52	1	U
4-Nitrotoluene	ND	0.18	0.52	1	U
3-Nitrotoluene	ND	0.20	0.52	1	U

Sample ID: **13104** | Sampling Site: NA | Collected: 10/15/2013
Lab ID: 1329042008 | Media: 1000 mL Amber Glass | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8015 DRO

Preparation:	EPA 3510, Sep Funnel DRO Ext.	**Weight/Volume**	**Analysis:**	SW 8015B DRO, Water	**Instrument ID:** GCE22
Batch:	ENVX/17902 (HBN: 115689)	**Initial:** 1000 mL	**Batch:**	EGC/4687 (HBN: 116076)	**Percent Solid:** NA
Prepared:	10/18/2013	**Final:** 1 mL	**Analyzed:**	10/30/2013 00:00	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Diesel Range Organics	ND	3.2	100	1	U

Analysis Method - SW 8151 by GC/MS

Preparation:	EPA 3510, Sep Funnel Herbicides	**Weight/Volume**	**Analysis:**	SW 8151A by GC/MS, Water	**Instrument ID:** 5975-H
Batch:	ENVX/17901 (HBN: 115687)	**Initial:** 1000 mL	**Batch:**	ESVO/4328 (HBN: 116292)	**Percent Solid:** NA
Prepared:	10/21/2013	**Final:** 5 mL	**Analyzed:**	10/24/2013 21:38	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
2,4-D	ND	NA	0.53	1	
Picloram	ND	NA	0.53	1	

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ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13104 | Sampling Site: NA | Collected: 10/15/2013
Lab ID: 1329042008 | Media: 40 mL Amber Glass VOA | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable | **Analysis:** SW 8260C GRO, Water | **Instrument ID:** 5975-J
Batch: EVO/4709 (HBN: 115987) | **Percent Solid:** NA
Analyzed: 10/23/2013 21:17 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Gasoline Range Organics	ND	15	50	1	U

Analysis Method - SW 8260

Preparation: Not Applicable | **Analysis:** SW 8260C, Water | **Instrument ID:** 5975-J
Batch: EVO/4710 (HBN: 115988) | **Percent Solid:** NA
Analyzed: 10/23/2013 21:17 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Dichlorodifluoromethane	ND	0.30	1.0	1	U
Chloromethane	ND	0.30	1.0	1	U
Vinyl chloride	ND	0.30	1.0	1	U
Bromomethane	ND	0.30	1.0	1	U
Chloroethane	ND	0.30	1.0	1	U
Dichlorofluoromethane	ND	0.30	1.0	1	U
Trichlorofluoromethane	ND	0.30	1.0	1	U
Ethyl ether	ND	0.30	1.0	1	U
1,1-Dichloroethene	ND	0.30	1.0	1	U
Freon 113	ND	0.30	1.0	1	U
Acetone	ND	3.2	5.0	1	U
Iodomethane	ND	0.30	1.0	1	U
Carbon disulfide	0.31	0.30	1.0	1	J
Methyl Acetate	ND	0.30	1.0	1	U
Allyl chloride	ND	0.30	1.0	1	U
Methylene chloride	ND	0.30	1.0	1	U
trans-1,2-Dichloroethene	ND	0.30	1.0	1	U
Methyl-t-butyl ether	ND	0.30	1.0	1	U
cis-1,2-Dichloroethene	ND	0.30	1.0	1	U
1,1-Dichloroethane	ND	0.30	1.0	1	U
2,2-Dichloropropane	ND	0.30	1.0	1	U
2-Butanone	ND	3.9	5.0	1	U
Ethyl acetate	ND	3.7	5.0	1	U
Bromochloromethane	ND	0.30	1.0	1	U
Tetrahydrofuran	ND	3.5	5.0	1	U
Chloroform	ND	0.30	1.0	1	U
1,1,1-Trichloroethane	ND	0.30	1.0	1	U
Cyclohexane	ND	0.30	1.0	1	U
1,1-Dichloropropene	ND	0.30	1.0	1	U
1,2-Dichloroethane	ND	0.30	1.0	1	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13104 | Sampling Site: NA | Collected: 10/15/2013
Lab ID: 1329042008 | Media: 40 mL Amber Glass VOA | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water
Batch: EVO/4710 (HBN: 115988)
Analyzed: 10/23/2013 21:17
Instrument ID: 5975-J
Percent Solid: NA
Report Basis: Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Carbon tetrachloride	ND	0.30	1.0	1	U
Benzene	ND	0.30	1.0	1	U
Trichloroethene	ND	0.30	1.0	1	U
Methylcyclohexane	ND	0.30	1.0	1	U
1,2-Dichloropropane	ND	0.30	1.0	1	U
Dibromomethane	ND	0.30	1.0	1	U
Bromodichloromethane	ND	0.30	1.0	1	U
cis-1,3-Dichloropropene	ND	0.30	1.0	1	U
4-Methyl-2-pentanone	ND	4.1	5.0	1	U
trans-1,3-Dichloropropene	ND	0.30	1.0	1	U
Ethyl methacrylate	ND	0.32	1.0	1	U
1,1,2-Trichloroethane	ND	0.30	1.0	1	U
2-Hexanone	ND	4.0	5.0	1	U
1,2-Dibromoethane	ND	0.30	1.0	1	U
Toluene	ND	0.30	1.0	1	U
1,3-Dichloropropane	ND	0.30	1.0	1	U
Dibromochloromethane	ND	0.30	1.0	1	U
Bromoform	ND	0.30	1.0	1	U
Tetrachloroethene	ND	0.30	1.0	1	U
1-Chlorohexane	ND	0.33	1.0	1	U
Chlorobenzene	ND	0.30	1.0	1	U
1,1,1,2-Tetrachloroethane	ND	0.30	1.0	1	U
Ethylbenzene	ND	0.30	1.0	1	U
m,p-Xylene	ND	0.30	2.0	1	U
o-Xylene	ND	0.30	1.0	1	U
Styrene	ND	0.30	1.0	1	U
Isopropylbenzene	ND	0.30	1.0	1	U
1,1,2,2-Tetrachloroethane	ND	0.30	1.0	1	U
Bromobenzene	ND	0.30	1.0	1	U
1,2,3-Trichloropropane	ND	0.30	1.0	1	U
trans-1,4-Dichloro-2-butene	ND	3.8	5.0	1	U
Pentachloroethane	ND	0.33	1.0	1	U
n-Propylbenzene	ND	0.30	1.0	1	U
1,3,5-Trimethylbenzene	ND	0.30	1.0	1	U
2-Chlorotoluene	ND	0.30	1.0	1	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13104 | Sampling Site: NA | Collected: 10/15/2013
Lab ID: 1329042008 | Media: 40 mL Amber Glass VOA | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water | **Instrument ID:** 5975-J
Batch: EVO/4710 (HBN: 115988) | **Percent Solid:** NA
Analyzed: 10/23/2013 21:17 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
4-Chlorotoluene	ND	0.30	1.0	1	U
tert-Butylbenzene	ND	0.30	1.0	1	U
1,2,4-Trimethylbenzene	ND	0.30	1.0	1	U
sec-Butylbenzene	ND	0.30	1.0	1	U
p-Isopropyltoluene	ND	0.30	1.0	1	U
1,3-Dichlorobenzene	ND	0.30	1.0	1	U
1,4-Dichlorobenzene	ND	0.30	1.0	1	U
n-Butylbenzene	ND	0.30	1.0	1	U
1,2-Dichlorobenzene	ND	0.30	1.0	1	U
1,2-Dibromo-3-Chloropropane	ND	0.30	1.0	1	U
1,2,4-Trichlorobenzene	ND	0.30	1.0	1	U
Hexachlorobutadiene	ND	0.30	1.0	1	U
Naphthalene	ND	0.31	1.0	1	U
1,2,3-Trichlorobenzene	ND	0.30	1.0	1	U

Analysis Method - SW 8270

Preparation: EPA 3510, Sep Funnel SVOA | **Weight/Volume**
Batch: ENVX/17903 (HBN: 115691) | **Initial:** 1000 mL
Prepared: 10/21/2013 | **Final:** 1 mL
Analysis: SW 8270D, Water | **Instrument ID:** 5975-D
Batch: ESVO/4324 (HBN: 116273) | **Percent Solid:** NA
Analyzed: 10/23/2013 13:38 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Pyridine	ND	3.1	5.0	1	U
Phenol	ND	1.5	5.0	1	U
Bis(2-chloroethyl)ether	ND	1.5	5.0	1	U
2-Chlorophenol	ND	1.5	5.0	1	U
1,3-Dichlorobenzene	ND	1.5	5.0	1	U
1,4-Dichlorobenzene	ND	1.5	5.0	1	U
Benzyl alcohol	ND	1.5	5.0	1	U
1,2-Dichlorobenzene	ND	1.5	5.0	1	U
2-Methylphenol	ND	1.5	5.0	1	U
bis(2-Chloroisopropyl)ether	ND	1.7	5.0	1	U
4-Methylphenol	ND	1.5	5.0	1	U
N-Nitrosodi-n-propyl amine	ND	1.5	5.0	1	U
Hexachloroethane	ND	1.5	5.0	1	U
Nitrobenzene	ND	1.5	5.0	1	U
Isophorone	ND	1.5	5.0	1	U
2-Nitrophenol	ND	1.6	5.0	1	U
2,4-Dimethylphenol	ND	1.5	5.0	1	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13104 | Sampling Site: NA | Collected: 10/15/2013
Lab ID: 1329042008 | Media: 1000 mL Amber Glass | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-D
Batch:	ENVX/17903 (HBN: 115691)	**Initial:** 1000 mL	**Batch:**	ESVO/4324 (HBN: 116273)	**Percent Solid:** NA
Prepared:	10/21/2013	**Final:** 1 mL	**Analyzed:**	10/23/2013 13:38	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Benzoic acid	ND	17	50	1	U
Bis(2-Chloroethoxy)methane	ND	1.5	5.0	1	U
2,4-Dichlorophenol	ND	1.5	5.0	1	U
1,2,4-Trichlorobenzene	ND	1.5	5.0	1	U
Naphthalene	ND	1.5	5.0	1	U
4-Chloroaniline	ND	1.5	5.0	1	U
Hexachlorobutadiene	ND	1.5	5.0	1	U
4-Chloro-3-methylphenol	ND	1.5	5.0	1	U
2-Methylnaphthalene	ND	1.5	5.0	1	U
Hexachlorocyclopentadiene	ND	2.2	5.0	1	U
2,4,6-Trichlorophenol	ND	1.5	5.0	1	U
2,4,5-Trichlorophenol	ND	1.5	5.0	1	U
2-Chloronaphthalene	ND	1.5	5.0	1	U
2-Nitroaniline	ND	1.5	5.0	1	U
Dimethylphthalate	ND	1.5	5.0	1	U
2,6-Dinitrotoluene	ND	1.5	5.0	1	U
Acenaphthylene	ND	1.5	5.0	1	U
3-Nitroaniline	ND	2.1	5.0	1	U
Acenaphthene	ND	1.5	5.0	1	U
2,4-Dinitrophenol	ND	27	60	1	U
4-Nitrophenol	ND	15	50	1	U
Dibenzofuran	ND	1.5	5.0	1	U
2,4-Dinitrotoluene	ND	1.5	5.0	1	U
Diethylphthalate	ND	1.5	5.0	1	U
4-Chlorophenyl phenyl ether	ND	1.5	5.0	1	U
Fluorene	ND	1.5	5.0	1	U
4-Nitroaniline	ND	2.0	5.0	1	U
4,6-Dinitro-2-methylphenol	ND	32	60	1	U
N-Nitrosodiphenylamine	ND	1.5	5.0	1	U
4-Bromophenyl phenyl ether	ND	1.5	5.0	1	U
Hexachlorobenzene	ND	1.5	5.0	1	U
Pentachlorophenol	ND	29	60	1	U
Phenanthrene	ND	1.5	5.0	1	U
Anthracene	ND	1.5	5.0	1	U
Carbazole	ND	1.5	5.0	1	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13104 | Sampling Site: NA | Collected: 10/15/2013
Lab ID: 1329042008 | Media: 1000 mL Amber Glass | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-D
Batch:	ENVX/17903 (HBN: 115691)	**Initial:** 1000 mL	**Batch:**	ESVO/4324 (HBN: 116273)	**Percent Solid:** NA
Prepared:	10/21/2013	**Final:** 1 mL	**Analyzed:**	10/23/2013 13:38	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Di-n-butylphthalate	ND	1.5	5.0	1	U
Fluoranthene	ND	1.5	5.0	1	U
Pyrene	ND	1.5	5.0	1	U
Butylbenzylphthalate	1.9	1.5	5.0	1	J
3,3'-Dichlorobenzidine	ND	1.7	5.0	1	U
Benzo(a)anthracene	ND	1.5	5.0	1	U
Chrysene	ND	1.5	5.0	1	U
Bis(2-ethylhexyl)phthalate	ND	1.5	5.0	1	U
Di-n-octylphthalate	ND	1.5	5.0	1	U
Benzo(b)fluoranthene	ND	1.5	5.0	1	U
Benzo(k)fluoranthene	ND	1.5	5.0	1	U
Benzo(a)pyrene	ND	1.5	5.0	1	U
Indeno(1,2,3-c,d)pyrene	ND	1.5	5.0	1	U
Dibenz(a,h)anthracene	ND	1.5	5.0	1	U
Benzo(g,h,i)perylene	ND	1.5	5.0	1	U

Analysis Method - SW 8330B

Preparation:	SW 8330B, Water Prep	**Weight/Volume**	**Analysis:**	SW 8330B, Water	**Instrument ID:** HPLC14
Batch:	ENVX/17907 (HBN: 115812)	**Initial:** 1000 mL	**Batch:**	ELC/1193 (HBN: 116014)	**Percent Solid:** NA
Prepared:	10/22/2013	**Final:** 5 mL	**Analyzed:**	10/24/2013 15:04	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Nitroglycerin	ND	0.41	0.97	1	U
PETN	ND	0.51	0.97	1	U
HMX	ND	0.10	0.26	1	U
RDX	ND	0.097	0.26	1	U
1,3,5-Trinitrobenzene	ND	0.36	0.65	1	U
1,3-Dinitrobenzene	ND	0.34	0.65	1	U
Nitrobenzene	ND	0.091	0.26	1	U
TETRYL	ND	0.15	0.26	1	U
2,4,6-Trinitrotoluene	ND	0.11	0.26	1	U
2-Amino-4,6-dinitrotoluene	ND	0.13	0.26	1	U
4-Amino-2,6-dinitrotoluene	ND	0.13	0.26	1	U
2,4-Dinitrotoluene	ND	0.39	0.65	1	U
2,6-Dinitrotoluene	ND	0.092	0.26	1	U
2-Nitrotoluene	ND	0.19	0.52	1	U
4-Nitrotoluene	ND	0.18	0.52	1	U
3-Nitrotoluene	ND	0.20	0.52	1	U

ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13105 | Sampling Site: NA | Collected: 10/15/2013
Lab ID: 1329042009 | Media: Liquid | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - ENV by LC/MS

Preparation: Not Applicable
Analysis: ENV by LC/MS, Water | **Instrument ID:** LCMS03
Batch: ELMS/1431 (HBN: 116117) | **Percent Solid:** NA
Analyzed: 10/28/2013 00:00 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Glyphosate	ND	NA	50	1	

Analysis Method - SW 8151 by GC/MS

Preparation: EPA 3510, Sep Funnel Herbicides | **Weight/Volume**
Batch: ENVX/17901 (HBN: 115687) | **Initial:** 1000 mL
Prepared: 10/21/2013 | **Final:** 5 mL
Analysis: SW 8151A by GC/MS, Water | **Instrument ID:** 5975-H
Batch: ESVO/4328 (HBN: 116292) | **Percent Solid:** NA
Analyzed: 10/24/2013 22:20 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
2,4-D	ND	NA	0.53	1	
Picloram	ND	NA	0.53	1	

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water | **Instrument ID:** 5975-J
Batch: EVO/4710 (HBN: 115988) | **Percent Solid:** NA
Analyzed: 10/23/2013 21:41 | **Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Dichlorodifluoromethane	ND	0.30	1.0	1	U
Chloromethane	ND	0.30	1.0	1	U
Vinyl chloride	ND	0.30	1.0	1	U
Bromomethane	ND	0.30	1.0	1	U
Chloroethane	ND	0.30	1.0	1	U
Dichlorofluoromethane	ND	0.30	1.0	1	U
Trichlorofluoromethane	ND	0.30	1.0	1	U
Ethyl ether	ND	0.30	1.0	1	U
1,1-Dichloroethene	ND	0.30	1.0	1	U
Freon 113	ND	0.30	1.0	1	U
Acetone	ND	3.2	5.0	1	U
Iodomethane	ND	0.30	1.0	1	U
Carbon disulfide	ND	0.30	1.0	1	U
Methyl Acetate	ND	0.30	1.0	1	U
Allyl chloride	ND	0.30	1.0	1	U
Methylene chloride	ND	0.30	1.0	1	U
trans-1,2-Dichloroethene	ND	0.30	1.0	1	U
Methyl-t-butyl ether	ND	0.30	1.0	1	U
cis-1,2-Dichloroethene	ND	0.30	1.0	1	U
1,1-Dichloroethane	ND	0.30	1.0	1	U
2,2-Dichloropropane	ND	0.30	1.0	1	U
2-Butanone	ND	3.9	5.0	1	U
Ethyl acetate	ND	3.7	5.0	1	U
Bromochloromethane	ND	0.30	1.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13105 | Sampling Site: NA | Collected: 10/15/2013
Lab ID: 1329042009 | Media: 40 mL Amber Glass VOA | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water
Batch: EVO/4710 (HBN: 115988)
Analyzed: 10/23/2013 21:41
Instrument ID: 5975-J
Percent Solid: NA
Report Basis: Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Tetrahydrofuran	ND	3.5	5.0	1	U
Chloroform	ND	0.30	1.0	1	U
1,1,1-Trichloroethane	ND	0.30	1.0	1	U
Cyclohexane	ND	0.30	1.0	1	U
1,1-Dichloropropene	ND	0.30	1.0	1	U
1,2-Dichloroethane	ND	0.30	1.0	1	U
Carbon tetrachloride	ND	0.30	1.0	1	U
Benzene	ND	0.30	1.0	1	U
Trichloroethene	ND	0.30	1.0	1	U
Methylcyclohexane	ND	0.30	1.0	1	U
1,2-Dichloropropane	ND	0.30	1.0	1	U
Dibromomethane	ND	0.30	1.0	1	U
Bromodichloromethane	ND	0.30	1.0	1	U
cis-1,3-Dichloropropene	ND	0.30	1.0	1	U
4-Methyl-2-pentanone	ND	4.1	5.0	1	U
trans-1,3-Dichloropropene	ND	0.30	1.0	1	U
Ethyl methacrylate	ND	0.32	1.0	1	U
1,1,2-Trichloroethane	ND	0.30	1.0	1	U
2-Hexanone	ND	4.0	5.0	1	U
1,2-Dibromoethane	ND	0.30	1.0	1	U
Toluene	ND	0.30	1.0	1	U
1,3-Dichloropropane	ND	0.30	1.0	1	U
Dibromochloromethane	ND	0.30	1.0	1	U
Bromoform	ND	0.30	1.0	1	U
Tetrachloroethene	ND	0.30	1.0	1	U
1-Chlorohexane	ND	0.33	1.0	1	U
Chlorobenzene	ND	0.30	1.0	1	U
1,1,1,2-Tetrachloroethane	ND	0.30	1.0	1	U
Ethylbenzene	ND	0.30	1.0	1	U
m,p-Xylene	ND	0.30	2.0	1	U
o-Xylene	ND	0.30	1.0	1	U
Styrene	ND	0.30	1.0	1	U
Isopropylbenzene	ND	0.30	1.0	1	U
1,1,2,2-Tetrachloroethane	ND	0.30	1.0	1	U
Bromobenzene	ND	0.30	1.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13105 | Sampling Site: NA | Collected: 10/15/2013
Lab ID: 1329042009 | Media: 40 mL Amber Glass VOA | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8260

Preparation: Not Applicable
Analysis: SW 8260C, Water
Batch: EVO/4710 (HBN: 115988)
Analyzed: 10/23/2013 21:41
Instrument ID: 5975-J
Percent Solid: NA
Report Basis: Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
1,2,3-Trichloropropane	ND	0.30	1.0	1	U
trans-1,4-Dichloro-2-butene	ND	3.8	5.0	1	U
Pentachloroethane	ND	0.33	1.0	1	U
n-Propylbenzene	ND	0.30	1.0	1	U
1,3,5-Trimethylbenzene	ND	0.30	1.0	1	U
2-Chlorotoluene	ND	0.30	1.0	1	U
4-Chlorotoluene	ND	0.30	1.0	1	U
tert-Butylbenzene	ND	0.30	1.0	1	U
1,2,4-Trimethylbenzene	ND	0.30	1.0	1	U
sec-Butylbenzene	ND	0.30	1.0	1	U
p-Isopropyltoluene	ND	0.30	1.0	1	U
1,3-Dichlorobenzene	ND	0.30	1.0	1	U
1,4-Dichlorobenzene	ND	0.30	1.0	1	U
n-Butylbenzene	ND	0.30	1.0	1	U
1,2-Dichlorobenzene	ND	0.30	1.0	1	U
1,2-Dibromo-3-Chloropropane	ND	0.30	1.0	1	U
1,2,4-Trichlorobenzene	ND	0.30	1.0	1	U
Hexachlorobutadiene	ND	0.30	1.0	1	U
Naphthalene	ND	0.31	1.0	1	U
1,2,3-Trichlorobenzene	ND	0.30	1.0	1	U

Analysis Method - SW 8270

Preparation: EPA 3510, Sep Funnel SVOA
Batch: ENVX/17903 (HBN: 115691)
Prepared: 10/21/2013
Weight/Volume
Initial: 1000 mL
Final: 1 mL
Analysis: SW 8270D, Water
Batch: ESVO/4324 (HBN: 116273)
Analyzed: 10/23/2013 14:09
Instrument ID: 5975-D
Percent Solid: NA
Report Basis: Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Pyridine	ND	3.1	5.0	1	U
Phenol	ND	1.5	5.0	1	U
Bis(2-chloroethyl)ether	ND	1.5	5.0	1	U
2-Chlorophenol	ND	1.5	5.0	1	U
1,3-Dichlorobenzene	ND	1.5	5.0	1	U
1,4-Dichlorobenzene	ND	1.5	5.0	1	U
Benzyl alcohol	ND	1.5	5.0	1	U
1,2-Dichlorobenzene	ND	1.5	5.0	1	U
2-Methylphenol	ND	1.5	5.0	1	U
bis(2-Chloroisopropyl)ether	ND	1.7	5.0	1	U
4-Methylphenol	ND	1.5	5.0	1	U

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ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13105 | Sampling Site: NA | Collected: 10/15/2013
Lab ID: 1329042009 | Media: 1000 mL Amber Glass | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-D
Batch:	ENVX/17903 (HBN: 115691)	**Initial:** 1000 mL	**Batch:**	ESVO/4324 (HBN: 116273)	**Percent Solid:** NA
Prepared:	10/21/2013	**Final:** 1 mL	**Analyzed:**	10/23/2013 14:09	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
N-Nitrosodi-n-propyl amine	ND	1.5	5.0	1	U
Hexachloroethane	ND	1.5	5.0	1	U
Nitrobenzene	ND	1.5	5.0	1	U
Isophorone	ND	1.5	5.0	1	U
2-Nitrophenol	ND	1.6	5.0	1	U
2,4-Dimethylphenol	ND	1.5	5.0	1	U
Benzoic acid	ND	17	50	1	U
Bis(2-Chloroethoxy)methane	ND	1.5	5.0	1	U
2,4-Dichlorophenol	ND	1.5	5.0	1	U
1,2,4-Trichlorobenzene	ND	1.5	5.0	1	U
Naphthalene	ND	1.5	5.0	1	U
4-Chloroaniline	ND	1.5	5.0	1	U
Hexachlorobutadiene	ND	1.5	5.0	1	U
4-Chloro-3-methylphenol	ND	1.5	5.0	1	U
2-Methylnaphthalene	ND	1.5	5.0	1	U
Hexachlorocyclopentadiene	ND	2.2	5.0	1	U
2,4,6-Trichlorophenol	ND	1.5	5.0	1	U
2,4,5-Trichlorophenol	ND	1.5	5.0	1	U
2-Chloronaphthalene	ND	1.5	5.0	1	U
2-Nitroaniline	ND	1.5	5.0	1	U
Dimethylphthalate	ND	1.5	5.0	1	U
2,6-Dinitrotoluene	ND	1.5	5.0	1	U
Acenaphthylene	ND	1.5	5.0	1	U
3-Nitroaniline	ND	2.1	5.0	1	U
Acenaphthene	ND	1.5	5.0	1	U
2,4-Dinitrophenol	ND	27	60	1	U
4-Nitrophenol	ND	15	50	1	U
Dibenzofuran	ND	1.5	5.0	1	U
2,4-Dinitrotoluene	ND	1.5	5.0	1	U
Diethylphthalate	ND	1.5	5.0	1	U
4-Chlorophenyl phenyl ether	ND	1.5	5.0	1	U
Fluorene	ND	1.5	5.0	1	U
4-Nitroaniline	ND	2.0	5.0	1	U
4,6-Dinitro-2-methylphenol	ND	32	60	1	U
N-Nitrosodiphenylamine	ND	1.5	5.0	1	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13105 | Sampling Site: NA | Collected: 10/15/2013
Lab ID: 1329042009 | Media: 1000 mL Amber Glass | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8270

Preparation:	EPA 3510, Sep Funnel SVOA	**Weight/Volume**	**Analysis:**	SW 8270D, Water	**Instrument ID:** 5975-D
Batch:	ENVX/17903 (HBN: 115691)	**Initial:** 1000 mL	**Batch:**	ESVO/4324 (HBN: 116273)	**Percent Solid:** NA
Prepared:	10/21/2013	**Final:** 1 mL	**Analyzed:**	10/23/2013 14:09	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
4-Bromophenyl phenyl ether	ND	1.5	5.0	1	U
Hexachlorobenzene	ND	1.5	5.0	1	U
Pentachlorophenol	ND	29	60	1	U
Phenanthrene	ND	1.5	5.0	1	U
Anthracene	ND	1.5	5.0	1	U
Carbazole	ND	1.5	5.0	1	U
Di-n-butylphthalate	ND	1.5	5.0	1	U
Fluoranthene	ND	1.5	5.0	1	U
Pyrene	ND	1.5	5.0	1	U
Butylbenzylphthalate	2.1	1.5	5.0	1	J
3,3'-Dichlorobenzidine	ND	1.7	5.0	1	U
Benzo(a)anthracene	ND	1.5	5.0	1	U
Chrysene	ND	1.5	5.0	1	U
Bis(2-ethylhexyl)phthalate	ND	1.5	5.0	1	U
Di-n-octylphthalate	ND	1.5	5.0	1	U
Benzo(b)fluoranthene	ND	1.5	5.0	1	U
Benzo(k)fluoranthene	ND	1.5	5.0	1	U
Benzo(a)pyrene	ND	1.5	5.0	1	U
Indeno(1,2,3-c,d)pyrene	ND	1.5	5.0	1	U
Dibenz(a,h)anthracene	ND	1.5	5.0	1	U
Benzo(g,h,i)perylene	ND	1.5	5.0	1	U

Analysis Method - SW 8330B

Preparation:	SW 8330B, Water Prep	**Weight/Volume**	**Analysis:**	SW 8330B, Water	**Instrument ID:** HPLC14
Batch:	ENVX/17907 (HBN: 115812)	**Initial:** 1000 mL	**Batch:**	ELC/1193 (HBN: 116014)	**Percent Solid:** NA
Prepared:	10/22/2013	**Final:** 5 mL	**Analyzed:**	10/24/2013 15:56	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Nitroglycerin	ND	0.41	0.97	1	U
PETN	ND	0.51	0.97	1	U
HMX	ND	0.10	0.26	1	U
RDX	ND	0.097	0.26	1	U
1,3,5-Trinitrobenzene	ND	0.36	0.65	1	U
1,3-Dinitrobenzene	ND	0.34	0.65	1	U
Nitrobenzene	ND	0.091	0.26	1	U
TETRYL	ND	0.15	0.26	1	U
2,4,6-Trinitrotoluene	ND	0.11	0.26	1	U
2-Amino-4,6-dinitrotoluene	ND	0.13	0.26	1	U

Results Continued on Next Page

ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Analytical Results

Sample ID: 13105 | Sampling Site: NA | Collected: 10/15/2013
Lab ID: 1329042009 | Media: 1000 mL Amber Glass | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8330B

Preparation: SW 8330B, Water Prep	**Weight/Volume**	**Analysis:** SW 8330B, Water	**Instrument ID:** HPLC14
Batch: ENVX/17907 (HBN: 115812)	**Initial:** 1000 mL	**Batch:** ELC/1193 (HBN: 116014)	**Percent Solid:** NA
Prepared: 10/22/2013	**Final:** 5 mL	**Analyzed:** 10/24/2013 15:56	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
4-Amino-2,6-dinitrotoluene	ND	0.13	0.26	1	U
2,4-Dinitrotoluene	ND	0.39	0.65	1	U
2,6-Dinitrotoluene	ND	0.092	0.26	1	U
2-Nitrotoluene	ND	0.19	0.52	1	U
4-Nitrotoluene	ND	0.18	0.52	1	U
3-Nitrotoluene	ND	0.20	0.52	1	U

Sample ID: 13089 | Sampling Site: CCS | Collected: 10/14/2013
Lab ID: 1329042010 | Media: 1000 mL Amber Glass | Received: 10/17/2013
Matrix: Water | Sampling Parameter: NA

Analysis Method - SW 8015 DRO

Preparation: EPA 3510, Sep Funnel DRO Ext.	**Weight/Volume**	**Analysis:** SW 8015B DRO, Water	**Instrument ID:** GCE22
Batch: ENVX/17902 (HBN: 115689)	**Initial:** 1000 mL	**Batch:** EGC/4687 (HBN: 116076)	**Percent Solid:** NA
Prepared: 10/18/2013	**Final:** 1 mL	**Analyzed:** 10/30/2013 00:00	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
Diesel Range Organics	ND	3.2	100	1	U

Analysis Method - SW 8151 by GC/MS

Preparation: EPA 3510, Sep Funnel Herbicides	**Weight/Volume**	**Analysis:** SW 8151A by GC/MS, Water	**Instrument ID:** 5975-H
Batch: ENVX/17901 (HBN: 115687)	**Initial:** 1000 mL	**Batch:** ESVO/4328 (HBN: 116292)	**Percent Solid:** NA
Prepared: 10/21/2013	**Final:** 5 mL	**Analyzed:** 10/24/2013 23:02	**Report Basis:** Wet

Analyte	ug/L	MDL (ug/L)	RL (ug/L)	Dilution	Qual.
2,4-D	ND	NA	0.53	1	
Picloram	ND	NA	0.53	1	

Comments

Quality Control: SW 8151 by GC/MS - (HBN: 116292)

Original LCS and LCSD were spiked with the wrong solution. A second MB LCS and parent MS/MSD were prepped with the correct solution. The method is deemed valid.

Quality Control: SW 8260 - (HBN: 115988)

Not all compounds passed percent recovery limits in the LCS but this is not a method requirement. Per ALS SOP OV-SW-8260C section 14.3.1 “Since the CVS is utilized as the LCS, if the CVS passes method criteria then the LCS is deemed also to have passed.” It is unclear what caused the two LCS failures and the lone MS compound failure.

Quality Control: SW 8270 - (HBN: 116273)

Sample 004 was diluted by 5x due to sample matrix.

ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

Comments

Quality Control: SW 8330B - (HBN: 116014)

Tetryl failed percent recovery in the Laboratory Control Sample (LCS). 2-Nitrotoluene failed percent recovery in the Matrix Spike (MS) sample. The Relative Percent Differences for the MS/MSD failed QC acceptance criteria for Tetryl and 2,4,6-TNT. The surrogate recovery was low for sample 1329042004.

Report Authorization

Method	Analyst	Peer Review
ENV by GC-MS Specialty	Pooreun Lim	Thomas J. Masoian
ENV by LC/MS	Thomas T. McKay	Thomas Bosch
SW 8015 DRO	Mila V. Potekhin	Nadjla Borges
SW 8151 by GC/MS	Jessica Helland	Dustin Calder
SW 8260	Christopher Q. Coleman	Thomas Bosch
SW 8260	Christopher Q. Coleman	Thomas J. Masoian
SW 8270	Jessica Helland	Dustin Calder
SW 8330B	Thomas Bosch	Thomas T. McKay

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ANALYTICAL REPORT

Workorder: 34-1329042
Client: North Dakota State Water Commission
Project Manager: Jessica Helland

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ACLASS (DoD ELAP)	ADE-1420	http://www.aclasscorp.com
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx
	Florida (TNI)	E871067	http://www.dep.state.fl.us/labs/bars/sas/qa/
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Lead Testing:			
CPSC	ACLASS (ISO 17025, CPSC)	ADE-1420	http://www.aclasscorp.com
Soil, Dust, Paint ,Air	AIHA (ISO 17025, AIHA ELLAP and NLLAP)	101574	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.com

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.