

PlumeStop™ Demonstration Study

Report

NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT (NIROP)
FRIDLEY, MINNESOTA

Revision: 0

Prepared For:



Department of the Navy
Naval Facilities Engineering Command Mid-Atlantic
9324 Virginia Avenue
Norfolk, Virginia 23511

Prepared By:

Resolution Consultants
A Joint Venture of AECOM & EnSafe

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A handwritten signature in black ink that reads "nanjun Shetty". The signature is written in a cursive style with a long horizontal stroke extending to the right.

Nanjun Shetty
Environmental Engineer

A handwritten signature in black ink that reads "Christina M. Boehm Carlson". The signature is written in a cursive style with a long horizontal stroke extending to the right.

Christina M. Boehm Carlson, PG
CTO Project Manager

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List of Acronyms

ACP	Anoka County Park
BDI	Bio-Dechlor INOCULUM®
bgs	below ground surface
CAI	Contributing Area Investigation
COD	Chemical Oxygen Demand
CSIA	compound specific isotope analysis
CVOC	chlorinated volatile organic compound
DCE	dichloroethene
Dhb	dehalobacter
Dhc	dehalococcoide
EPA	United States Environmental Protection Agency
ERD	enhanced reductive dechlorination
HRC®	Hydrogen Release Compound
IC	Institutional control
IDW	investigative derived waste
MDH	Minnesota Department of Health
mg/L	milligrams per liter
MI	Microbial Insights
MPCA	Minnesota Pollution Control Agency
MSDS	Material Safety Data Sheet
NIROP	Naval Industrial Reserve Ordnance Plant
OU	Operable Unit
PVC	polyvinyl chloride
RI	Remedial Investigation
RL	reporting limit
ROD	Record of Decision
sVOC	semi-volatile organic compounds
TCE	trichloroethene
TCLP	Toxicity Characteristic Leaching Procedure
TOC	total organic carbon
VFA	volatile fatty acid
VOC	Volatile organic compound
µg/L	microgram per liter

1.0 INTRODUCTION

1.1 Demonstration Scope and Purpose

This report describes the implementation of a demonstration study at the United States Navy (Navy) Naval Industrial Reserve Ordnance Plant (NIROP) in Fridley, MN (Site) to evaluate a new commercial product that has the potential for *in situ* remediation of chlorinated volatile organic compounds (CVOCs) in subsurface soil and groundwater. The product, termed PlumeStop™, is a colloidal groundwater remediation agent manufactured by Regenesis, Inc. (Regenesis), which couples degradation of contaminants with rapid contaminant sorption. The intended result of a PlumeStop™ application is to enhance biodegradation of Site contaminants and to sorb contaminants from groundwater in a treatment zone, thus controlling the plume migration and accelerating CVOC degradation. PlumeStop™ was injected in two demonstration areas within an existing trichloroethene (TCE) plume underlying the Site; one area is of moderate TCE concentration (Demonstration Area One) with a second area downgradient of the first and of lower TCE concentration (Demonstration Area Two). A Site Location Map is included as Figure 1-1 and Figure 1-2 illustrates the Site Layout.

This demonstration study was managed for the Navy by Resolution Consultants in cooperation with Regenesis, the manufacturer of PlumeStop™. The Navy executed this project in a cost-sharing approach with Regenesis; however, by this arrangement the Navy does not endorse or intend directly or incidentally to promote the use of PlumeStop™.

1.2 Performance Goals

The intended result of the NIROP PlumeStop™ demonstration was to evaluate if the product will yield measurable results as indicated by a decline in CVOC concentrations over the planned monitoring period, specifically TCE and its degradation products [cis-1,2-dichloroethene (DCE), trans-1,2-DCE, and vinyl chloride]. As described, the demonstration areas are small and the performance monitoring is limited to a few wells over a relatively short time period. As proposed in the PlumeStop Demonstration Study Work Plan (Work Plan) (Resolution Consultant, 2015), the Navy envisions the short-term performance goal to be a reduction in the concentrations of CVOCs in groundwater within the vicinity of injections by approximately one order of magnitude (from baseline sample concentration).

1.3 Site Background

The NIROP site is 83-acres located approximately 700 feet east of the Mississippi River in Fridley, Minnesota (Figure 1-1). Various contractors have operated NIROP for the Navy producing advanced weapons systems since 1940. The Navy, United States Environmental Protection Agency

(EPA), Region 5, and Minnesota Pollution Control Agency (MPCA) have worked together to complete environmental investigations and remedial efforts at the Site. Figure 1-2 presents a detailed map of the Site including the extensive network of groundwater monitoring and extraction wells and PlumeStop™ Demonstration Areas One and Two.

The NIROP site is divided into three separate operable units (OUs):

- OU1 is the groundwater plume as shown on Figure 4 of the NIROP Record of Decision (1990).
- OU2 is the unsaturated soils outside of the Plating Room on the NIROP property.
- OU3 is the unsaturated soils beneath the Plating Room within the NIROP building.

The NIROP Record of Decision (ROD) for groundwater remediation (OU1) was signed in September 1990 (USEPA, 1990) by the Navy, the EPA Region 5, and the MPCA. Remedial action in the ROD specified "...hydraulic containment and recovery of all future migration of contaminated ground water from the NIROP and recovery, to the extent feasible, of contamination downgradient of the NIROP." The selected remedy included the installation and operation of groundwater extraction wells. Contaminated groundwater downgradient of NIROP in Anoka County Riverfront Park (ACP) is allowed to dissipate naturally. In September 1992, the groundwater extraction well system came on-line and the system is currently in operation. Through the end of 2014, the system had treated approximately 5.1 billion gallons of groundwater and extracted approximately 39,713 pounds of TCE and other volatile organic compounds (VOCs) (Resolution Consultants, 2016).

In 2003, the EPA issued a ROD for OU2 and OU3, which uses institutional controls (IC) to restrict the property to industrial and limited commercial use until and unless EPA and MPCA determine that concentrations in soil have been reduced to levels allowing less restrictive uses.

In 1997, an investigation of OU3 (since re-defined) was completed as part of the Remedial Investigation (RI) study to locate contributing areas beneath the building, included analysis of approximately 500 soil and 46 groundwater samples (TetraTech NUS, Inc. [Tetra Tech], 2002). In July 2013, the Navy commenced a Contributing Area Investigation (CAI) (performed by Resolution Consultants) to evaluate potential TCE contributing areas. The CAI determined that the East Plating Shop, 8th Avenue Area south of the East Plating Shop, and 7th and Broadway area are the primary areas contributing TCE to groundwater. The maximum concentration of TCE detected was 1,200,000 micrograms per liter (µg/L) in a groundwater sample collected from the 7th and Broadway area from 76 to 79 feet below ground surface (bgs). The CAI Report has been submitted in draft version with a final version expected to be completed in early 2017.

TCE and its degradation products are present in groundwater at concentrations above regulatory levels, thus requiring continued operation of an onsite groundwater extraction and treatment system. Although the groundwater treatment system is operating in accordance with the ROD, under current conditions, it will take significant time to reach cleanup goals. Therefore the Navy periodically evaluates new cleanup options in order to identify actions that optimize the cleanup process and that may allow the Site to reach cleanup goals faster and at a lower cost.

The NIROP property was purchased by Fridley Land, LLC and they have begun redeveloping the NIROP property for commercial office and distribution space. The redevelopment activities began in 2014 and building demolition, grading and construction activities are currently ongoing.

2.0 DEMONSTRATION AREAS ONE AND TWO GROUNDWATER CONTAMINATION

The three primary TCE source areas are the East Plating Room, the 7th and Broadway area, and the 8th Avenue area. Figure 2-1 is an isoconcentration map from the draft CAI report (Resolution 2015) that depicts TCE variation in Site groundwater in these areas. As indicated on Figure 2-1, Demonstration Area One is located in the vicinity of a former pit near the 7th and Broadway TCE source area. This area is within the 100,000 µg/L TCE contour as determined in the CAI vertical profile sampling. Demonstration Area Two is located to the north and west in an area of lower TCE groundwater concentration (within 10,000 µg/L contour of vertical profile sampling). A brief description of the TCE concentration in each Demonstration Area is provided below.

The 7th and Broadway area is characterized by elevated TCE concentrations at intermediate zone depths in finer grained soils. Soil samples containing the highest concentration of TCE were collected in the 7th and Broadway Area from boring VP-32, located just east of a pit (see Figure 2-1). The sample interval depth with the highest TCE concentrations was from 71 to 84 feet bgs in alternating silty sand, silt, and clay layers. The maximum concentration of TCE in groundwater measured during the CAI was 1,200,000 µg/L, in the boring VP-32 (76 to 79 feet bgs). Demonstration Area One is located downgradient of VP-32 and near of boring VP-17. The maximum concentration of TCE in groundwater in boring VP-17 was 100,000 µg/L (61 to 64 feet bgs) within silty sand soil. Based on the groundwater elevations contours from the 2014 Annual Monitoring Report, the intermediate depth groundwater gradient in this area is relatively flat with flow towards the southwest (Resolution Consultants, 2016).

Demonstration Area Two is located hydrogeological downgradient of the source areas near groundwater extraction well AT-12. Boring VP-25 is located near Demonstration Area Two and the soil type encountered in the area is fine to medium sand. The maximum TCE concentration measured in VP-25 was 12,000 µg/L from 77 to 80 feet bgs. Based on the groundwater elevation contours from the 2014 Annual Monitoring Report, the intermediate depth groundwater gradient in this area is influenced by the nearby groundwater extraction wells with a steeper gradient than found in Demonstration Area One (Resolution Consultants, 2016).

3.0 PlumeStop™ DESCRIPTION

PlumeStop™ is a colloidal groundwater remediation agent, manufactured by Regenesis, Inc. (Regenesis), which couples enhanced biodegradation of contaminants with rapid contaminant sorption. The combined effects of PlumeStop™ degradation and sorption actions is expected to result in a sustained decline of groundwater CVOC concentrations. The formulation is designed to distribute through soil and groundwater upon application, and is based on micron-sized activated carbon, enhanced with a proprietary mixture of polymeric and molecular active ingredients. PlumeStop™ has been shown to be effective on most chlorinated organic groundwater contaminants, including CVOCs, by first sorbing mobile contaminants followed by biodegradation as the sorptive material provides a favorable matrix for microbial colonization and growth (Birnstingl, et al, 2014). The Material Safety Data Sheets (MSDS) for PlumeStop™ and the other injectants are provided in Appendix A.

The function of Plume-Stop™ is to:

- Adsorb contaminants and rapidly reduce their concentration in groundwater;
- Inhibit transport of contaminants; and,
- Provide a “bio-matrix” for bacteria and contaminants to enhance contaminant biodegradation, resulting in contaminant destruction and remediation of the site.

To facilitate anaerobic biodegradation on the PlumeStop™ biomatrix, Hydrogen Release Compound (HRC®) was co-injected with PlumeStop™. HRC® is a poly-lactate ester material that, when hydrated, is subject to microbial breakdown producing a controlled release of hydrogen to enhance anaerobic bioremediation. The Demonstration Areas were also bioaugmented using Bio-Dechlor INOCULUM® Plus (BDI), a consortium of bacteria that have been shown to be effective in the dechlorination of chlorinated ethenes and ethanes. The purpose of the bioaugmentation step is to allow complete breakdown of chlorinated solvents to non-toxic byproducts such as water and carbon dioxide and prevent build-up of degradation products (Regenesis, 2015).

4.0 PLUMESTOP™ INJECTION ACTIVITIES

The implementation of this demonstration study required the installation of direct push injection points, installation of injection wells, installation of four new groundwater monitoring wells, and direct push post-injection borings to evaluate the injectant area of influence. Pre-injection and post-injection groundwater sampling was completed to evaluate baseline conditions and to monitor Plume-Stop™ effectiveness. The following sections address each of these activities in detail. Figure 4-1 illustrates the boring and monitoring well configuration in Demonstration Area One. Figure 4-2 illustrates the boring, injection well and monitoring well configuration in Demonstration Area Two.

4.1 Demonstration Areas

The demonstration study was implemented on a relatively small foot print (approximately 20 by 16 feet) in the two areas. The higher TCE concentration test area was Demonstration Area One and was located near the 7th and Broadway TCE source and proximal to CAI direct push locations VP-17 and VP-32 (see Figure 2-1). Demonstration Area Two was placed in a lower TCE groundwater concentration area and was proximal to CAI direct push location VP-25 (see Figure 2-1). Site-wide generalized cross sections were updated with the PlumeStop™ Demonstration Area injection plan. A cross-section location map is included as Figure 4-3. Generalized site-wide geologic cross sections A-A' and B-B' are included on Figure 4-4. Geologic cross sections focused on Demonstration Areas One and Two are shown on Figure 4-5 and Figure 4-6, respectively. As shown on the cross sections, the performance well screens were placed in the same depth interval as the PlumeStop™ injection depths. The Demonstration Areas are located in fairly homogeneous geologic materials, which assisted with the distribution of PlumeStop™ in the soil matrix.

4.2 Pre-Injection Activities

Pre-injection activities included permitting, utility clearance, monitoring well installation and baseline groundwater monitoring. These activities are discussed below.

4.2.1 Permitting

Variances were required to be submitted to and approved by the Minnesota Department of Health (MDH) prior to completing injections of remedial agents associated with PlumeStop™. The first variance permit (TN 5265) was obtained to inject chemical agents at the Site. The variance approved the injection of up to 9,000 pounds of PlumeStop™ (25% concentration), 400 pounds of HRC®, and five pounds of Dehalococcoides spp. (Dhc) microbial consortium mixed with approximately 4,500 gallons of potable water. The variance included injection of these materials into up to 28 direct push soil borings (14 borings at each demonstration area). A second variance permit (TN 5265A) approved the injection of an additional 2,000 pounds of PlumeStop™ (25% concentration) mixed with approximately 3,500 gallons of water into three injection wells (MN

unique numbers 818601, 818602, and 818603) at the Site. The MDH Variance Permits are included as Appendix B.

4.2.2 Utility Clearance Procedures

Resolution Consultants coordinated utility clearance with the Gopher State One Call public utility locating service prior to completing the subsurface activities. The Gopher State One Call was notified and marked public utilities prior to drilling. Hance Utility Services, Inc. (a private utility location subcontractor) was also contracted to locate private utilities prior to commencing subsurface activities.

4.2.3 Performance Monitoring Well Installation

Four soil borings (PMW-1 through PMW-4) were drilled on September 2 and 3, 2015 in the Demonstration Areas using a sonic drilling rig. Monitoring wells were installed in each boring prior to the Plume-Stop™ injections. Drilling and well construction services were provided by Mark J. Traut Wells, Inc. Performance monitoring wells PMW-1 and PMW-2 were installed in Demonstration Area One and PMW-3 and PMW-4 were installed in Demonstration Area Two. The performance monitoring wells were installed to allow collection of groundwater samples to assess the performance of PlumeStop™.

Wells PMW-1 and PMW-3 were installed in the central portion of the Demonstration Area One and Demonstration Area Two, respectively. Wells PMW-2 and PMW-4 were installed downgradient of Area One and Area Two, respectively, as shown on Figure 4-1 and Figure 4-2. The downgradient wells were installed less than a presumed 30-day time-of-travel distance from each injection area to assess application methods and CVOC concentration decline.

Continuous soil samples were collected during the advancement of each soil boring and the drill cores were logged by a field geologist. Boring logs created from soil borings are included as Appendix C. Performance monitoring wells were constructed of 2-inch diameter stainless steel well screen and poly-vinyl chloride (PVC) riser pipe. Well screens are 5-feet in length and have slot size of 0.010 inches with a bottom caps fitted to the bottom of each well. Pipe sections, screens and bottom caps are flush-jointed. Demonstration Area One monitoring wells (PMW-1 and 2) screens were installed at approximately 61 to 66 feet bgs. Demonstration Area Two monitoring wells (PMW-3 and 4) screens were installed at approximately 70 to 75-feet bgs. The filter packs consists of 20/30 clean silica sand that was installed using a tremie pipe from the base of screen extending to 4-feet above the top of the screen. The remaining annular space from above the sand pack to ground surface was sealed with high-solids bentonite grout installed using a tremie pipe. The wells were completed with a flush mount manhole. Well construction details, including total and screened depth, are summarized on monitoring well construction forms included as Appendix D.

Monitoring wells were developed using a surge and purge method. Between 90 and 100 gallons of groundwater was purged from each monitoring well.

4.2.4 Baseline Groundwater Monitoring

Baseline, or pre-injection, groundwater sampling was completed on September 15 and 16, 2015, approximately twelve days after the performance monitoring wells were installed. The sampling event included measuring the depth to groundwater and sampling the four newly installed monitoring wells (PMW-1 through PMW-4). Groundwater samples were collected from each well with a bladder pump using low-flow purging and sampling techniques. The pump intake was placed approximately at the midpoint of the well screen during purging and sampling. The pumping rates (i.e. purge and vent cycle of the pump) for the bladder pump was controlled via a controller box and compressed air was utilized as the gas source. The respective pumping rates were set below the approximate rate of recharge for each well to minimize drawdown during sampling. Between sampling locations, the pump was decontaminated with a distilled water and Alconox[®] solution and rinsed with distilled water. New disposable tubing and bladders were used at each sampling location.

Water quality parameters were collected with a YSI water quality meter equipped with a flow-through cell during purging. Readings were recorded at approximately five minute intervals and the wells were purged until water quality parameters stabilized. When water quality parameters stabilized, samples were collected from each monitoring well and placed directly into laboratory supplied containers with the appropriate preservative (if required). Samples were stored on ice in coolers and were delivered under chain-of-custody to the laboratory. Groundwater Sample Collection Record forms for the baseline groundwater monitoring are included as Appendix E.

4.3 Surveying

The location, ground surface elevation, and top of casing elevation at wells PMW-01, PMW-02, PMW-03 and PMW-04 were surveyed by a surveyor licensed in State of Minnesota (Harry S. Johnson Land Surveyors) on September 15, 2015. The survey information for each well is included on the boring logs (Appendix C).

4.4 Field Assessment of PlumeStop[™] Injections

PlumeStop[™] and BDI were pressure injected via direct push technology into approximately 20 points (10 points at each Demonstration Area) within the intermediate zones of the aquifer. In addition, the electron donor HRC[®] was injected in four separate points in each demonstration area. In Demonstration Area One, the interval from 60 to 67 feet bgs was targeted and in Demonstration Area Two, the interval from 70 to 77 feet bgs was targeted for injections. The injection depths

were selected based upon the soil types and TCE concentrations from borings advanced during the CAI.

4.4.1 Initial PlumeStop™ Injections

The initial injection event in Area 1 was completed September 30, 2015 through October 5, 2015, with Matrix Environmental, LLC providing Geoprobe drilling services and Regenesi providing injection services. PlumeStop and BDI were injected from 60 to 67 feet bgs in direct push points IP-1 through IP-10 in Demonstration Area One around performance monitoring well PMW-1. The boring and well configuration of Demonstration Area One is illustrated on Figure 4-1. At each injection location in Demonstration Area One, the injection tooling was advanced to 67 feet bgs and a 2-foot long injection screen was exposed. Approximately 82 gallons of PlumeStop™ was injected at each 2-foot interval and then the injection tooling was retracted to the adjacent shallower 2-foot interval. For the last interval, 60 to 61 feet bgs, the screen was further retracted so that only one foot of screen was exposed and half the amount of product was injected. In boring IP-3, high injection pressures were encountered leading to more or less product injected at each depth intervals. A total of 290-gallons of PlumeStop™ were injected at each location. Approximately 0.26 liters of BDI was added to the PlumeStop™ for each 2-foot interval. Four additional borings, HRC-1 through HRC-4, were advanced in Demonstration Area One to inject HRC®. At each injection location, the injection tooling was advanced to 67-feet bgs and a 2-foot long injection screen was exposed. Approximately 0.69 gallons of HRC® solution (7.5 pounds [lbs.] per foot) was injected at each 2-foot interval and then injection tooling was retracted to the adjacent shallower 2-foot interval. A total of 4.84-gallons of HRC® were injected at each location. Appendix F includes injection logs completed by Regenesi summarizing the injection borings.

The initial injection event in Area 2 was completed October 6, 2015 through October 8, 2015. PlumeStop and BDI were injected through points IP-1 through IP-10 in Demonstration Area Two around performance monitoring well PMW-3. Injection point IP-1A was installed adjacent to IP-1 in order to complete injections after fine sands plugged the screen in the initial attempt. The boring and well configuration of Demonstration Area Two is illustrated on Figure 4-2. In Demonstration Area Two, during the first injection attempts at IP-1, the fine grained sand was heaving into the injection screen preventing the screen from opening. The Regenesi field crew decided to change the injection tooling used in Area Two due to the high pressure and heaving sands. The new injection tooling included an expandable tip which released from the end of the drilling string when high pressure is applied and then the tooling is drawn up a foot during injections. This method injects the PlumeStop™ in a downward direction out the bottom of the tooling versus laterally as with the screen in Area One. At each injection location, the injection tooling was advanced to 77-foot bgs and high pressure was applied during pumping of PlumeStop™ which released the expandable tip. Approximately 34-gallons of PlumeStop™ were injected at each 1-foot interval

(slightly more or less was injected at some locations due to high injection pressures) and then injection tooling was retracted to the adjacent shallower 1-foot interval. A total of 240-gallons of PlumeStop™ were injected at each location. Approximately 0.13 liters of BDI was added to the PlumeStop™ for each 1-foot interval. Four borings (HRC-1 through HRC-4) were advanced in Demonstration Area Two to inject HRC® using the same technique as the PlumeStop™ injections. Approximately 0.69-gallons of HRC® were injected at each 1-foot interval and then injection tooling was retracted to the adjacent shallower 1-foot interval. A total of 4.84-gallons of HRC® were injected at each location.

Following injections, radius of injection influence was assessed by advancing soil borings radially outward from the injection area. Borings RD-1, RD-2, and RD-3 were advanced at Demonstration Area One. Boring RD-4 was advanced at Demonstration Area Two. The radius of influence boring locations are illustrated on Figure 4-1 and Figure 4-2, respectively, for Demonstration Areas One and Two. Soil cores were collected with the direct push drill rig using dual-tube tooling as summarized below.

- Borings RD-1 and RD-2 were blind-drilled to 60-feet bgs and soil cores were collected from 60 to 70-feet bgs.
- Boring RD-3 was blind-drilled to 55-feet bgs and soil cores were collected from 55 to 70-feet bgs.
- Boring RD-4 was blind-drilled to 65-feet bgs and soil cores were collected from 65 to 80-feet bgs.

Cores from borings RD-1 and RD-2 were cut into 1-foot long sections, secured with foil and rubber caps, secured with tape and shipped to the Regenesys laboratory. The soil cores from borings RD-3 (Area One) and RD-4 (Area Two) were opened and visually examined by the Regenesys field geologist on-Site. PlumeStop™ is readily identifiable by visual observation of the soil cores due to its distinct black coloration (in contrast to the native brown sand / silty sand). Dark grey to black was noted in the silty sand from 60 to 68-feet bgs at boring RD-3 indicating the presence of PlumeStop™. Slightly grey sand were noted from 75 to 77.5-feet bgs at boring RD-4 and grayish water was also in the drilling liner, indicating the presence of PlumeStop™.

4.4.2 Injection Well Installation and Follow-Up PlumeStop™ Injections

The Regenesys project team recommended the completion of an additional follow-up injection of PlumeStop™ at Demonstration Area Two based on the initial field assessment and post injection performance monitoring results (discussed below). Follow-up PlumeStop™ injection activities in Area Two included injection well installation and PlumeStop™ injections in the newly installed wells.

4.4.2.1 Injection Wells Installation

Injection wells IW-1, IW-2, and IW-3 were installed on December 17 through 21, 2015 by Mateco Drilling, Inc. to perform additional PlumeStop injection in Demonstration Area Two. Wells were constructed of 2-inch diameter stainless steel well screen and steel riser pipe. Injection wells screens were installed from approximately 71 to 76-feet bgs and have slot size of 0.010 inches. The filter packs consists of 20/30 clean silica sand that was installed using a tremie pipe from the base of screen extending to 4-feet above the top of the screen. The remaining annular space from above the sand pack to ground surface was sealed with high-solids bentonite grout installed using a tremie pipe. The wells were completed with above grade locking well protection. Well construction details are summarized on monitoring well construction forms included as Appendix D.

Injection wells were developed using a surge and purge method. Approximately 76 gallons of groundwater was purged from each injection well.

4.4.2.2 PlumeStop™ Injections into Injection Wells

A total of 1,066-gallons of PlumeStop™ (667 lbs of PlumeStop™ plus water) was injected at each injection well (IW-1, IW-2, and IW-3) on January 8, 2016. Regensis performed the injections by attaching the injection piping directly to the injection well top of casing and pumping the PlumeStop™ through the well screen into the formation. The goal of pumping PlumeStop™ through the injection wells was to obtain better horizontal distribution and radius of influence compared to the direct push method previously used in Demonstration Area Two. No BDI or HRC were injected in during this event. Appendix F includes an injection log completed by Regensis of the follow-up PlumeStop™ injections.

4.5 Investigative Derived Waste

Soil cuttings generated during monitoring well installation and soil sampling were containerized in 55-gallon drums. Groundwater generated during well development, purging and sampling activities was stored in a water-tight roll-off dumpster. A soil sample representative of the investigative-derived waste (IDW) was collected and submitted to Trimatrix Laboratories in Grand Rapids, Michigan for analysis of toxicity characteristic leaching procedure (TCLP) VOCs, TCLP semi-volatile organic compounds (sVOCs), TCLP metals, flashpoint, ignitability, corrosively, pH, TCLP pesticides, and polychlorinated biphenyls. Soil IDW analytical results were used to generate a waste profile. Soil drums were removed from the Site by Capitol Environmental for disposal on March 24, 2016. The waste disposal documentation is included in Appendix G.

A water sample representative of the IDW waste was submitted to Trimatrix Laboratories in Grand Rapids, MI for analysis of metals (cadmium, copper, chromium, lead, nickel, zinc, and mercury), VOCs, total suspended solids, pH, cyanide, and chemical oxygen demand. Water IDW analytical results indicated that the analyzed compounds were below the Metropolitan Council Environmental Services permit limits. The water IDW was discharged to the sanitary sewer on November 10, 2015.

5.0 PERFORMANCE GROUNDWATER MONITORING

Groundwater monitoring was performed in Demonstration Area One and Demonstration Area Two prior to injection activities and during a time period of approximately one-month through approximately six-months after the initial injections. The groundwater monitoring results are discussed below.

5.1 Monitoring Program

The monitoring program varied slightly over the study. Tests performed included field stabilization parameters and laboratory analysis of VOCs (including CVOCs), ethane, ethane, methane, total iron, dissolved iron, sulfate, carbon dioxide, total alkalinity, sulfide, nitrogen, chemical oxygen demand (COD), total organic carbon (TOC), compound specific isotope analysis (CSIA), and volatile fatty acids (VFAs) at Pace Analytical Services in Minneapolis, MN (Pace). Additionally, samples for microorganism testing were performed by Microbial Insights (MI) in Knoxville, Tennessee.

Results for CVOC and inorganic groundwater analytical results are presented in Table 5-1. VFA groundwater analytical results are presented in Table 5-2. Carbon isotope forensics groundwater analytical results are presented in Table 5-3. Water quality parameters collected during well purging are summarized on Table 5-4. Laboratory analytical reports for the baseline groundwater monitoring event are included in Appendix H.

A brief description of the field and analytical parameters used to evaluate results for reductive dechlorination is provided in Appendix I.

5.2 Baseline Monitoring Results

Baseline monitoring was performed prior to injection activities on September 15 and 16, 2015. Analyses included all those specified in Section 5.1.

Baseline field sampling parameters indicate that groundwater pH (see Table 5-4) is favorable for *Dehalococcoides* spp (Dhc) to survive and that groundwater is slight to moderately anaerobic. Electron acceptors include low to moderate concentrations of total iron (likely including both ferrous and ferric) and high sulfate concentrations in both demonstration areas.

The TCE results of the baseline sampling were significantly lower than expected, based on results from the CAI, most notably in Demonstration Area One. Baseline TCE groundwater sample results from wells PMW-1 and PMW-2 were 156 µg/L and 35.4 µg/L, respectively, versus an anticipated concentration of up to 100,000 µg/L. Similarly, but to a lesser degree, baseline TCE groundwater sample results from wells PMW-3 and PMW-4 were 519 µg/L and 13.7 µg/L, respectively, versus anticipated concentrations of up to 12,000 µg/L. An additional round of groundwater samples for

VOCs analysis were collected from wells PMW-1 and PMW-2 on September 25, 2015 to confirm the initial baseline results. The analytical results from the confirmation groundwater samples collected on September 25, 2015 were similar to the baseline results collected September 15 and 16, 2015, with TCE detected at wells PMW-1 and PMW-2 at concentrations of 332 and 30.2 µg/L, respectively.

The microorganisms typically responsible for the biodegradation of TCE are *Dehalobacter* (*Dhb*) (TCE to cis-1,2-DCE) and *Dehalococcoides* (*Dhc*) (TCE to ethene). The following table provides guidelines to interpret the density of *Dhc* (ESTCP, 2011).

<i>Dehalococcoides</i> 16S rRNA gene copies per Liter	Interpretation
<10 ⁴	Low <i>Dhc</i> , efficient dechlorination and ethene production unlikely
<10 ⁵	Moderate <i>Dhc</i> , which may or may not be associated with ethene formation. Observable dechlorination
<10 ⁶	High <i>Dhc</i> , which is often associated with high rates of dechlorination and ethene production

Baseline results for *Dhc* range from 7.74 X 10² to 8.9 x 10³ cells/mL *Dhc* population was below the critical mass required for reductive dechlorination (see Appendix H). Some biodegradation activity may have been occurring prior to injection activities. In addition, other halo-respiring microorganisms (*Dehalobacter spp* and *Dehaloginimonas spp*), methanogens and sulfate reducers were present in groundwater from both demonstration areas. However, TCE and vinyl chloride reductase genes were below reporting limits in all pilot monitoring wells.

5.3 Demonstration Area One Performance Monitoring

Groundwater monitoring was performed at Demonstration Area One on October 26, November 6, and December 4, 2015 and January 6, and March 31, 2016 at performance monitoring wells PMW-1 and PMW-2. Groundwater sampling methodology was the same as the pre-injection baseline sampling as described in Section 4.2.4. Groundwater samples were submitted to Pace for analysis of VOCs, ethane, ethane, methane, dissolved iron, sulfate, carbon dioxide, total alkalinity, sulfate, nitrogen, COD, TOC, and VFAs. Additionally, groundwater samples collected on November 6, 2015 and March 31, 2016 were submitted to Pace for CSIA and the samples collected on November 6, 2015 were submitted to MI for analysis of *Dhc*.

An immediate decrease in concentrations of CVOCs to below reporting limits (RLs) was observed in key performance monitoring well PMW-1 within one month of injecting PlumeStop™ in Demonstration Area 1. The contaminant reductions are interpreted to be a direct result of the placement of PlumeStop™ via six injection point locations within eight feet of well PMW-1 (Figure 5-1). The presence of PlumeStop material was visually confirmed in the RD-3 soil core and in groundwater in well PMW-1 (as observed black-to-gray color of groundwater samples obtained from this well, Table 5-4). As shown on the graphs in Appendix J, the CVOC contaminant reductions in PMW-1 persisted for the six month monitoring period until performance monitoring was formally concluded. The TOC concentrations in well PMW-1 increased from the baseline concentration of 2.8 milligram per liter (mg/L) to a high of 91.9 mg/L in January 2016. Evidence of VFAs was observed two months after the PlumeStop injection in well PMW-1 (see Table 5-2). Very low concentrations of VFAs were observed in the downgradient well PMW-2 five months after the PlumeStop injection. The lack of discernable CVOC or biogeochemical changes in well PMW-2 suggests that groundwater in this area was not influenced by the upgradient injections during the performance monitoring period. The hydraulic gradient was flat between PMW-1 and PMW-2, which may account for the slow travel time between the wells and/or local flow variations (see Table 5-1 for groundwater elevations). Dissolved iron concentrations significantly increased within one month and sulfate concentrations began reducing within two months after injection in well PMW-1 indicating that iron and sulfate were being used as electron acceptors. However, sulfate concentration remained high at the end of the study (102 mg/L) indicating that sulfate competing for electron donor.

Most of the data collected from Demonstration Area One suggests that sorption was the primary process for removal of CVOCs from groundwater. The timing of concentration decreases (i.e. immediate decrease in CVOC concentrations) is one of the key indicators of sorption. In addition, dehalorespiring bacterial colonies were below critical mass required for effective reductive dechlorination, functional genes were below RLs, and no hydrogenolysis daughter products were present. *Dhc* population increased slightly in well PMW-1 from 8.9×10^3 to 1.74×10^4 , while that in well PMW-2 had a slight decrease, from 7.47×10^3 to 6.3×10^2 (see Microbial Insights QuantArray® Microbial Study results in Appendix H). Since it appears that CVOCs (TCE and degradation products) were adsorbed to the activated carbon in PlumeStop, reductive dechlorination that may have occurred within the carbon matrix could not be directly measured.

The eventual presence of methane (low concentrations) in well PMW-1 suggests that hydrogen generated by the oxidation of the injected HRC® was being used by methanogenic bacteria, although the field parameter trends showing moderately low oxidation-reduction potential suggest transition metal reduction was a more dominant redox position within the aquifer. Similarly, low concentrations of sulfide were observed in well PMW-1 after six months after injection, indicating

that pockets of strongly reducing conditions may have existed within the aquifer despite measuring bulk oxidation-reductions potentials that were moderately reducing. Sulfate concentrations in both wells PMW1- and PMW-2 were decreasing, but still remaining at high concentrations and likely competing for the electron donor. The relatively small volumetric addition of HRC[®] (4 gallons per location) may be one reason why sufficient distribution of carbon substrate in the treatment area was likely not observed. Low hydraulic gradient in the area may have also influenced poor distribution of the injected carbon substrate and VFAs.

Baseline CSIA results in well PMW-1 (significant fractionation) suggest that sorptive processes were primarily responsible for changes in observed CVOC concentrations rather than enhanced reductive dechlorination (ERD) (no hydrogenolysis daughter products observed).

Neither PlumeStop material or TOC was observed in well PMW-2. CVOC concentrations gradually increased during the study period and there was no evidence of hydrogenolysis (i.e., increases in daughter products). There were no evidences that PlumeStop or HRC influenced this well which is located approximately 25 feet downgradient of well PMW-1. However, CSIA data indicates some enrichment in TCE and vinyl chloride was observed which could be due to natural attenuation processes.

5.4 Demonstration Area Two Performance Monitoring

Results of the initial PlumeStop injections performed on October 6 through 8, 2016, via direct push points, had poor distribution and did not reach monitoring wells PMW-3 and PMW-4 (screened from 71 feet to 76 feet below ground surface). A second round of PlumeStop injections was performed on January 8, 2016 using injection wells IW-1, IW-2 and IW-3 which were screened from 71 feet to 76 feet below ground surface (see Figure 5-2). It is likely that that the majority of the PlumeStop material and HRC may have migrated into more permeable zones (gravel) which may resulted in poor distribution of the injected material. Groundwater monitoring was performed at Demonstration Area Two on October 26, November 11, and December 4, 2015 and January 6, 2016 at performance monitoring wells PMW-3 and PMW-4 following the initial PlumeStop[™] injections. Groundwater monitoring was performed on January 25, February 8, and March 31, 2016 in Demonstration Area Two following the second round of PlumeStop[™] application utilizing in injection wells IW-1, IW-2, and IW-3. Groundwater samples were collected, handled and analyzed as described in Sections 4.2.4 and 5.1.

In well PMW-3, after a significant initial decrease in TCE concentration after the first PlumeStop application, the TCE concentration stabilized and exhibited a slightly decreasing trend. TCE decreased from 519 µg/L to 20.8 µg/L one month after the initial PlumeStop[™] injections. As the TCE concentrations decreased, both cis-1,2-dichloroethene (cis-1,2-DCE) and trans-1,2-

dichloroethene (trans-1,2-DCE) increased in this PMW-3. A slight increase in vinyl chloride concentration was observed in this well after the initial application, which later decreased. As indicated in Section 4.4.1, slightly grey sand were noted in boring RD-4 and grayish water was also in the drilling liner, indicating the likely presence of PlumeStop. Based on this information, it is possible that some adsorption of VOCs may have occurred in this area. However, no increases in TOC or VFAs concentrations was observed in wells PMW-3 and PMW-4 which indicates that HRC did not reach these wells which is required to supported ERD. Therefore, no evidence of complete dechlorination was observed in either of these wells.

CSIA data indicate enrichment in carbon¹³ isotope ($d^{13}C$) in TCE in well PMW-3, while $d^{13}C$ isotopes in both cis-1,2-DCE and trans-1,2-DCE sampled from well PMW-3 were enriched during the first month of the study and subsequently stabilized. These trends suggest sequential dechlorination of TCE to cis-1,2-DCE and trans-1,2-DCE, which is a typical for biologically-mediated reductive dechlorination. A slight enrichment of $d^{13}C$ in TCE was initially observed in well PMW-4 (e.g. intrinsic biodegradation) without obvious short-term effects from the injected PlumeStopTM.

TOC and VFA concentration increases were not observed in either well PMW-3 or well PMW-4, but minor increases in total and dissolved iron concentrations were observed and supported by pH and oxidation-reduction potentials that could indicate redox poisoning at iron-reducing conditions. In contrast, increases in methane evolution were not observed either in well PMW-3 or well PMW-4 and sulfate concentrations did not decrease. Traces of VFAs detections were observed in well PMW-3 at the end of the monitoring period. Discernable changes in CVOC concentrations were not observed in key performance monitoring well PMW-4, suggesting that this well was not influenced by the PlumeStop injection. The incomplete concentration reductions of CVOCs in Demonstration Area Two may have resulted from uneven distribution of injected material in the study area or low volume of HRC[®] injected or from high dissolution rate of the injected HRC[®] due to high groundwater velocity in the vicinity of the study area. Further, injected material may have migrated into the gravelly layer located below well PMW-3.

5.5 Well Abandonment

On May 18, 2016, the performance monitoring wells PMW-1 through 4 and injection wells IW-1 through 3 were abandoned by Mark J. Traut Wells, Inc. The wells were abandoned at the request of the property owner due to ongoing redevelopment activities (concrete slab removal and grading) in Demonstration Area One and Two. The wells were sealed and abandoned by pumping neat cement into the well using a tremie pipe from the bottom of the well to ground surface. Locking steel above grade protops were removed from the wells. The MDH well abandonment approval letter is included in Appendix B.

6.0 SUMMARY

The following is summary of the results of the PlumeStop™ Demonstration Study:

- The baseline concentrations of CVOCs were orders of magnitude lower than those expected for the PlumeStop study.
- Injection of PlumeStop™ resulted in complete removal of CVOCs in well PMW-1 in Demonstration Area One and order-of-magnitude concentration reductions of CVOCs in well PMW-3 within Demonstration Area Two.
- CVOC and CSIA data suggest that sorption of CVOC to the PlumeStop™ material is the major process in the CVOC reduction in well PMW-1.
- CSIA data indicate some level of sorption in well PMW-3 in Demonstration Area Two but not as rapid as that observed in well PMW-1.
- No significant increase in TOC and very low concentrations of VFAs were observed in well PMW-4 in Demonstration Area Two indicating ineffective distribution of HRC® with minimal dechlorination of CVOCs. CSIA data for this area indicate minimal enrichment of TCE and vinyl chloride. Data indicates initial enrichment of d¹³C isotopes for cis-1,2-DCE and trans-1,2-DCE which later stabilized.
- Sharp stratigraphic contacts, perhaps in combination with flow paths created by the nearby groundwater recovery system, may have affected the delivery and distribution of PlumeStop™ including HRC® in Demonstration Area Two, and would need to be accounted for as part of a future injection design.
- Probing was successfully conducted at depths deeper than 50 feet, and injection rates approached 10 gallons per minute with less than 10 pounds per square inch of formation backpressure at the ground surface, indicating that injection work is relatively feasible at the Site.

Although the overall contaminant reductions observed as part of the Demonstration Study were moderately encouraging, the following limitations of the study are noted:

- Baseline concentrations of CVOCs in new performance monitoring wells did not facilitate the evaluation of PlumeStop™ performance for high-concentration groundwater hot-spots. These locations are more challenging implementation spots for using a product like PlumeStop

successfully, and the establishment of robust non-sorptive degradation/dechlorination processes would be important to achieve.

- The effectiveness of PlumeStop™ delivered in grid patterns that are more feasible for scale up than those used for the Demonstration Study was not evaluated.
- Due to local geological and hydrogeological features, larger amounts of HRC® and bioaugmentation culture are likely required to get better distribution within the targeted treatment areas.

7.0 REFERENCES

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Tables

**Table 5-1
PlumeStop Demonstration CVOCs and Inorganics Groundwater Analytical Results
PlumeStop Demonstration Study Report
NIROP Fridley, Minnesota**

Well ID	Date	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCA	1,1-DCE	VC	Ethane	Ethene	Methane	Iron	Dissolved Iron	Sulfide	Carbon Dioxide	Total Alkalinity	Sulfate	Nitrogen	COD	TOC	GW Elevation	Notes	
Unit		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ft amsl		
PMW-1	09/16/15	156	141	154	7.1	2.3	0.66	ND	ND	ND	10,200	135	ND	34.8	383	157	ND	ND	2.8	819.07	Pre-injection	
	09/25/15	332	229	438	17.3	10.1	ND	-	-	-	-	-	-	-	-	-	-	-	-	819.19	Pre-injection re-sampling	
	10/26/15	ND	ND	ND	ND	ND	ND	ND	ND	ND	21,400	2,580	ND	ND	599	172	ND	1,240	35.1	818.58	1st Post-injection	
	11/06/15	ND	ND	ND	ND	ND	ND	ND	ND	ND	10,500	833	ND	ND	521	172	2.6	995	ND	818.62	2nd Post-injection	
	12/04/15	ND	ND	ND	ND	ND	ND	ND	ND	ND	13,300	2,190	ND	ND	575	117	ND	342	36.7	818.96	3rd Post-injection	
	01/06/16	ND	ND	ND	ND	ND	ND	ND	ND	ND	31.7	17,600	11,600	ND	103	605	104	ND	278	91.9	818.64	4th Post-injection
	03/31/16	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,710	12,100	7,240	0.25	100	519	102	ND	ND	14.5	818.50	5th Post-injection
PMW-2	09/16/15	35.4	192	230	27.2	16.9	2.7	ND	ND	ND	10,800	1,620	ND	35.3	318	108	ND	ND	3.1	819.07	Pre-injection	
	09/25/15	30.2	224	276	31.7	21.6	3.6	-	-	-	-	-	-	-	-	-	-	-	-	819.19	Pre-injection re-sampling	
	10/26/15	39.7	248	303	46.5	32.1	4.5	ND	ND	14.4	3,430	2,600	ND	63.6	427	156	ND	ND	2.3	818.61	1st Post-injection	
	11/06/15	36.6	264	318	34.3	20.5	4.8	ND	ND	16.0	3,860	3,420	ND	34.8	426	149	ND	ND	2.5	818.59	2nd Post-injection	
	12/04/15	54.4	257	284	50.5	30.7	4.1	ND	ND	13.2	7,070	5,480	ND	51.9	425	147	ND	ND	2.5	818.96	3rd Post-injection	
	01/06/16	51.2	282	320	37.8	22.2	ND	ND	ND	ND	13.0	8,910	6,320	ND	54.0	421	157	ND	ND	2.4	818.62	4th Post-injection
	03/31/16	93.8	361	309	35.2	23.6	3.7	ND	ND	ND	18.6	9,170	6,320	0.13	60.7	499	128	ND	ND	5.3	818.48	5th Post-injection
PMW-3	09/15/15	519	20.5	42.3	ND	ND	0.65	ND	ND	72.4	5,250	1,370	ND	36.7	315	98.2	ND	ND	2.6	810.22	Pre-injection	
	10/26/15	20.8	15.6	35.3	ND	ND	0.92	ND	ND	26.7	10,500	4,540	ND	36.1	300	152	ND	ND	2.5	803.73	1st Post-injection	
	11/06/15	21.0	19.4	45.0	1.4	ND	2.4	ND	ND	51.3	7,270	5,180	ND	28.0	369	121	ND	ND	2.6	806.54	2nd Post-injection	
	12/04/15	19.5	34.5	70.5	3.1	ND	1.7	ND	ND	36.9	8,360	7,260	ND	48.0	370	136	ND	ND	3.0	805.12	3rd Post-injection	
	01/06/16	13.0	37.7	67.7	2.6	ND	ND	ND	ND	24.6	10,800	7,410	ND	35.9	328	130	ND	ND	2.8	804.06	4th Post-injection	
	01/25/16	10.8	42.3	65.9	2.8	ND	0.72	ND	ND	23.1	10,700	5,880	ND	40.6	341	141	ND	ND	3.1	804.95	1st Post Injection Well Injections	
	02/08/16	12.9	57.6	97.6	3.7	1.5	1.2	ND	ND	37.0	8,300	6,350	ND	55.8	343	150	ND	ND	2.8	804.16	2nd Post Injection Well Injections	
03/31/16	13.9	53.6	91.0	2.7	1.6	ND	ND	ND	ND	27.3	8,680	7,600	ND	41.3	356	151	ND	ND	3.1	805.67	3rd Post Injection Well Injections	
PMW-4	09/15/15	13.7	11.0	31.8	ND	ND	ND	ND	ND	20.6	5,020	1,090	ND	31.6	264	85.4	ND	ND	2.2	810.16	Pre-injection	
	10/26/15	17.8	19.9	55.3	ND	ND	ND	ND	ND	17.7	3,880	2,580	ND	32.6	274	118	ND	ND	2.3	803.39	1st Post-injection	
	11/06/15	15.4	18.2	50.5	ND	ND	ND	ND	ND	21.0	4,970	2,580	ND	24.5	281	115	ND	ND	2.6	806.50	2nd Post-injection	
	12/04/15	16.5	23.2	69.0	1.4	ND	ND	ND	ND	ND	8,940	3,370	ND	36.0	273	97.1	ND	ND	2.9	804.99	3rd Post-injection	
	01/06/16	14.4	16.4	47.1	ND	ND	ND	ND	ND	ND	5,920	3,330	ND	35.9	267	101	0.46	ND	3.2	803.92	4th Post-injection	
	01/25/16	19.3	19.3	49.9	1.1	ND	ND	ND	ND	ND	4,860	3,420	ND	32.4	251	80.5	ND	ND	3.2	804.84	1st Post Injection Well Injections	
	02/08/16	21.6	23.8	60.4	1.2	< 1.0	0.4	ND	ND	ND	3,980	3,070	ND	30.6	241	84.2	ND	ND	3.3	804.05	2nd Post Injection Well Injections	
03/31/16	28.4	23.8	57.5	ND	1.2	ND	ND	ND	ND	ND	6,310	3,350	ND	22.7	231	90.5	ND	ND	3.6	805.57	3rd Post Injection Well Injections	

- = not analyzed
cis-1,2-DCE = cis-1,2-dichloroethene
COD = chemical oxygen demand
CVOCs = chlorinated volatile organic compounds
1,1,-DCA = 1,1-dichloroethane
1,1,-DCE = 1,1-dichloroethene
ft amsl = feet above mean sea level
GW = groundwater
mg/L = milligrams per liter
ND = not detected
TCE = Trichloroethene
TOC = total organic carbon
trans-1,2-DCE = trans-1,2-dichloroethene
µg/L = micrograms per liter

Table 5-2
PlumeStop Demonstration Volatile Fatty Acids Groundwater Analytical Results
PlumeStop Demonstration Study Report
NIROP Fridley, Minnesota

Well ID	Date	Lactic Acid	Acetic Acid	Propionic Acid	Formic Acid	Butyric Acid	Pyruvic Acid	i-Pentanoic Acid	Pentanoic Acid	i-Hexanoic Acid	Hexanoic Acid	Notes
Unit		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
PMW-1	09/16/15	ND	ND	ND	NA	ND	ND	NA	NA	NA	NA	Pre-injection
	10/26/15	ND	ND	1.5		ND	ND	ND	ND	ND	ND	1st Post-injection
	11/06/15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2nd Post-injection
	12/04/15	ND	30	15	ND	ND	ND	ND	ND	ND	ND	3rd Post-injection
	01/06/16	ND	120	86	ND	1.8	ND	ND	ND	ND	ND	4th Post-injection
	03/31/16	0.10 J	17	10	0.044 J	1.4	0.066 J	0.054 J	ND	ND	ND	5th Post-injection
PMW-2	09/16/15	ND	1.7 J	ND	NA	ND	ND	NA	NA	NA	NA	Pre-injection
	10/26/15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1st Post-injection
	11/06/15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2nd Post-injection
	12/04/15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3rd Post-injection
	01/06/16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4th Post-injection
	03/31/16	0.043 J	2.7	2.2	ND	ND	ND	ND	ND	ND	ND	5th Post-injection
PMW-3	09/15/15	ND	4.6 J	ND	NA	ND	ND	NA	NA	NA	NA	Pre-injection
	10/26/15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1st Post-injection
	11/06/15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2nd Post-injection
	12/04/15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3rd Post-injection
	01/06/16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4th Post-injection
	01/25/16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1st Post Injection Well Injections
	02/08/16	ND	0.016 J	ND	0.014 J	ND	ND	ND	ND	ND	ND	2nd Post Injection Well Injections
	03/31/16	ND	0.035 J	ND	0.028 J	ND	ND	ND	ND	ND	ND	3rd Post Injection Well Injections
PMW-4	09/15/15	ND	1.1 J	ND	NA	ND	ND	NA	NA	NA	NA	Pre-injection
	10/26/15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1st Post-injection
	11/06/15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2nd Post-injection
	12/04/15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3rd Post-injection
	01/06/16	ND	0.14	ND	ND	ND	ND	ND	ND	ND	ND	4th Post-injection
	01/25/16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1st Post Injection Well Injections
	02/08/16	ND	0.036 J	ND	0.016 J	ND	ND	ND	ND	ND	ND	2nd Post Injection Well Injections
	03/31/16	ND	0.049 J	ND	0.016 J	ND	ND	ND	ND	ND	ND	3rd Post Injection Well Injections

J = estimated value
mg/L = milligrams per liter
ND = not detected
NA = not analyzed

Table 5-3
PlumeStop Demonstration Carbon Isotope Forensics Groundwater Analytical Results
PlumeStop Demonstration Study Report
NIROP Fridley, Minnesota

Stable Carbon Isotope Forensics of Chlorinated Solvents								
Well ID	Date	Vinyl Chloride	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	1,1-DCA	TCE	Notes
PMW-1	09/16/15	-31.62	-29.87	-33.97 J	-13.89	-26.26	-6.24	Pre-injection
	11/06/15	U	U	U	U	U	U	2nd Post-injection
	01/06/16	NA	NA	NA	NA	NA	NA	4th Post-injection
	03/31/16	U	U	U	U	U	U	5th Post-injection
PMW-2	09/16/15	-29.05	-26.20	-35.25	-16.80	-27.41	-0.63	Pre-injection
	11/06/15	-23.97	-27.03	-37.54	-20.23	-29.16	12.09	2nd Post-injection
	01/06/16	NA	NA	NA	NA	NA	NA	4th Post-injection
	03/31/16	-23.79	-19.24	-37.86	-18.67	-26.40	6.28	5th Post-injection
PMW-3	09/15/15	-29.94	-28.09	-28.07	U	U	-21.82	Pre-injection
	11/06/15	-20.39	-20.10	-20.97	U	U	-8.52	2nd Post-injection
	01/06/16	U	-19.78	-22.58	U	-23.48	-3.77	4th Post-injection
	03/31/16	U	-19.77	-23.1	U	-23.01	-0.26	3rd Post Injection Well Injections
PMW-4	09/15/15	U	-13.30	-17.99	U	U	5.56	Pre-injection
	11/06/15	U	-17.46	-20.12	U	U	7.39	2nd Post-injection
	01/06/16	NA	NA	NA	NA	NA	NA	4th Post-injection
	03/31/16	U	-25.88	-29.16	U	U	4.39	3rd Post Injection Well Injections

Results reported in ‰ VPDB

Method: Compound Specific Isotope Analysis (CSIA) for 13C and 2H by GC-IRMS and for 37CL by GC-qMS

J = Low peak signal produced which is considered usable to the ±2‰ but not the standard ±5‰

U = Either there was no peak corresponding to the target analyte or that such a peak did not produce a reliable CSIA result due to sample matrix effect or dilutions applied to prevent instrument contamination

NA = not analyzed

DCE = dichloroethene

TCE = trichloroethene

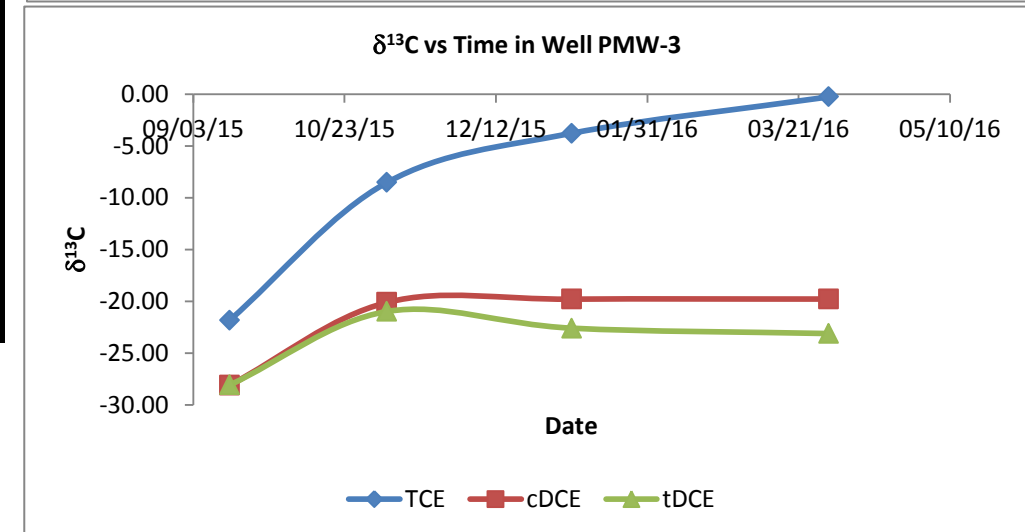
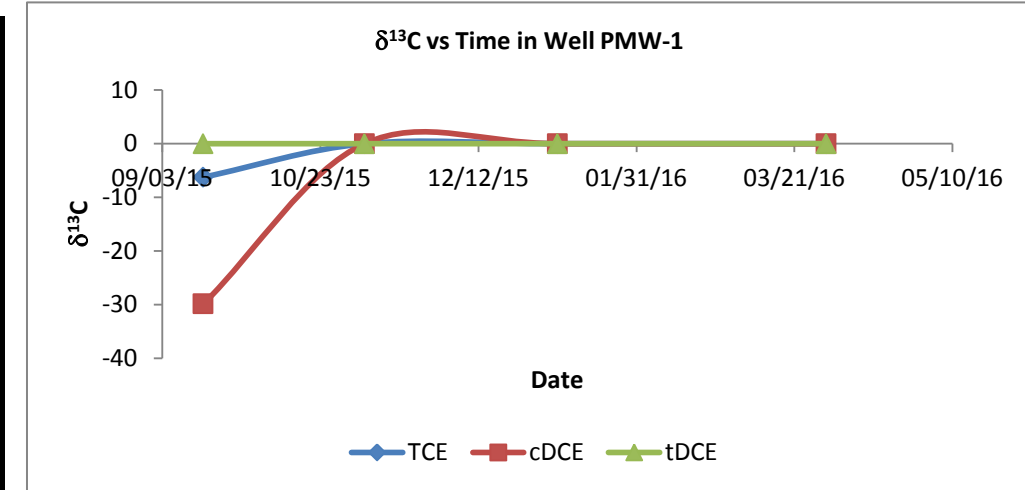


Table 5-4
Summary of Field Water Quality Parameters
PlumeStop Demonstration Study Report
Nirop Fridley, Minnesota

Well Number (Unique Number)	Date	Volume Removed (gallons)	Temperature (°C)	pH	Specific Conductance (µs/cm)	ORP (mV)	Dissolved Oxygen (ppm)	Color
PMW-1	9/16/2015	5.0	17.36	7.24	1,402	52.2	5.78	Clear
	9/25/2015	2.5	17.98	7.17	1,571	-47.9	0.69	Clear
	10/26/2015	3.75	17.26	8.16	1,814	-159.7	0.71	Black
	11/6/2015	2.25	16.00	7.67	2,051	-189.6	0.15	Black
	12/4/2015	2.0	15.21	7.29	1,649	-185.4	0.52	Black
	1/6/2016	2.0	14.02	6.95	1,603	-150.6	1.13	Light gray
	3/31/2016	2.0	15.07	7.08	1,383	-135.7	0.37	Gray
PMW-2	9/16/2015	2.5	16.62	7.11	1,384	-117.2	0.39	Clear
	9/25/2015	3.25	17.97	7.15	1,497	-25.9	0.72	Clear
	10/26/2015	4.5	16.87	7.17	1,426	-80.9	1.75	Clear
	11/6/2015	2.0	16.02	7.11	1,698	-110.2	0.81	Clear
	12/4/2015	2.5	14.56	7.15	1,425	-105.5	1.02	Clear
	1/6/2016	2.5	14.65	7.22	1,415	-106.3	1.29	Clear
	3/31/2016	2.0	14.75	7.26	1,353	-105.8	0.25	Gray
PMW-3	9/15/2015	2.5	16.45	7.05	1,062	-92.8	0.59	Clear
	10/26/2015	3.0	15.90	7.27	1,029	-90.6	3.10	Clear
	11/6/2015	2.5	15.55	7.07	1,410	-104.3	0.82	Clear
	12/4/2015	2.0	12.65	7.14	1,152	-117.6	1.29	Clear
	1/6/2016	2.5	13.40	7.27	1,099	-98.5	2.99	Clear
	1/25/2016	2.5	13.51	7.25	1,017	-110.4	3.95	Clear
	2/8/2016	2.0	10.88	7.16	1,058	-78.4	1.83	Clear
	3/31/2016	2.0	14.31	7.27	1,103	-100.5	0.31	Light Gray
PMW-4	9/15/2015	3.5	16.22	7.12	828	-173.9	0.60	Clear
	10/26/2015	3.25	16.28	7.19	898	-50.2	1.09	Clear
	11/6/2015	2.5	15.52	7.00	1,137	-91.2	0.90	Clear
	12/4/2015	2.0	12.33	7.06	1,164	-100.6	1.43	Clear
	1/6/2016	3.0	13.00	7.23	889	-62.6	2.17	Clear
	1/25/2016	2.0	13.71	7.22	785	-57.7	0.85	Very Light Gray to Clear
	2/8/2016	2.0	12.35	7.11	788	-69.0	1.01	Clear
	3/31/2016	2.5	14.38	7.28	781	-60.0	1.17	Light Gray

Notes

°C = degrees Celsius

µs/cm = microsiemens per centimeter

mV = millivolts

ppm = parts per million

Figures

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**Naval Industrial Reserve Ordnance Plant (NIROP)
Plumestop Demonstration Report**

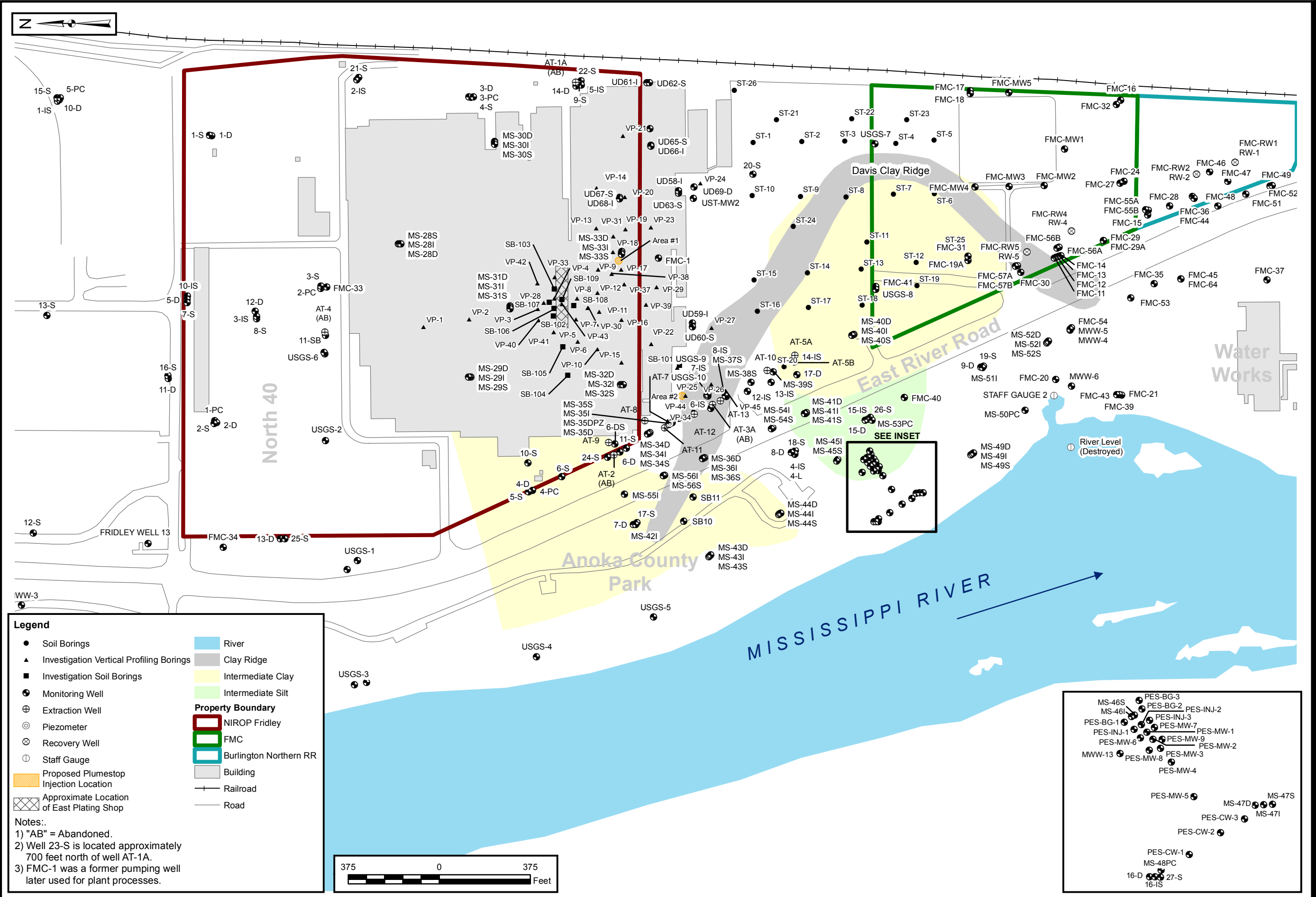
Fridley, Minnesota
Project No.: 60276080 Date: 10/25/2016

Site Location Map



Figure 1-1

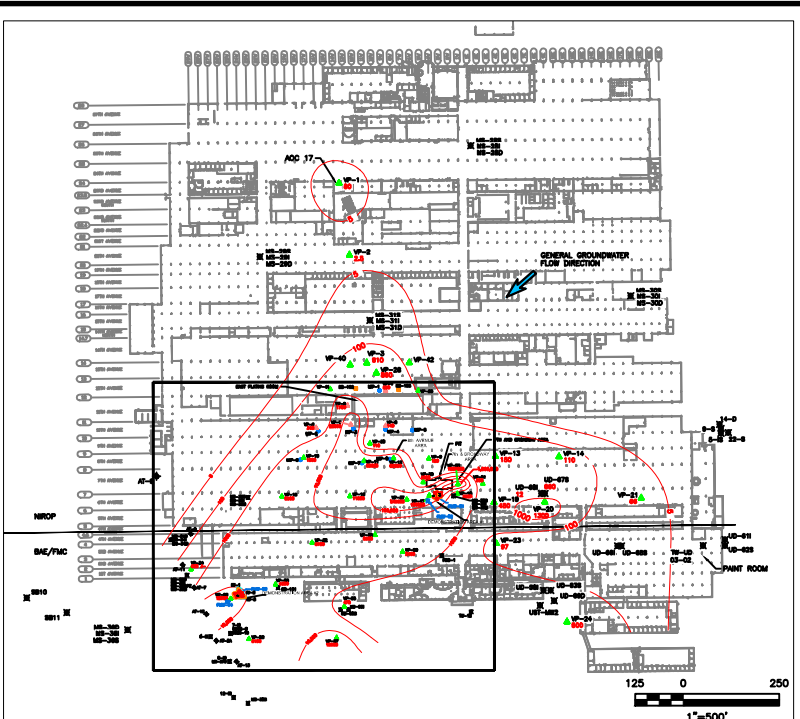
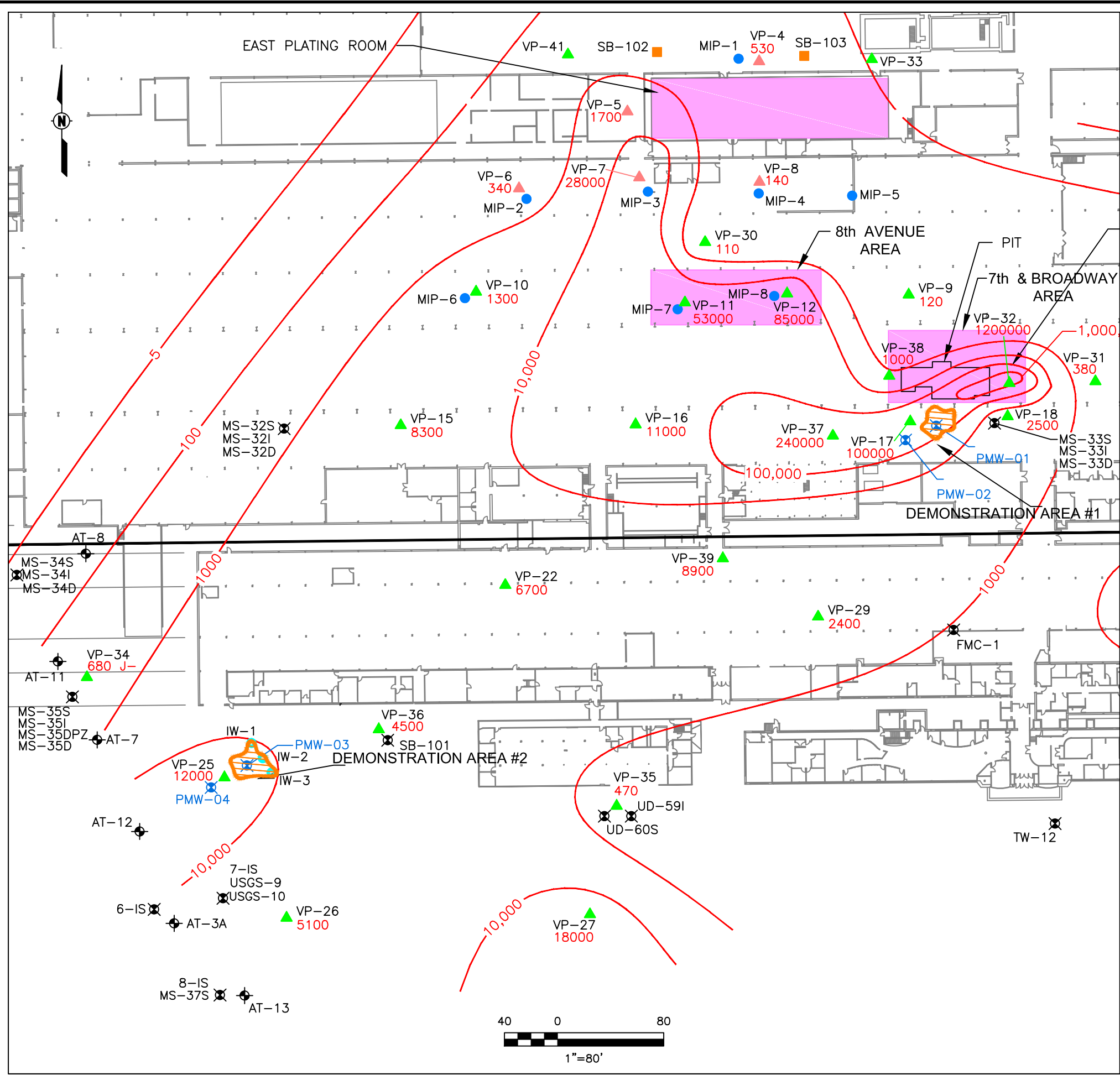
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Site Layout

Naval Industrial Reserve Ordnance Plant (NIROP)
Plumestop Demonstration Report

Fridley, Minnesota
Project No.: 60276080 Date: 10/25/2016



- LEGEND**
- MIP-2 MEMBRANE INTERFACE PROBE BORING
 - SB-104 SOIL BORING (VALDOSE ZONE ONLY)
 - ▲ VP-10 VERTICAL PROFILING BORING (VADEOSE ZONE SOIL AND SAMPLING BELOW WATER TABLE)
 - ▲ VP-20 VERTICAL PROFILING BORING (SAMPLING BELOW WATER TABLE)
 - ⊗ MS-28S, MS-28I, MS-28D EXISTING MONITORING WELL
 - ⊕ AT-11 EXTRACTION WELL
 - ⊗ PMW-01 PERFORMANCE MONITORING WELL LOCATION
 - IW-3 INJECTION WELL
 - ▭ APPROXIMATE PLUMESTOP™ AREA OF INFLUENCE BASED ON RADIUS OF INFLUENCE BORINGS
 - NIROP / BAE-FMC PROPERTY LINE
 - 210 MAXIMUM GROUNDWATER TCE CONCENTRATION (UG/L) REGARDLESS OF DEPTH
 - 5 TCE ISOCONCENTRATION CONTOUR
 - ▭ POTENTIAL CONTRIBUTING AREA

NOTES:

TCE = TRICHLOROETHENE

GROUNDWATER RESULTS ARE IN ug/L

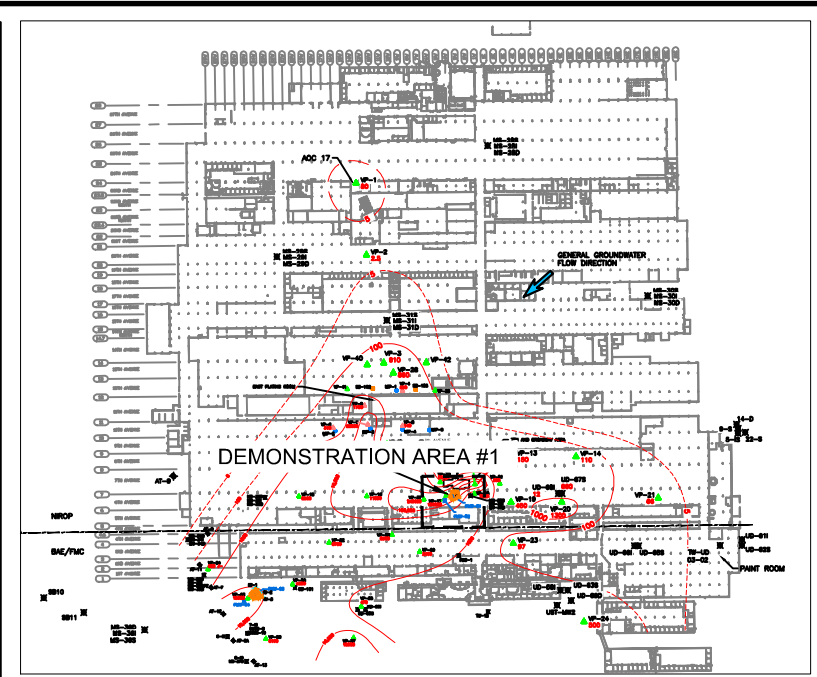
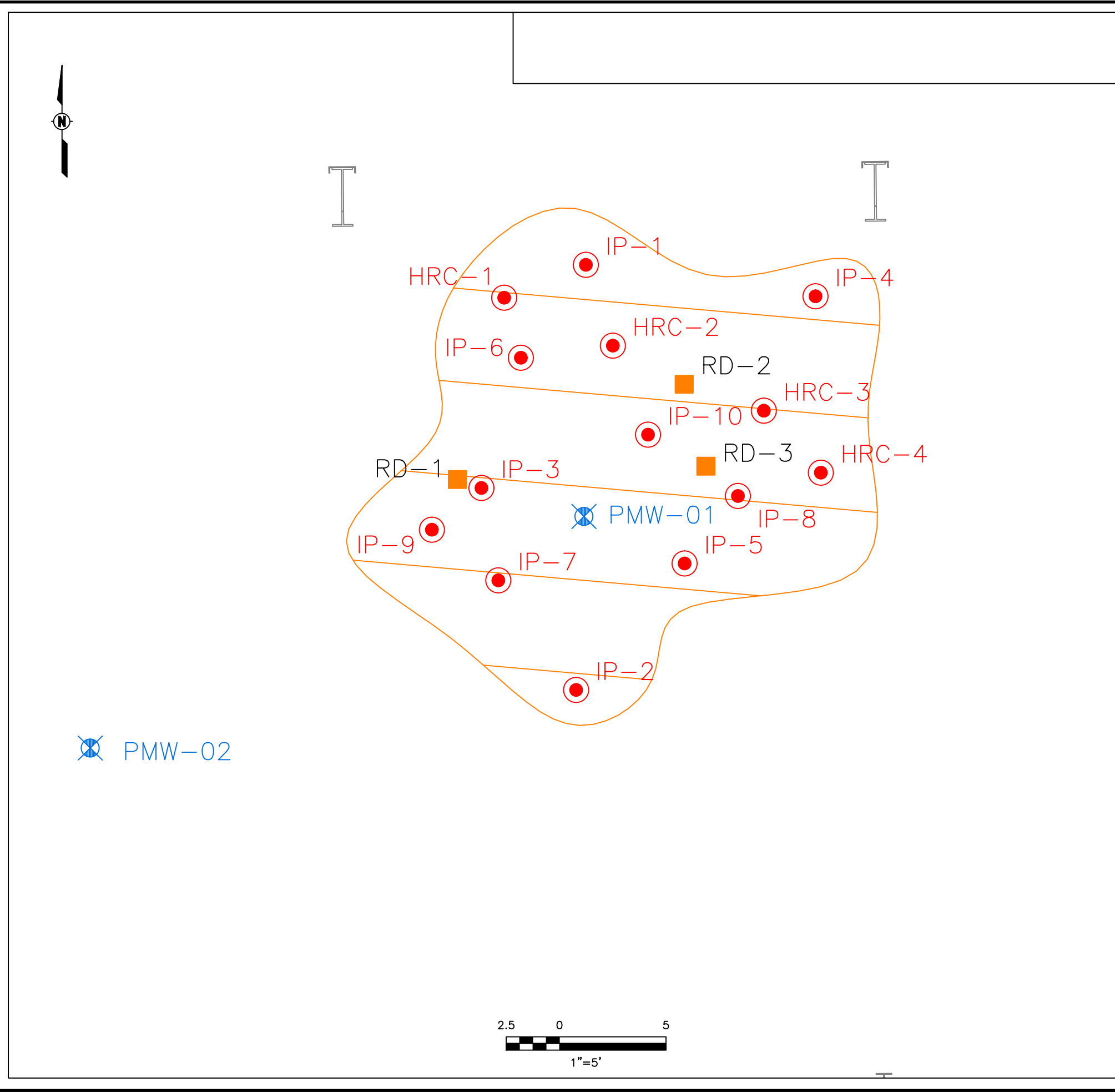
J- = ESTIMATED RESULT BIASED LOW

< = LESS THAN LABORATORY REPORTING LIMIT

GROUNDWATER SAMPLES WERE COLLECTED BETWEEN SEPTEMBER 11, 2013 AND JANUARY 8, 2014

THE HIGHER RESULT BETWEEN PARENT AND DUPLICATE SAMPLE IS PRESENTED IF APPLICABLE

UD-68I WAS NOT USED IN CONTOURING



- LEGEND**
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 - IP-2 INJECTION BORING
 - RD-1 RADIUS OF INFLUENCE BORING
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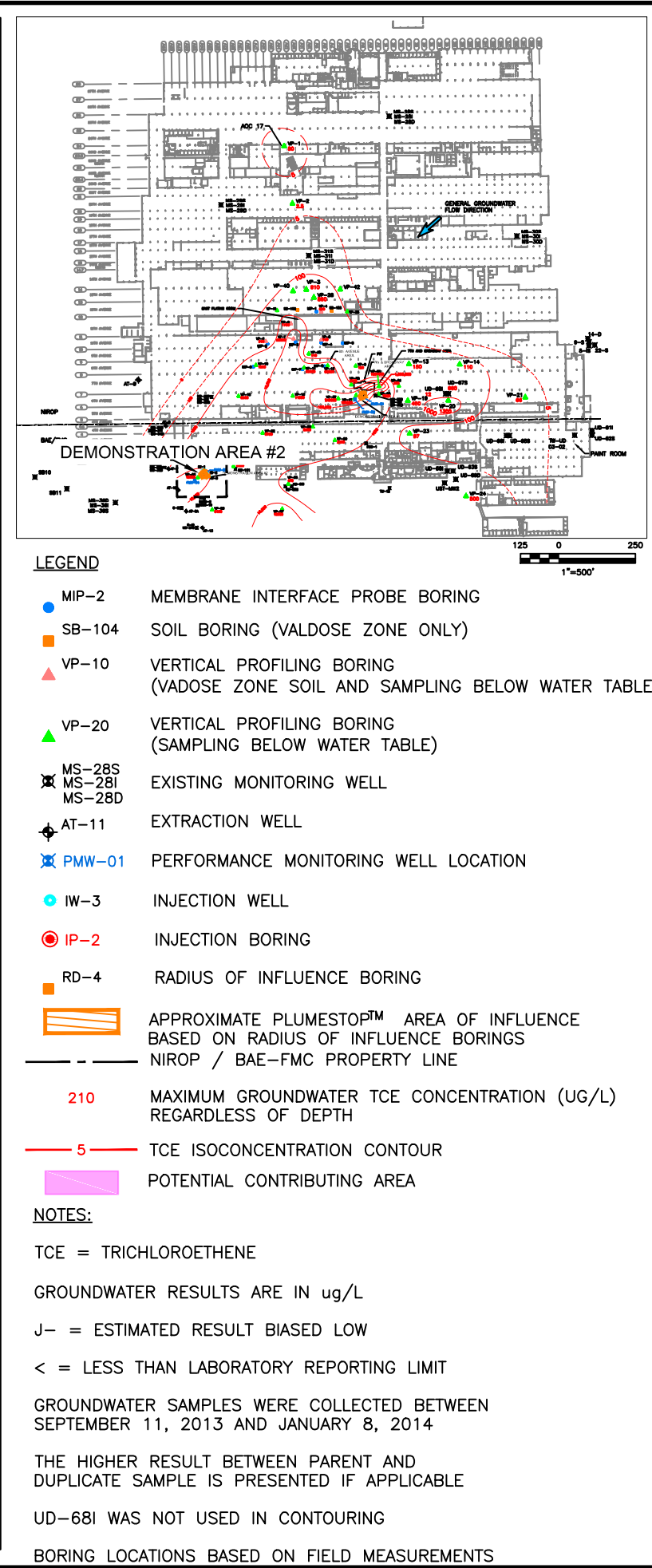
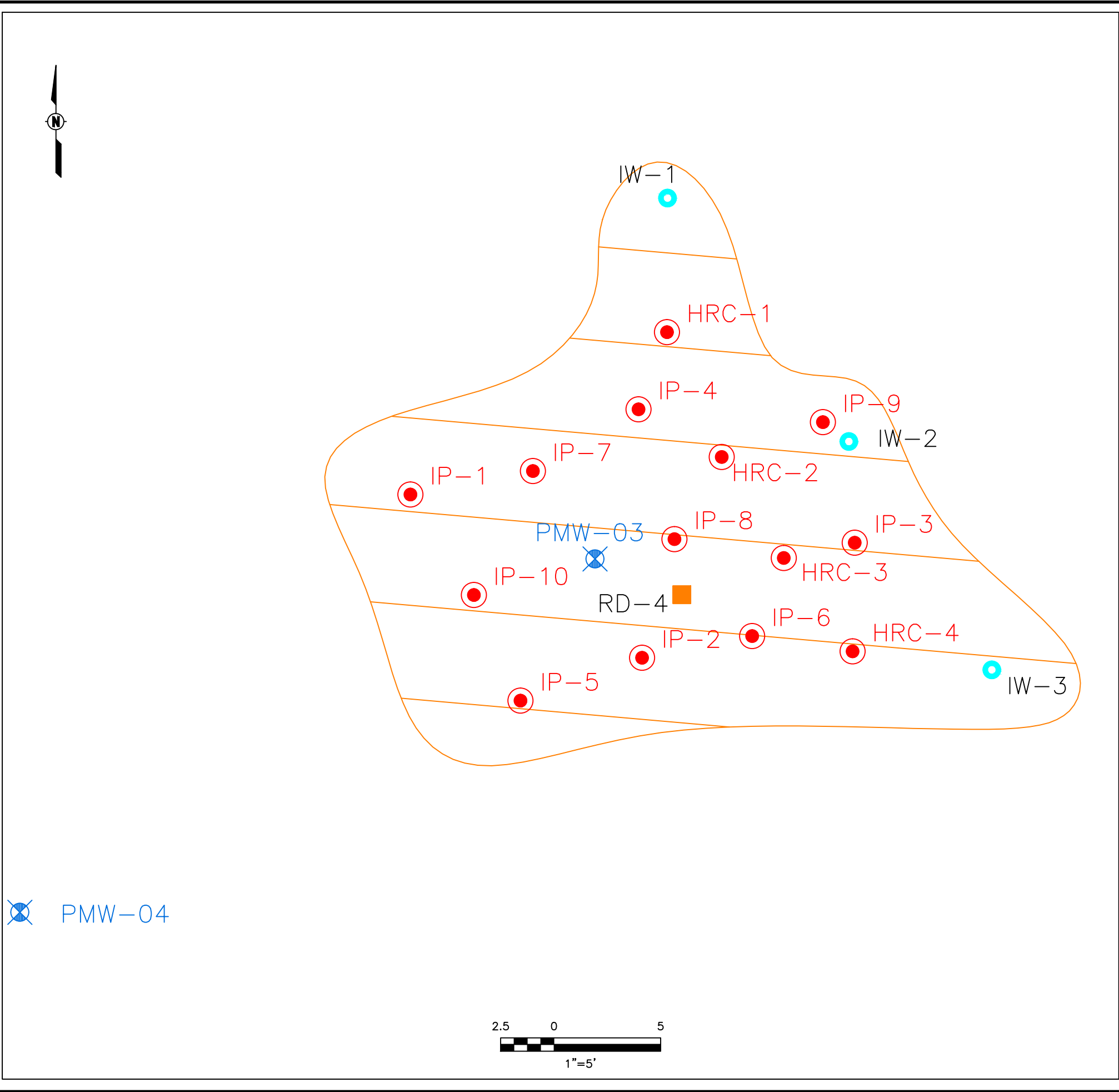
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GROUNDWATER SAMPLES WERE COLLECTED BETWEEN SEPTEMBER 11, 2013 AND JANUARY 8, 2014

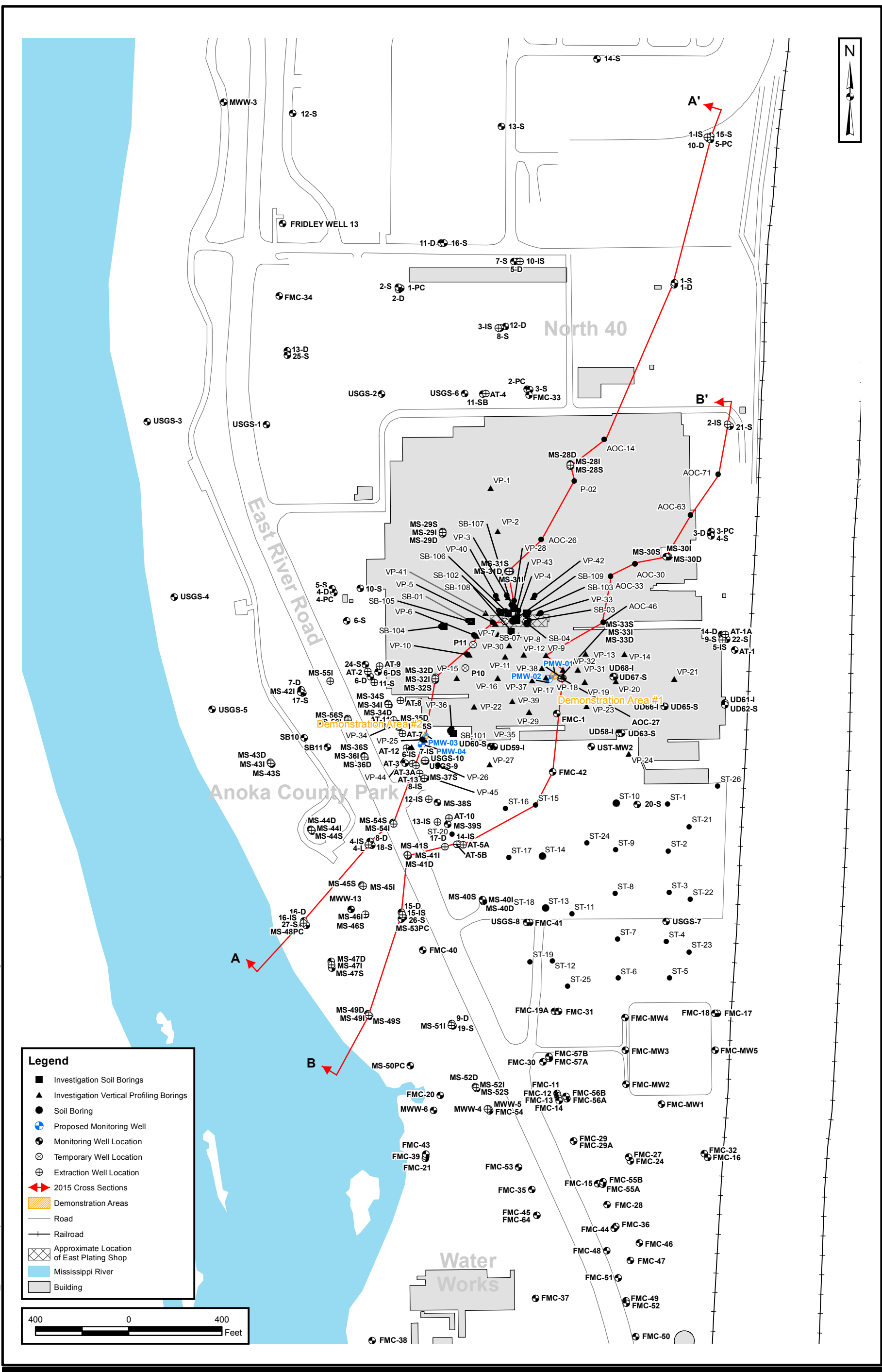
THE HIGHER RESULT BETWEEN PARENT AND DUPLICATE SAMPLE IS PRESENTED IF APPLICABLE

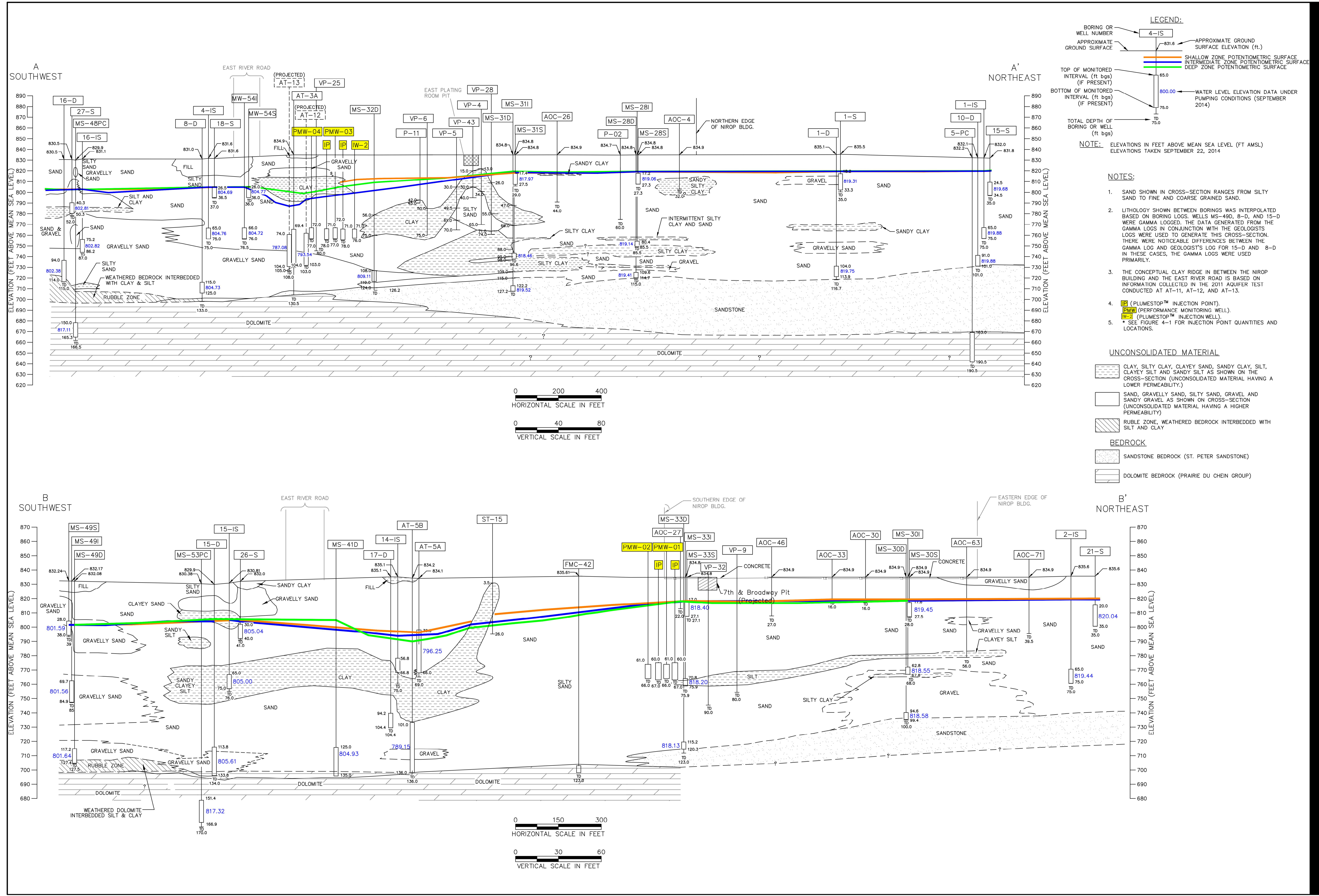
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BORING LOCATIONS BASED ON FIELD MEASUREMENTS



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LEGEND:

- BORING OR WELL NUMBER: 4-IS
- APPROXIMATE GROUND SURFACE: 831.6
- APPROXIMATE GROUND SURFACE ELEVATION (ft.): 831.6
- SHALLOW ZONE POTENTIOMETRIC SURFACE: 85.0
- INTERMEDIATE ZONE POTENTIOMETRIC SURFACE: 800.00
- DEEP ZONE POTENTIOMETRIC SURFACE: 75.0
- TOP OF MONITORED INTERVAL (ft bgs) (IF PRESENT): 65.0
- BOTTOM OF MONITORED INTERVAL (ft bgs) (IF PRESENT): 800.00
- WATER LEVEL ELEVATION DATA UNDER PUMPING CONDITIONS (SEPTEMBER 2014): 75.0
- TOTAL DEPTH OF BORING OR WELL (ft bgs): 75.0

NOTE: ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL (FT AMSL) ELEVATIONS TAKEN SEPTEMBER 22, 2014

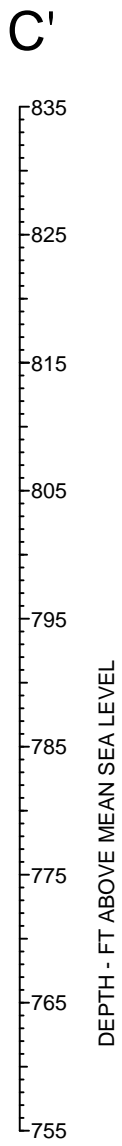
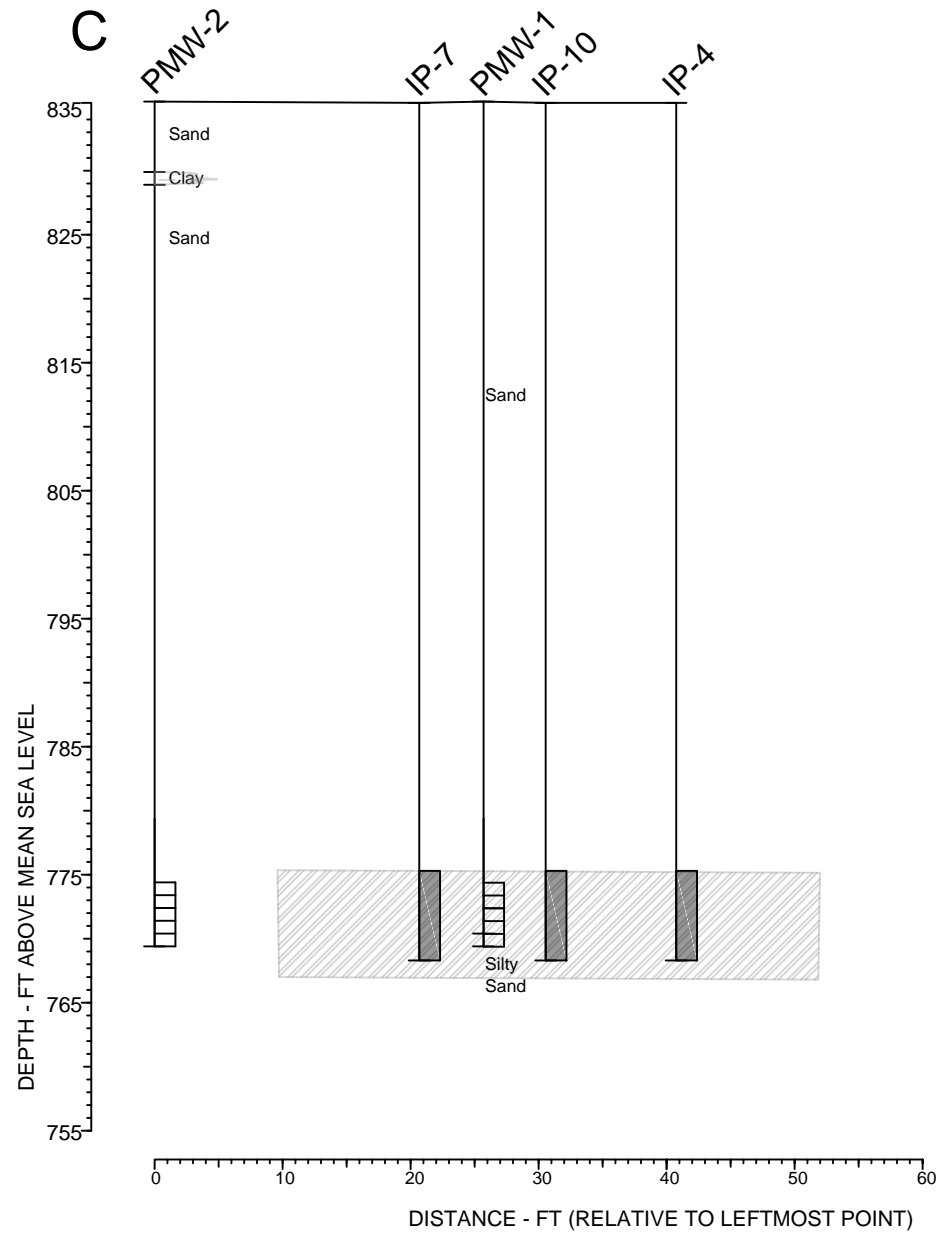
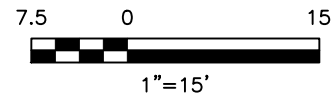
- NOTES:**
- SAND SHOWN IN CROSS-SECTION RANGES FROM SILTY SAND TO FINE AND COARSE GRAINED SAND.
 - LITHOLOGY SHOWN BETWEEN BORINGS WAS INTERPOLATED BASED ON BORING LOGS. WELLS MS-49D, 8-D, AND 15-D WERE GAMMA LOGGED. THE DATA GENERATED FROM THE GAMMA LOGS IN CONJUNCTION WITH THE GEOLOGISTS LOGS WERE USED TO GENERATE THIS CROSS-SECTION. THERE WERE NOTICEABLE DIFFERENCES BETWEEN THE GAMMA LOG AND GEOLOGIST'S LOG FOR 15-D AND 8-D IN THESE CASES, THE GAMMA LOGS WERE USED PRIMARILY.
 - THE CONCEPTUAL CLAY RIDGE IN BETWEEN THE NIROP BUILDING AND THE EAST RIVER ROAD IS BASED ON INFORMATION COLLECTED IN THE 2011 AQUIFER TEST CONDUCTED AT AT-11, AT-12, AND AT-13.
 - IP (PLUMESTOP™ INJECTION POINT), PMW (PERFORMANCE MONITORING WELL), IW-2 (PLUMESTOP™ INJECTION WELL).
 - SEE FIGURE 4-1 FOR INJECTION POINT QUANTITIES AND LOCATIONS.

UNCONSOLIDATED MATERIAL

- CLAY, SILTY CLAY, CLAYEY SAND, SANDY CLAY, SILT, CLAYEY SILT AND SANDY SILT AS SHOWN ON THE CROSS-SECTION (UNCONSOLIDATED MATERIAL HAVING A LOWER PERMEABILITY.)
- SAND, GRAVELLY SAND, SILTY SAND, GRAVEL AND SANDY GRAVEL AS SHOWN ON CROSS-SECTION (UNCONSOLIDATED MATERIAL HAVING A HIGHER PERMEABILITY)
- RUBBLE ZONE, WEATHERED BEDROCK INTERBEDDED WITH SILT AND CLAY

BEDROCK

- SANDSTONE BEDROCK (ST. PETER SANDSTONE)
- DOLOMITE BEDROCK (PRAIRIE DU CHEIN GROUP)



CLAY, SILTY CLAY, CLAYEY SAND, SANDY CLAY, SILT, CLAYEY SILT, SILTY SAND, SANDY SILT AND RUBBLE ZONE AS SHOWN ON THE CROSS-SECTION (UNCONSOLIDATED MATERIAL HAVING A LOWER PERMEABILITY)

SAND, GRAVELLY SAND, GRAVEL AND SANDY GRAVEL AS SHOWN ON CROSS SECTION (UNCONSOLIDATED MATERIAL HAVING A HIGHER PERMEABILITY)

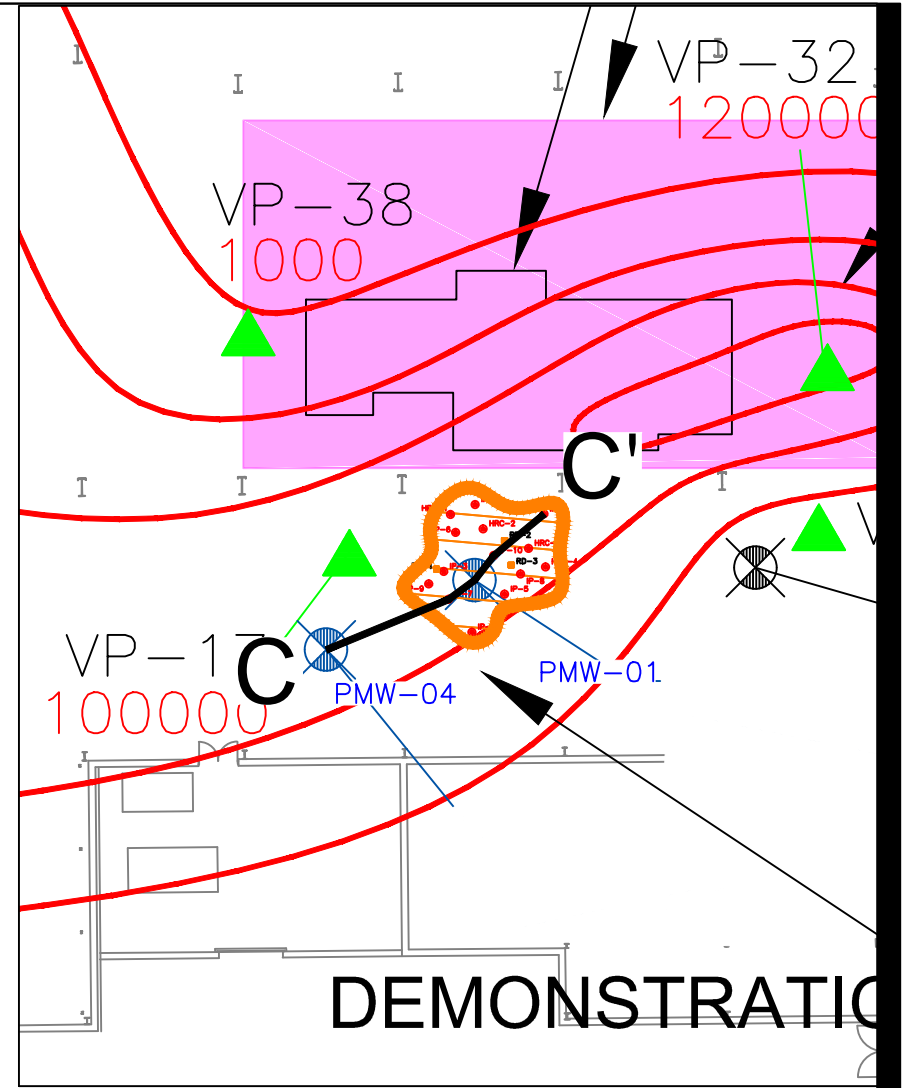
SANDSTONE BEDROCK (ST. PETER SANDSTONE)

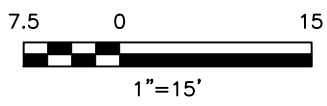
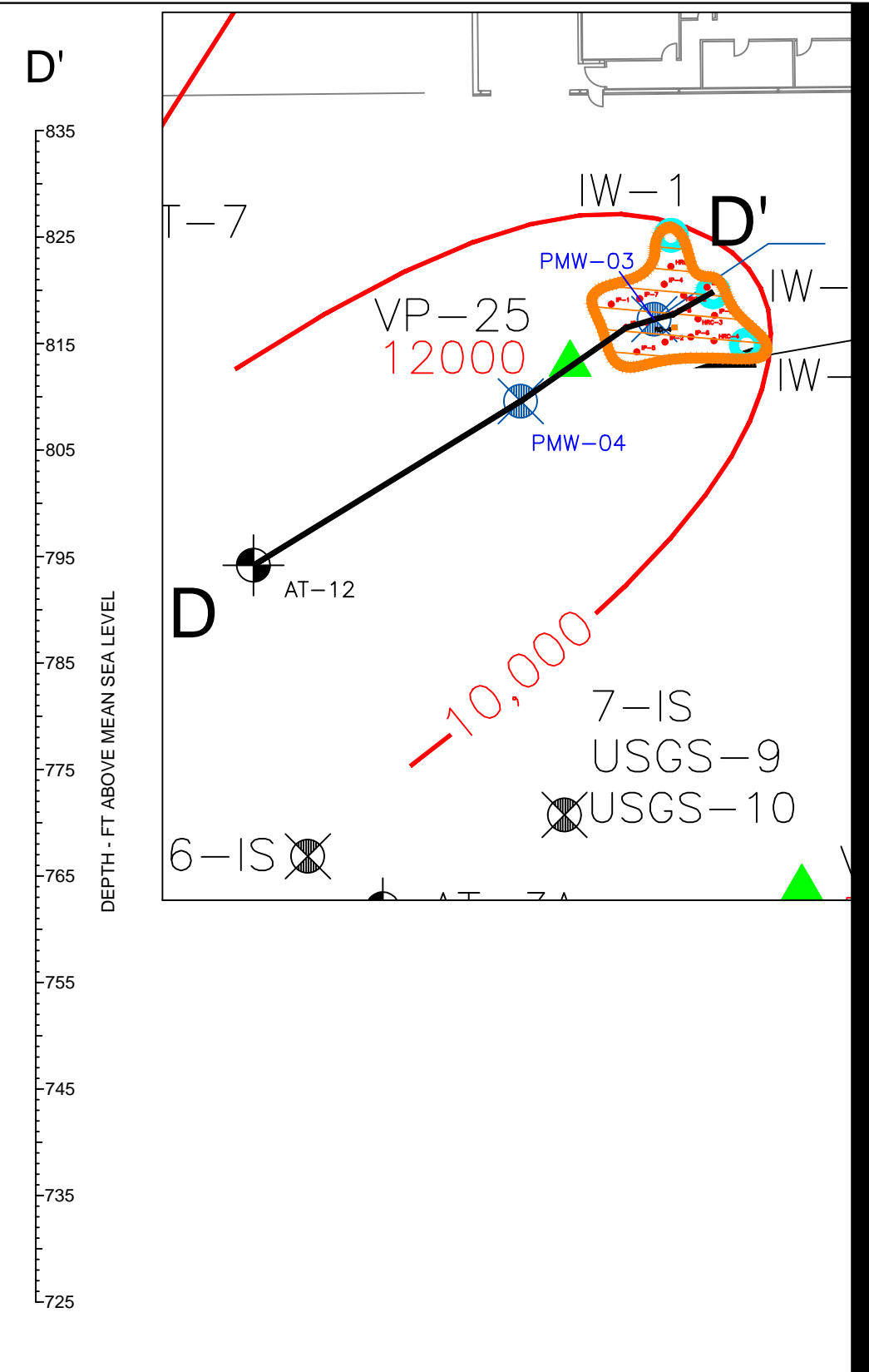
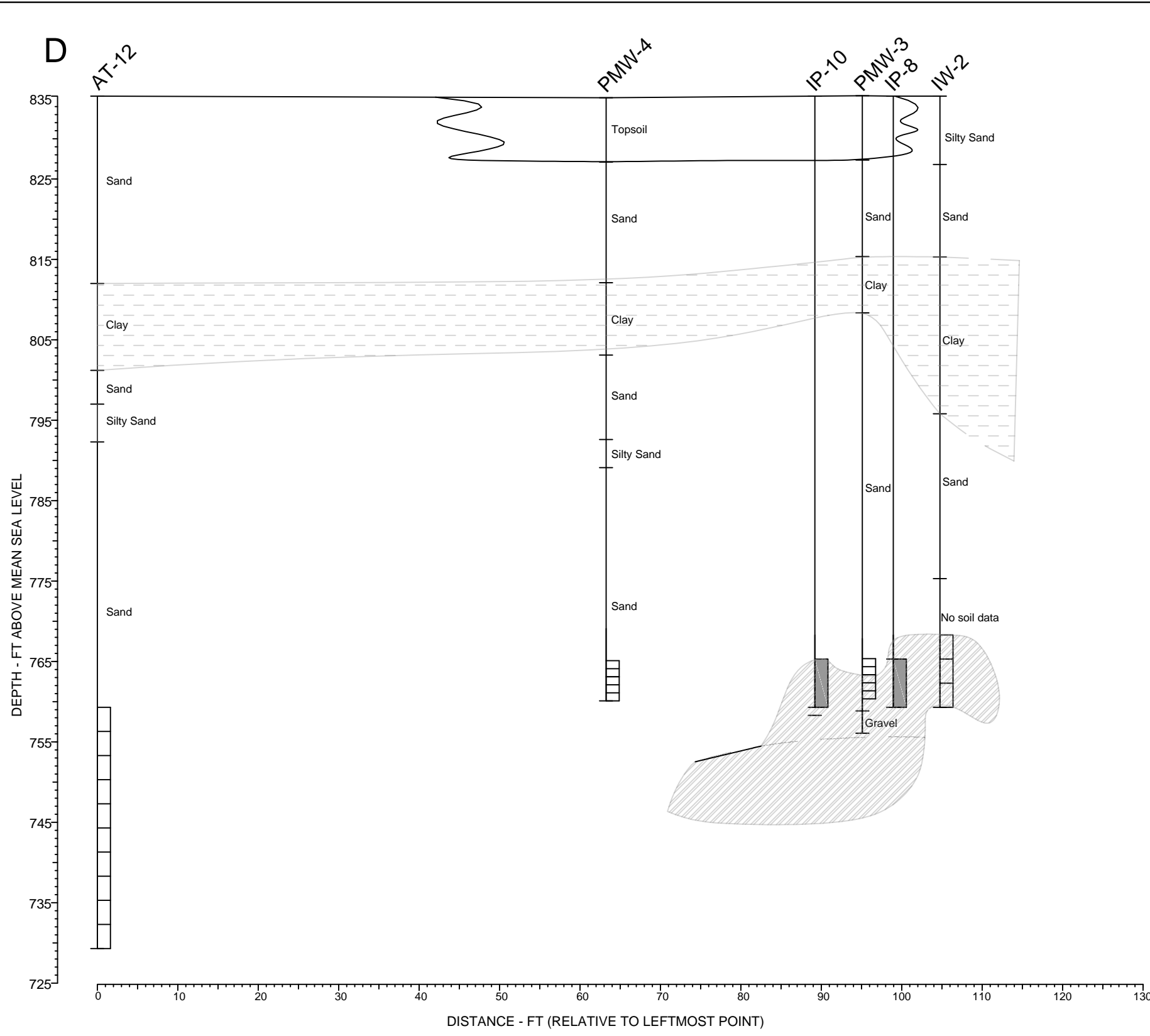
SCREENED WELL INTERVAL

APPROXIMATE GROUNDWATER ELEVATION

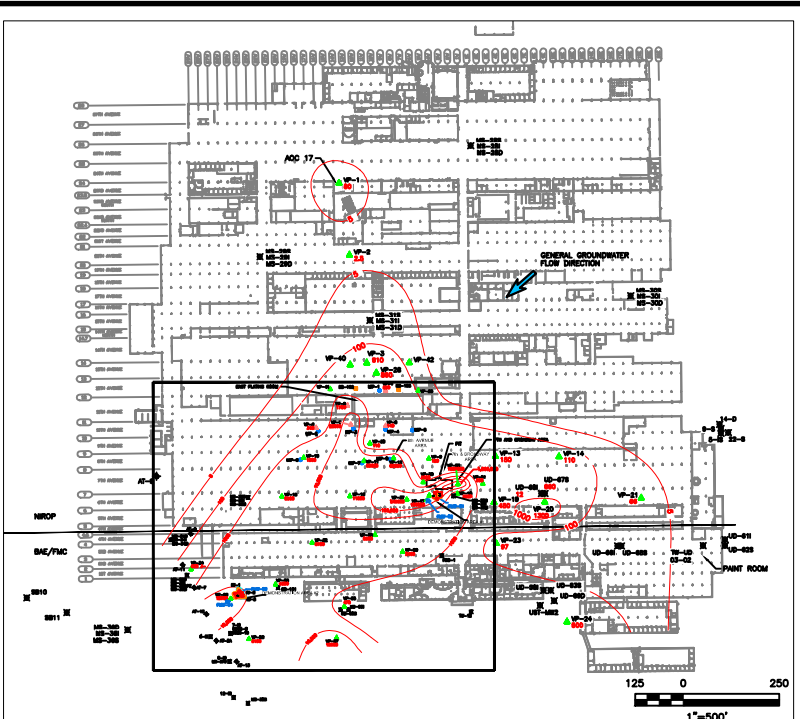
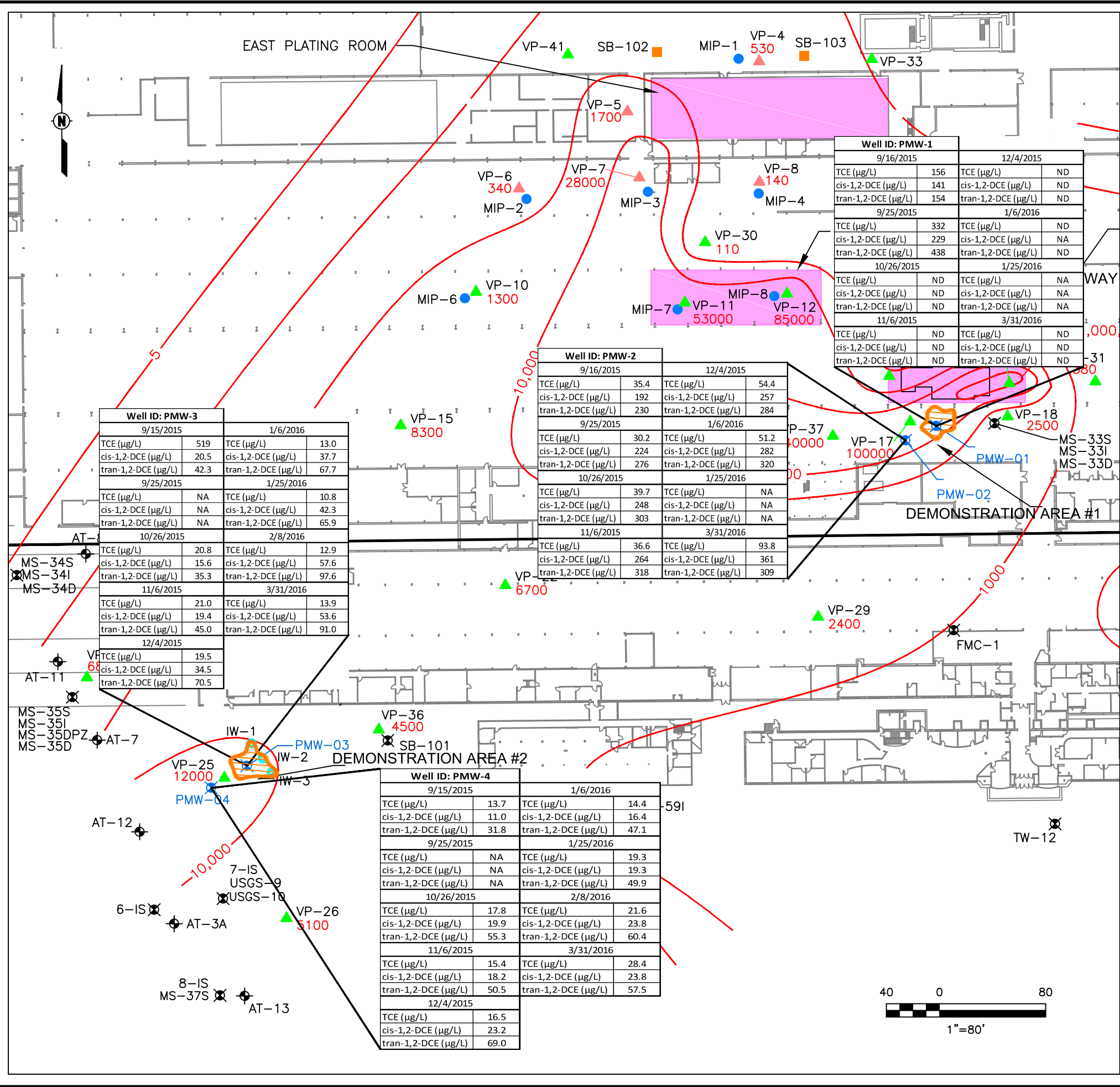
APPROXIMATE AREA OF INFLUENCE OF PLUMESTOP

PLUMESTOP INJECTION POINT INTERVAL





- CLAY, SILTY CLAY, CLAYEY SAND, SANDY CLAY, SILT, CLAYEY SILT, SILTY SAND, SANDY SILT AND RUBBLE ZONE AS SHOWN ON THE CROSS-SECTION (UNCONSOLIDATED MATERIAL HAVING A LOWER PERMEABILITY)
- SAND, GRAVELLY SAND, GRAVEL AND SANDY GRAVEL AS SHOWN ON CROSS SECTION (UNCONSOLIDATED MATERIAL HAVING A HIGHER PERMEABILITY)
- SANDSTONE BEDROCK (ST. PETER SANDSTONE)
- SCREENED WELL INTERVAL
- APPROXIMATE GROUNDWATER ELEVATION
- APPROXIMATE AREA OF INFLUENCE OF PLUMESTOP
- PLUMESTOP INJECTION POINT INTERVAL



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UD-68I WAS NOT USED IN CONTOURING

Appendix A
Material Safety
Data Sheets

PlumeStop™
Material Safety Data Sheet (MSDS)

Last Revised: July, 1 2014

Section 1 – Supplier Information and Material Identification

Supplier:



REGENESIS

1011 Calle Sombra
San Clemente, CA 92673
Telephone: 949.366.8000
Fax: 949.366.8090
E-mail: info@regenesiS.com

Chemical Description: An aqueous mixture of activated carbon and other food grade additives
Trade Name: PlumeStop™
Product Use: Used to remediate contaminated soil and groundwater (environmental applications)

Section 2 – Chemical Information/Other Designations

<u>CAS No.</u>	<u>Chemical</u>	<u>Weight %</u>
7440-44-0	Colloidal activated carbon $\leq 2.5 \mu\text{m}$	< 25
7732-18-5	Water	> 75
	Proprietary additives	≤ 2

Section 3 – Physical Data

Form: Aqueous suspension
Color: Black
Odor: Odorless
Melting Point: 0°C
Boiling Point: NA
Flammability/Flash Point: NA
Vapor Pressure: NA
Bulk Density: NA
Solubility: NA
Viscosity: NA
pH (1% solution) 8-10
Decomposition Temperature: NA

Section 4 – Reactivity Data

Stability:	Stable under recommended storage conditions.
Conditions to Avoid/Incompatibility:	Avoid contact with alkali metals and strong oxidizing agents.
Possibility of Hazardous Reactions:	Hazardous polymerization will not occur.
Hazardous Decomposition Products:	Hazardous decomposition products formed under fire conditions. Carbon oxides.

Section 5 – Regulations

TSCA Inventory:	Listed (activated carbon)
OSHA Hazards:	Not regulated
CERCLA Reportable Quantity:	NA
Canadian Domestic Substance List:	Listed (activated carbon)
WHMIS Classification:	Listed (activated carbon)
SARA 302 Components:	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components:	This material does not contain any chemical components with known CAS numbers that exceed the threshold reporting limits established by SARA Title III, Section 313.

Section 6 – Protective Measures, Storage and Handling

Technical Protective Measures

Storage:	Keep container tightly closed in the original container. Do not allow product to freeze.
Handling:	As with any chemical product, use good laboratory/workplace procedures. Avoid contact with skin and eyes. Wash thoroughly after handling this product.

Personal Protective Equipment (PPE)

Exposure Limits	Contains no substances with occupational exposure limit values.
Engineering Controls:	Local exhaust ventilation is recommended.
Respiratory Controls:	Not required for routine handling. A NIOSH approved respirator should be used if handling dust that results in the event that water evaporates from product.
Eye Protection:	Wear chemical safety goggles. A full face shield may be worn in lieu of safety goggles.

Section 6 – Protective Measures, Storage and Handling, continued

Hand Protection:	Wear chemical resistant gloves (neoprene, rubber or PVC). Dispose of used gloves in accordance with good laboratory practices. Wash and dry hands after handling.
Skin Protection:	Try to avoid skin contact with this product. Chemical resistant gloves and protective clothing should be worn during use.
Protection Against Fire & Explosion:	Product is non-explosive and non-flammable. In the unlikely event that all water is evaporated, residual dust is flammable.

Section 7 – Hazards Identification

Potential Health Effects

Inhalation:	Not applicable.
Eye Contact:	May cause eye irritation.
Skin Contact:	May cause skin irritation.
Ingestion:	May be harmful if swallowed.

Section 8 – Measures in Case of Accidents and Fire

After Spillage/Leakage:	Contain spill with absorbent material. Vacuum or sweep into suitable, closed container for disposal. Do not return spilled or contaminated material to the inventory.
Extinguishing Media:	Water, alcohol-resistant foam, dry chemical or carbon dioxide.
Eye Contact:	Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
Inhalation:	If affected, move person to fresh air. Get medical attention if symptoms occur.
Ingestion:	Rinse mouth with water. Get medical aid if symptoms occur.
Skin Contact:	Wash off with soap and water to remove the activated carbon.

Section 9 – Accidental Release Measures

Cleanup Methods:	Contain spill with absorbent material. Vacuum or sweep into suitable, closed container for disposal.
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Section 10 – Information on Toxicology

Oral LD50:	No data available.
Dermal LD50:	No data available.
Carcinogenicity:	No component of this product is identified as a probable, possible or confirmed human carcinogen by IARC, ACGIH, NTP, OSHA or CA Prop 65.

Section 11 – Information on Ecology

No data available.

Section 12 – Disposal Considerations

Waste Treatment: Dispose of in an approved waste facility operated by an authorized contractor in compliance with local regulations.

Package (Pail) Treatment: The empty and clean containers are to be recycled or disposed of in conformity with local regulations.

Section 13 – Shipping/Transport Information

D.O.T. Shipping Name: Not dangerous goods.

IMDG, IATA Not dangerous goods

Section 14 – Other Information

NFPA Rating: Health – 0 Flammability – 0 Reactivity Hazards – 0

Section 15 – Further Information

The information contained in this document is the best available to the supplier at the time of writing, but is provided without warranty of any kind. Some possible hazards have been determined by analogy to similar classes of material. The items in this document are subject to change and clarification as more information become available. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person. Individuals receiving this information must exercise their independent judgment in determining its appropriateness for a particular purpose.

**Hydrogen Release Compound (HRC[®])
MATERIAL SAFETY DATA SHEET (MSDS)**

Last Revised: February 10, 2004

Section 1 - Material Identification

Supplier:



REGENESIS

1011 Calle Sombra

San Clemente, CA 92673

Phone: 949.366.8000

Fax: 949.366.8090

E-mail: info@regenesiS.com

Chemical Name: Propanoic acid, 2-[2-[2-(2-hydroxy-1-oxopropoxy)-1-oxopropoxy]-1-oxopropoxy]-1,2,3-propanetriyl ester

Chemical Family: Organic Chemical

Trade Name: Hydrogen Release Compound[®] (HRC[®])
Glycerol tripoly lactate and Glycerol

Product Use: Used to remediate contaminated soil and groundwater (environmental applications)

Section 2 – Chemical Identification

<u>CAS#</u>	<u>Chemical</u>
201167-72-8	Glycerol Tripoly lactate
56-81-5	Glycerol
50-21-5	Lactic Acid

Section 3 - Physical Data

Melting Point: Not Available (NA)

Boiling Point: Not Determined (ND)

Flash Point: ND

Density: 1.3 g/cc

Section 3 – Physical Data (cont)

Solubility: Acetone and DMSO

Appearance: Viscous amber gel/liquid

Odor: Not detectable

Vapor Pressure: None

Section 4 - Fire and Explosion Hazard Data

Extinguishing Media: Carbon Dioxide, Dry Chemical Powder or Appropriate Foam.

Water may be used to keep exposed containers cool.

For large quantities involved in a fire, one should wear full protective clothing and a NIOSH approved self contained breathing apparatus with full face piece operated in the pressure demand or positive pressure mode as for a situation where lack of oxygen and excess heat are present.

Section 5 - Toxicological Information

Acute Effects: May be harmful by inhalation, ingestion, or skin absorption. May cause irritation. To the best of our knowledge, the chemical, physical, and toxicological properties of the glycerol tripoly lactate have not been investigated. Listed below are the toxicological information for glycerol and lactic acid.

RTECS#: MA8050000
Glycerol

Irritation data:	SKN-RBT 500 MG/24H MLD	BIOFX* 9-4/1970
	85JCAE-,207,1986	85JCAE-,207,1986
	EYE-RBT 126 MG MLD	85JCAE -,656,86
	EYE-RBT 500 MG/24H MLD	AJOPAA 29,1363,46
	SKN-RBT 5MG/24H SEV	
	EYE-RBT 750 UG SEV	

Section 5 – Toxicological Information (cont)

Toxicity data:	<p> ORL-MUS LD50:4090 MG/KG FRZKAP (6),56,1977 SCU-RBT LD50:100 MG/KG ORL-RAT LD50:12600 MG/KG IHL- RATLC50:>570MG/M3/1HBIO FX*9-4/1970 IPR-RAT LD50: 4420 MG/KG IVN-RAT LD50: 5566 MG/KG IPR-MUS LD50: 8700 MG/KG SCU-MUS LD50: 91 MG/KG IVN-MUS LD50: 4250 MG/KG ORL-RBT LD50: 27 GM/KG SKN-RBT LD50:>10GM/KG IVN-RBT LD50: 53 GM/KG ORL-GPG LD50: 7750 MG/KG ORL-RAT LD50:3543 MG/KG SKN-RBT LD50:>2 GM/KG ORL-MUS LD50: 4875 MG/KG ORL-GPG LD50: 1810 MG/KG ORL-QAL LD50: >2250 MG/KG </p>	<p> NIIRDN 6,215,1982 FEPRA7 4,142,1945 RCOCB8 56,125,1987 ARZNAD 26,1581,1976 ARZNAD 26,1579,1978 NIIRDN 6,215,1982 JAPMA8 39,583,1950 DMDJAP 31,276,1959 BIOFX* 9-4/1970 NIIRDN 6,215,1982 FMCHA2-,C252,91 FMCHA2-,C252,91 FAONAU 40,144,67 JIHTAB 23,259,41 FMCHA2-,C252,91 JIHTAB 23,259,1941 </p>
Target Organ data:	<p> Behavioral (headache), gastrointestinal (nausea or vomiting), Paternal effects (spermatogenesis, testes, epididymis, sperm duct), effects of fertility (male fertility index, post-implantation mortality). </p>	
RTECS#:	<p> OD2800000 Lactic acid </p>	

Only selected registry of toxic effects of chemical substances (RTECS) data is presented here. See actual entry in RTECS for complete information on lactic acid and glycerol.

Section 6 - Health Hazard Data

Handling: Avoid continued contact with skin. Avoid contact with eyes.

In any case of any exposure which elicits a response, a physician should be consulted immediately.

First Aid Procedures

Inhalation: Remove to fresh air. If not breathing give artificial respiration. In case of labored breathing give oxygen. Call a physician.

Ingestion: No effects expected. Do not give anything to an unconscious person. Call a physician immediately.

Skin Contact: Flush with plenty of water. Contaminated clothing may be washed or dry cleaned normally.

Eye contact: Wash eyes with plenty of water for at least 15 minutes lifting both upper and lower lids. Call a physician.

Section 7 - Reactivity Data

Conditions to Avoid: Strong oxidizing agents, bases and acids

Hazardous Polymerization: None known

Further Information: Hydrolyses in water to form Lactic Acid and Glycerol.

Section 8 - Spill, Leak or Accident Procedures

After Spillage or Leakage: Neutralization is not required. This material may be burned in a chemical incinerator equipped with an afterburner and scrubber.

Disposal: Laws and regulations for disposal vary widely by locality. Observe all applicable regulations and laws. This material, may be disposed of in solid waste. Material is readily degradable and hydrolyses in several hours.

No requirement for a reportable quantity (CERCLA) of a spill is known.

Section 9 - Special Protection or Handling

Should be stored in plastic lined, steel, plastic, glass, aluminum, stainless steel, or reinforced fiberglass containers.

Protective Gloves: Vinyl or Rubber

**Eyes: Splash Goggles or Full Face Shield
Area should have approved means of washing eyes.**

Ventilation: General exhaust.

Storage: Store in cool, dry, ventilated area. Protect from incompatible materials.

Section 10 - Other Information

This material will degrade in the environment by hydrolysis to lactic acid and glycerol. Materials containing reactive chemicals should be used only by personnel with appropriate chemical training.

The information contained in this document is the best available to the supplier as of the time of writing. Some possible hazards have been determined by analogy to similar classes of material. No separate tests have been performed on the toxicity of this material. The items in this document are subject to change and clarification as more information becomes available.



Advanced Technologies for Groundwater Resources

Material Safety Data Sheet (MSDS)

Bio-Dechlor INOCULUM PLUS (BDI PLUS™)

SECTION 1 - MATERIAL IDENTIFICATION AND INFORMATION

Material Name: DHC microbial consortium (SDC-9) MSDS #: ENV 1033

Date Prepared: 1/05/2006 CAS #: N/A (Not Applicable)

Prepared By: Simon Vainberg Formula #: N/A

Material Description: Non-hazardous, naturally occurring non-altered anaerobic microbes and enzymes in a water-based medium.

SECTION 2 - INGREDIENTS

Components	%	OSHA PEL	ACGIH TLV	OTHER LIMITS
Non-Hazardous Ingredients	100	N/A	N/A	N/A

SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point: 100°C (water) Specific Gravity (H₂O = 1): 0.9 - 1.1

Vapor Pressure @ 25°C: 24 mm Hg (water) Melting Point: 0°C (water)

Vapor Density: N/A Evaporation Rate (H₂O = 1): 0.9 - 1.1

Solubility in Water: Soluble Water Reactive: No

pH: 6.0 - 8.0

Appearance and Odor: Murky, yellow to grey water. Musty odor.

SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

Flash Point: N/A

Flammable Limits: N/A

Extinguishing Media: Foam, carbon dioxide, water

Special Fire Fighting Procedures: None

Unusual Fire and Explosion Hazards: None

SECTION 5 - REACTIVITY DATA

Stability: Stable

Conditions to Avoid: None

Incompatibility (Materials to Avoid): Water-reactive materials

Hazardous Decomposition Byproducts: None

SECTION 6 - HEALTH HAZARD DATA

HEALTH EFFECTS

The effects of exposure to this material have not been determined. Safe handling of this material on a long-term basis will avoid any possible effect from repetitive acute exposures. Below are possible health effects based on information from similar materials. Individuals hyper allergic to enzymes or other related proteins should not handle.

Ingestion: Ingestion of large quantities may result in abdominal discomfort including nausea, vomiting, cramps, diarrhea, and fever.

Inhalation: Hypersensitive individuals may experience breathing difficulties after inhalation of aerosols.

Skin Absorption: N/A

Skin Contact: May cause skin irritation. Hypersensitive individuals may experience allergic reactions to enzymes.

Eye Contact: May cause eye irritation.

FIRST AID

Ingestion: Get medical attention if allergic symptoms develop (observe for 48 hours). Never give anything by mouth to an unconscious or convulsing person.

Inhalation: Get medical attention if allergic symptoms develop.

Skin Absorption: N/A

Skin Contact: Wash affected area with soap and water. Get medical attention if allergic symptoms develop.

Eye Contact: Flush eyes with plenty of water for at least 15 minutes using an eyewash fountain, if available. Get medical attention if irritation occurs.

NOTE TO PHYSICIANS: All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this material may have occurred.

SECTION 7 - SPILL AND LEAK PROCEDURES

Reportable quantities (in lbs of EPA Hazardous Substances): N/A

Steps to be taken in case of spill or release: No emergency results from spillage. However, spills should be cleaned up promptly. All personnel involved in the cleanup must wear protective clothing and avoid skin contact. Absorb spilled material or vacuum into a container. After clean-up, disinfect all cleaning materials and storage containers that come in contact with the spilled liquid.

Waste Disposal Method: No special disposal methods are required. The material may be sewerred, and is compatible with all known biological treatment methods. To reduce odors and permanently inactivate microorganisms, mix 100 parts (by volume) of SDC-9 consortium with 1 part (by volume) of bleach. Dispose of in accordance with local, state and federal regulations.

SECTION 8 - HANDLING AND STORAGE

Hand Protection: Rubber gloves.

Eye Protection: Safety goggles with side splash shields.

Protective Clothing: Use adequate clothing to prevent skin contact.

Respiratory Protection: Surgical mask.

Ventilation: Provide adequate ventilation to remove odors.

Storage & Handling:

Material may be stored for up to 3 weeks at 2-4°C without aeration.

Other Precautions: An eyewash station in the work area is recommended.

While the information and recommendations set forth herein are believed to be accurate as of the date hereof, REGENESIS MAKES NO WARRANTY WITH RESPECT HERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

Appendix B
MDH Variance Permits



Protecting, maintaining and improving the health of all Minnesotans

December 28, 2015

Refer to: TN 5265A

Mr. Brian Murray
Department of the Navy
NAVFAC Mid-Atlantic
Building Z-144
9324 Virginia Avenue
Norfolk, Virginia 23511

Ms. Chris Boehm Carlson
AECOM
Suite 500
800 Lasalle Avenue
Minneapolis, Minnesota 55402

Dear Mr. Murray and Ms. Boehm Carlson:

Subject: Amendment to a Variance from Minnesota Rules, Chapter 4725, to Inject Activated Carbon into Groundwater at the Naval Industrial Reserve Ordnance Plant located at 4800 East River Road, Fridley, located in the NE ¼ of the SW ¼ of Section 27.

This letter is in response to your request submitted on December 22, 2015, to the Minnesota Department of Health (MDH) for an amendment to variance TN5265, described in an MDH letter dated September 30, 2015. The original letter issued a variance from Minnesota Rules, chapter 4725, to inject activated carbon, Hydrogen Release Compound®, and a Dehalococcoides microbial consortium into groundwater at the subject property through approximately 28 environmental bore holes. Approval of additional injection of activated carbon through three monitoring wells, Minnesota Unique Numbers 818601, 818602, and 818603 is requested. Minnesota Rules, part 4725.2050 requires that a well or a boring must not be used for disposal of surface water, groundwater, or any other liquid, gas, or chemical. This rule part prohibits the injection of dye tracing chemicals, nutrients, organisms, or other remediation materials in a well or boring.

The proposed injection is intended to facilitate in-situ enhanced reductive dechlorination (ERD) for remediation of trichloroethylene (TCE), and daughter products, contamination at the source. The original injection activities, approved by TN5265 and conducted in October 2015, did not result in the desired extent or orientation of the injection chemicals due to geology and equipment difficulties. To supplement the original injection, activated carbon will be injected through three 2-inch diameter monitoring wells installed with 5 feet of screen between approximately 71 and 76 feet below-grade.

The proposed injection chemical is PlumeStop™, a mixture of approximately 25 percent activated carbon, and 75 percent water with less than 2 percent food grade additives, manufactured by Regenesys, Inc. of San Clemente, California. Injection activities are expected to take approximately 2 days, during which a total of approximately 2,000 pounds of PlumeStop™ combined with 3,500 gallons of water would be injected. The volume of fluid injected into an individual well would range from 1,000 to 1,500 gallons.

Mr. Brian Murray
Ms. Chris Boehm Carlson
Page 2
December 28, 2015
TN 5265A

Groundwater monitoring will continue in monitoring wells PMW-1 through PMW-4. No groundwater samples will be collected from the injection wells.

On December 23, 2015, Ms. Shanna Schmitt with the Minnesota Pollution Control Agency (MPCA) indicated that the MPCA requires no additional approval for this injection request because it is within the scope of the original work plan.

In accordance with Minnesota Rules, chapter 4725, **your request for a variance to inject activated carbon through wells Minnesota Unique Numbers 818601, 818602 and 818603 into groundwater at the subject site is granted.** The variance is granted because of the need to remediate contaminated groundwater at the site. The variance is granted with the following conditions:

1. The variance is granted for the proposed injection of approximately 2,000 pounds of a 25 percent solution of activated carbon mixed with approximately 3,500 gallons of potable water through Minnesota Unique Well Numbers 818601, 818602, and 818603. Solution make-up water must be from a potable source. No other injection may take place in these wells or in any other regulated well or boring at the subject site unless and until a variance request for the intended injection has been submitted to and approved by the MDH.
2. The variance allows the injection of Regenesis, Inc. PlumeStop™ and potable water. No other material may be injected into the borings.
3. AECOM must notify MDH staff Mr. Steven Bennett at 651-201-3963 or Mr. Ronald Thompson at 651-201-3658 at least 24 hours prior to beginning injection to schedule an inspection.
4. Monitoring must take place as described in the variance application and the work plan from AECOM, dated September 2015. Analytical methods must have detection and reporting limits below the federal Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs), where applicable.
5. A copy of a report summarizing the results of the ERD pilot test must be submitted to Mr. Alex Martell within 90 days after completion of the test.
6. The applicants are responsible for the safe handling, storage, and use of the injection chemicals.
7. All other conditions from variance TN 5265 remain in effect.
8. All other requirements of Minnesota Rules, chapter 4725, are in effect.

Mr. Brian Murray
Ms. Chris Boehm Carlson
Page 3
December 28, 2015
TN 5265A

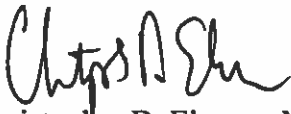
This variance should not be construed as an endorsement of the proposed injection, nor is it an assessment of the efficacy of the proposed injection.

Alternative measures or conditions attached to a variance have the force of law and effect of applicable rule. If a party violates the alternative measures or conditions attached to the variance, the party is subject to enforcement actions and penalties provided in the applicable law or rule.

This variance is conditioned upon the applicable acceptance of and compliance with the conditions of the variance. Failure by the applicant to comply with the conditions prescribed in the variance will result in the immediate expiration of the variance.

If you have any questions, please contact Mr. Alex Martell at 651-201-4595.

Sincerely,



Christopher D. Elvrum, Manager
Well Management Section
Environmental Health Division
P.O. Box 64975
St. Paul, Minnesota 55164-0975

CDE:ECS:dg
cc: Shanna Schmitt, MPCA



Protecting, maintaining and improving the health of all Minnesotans

September 30, 2015

Refer to: TN 5265

Mr. Brian Murray
Department of the Navy
NAVFAC Mid-Atlantic
Building Z-144
9324 Virginia Avenue
Norfolk, VA 23511

Ms. Chris Boehm Carlson
AECOM
Suite 500
800 Lasalle Avenue
Minneapolis, Minnesota 55402

Dear Mr. Murray and Ms. Boehm Carlson:

Subject: Request for a Variance from Minnesota Rules, Chapter 4725, to Inject Activated Carbon, Hydrogen Release Compound®, and a Dehalococcoides Microbial Consortium into Groundwater at the Naval Industrial Reserve Ordnance Plant located at 4800 East River Road, Fridley, located in the NE ¼ of the SW ¼ of Section 27, Township 24 North, Range 24 West, Anoka County, Minnesota

This letter is in response to your request submitted to the Minnesota Department of Health (MDH) for a variance from Minnesota Rules, chapter 4725, to inject activated carbon, Hydrogen Release Compound® (HRC®), and a Dehalococcoides microbial consortium into groundwater at the subject property through approximately 28 environmental bore holes (EBHs). Minnesota Rules, part 4725.2050 requires that a well or a boring must not be used for disposal of surface water, groundwater, or any other liquid, gas, or chemical. This rule part prohibits the injection of dye tracing chemicals, nutrients, organisms, or other remediation materials in a well or boring.

The proposed injection is intended to facilitate in-situ enhanced reductive dechlorination (ERD) for remediation of trichloroethylene (TCE), and daughter products, contamination at the source. The ISCO treatment chemicals would be injected through a total of approximately 28 EBHs, split across two demonstration areas (Area 1 and Area 2), with approximately 14 borings advanced in a grid at each area. Direct push drilling equipment will be used to advance the borings to approximately 60 to 67 feet in Area 1 and 71 to 78 feet in Area 2. The potentiometric water level at the injection sites are anticipated to be approximately 16 to 20 feet, and 30 to 35 feet in Area 1 and Area 2, respectively.

The chemicals proposed for injection are all manufactured by Regenesis, Inc. of San Clemente, California. The proposed injection chemicals include, PlumStop™, HRC®, and Bio-Dechlor INOCULUM PLUS. PlumStop™ is a mixture of approximately 25 percent activated carbon, and 75 percent water with less than 2 percent food grade additives. HRC® contains glycerol tripolylactate, glycerol and lactic acid, and serves as nutrients. Bio-Dechlor INOCULUM PLUS contains an aqueous solution of a Dehalococcoides microbial consortium.

Mr. Brian Murray
Ms. Chris Boehm Carlson
Page 2
September 30, 2015
TN 5265

Bioaugmentation is proposed, using Bio-Dechlor INOCULUM. Documentation provided in the variance request and obtained from other sources indicates that the Bio-Dechlor INOCULUM PLUS is a natural, non-pathogenic, anaerobic microbial consortium. Bio-Dechlor INOCULUM PLUS is composed of *Dehalococcoides sp.*, which is a naturally occurring dechlorinating organism, and naturally occurring iron reducing and methanogenic anaerobic bacteria. These bacteria have been shown to be naturally present at sites throughout North America and Europe where groundwater is contaminated with chlorinated solvents such as trichloroethene (TCE), and their presence has been identified or inferred at the subject site. The supporting documentation also indicates that Dehalococcoides bacteria have been shown to completely dechlorinate chlorinated ethenes in-situ to ethene gas. The dechlorinating bacteria do not persist in the absence of chlorinated solvents, or in aerobic or even mildly reducing conditions.

Injection activities are expected to take approximately 1 week, during which a total of approximately 9,000 pounds of PlumStop™, 400 pounds of HRC®, and 5 gallons of a Bio-Dechlor INOCULUM PLUS would be injected. The volume of fluid injected into an individual EBH would range from 900 to 3,500 gallons.

Samples will be collected from two downgradient wells, PMW-02 for Area 1 and PMW-04 for Area 2, at two weeks, one month, two months, three months, and six months after injection. The sample analysis will include chlorinated volatile organic compounds (CVOCs), nitrate/nitrite, total and dissolved iron, sulfate/sulfide, carbon dioxide, ethene, ethane, methane, alkalinity, chemical oxygen demand, volatile fatty acids/metabolic acids, total organic carbon, and CENSUS Dehalococcoides. Two additional monitoring wells, PMW-01 (Area 1) and PMW-03 (Area 2), will be installed within the injection area, sampled on the same schedule and for the same list of analytes.

On September 29, 2015, Mr. Alex Martell, MDH hydrologist, discussed the proposed injection with Ms. Shanna Schmitt, Minnesota Pollution Control Agency (MPCA) geologist, who confirmed that the MPCA has approved the work plan for the proposed ERD.

In accordance with Minnesota Rules, chapter 4725, **your request for a variance to inject activated carbon, HRC®, and a Dehalococcoides microbial consortium into groundwater at the subject site is granted.** The variance is granted because of the need to remediate contaminated groundwater at the site. The variance is granted with the following conditions:

1. The variance is granted for the proposed injection of approximately 9,000 gallons of a 25 percent solution of activated carbon, approximately 400 pounds of HRC®, and approximately 5 pounds of a Dehalococcoides microbial consortium mixed with approximately 4,500 gallons of potable water, and to utilize up to 28 EBHs for the injection. Solution make-up water must be from a potable source. No other injection may take place in these borings or in any other regulated well or boring at the subject site unless and until a variance request for the intended injection has been submitted to and approved by the MDH.

Mr. Brian Murray
Ms. Chris Boehm Carlson
Page 3
September 30, 2015
TN 5265

2. The variance allows the injection of Regenesis, Inc. PlumStop™, HRC®, Bio-Dechlor INOCULUM PLUS, and potable water. No other material may be injected into the borings.
3. Construction and sealing of the direct push borings must be done by or under the direct supervision of a licensed well contractor or registered monitoring well contractor. Ms. Chris Boehm Carlson of AECOM has indicated that Matrix Environmental, LLC would be employed for the EBH work.
4. After injection is complete, each boring must be sealed by pumping approved neat-cement grout through the injection point from within 10 feet of the original bottom of the boring up to the ground surface. Borings used to determine the radius of influence of the injection chemicals must be sealed in the same manner.
5. AECOM must notify MDH staff Mr. Steven Bennett at 651-201-3963 or Mr. Ronald Thompson at 651-201-3658 prior to beginning injection to schedule an inspection.
6. Monitoring must take place as described in the variance application and the work plan from AECOM, dated September, 2015. Analytical methods must have detection and reporting limits below the federal Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs), where applicable.
7. A copy of a report summarizing the results of the ERD pilot test must be submitted to Mr. Martell within 90 days after completion of the test.
8. The applicants are responsible for the safe handling, storage, and use of the injection chemicals.
9. All other requirements of Minnesota Rules, chapter 4725, are in effect.

This variance should not be construed as an endorsement of the proposed injection, nor is it an assessment of the efficacy of the proposed injection.

Alternative measures or conditions attached to a variance have the force of law and effect of applicable rule. If a party violates the alternative measures or conditions attached to the variance, the party is subject to enforcement actions and penalties provided in the applicable law or rule.

Mr. Brian Murray
Ms. Chris Boehm Carlson
Page 4
September 30, 2015
TN 5265

This variance is conditioned upon the applicable acceptance of and compliance with the conditions of the variance. Failure by the applicant to comply with the conditions prescribed in the variance will result in the immediate expiration of the variance.

If you have any questions, please contact Mr. Martell at 651-201-4595.

Sincerely,

A handwritten signature in black ink, appearing to read "Christopher D. Elvrum". The signature is written in a cursive, slightly slanted style.

Christopher D. Elvrum, Manager
Well Management Section
Environmental Health Division
P.O. Box 64975
St. Paul, Minnesota 55164-0975

CDE:ECS:dg
cc: Matrix Environmental, LLC



Minnesota
Department
of Health

PROTECTING, MAINTAINING & IMPROVING THE HEALTH OF ALL MINNESOTANS

May 12, 2016

Mr. Rob Vix
Mark J. Traut Wells, Inc.
141 28th Avenue South
Waite Park, Minnesota 56387

Dear Mr. Vix:

Subject: Response to a Request to Seal Three Injection Wells, Minnesota Unique Well Numbers 818601, 818602 and 818603; and Four Monitoring Wells, Minnesota Unique Well Numbers 814759, 814760, 814761, and 814766; Within the Southwestern Fridley and Southwestern Columbia Heights Special Well and Boring Construction Area, Anoka County, Minnesota

This letter is in response to your request submitted to the Minnesota Department of Health (MDH) to seal three injection wells, Minnesota Unique Well Numbers 818601 (H339285), 818602 (H339286) and 818603 (H339287); and four Monitoring Wells, Minnesota Unique Well Numbers 814759 (H339281), 814760 (H339282), 814761 (H339283), and 814766 (H339284) located at the Naval Industrial Reserve Ordinance Plant (NIROP), 4800 East River Road, Fridley, within the Southwestern Fridley and Southwestern Columbia Heights Special Well and Boring Construction Area. The request was provided to MDH in two letters from Mark J. Traut Wells, Inc., dated May 10, 2016, and May 11, 2016.

Minnesota Unique Well Numbers 818601, 818602, and 818603 were the subject of a variance, TN5265A, granted in a letter from MDH dated December 28, 2015. The variance was issued to allow the injection of remediation chemicals into groundwater at the site.

Each well requested to be sealed is constructed with 2-inch steel casing and a 5-foot section of stainless steel screen. The depths of the wells range from 66 to 75 feet. Proposed sealing will be completed by pumping neat-cement grout through a tremie pipe from the bottom of each well to within 2 feet of the ground surface.

MDH has reviewed the sealing proposal and approves the work with the following conditions:

1. Contact MDH staff, Mr. Patrick Sarafolean at 651-201-3962 or Mr. Steven Bennett at 651-201-3963, at least 24 hours prior to beginning well sealing so that an inspector may be present during this work.
2. The tremie pipe must be placed within 10 feet of the bottom of each well, and neat-cement grout must be emplaced in one continuous operation for each well.

Mr. Rob Vix
Page 2
May 12, 2016

If you have any questions, please contact Mr. Sarafolean at 651-201-3962, Mr. Bennett at 651-201-3963, or me at 651-201-4595.

Sincerely,


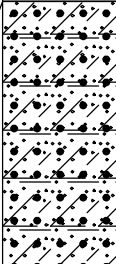
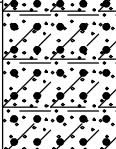
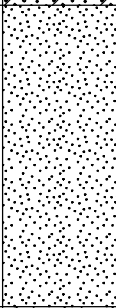
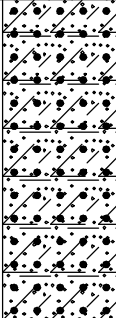

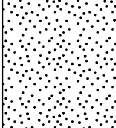
A handwritten signature in black ink, appearing to read 'Alex Martell', with a long horizontal flourish extending to the right.

Alex Martell
Well Management Section
Environmental Health Division
P.O. Box 64975
St. Paul, Minnesota 55164-0975

AMM:mj
cc: Chris Boehm Carlson, AECOM

Appendix C
Soil Boring Logs

Client: Department of the Navy		Logged By: MM	
Location: NIROP, Fridley MN	Northing: 1078402	Easting: 2811703	Drilling Company: Traut Inc
Project #: 60276080	Ground Elevation (msl): 835.10		Hole Size (in): 2 IN
Start Date: 9/2/2015	Drilling Method: Sonic		Water Level (ft): 17
Finish Date: 9/2/2015	Drill Rig Type: Versa-Sonic		Total Depth (ft): 66.0

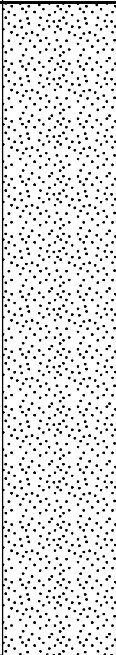
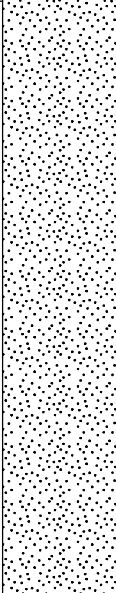
Depth (ft bgs)	Recovery (percent)	PID (ppm)	USCS Code	Graphic	Soil Description Classification Scheme: USCS	Soil Lab Sample Collection Depth	
0							
0.8			CNCR		Concrete		
2		0.0	SW		well graded SAND; very fine to coarse sand; some fine to coarse gravel; subrounded to rounded; moist; loose; 10YR 4/2 dark grayish brown @5-6' bgs: wet		
4		0.0			6.0	well graded SAND; very fine to coarse sand; some fine to coarse gravel; subangular to angular; trace silt; dry; loose; 10YR 6/2 light brownish gray	
6		0.0	SW				
8		0.0					9.0
10		0.0	SP				
12		0.0					15.0
14		0.0					21.5
16		0.0					22.0
18		0.0	SW				
20		0.0					21.5
22		0.0	SW		well graded SAND; some fine to coarse gravel (up to 49%); subround to subangular; little silt; wet; loose; 10YR 4/3 brown		
24		0.0	SP		poorly graded SAND; very fine to coarse (mostly fine) sand; little fine gravel; subround to subangular; little silt; wet; loose; 10YR 4/2 dark grayish brown		
		0.0				25.0	

Remarks: Boring Terminated (ft): 66.0 Hand augered down to 5' bgs

Cloudy, 70's, humid

Resolution Consultants
 800 LaSalle Ave, Suite 500
 Minneapolis, MN 55402
 Phone: (612) 376-2000
 Fax: (612) 376-2271

Client: Department of the Navy		Logged By: MM	
Location: NIROP, Fridley MN		Northing: 1078402	Easting: 2811703
Project #: 60276080		Drilling Company: Traut Inc	
Start Date: 9/2/2015		Ground Elevation (msl): 835.10	Hole Size (in): 2 IN
Finish Date: 9/2/2015		Drilling Method: Sonic	Water Level (ft): 17
		Drill Rig Type: Versa-Sonic	Total Depth (ft): 66.0

Depth (ft bgs)	Recovery (percent)	PID (ppm)	USCS Code	Graphic	Soil Description Classification Scheme: USCS	Soil Lab Sample Collection Depth				
26		0.0	SP		poorly graded SAND; very fine to coarse (mostly fine) sand; little silt and fine gravel; subround to subangular; wet; loose; 10YR 4/2 dark grayish brown @26.5-26.6' bgs: coarse sand lense with fine gravel					
28		0.0								
30		0.0								
32		0.0								
34		0.0								
36		0.0								
38		0.0								
40		0.0					SP		poorly graded SAND; very fine to fine sand; some silt; trace clay; no plasticity; wet; 10YR 4/2 dark grayish brown @44-44.1' bgs: very fine to medium sand lense	
42		0.0								
44		0.0								
46		1.4								
48		0.0								
50		1.7								

Remarks: Boring Terminated (ft): 66.0 Hand augered down to 5' bgs

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Cloudy, 70's, humid

Client: Department of the Navy		Logged By: MM	
Location: NIROP, Fridley MN	Northing: 1078402	Easting: 2811703	Drilling Company: Traut Inc
Project #: 60276080	Ground Elevation (msl): 835.10		Hole Size (in): 2 IN
Start Date: 9/2/2015	Drilling Method: Sonic		Water Level (ft): 17
Finish Date: 9/2/2015	Drill Rig Type: Versa-Sonic		Total Depth (ft): 66.0

Depth (ft bgs)	Recovery (percent)	PID (ppm)	USCS Code	Graphic	Soil Description Classification Scheme: USCS	Soil Lab Sample Collection Depth
50		0.0	SP		51.0 poorly graded SAND; very fine to fine sand; some silt; trace clay; no plasticity; wet; 10YR 4/2 dark grayish brown @44-44.1' bgs: very fine to medium sand lens	
52		0.0			poorly graded SAND; very fine to fine (mostly fine) sand; wet; 10YR 4/2 dark grayish brown	
		0.0				
54		0.0				
		0.0				
56		0.7				
		0.9	SP			
58		2.8				
		7.1				
60		6.8				
		0.0				
		1.2			61.0 poorly graded SAND; very fine to medium (mostly fine) sand; some silt; cohesive; wet; 10YR 4/2 dark grayish brown	
62		0.5				
		1.3	SP			
64		2.5				
		2.6			65.0 SILTY SAND; very fine to fine; wet	
66		2.6	SM		@65.8-65.9' bgs: silt lens with very fine sand; 10YR 5/1 gray	


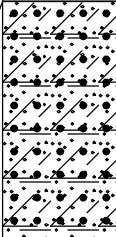

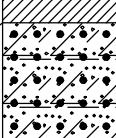
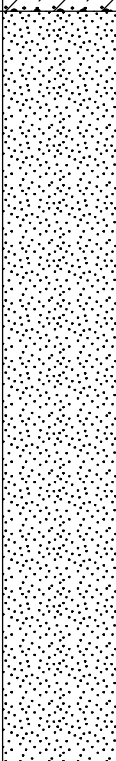
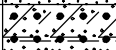
End of boring at 66.0 ft. bgs.

Remarks: Boring Terminated (ft): 66.0 Hand augered down to 5' bgs

Cloudy, 70's, humid

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Client: Department of the Navy		Logged By: MM	
Location: NIROP, Fridley MN	Northing: 1078394	Easting: 2811680	Drilling Company: Traut Inc
Project #: 60276080	Ground Elevation (msl): 835.11		Hole Size (in): 2 IN
Start Date: 9/2/2015	Drilling Method: Sonic		Water Level (ft): 17
Finish Date: 9/2/2015	Drill Rig Type: Versa-Sonic		Total Depth (ft): 66.0

Depth (ft bgs)	Recovery (percent)	PID (ppm)	USCS Code	Graphic	Soil Description Classification Scheme: USCS	Soil Lab Sample Collection Depth
0						
			CNCR		Concrete	
2		0.0			well graded SAND; with gravel; little silt; moist; loose; 10YR 4/2 dark grayish brown	
4			SW			
6		0.0	CL		SANDY CLAY; cohesive; low to medium plasticity; very fine to fine sand; trace fine gravel; moist, 10YR 3/1 very dark gray	
8		0.0	SW		well graded SAND; some gravel (up to 49%); little silt; moist; loose; 10YR 4/4 dark yellowish brown @7.5' bgs: 10YR 5/3 brown @8' bgs: large cobble	
10		0.0			poorly graded SAND; very fine to coarse (mostly fine) sand; some fine to coarse gravel; subround to subangular; little silt; moist; loose; 10YR 4/3 brown @15' bgs: some silt @19' bgs: trace cobble @19.5 bgs: 1" of silty clay lense @21' bgs: moist @24' bgs: cobble (4.5" in size) subround	
12		0.0	SP			
14		0.0				
16		0.0				
18		0.0				
20		0.0				
22		0.0				
24		0.0				
		0.0	SW		well graded SAND; with gravel; round to subround; little silt; wet; loose; 10YR 4/3 brown	

Remarks: Boring Terminated (ft): 66.0 Hand augered down to 5' bgs

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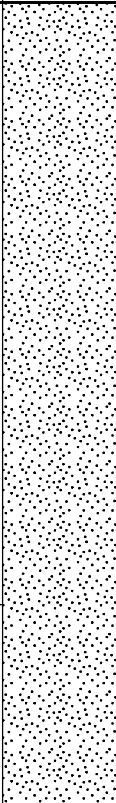
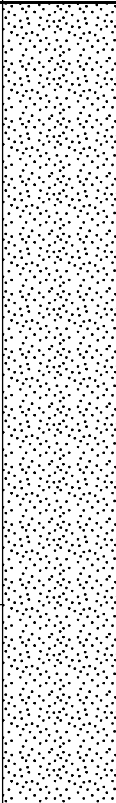
Client: Department of the Navy		Logged By: MM	
Location: NIROP, Fridley MN		Northing: 1078394	Easting: 2811680
Project #: 60276080		Drilling Company: Traut Inc	
Start Date: 9/2/2015		Ground Elevation (msl): 835.11	Hole Size (in): 2 IN
Finish Date: 9/2/2015		Drilling Method: Sonic	Water Level (ft): 17
		Drill Rig Type: Versa-Sonic	Total Depth (ft): 66.0

Depth (ft bgs)	Recovery (percent)	PID (ppm)	USCS Code	Graphic	Soil Description Classification Scheme: USCS	Soil Lab Sample Collection Depth
26		0.0	SW		well graded SAND; very fine to coarse sand; little fine to coarse gravel; little silt; wet; 10YR 4/2 dark grayish brown	
		0.0				
28		0.0				
		0.0				
30		0.0				
		0.0				
32		0.0	SP		poorly graded SAND; very fine to coarse (mostly fine) sand; little silt; wet; loose; 10YR 4/2 dark grayish brown @38.5' bgs: some silt @42.5' bgs: mostly medium sand	
		0.0				
34		0.0				
		0.0				
36		0.0				
		0.0				
38		0.0				
		0.0				
40		0.0				
		0.0				
42		0.0				
		0.0				
44		0.0				
		0.0				
46		0.0				
		0.0				
48		0.0				
		0.0				
50		0.0	SP		poorly graded SAND; very fine to coarse (mostly medium) sand; little silt; trace fine gravel; round to subround; wet; 10YR 4/2 dark grayish brown	

Remarks: Boring Terminated (ft): 66.0 Hand augered down to 5' bgs

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Client: Department of the Navy		Logged By: MM	
Location: NIROP, Fridley MN		Northing: 1078394	Easting: 2811680
Project #: 60276080		Drilling Company: Traut Inc	
Start Date: 9/2/2015		Ground Elevation (msl): 835.11	Hole Size (in): 2 IN
Finish Date: 9/2/2015		Drilling Method: Sonic	Water Level (ft): 17
		Drill Rig Type: Versa-Sonic	Total Depth (ft): 66.0

Depth (ft bgs)	Recovery (percent)	PID (ppm)	USCS Code	Graphic	Soil Description Classification Scheme: USCS	Soil Lab Sample Collection Depth
50		0.0	SP		poorly graded SAND; very fine to coarse (mostly medium) sand; little silt; trace fine gravel; round to subround; wet; 10YR 4/2 dark grayish brown	
52		0.0				
		0.0				
54		0.0				
		0.0				
56		0.0				
		0.0				
58		0.0				
		0.0				
60		0.0				
		0.0				
62		0.0	SP		62.0	poorly graded SAND; very fine to coarse (mostly fine) sand; some silt; trace fine to coarse gravel; subround; wet; 10YR 4/2 dark grayish brown @64-64.5' bgs: mostly medium sand @65.5' bgs: 1" mostly medium
		0.0				
64		0.0				
		0.0				
66		0.5			66.0	

End of boring at 66.0 ft. bgs.

Remarks: Boring Terminated (ft): 66.0 Hand augered down to 5' bgs

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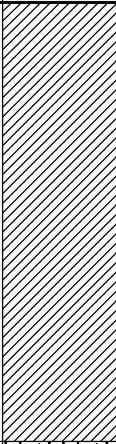
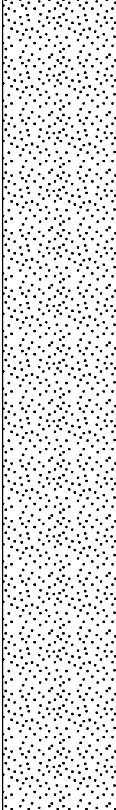
Client: Department of the Navy		Logged By: MM	
Location: NIROP, Fridley MN	Northing: 1078145	Easting: 2811181	Drilling Company: Traut Inc
Project #: 60276080	Ground Elevation (msl): 835.05		Hole Size (in): 2 IN
Start Date: 9/2/2015	Drilling Method: Sonic		Water Level (ft): 26
Finish Date: 9/2/2015	Drill Rig Type: Versa-Sonic		Total Depth (ft): 77.0

Depth (ft bgs)	Recovery (percent)	PID (ppm)	USCS Code	Graphic	Soil Description Classification Scheme: USCS	Soil Lab Sample Collection Depth		
0								
2		0.0	SM		Top soil; SILTY SAND; little clay; 10YR 2/1 black			
4								
6		0.0						
8		0.0						
8.0		0.0	SW		well graded SAND; very fine to coarse sand; some silt; little fine gravel; trace clay nodules; 10YR 4/3 brown; some mottling			
9.0		0.0	SW		well graded SAND; very fine to coarse sand; some fine to coarse gravel; trace silt; moist; loose; 10YR 6/2 light brownish gray			
10		0.0				@16-16.5' bgs: well graded sand and gravel		
12		0.0						
14		0.0						
16		0.2						
18		0.0						
20		0.0						
20.0								

Remarks: Boring Terminated (ft): 77.0 Hand augered down to 5' bgs

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Client: Department of the Navy		Logged By: MM	
Location: NIROP, Fridley MN	Northing: 1078145	Easting: 2811181	Drilling Company: Traut Inc
Project #: 60276080	Ground Elevation (msl): 835.05		Hole Size (in): 2 IN
Start Date: 9/2/2015	Drilling Method: Sonic		Water Level (ft): 26
Finish Date: 9/2/2015	Drill Rig Type: Versa-Sonic		Total Depth (ft): 77.0

Depth (ft bgs)	Recovery (percent)	PID (ppm)	USCS Code	Graphic	Soil Description Classification Scheme: USCS	Soil Lab Sample Collection Depth			
20		0.0	CL		LEAN CLAY; medium plasticity; some silt; little fine to coarse gravel; round to subangular; trace very fine to coarse sand; moist; 10YR 4/1 dark gray				
22		0.0							
24		0.0							
26		0.0							
27.0		0.0							
28		0.0				SP		poorly graded SAND; very fine to coarse (mostly medium) sand; some fine to coarse gravel; round to subround; trace small cobble; subround; trace silt; wet; loose; 10YR 4/2 dark grayish brown @39.8-40' bgs: some silt	
30		0.0							
32		0.0							
34		0.0							
36		0.0							
38		0.0							
40		0.0							

Remarks: Boring Terminated (ft): 77.0 Hand augered down to 5' bgs

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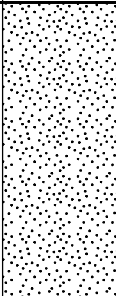

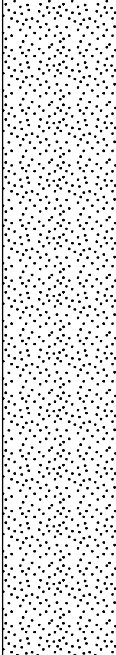

Client: Department of the Navy		Logged By: MM	
Location: NIROP, Fridley MN	Northing: 1078145	Easting: 2811181	Drilling Company: Traut Inc
Project #: 60276080	Ground Elevation (msl): 835.05		Hole Size (in): 2 IN
Start Date: 9/2/2015	Drilling Method: Sonic		Water Level (ft): 26
Finish Date: 9/2/2015	Drill Rig Type: Versa-Sonic		Total Depth (ft): 77.0

Depth (ft bgs)	Recovery (percent)	PID (ppm)	USCS Code	Graphic	Soil Description Classification Scheme: USCS	Soil Lab Sample Collection Depth
40		0.0				
42		0.0				
44		0.0				
46		0.0				
48		0.0	SP			
50		0.0				
52		0.0				
54		0.0				
56		0.0				
58		0.0	SP			
60		0.0				

Remarks: Boring Terminated (ft): 77.0 Hand augered down to 5' bgs

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Client: Department of the Navy		Logged By: MM	
Location: NIROP, Fridley MN	Northing: 1078145	Easting: 2811181	Drilling Company: Traut Inc
Project #: 60276080	Ground Elevation (msl): 835.05		Hole Size (in): 2 IN
Start Date: 9/2/2015	Drilling Method: Sonic		Water Level (ft): 26
Finish Date: 9/2/2015	Drill Rig Type: Versa-Sonic		Total Depth (ft): 77.0

Depth (ft bgs)	Recovery (percent)	PID (ppm)	USCS Code	Graphic	Soil Description Classification Scheme: USCS	Soil Lab Sample Collection Depth	
60		0.0					
62		0.0	SP		poorly graded SAND; very fine to medium sand; trace silt; wet; loose; 10YR 4/3 brown		
64		0.0					
65.0		0.0					
65.5		0.0			SW		well graded SAND; some gravel (up to 49%); wet; loose; 10YR 4/3 brown
66		0.0			poorly graded SAND; very fine to coarse (mostly fine) sand; little fine gravel; trace silt; wet; 10YR 4/3 brown @68.5-70' bgs: mostly coarse sand		
68		0.0	SP				
70		0.0					
72		0.0					
74		0.0					
76		0.0					
76.5		0.0	SW		well graded SAND; with gravel; subround to subangular; trace small cobble; wet; 10YR 4/3 brown		
77.0		0.0			End of boring at 77.0 ft. bgs.		

Remarks: Boring Terminated (ft): 77.0 Hand augered down to 5' bgs

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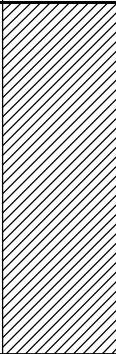
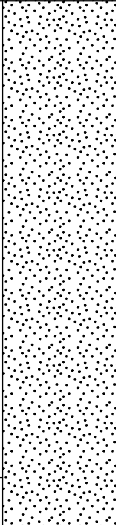
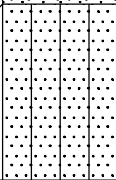
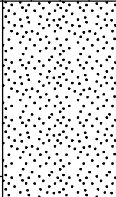
Client: Department of the Navy		Logged By: MM	
Location: NIROP, Fridley MN	Northing: 1078131	Easting: 2811152	Drilling Company: Traut Inc
Project #: 60276080	Ground Elevation (msl): 834.79		Hole Size (in): 2 IN
Start Date: 9/3/2015	Drilling Method: Sonic		Water Level (ft): 26
Finish Date: 9/3/2015	Drill Rig Type: Versa-Sonic		Total Depth (ft): 75.0

Depth (ft bgs)	Recovery (percent)	PID (ppm)	USCS Code	Graphic	Soil Description Classification Scheme: USCS	Soil Lab Sample Collection Depth	
0							
2		0.5	SM		Top soil; SILTY SAND; very fine to coarse sand; little clay; moist; 10YR 2/1 black		
4		0.3					
6		0.6					
8		1.1					
8		0.6	SP		poorly graded SAND; very fine to coarse (mostly fine) sand; little fine gravel; little silt; slightly cohesive; moist; 10YR 4/2 dark grayish brown		
10		0.9					
10		0.0			No recovery; two large concrete cobbles (up to 4" in size)		
12							
14		0.9					
16							
18							
20							
20		0.0	SW		well graded SAND; some gravel (up to 49%); large concrete boulder (>4" in size); wet; loose; 10YR 4/2 dark grayish brown		
22		0.9					
22		0.9	SP		poorly graded SAND; very fine to coarse (mostly fine) sand; trace silt; 10YR 5/2 grayish brown @22.9' bgs: coarse sand and fine gravel; large cobble >4" in size		
24		0.8	CL		LEAN CLAY, medium plasticity; some silt; little fine to coarse gravel; subround to subangular; trace very fine to coarse sand; moist; 10YR 4/1 dark gray		
24		1.3					

Remarks: Boring Terminated (ft): 75.0 Hand augered down to 5' bgs

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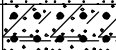
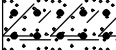
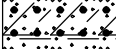
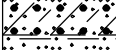





















Client: Department of the Navy		Logged By: MM	
Location: NIROP, Fridley MN		Northing: 1078131	Easting: 2811152
Project #: 60276080		Drilling Company: Traut Inc	
Start Date: 9/3/2015		Ground Elevation (msl): 834.79	Hole Size (in): 2 IN
Finish Date: 9/3/2015		Drilling Method: Sonic	Water Level (ft): 26
		Drill Rig Type: Versa-Sonic	Total Depth (ft): 75.0

Depth (ft bgs)	Recovery (percent)	PID (ppm)	USCS Code	Graphic	Soil Description Classification Scheme: USCS	Soil Lab Sample Collection Depth
26		1.1	CL		LEAN CLAY; medium plasticity; some silt; little fine to coarse gravel; subround to subangular; trace very fine to coarse sand; moist; 10YR 4/1 dark gray	
		1.0				
		1.1				
28		1.1				
		1.1				
		1.3				
30		1.2				
		1.2	SP		poorly graded SAND; very fine to coarse (mostly fine) sand; little silt; trace fine to coarse gravel; subround to subangular; moist to wet; 10YR 4/3 brown @35.5' bgs: 1" silty clay with sand @38.0' bgs: mostly coarse sand	
32		1.1				
		1.1				
34		0.9				
		1.1				
		1.2				
36		1.3				
		1.1				
38		1.1				
		0.9				
40		0.9				
		1.1	SP		poorly graded SAND, very fine to coarse (mostly fine) sand, little silt; 10YR 4/3 brown	
42		1.1			SILTY SAND; very fine to fine (mostly very fine) sand; cohesive; wet; 10YR 4/3 brown	
		1.0	SM			
44		0.9				
		0.6				
46		0.6	SP		poorly graded SAND; very fine to coarse (mostly fine) sand; little silt; trace fine gravel; subround to subangular; moist; 10YR 4/3 brown	
		0.7				
48		0.6				
		0.8				
50						

Remarks: Boring Terminated (ft): 75.0 Hand augered down to 5' bgs

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Client: Department of the Navy		Logged By: MM	
Location: NIROP, Fridley MN	Northing: 1078131	Easting: 2811152	Drilling Company: Traut Inc
Project #: 60276080	Ground Elevation (msl): 834.79		Hole Size (in): 2 IN
Start Date: 9/3/2015	Drilling Method: Sonic		Water Level (ft): 26
Finish Date: 9/3/2015	Drill Rig Type: Versa-Sonic		Total Depth (ft): 75.0

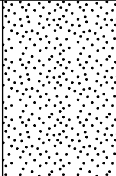
Depth (ft bgs)	Recovery (percent)	PID (ppm)	USCS Code	Graphic	Soil Description Classification Scheme: USCS	Soil Lab Sample Collection Depth
50						
		0.6	SP		poorly graded SAND; very fine to fine (mostly fine) sand; some silt; slightly cohesive; moist; 10YR 4/2 dark grayish brown (continued)	
52		0.8	SW		well graded SAND; very fine to coarse sand; little silt; 10YR 4/2; dark grayish brown @57-57.5' bgs: mostly medium sand	
		0.8				
54		0.8				
		0.8				
56		0.9				
		0.9				
58		0.8	SP		poorly graded SAND; very fine to coarse (mostly fine) sand; trace silt; 10YR 4/2 dark grayish brown	
		0.9				
60		1.0				
		0.7				
62		0.7				
		0.6				
64		0.6				
		0.6				
66		0.4				
		0.5				
68		0.6				
		0.7				
70		0.5				
		0.6				
72		0.6				
		0.7				
74		0.7				
		0.7				
		0.6				

End of boring at 75.0 ft. bgs.

Remarks: Boring Terminated (ft): 75.0 Hand augered down to 5' bgs

Resolution Consultants
 800 LaSalle Ave, Suite 500
 Minneapolis, MN 55402
 Phone: (612) 376-2000
 Fax: (612) 376-2271

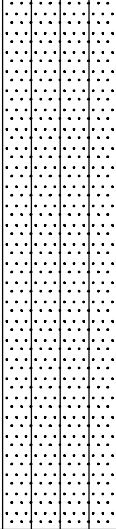
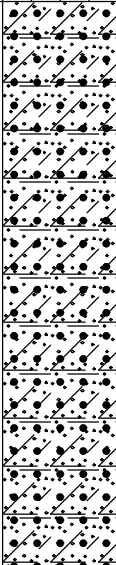
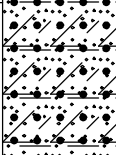
Client: Department of the Navy		Logged By: MM	
Location: NIROP, Fridley MN	Northing:	Easting:	Drilling Company: Mateco Well Drilling
Project #: 60276080	Ground Elevation (msl):		Hole Size (in): 2 IN
Start Date: 12/19/2015	Drilling Method: Sonic		Water Level (ft): 33
Finish Date: 12/21/2015	Drill Rig Type: Roto Sonic Mini Geoprobe		Total Depth (ft): 76.0

Depth (ft bgs)	Recovery (percent)	PID (ppm)	USCS Code	Graphic	Soil Description Classification Scheme: USCS	Soil Lab Sample Collection Depth	
0							
2					Blind drill to 65' bgs		
4							
6							
8							
10							
12							
14							
16							
18							
20							
22							
24							
26							
28							
30							
32							
34							
36							
38							
40							
42							
44							
46							
48							
50							
52							
54							
56							
58							
60							
62							
64							
65.0							
66					<1 inch of recovery poorly graded SAND; very fine to fine; wet; loose; 10YR 4/2 dark grayish brown		
68							
70							
72							
74							
76							
			SP				
				76.0			
End of boring at 76.0 ft. bgs.							

Remarks: Boring Terminated (ft): 76.0

Resolution Consultants
800 LaSalle Ave, Suite 500
Minneapolis, MN 55402
Phone: (612) 376-2000
Fax: (612) 376-2271

Client: Department of the Navy		Logged By: MM	
Location: NIROP, Fridley MN		Northing:	Easting:
Project #: 60276080		Drilling Company: Mateco Well Drilling	
Start Date: 12/17/2015		Ground Elevation (msl):	Hole Size (in): 2 IN
Finish Date: 12/21/2015		Drilling Method: Sonic	Water Level (ft): 33
		Drill Rig Type: Roto Sonic Mini Geoprobe	Total Depth (ft): 76.0

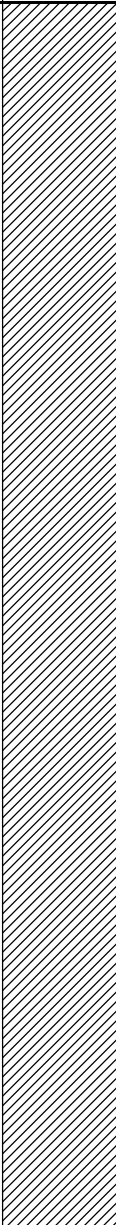
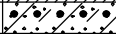
Depth (ft bgs)	Recovery (percent)	PID (ppm)	USCS Code	Graphic	Soil Description Classification Scheme: USCS	Soil Lab Sample Collection Depth
0						
2	20	132.2	SM		SILTY SAND; very fine to coarse sand; little clay; cohesive; little fine gravel; subround to subangular; moist; medium dense; 2.5Y 2.5/1 black	
4		76.7				
6		28.5				
8	100	19.0				
8.5		7.5				
10		1.4	SW		well graded SAND; very fine to coarse; trace fine gravel; subround to subangular; moist; loose; 2.5Y 5/2 grayish brown @15' bgs: trace cobble (up to 3.5" in size); round	
12	40	1.3				
14		1.3				
16		0.3				
16		0.0				
18	100	0.0				
18		0.0	SW		well graded SAND; very fine to coarse sand; trace silt; trace cobble (up to 3.5" in size); round; moist; loose; 2.5Y 5/3 light olive brown	
20		0.0				

Remarks: Boring Terminated (ft): 76.0

Resolution Consultants
800 LaSalle Ave, Suite 500
Minneapolis, MN 55402
Phone: (612) 376-2000
Fax: (612) 376-2271

20's, windy, cloudy

Client: Department of the Navy		Logged By: MM	
Location: NIROP, Fridley MN		Northing:	Easting:
Project #: 60276080		Drilling Company: Mateco Well Drilling	
Start Date: 12/17/2015		Ground Elevation (msl):	Hole Size (in): 2 IN
Finish Date: 12/21/2015		Drilling Method: Sonic	Water Level (ft): 33
		Drill Rig Type: Roto Sonic Mini Geoprobe	Total Depth (ft): 76.0

Depth (ft bgs)	Recovery (percent)	PID (ppm)	USCS Code	Graphic	Soil Description Classification Scheme: USCS	Soil Lab Sample Collection Depth		
20		0.0						
22	100	0.1			LEAN CLAY; medium plasticity; some silt; little fine to coarse sand; trace fine gravel; subround to subangular; moist; 2.5Y 4/1 dark gray			
		0.2						
		0.0						
24		0.1						
		0.0						
		0.0						
26		0.0						
		0.0						
28	100	0.0	CL					
		0.0						
		0.0						
30		0.0						
		0.0						
		0.0						
32	100	0.0						
		0.0						
		0.0						
34		0.0						
		0.0						
36		0.0						
		0.0						
38	100	0.0						
		0.0						
40		0.0			well graded SAND; very fine to coarse sand; with fine to coarse gravel; subround to			

Remarks: Boring Terminated (ft): 76.0

Resolution Consultants
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Minneapolis, MN 55402
Phone: (612) 376-2000
Fax: (612) 376-2271

20's, windy, cloudy

Client: Department of the Navy		Logged By: MM	
Location: NIROP, Fridley MN		Northing:	Easting:
Project #: 60276080		Drilling Company: Mateco Well Drilling	
Start Date: 12/17/2015		Ground Elevation (msl):	Hole Size (in): 2 IN
Finish Date: 12/21/2015		Drilling Method: Sonic	Water Level (ft): 33
		Drill Rig Type: Roto Sonic Mini Geoprobe	Total Depth (ft): 76.0

Depth (ft bgs)	Recovery (percent)	PID (ppm)	USCS Code	Graphic	Soil Description Classification Scheme: USCS	Soil Lab Sample Collection Depth
40						
		0.0	SW		subangular; some silt; wet; loose; 2.5Y 3/2 very dark grayish brown	
		0.0	SW		well graded SAND; very fine to coarse sand; with fine to coarse gravel; subround to subangular; some silt; wet; loose; 2.5Y 3/2 very dark grayish brown	
42	100	0.0			well graded SAND; very fine to coarse sand; some fine to coarse gravel (up to 2" in size); subround to angular; some silt; wet; loose; 2.5Y 3/2 very dark grayish brown @58-58.5' bgs: sand/clay lense	
44		0.0				
46		0.0				
48	100	0.0				
50		0.0				
52		0.0	SW			
54	40	0.0				
56		0.0				
58	60	1.0				
60		1.1				

Remarks: Boring Terminated (ft): 76.0

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20's, windy, cloudy

Client: Department of the Navy		Logged By: MM	
Location: NIROP, Fridley MN		Northing:	Easting:
Project #: 60276080		Drilling Company: Mateco Well Drilling	
Start Date: 12/17/2015		Ground Elevation (msl):	Hole Size (in): 2 IN
Finish Date: 12/21/2015		Drilling Method: Sonic	Water Level (ft): 33
		Drill Rig Type: Roto Sonic Mini Geoprobe	Total Depth (ft): 76.0

Depth (ft bgs)	Recovery (percent)	PID (ppm)	USCS Code	Graphic	Soil Description Classification Scheme: USCS	Soil Lab Sample Collection Depth
60						
62	0				No recovery	
64						
66						
68	0					
70						
72						
74	0					
76						

0 76.0 End of boring at 76.0 ft. bgs.

Remarks: Boring Terminated (ft): 76.0

Resolution Consultants
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Phone: (612) 376-2000
Fax: (612) 376-2271

20's, windy, cloudy

Client: Department of the Navy		Logged By: MM	
Location: NIROP, Fridley MN		Northing:	Easting:
Project #: 60276080		Drilling Company: Mateco Well Drilling	
Start Date: 12/18/2015		Ground Elevation (msl):	Hole Size (in): 2 IN
Finish Date: 12/21/2015		Drilling Method: Sonic	Water Level (ft): 33
		Drill Rig Type: Roto Sonic Mini Geoprobe	Total Depth (ft): 76.0

Depth (ft bgs)	Recovery (percent)	PID (ppm)	USCS Code	Graphic	Soil Description Classification Scheme: USCS	Soil Lab Sample Collection Depth
0						
2					Blind drill to 60' bgs	
4						
6						
8						
10						
12						
14						
16						
18						
20						
22						
24						
26						
28						
30						
32						
34						
36						
38						
40						
42						
44						
46						
48						
50						
52						
54						
56						
58						
60					60.0	
62					No recovery	
64						
66						
68						
70						
72						
74						
76					76.0	

End of boring at 76.0 ft. bgs.

Remarks: Boring Terminated (ft): 76.0

Resolution Consultants
800 LaSalle Ave, Suite 500
Minneapolis, MN 55402
Phone: (612) 376-2000
Fax: (612) 376-2271

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING SEALING RECORD
 Minnesota Statutes, Chapter 1031

Minnesota Well and Boring Sealing No. _____
 Minnesota Unique Well No. or W-series No. _____
(Leave blank if not known)

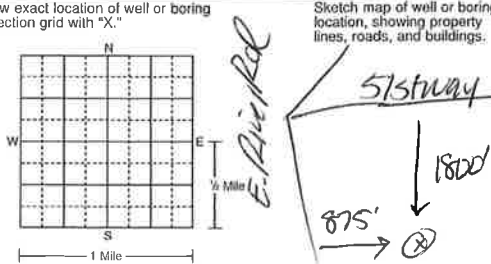
H 339281
 814759

WELL OR BORING LOCATION
 County Name
Anoka

Township Name **Fridley** Township No. **30** Range No. **24** Section No. **27** Fraction (sm. → lg.) **NW NW SE:** Date Sealed **5-18-16** Date Well or Boring Constructed **5-18-16**

GPS LOCATION: Latitude _____ degrees _____ minutes _____ seconds Longitude _____ degrees _____ minutes _____ seconds
 Depth Before Sealing **66** ft. Original Depth **66** ft.

Numerical Street Address or Fire Number and City of Well or Boring Location
4800 E River Rd, Fridley MN 55421

Show exact location of well or boring in section grid with "X."
 Sketch map of well or boring location, showing property lines, roads, and buildings.


AQUIFER(S) Single Aquifer Multi-aquifer
 WELL/BORING Water-Supply Well Monit. Well Env. Bore Hole Other
 STATIC WATER LEVEL Measured Estimated Date Measure _____
28.5 ft. below above land surface

CASING TYPE(S) Steel Plastic Tile Other _____
 WELLHEAD COMPLETION
 Outside: Well House At Grade Pitless Adapter/Unit Buried
 Inside: Basement Offset Well Pit Buried Other _____

PROPERTY OWNER'S NAME/COMPANY NAME
NAVFAC - Midlant
 Property owner's mailing address if different than well location address indicated above
**9324 Virginia Ave
 Norfolk, VA 23511**

CASING(S)
 Diameter **2** in. from **0** to **66** ft. Set in oversized hole? Yes No Annular space initially grouted? Yes No Unknown
 _____ in. from _____ to _____ ft. Yes No Yes No Unknown
 _____ in. from _____ to _____ ft. Yes No Yes No Unknown

WELL OWNER'S NAME/COMPANY NAME
Same
 Well owner's mailing address if different than property owner's address indicated above

SCREEN/OPEN HOLE
 Screen from **66** to **66** ft. Open Hole from _____ to _____ ft.
 OBSTRUCTIONS
 Rods/Drop Pipe Check Valve(s) Debris Fill No Obstruction
 Type of Obstructions (Describe) _____

Obstructions removed? Yes No Describe _____

PUMP
 Type Removed Not Present Other _____

METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE:
 No Annular Space Exists Annular Space Grouted with Tremie Pipe Casing Perforation/Removal
 _____ in. from _____ to _____ ft. Perforated Removed
 _____ in. from **unknown** to _____ ft. Perforated Removed
 Type of Perforator _____
 Other _____

GROUTING MATERIAL(S) (One bag of cement = 94 lbs., one bag of bentonite = 50 lbs.)
 Grouting Material **Neat Cement** from **0** to **66** ft. _____ yards **1** bags
 _____ from _____ to _____ ft. _____ yards _____ bags
 _____ from _____ to _____ ft. _____ yards _____ bags

OTHER WELLS AND BORINGS
 Other unsealed and unused well or boring on property? Yes No How many? _____

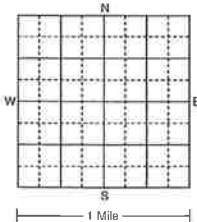
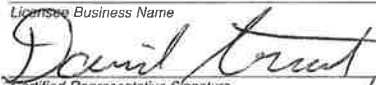

REMARKS, SOURCE OF DATA, DIFFICULTIES IN SEALING _____
 LICENSED OR REGISTERED CONTRACTOR CERTIFICATION
 This well or boring was sealed in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

Licensee Business Name _____ License or Registration No. _____
 Certified Representative Signature **David Trout** Certified Rep. No. _____ Date _____
 Name of Person Sealing Well or Boring **Jimmy & Andy**

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING SEALING RECORD
 Minnesota Statutes, Chapter 1031

Minnesota Well and Boring Sealing No. _____
 Minnesota Unique Well No. or W-series No. _____
(Leave blank if not known)

H339282
814760

WELL OR BORING LOCATION		County Name Anoka	
Township Name Fridley	Township No. 30	Range No. 24	Section No. 27
Date Sealed 4/16/16 5-18-16		Date Well or Boring Constructed 9-2-15	
GPS LOCATION: Latitude _____ degrees _____ minutes _____ seconds Longitude _____ degrees _____ minutes _____ seconds		Depth Before Sealing 606 ft. Original Depth 606 ft.	
Numerical Street Address or Fire Number and City of Well or Boring Location 4800 E River Rd, Fridley MN 55421		ACQUIFER(S) <input type="checkbox"/> Single Aquifer <input type="checkbox"/> Multi-aquifer WELL/BORING <input type="checkbox"/> Water-Supply Well <input type="checkbox"/> Monit. Well <input type="checkbox"/> Env. Bore Hole <input type="checkbox"/> Other	
Show exact location of well or boring in section grid with "X." 		STATIC WATER LEVEL <input checked="" type="checkbox"/> Measured <input type="checkbox"/> Estimated Date Measure _____ 28.5 ft. <input checked="" type="checkbox"/> below <input type="checkbox"/> above land surface	
PROPERTY OWNER'S NAME/COMPANY NAME NAVFAC - Midlant Property owner's mailing address if different than well location address indicated above 9324 Virginia Ave Norfolk, VA 23511		CASING TYPE(S) <input type="checkbox"/> Steel <input checked="" type="checkbox"/> Plastic <input type="checkbox"/> Tile <input type="checkbox"/> Other WELLHEAD COMPLETION Outside: <input type="checkbox"/> Well House <input checked="" type="checkbox"/> At Grade <input type="checkbox"/> Pitless Adapter/Unit <input type="checkbox"/> Well Pit <input type="checkbox"/> Other Inside: <input type="checkbox"/> Basement Offset <input type="checkbox"/> Buried <input type="checkbox"/> Other	
WELL OWNER'S NAME/COMPANY NAME Same Well owner's mailing address if different than property owner's address indicated above		CASING(S) Diameter 2 in. from 0 to 606 ft. Set in oversize hole? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Annular space initially grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown _____ in. from _____ to _____ ft. <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown _____ in. from _____ to _____ ft. <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	
GEOLOGICAL MATERIAL COLOR HARDNESS OR FORMATION FROM TO If not known, indicate estimated formation log from nearby well or boring. Concrete Gray H 0 1 Sand & gravel Brn S 1 13 Sand ↓ S 13 606		SCREEN/OPEN HOLE Screen from 606 to 606 ft. Open Hole from _____ to _____ ft. OBSTRUCTIONS <input type="checkbox"/> Rods/Drop Pipe <input type="checkbox"/> Check Valve(s) <input type="checkbox"/> Debris <input type="checkbox"/> Fill <input checked="" type="checkbox"/> No Obstruction Type of Obstructions (Describe) _____ Obstructions removed? <input type="checkbox"/> Yes <input type="checkbox"/> No Describe _____	
REMARKS, SOURCE OF DATA, DIFFICULTIES IN SEALING		PUMP Type <input type="checkbox"/> Removed <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> Other _____ METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: <input type="checkbox"/> No Annular Space Exists <input type="checkbox"/> Annular Space Grouted with Tremie Pipe <input type="checkbox"/> Casing Perforation/Removal _____ in. from _____ to _____ ft. <input type="checkbox"/> Perforated <input type="checkbox"/> Removed _____ in. from unknown to _____ ft. <input type="checkbox"/> Perforated <input type="checkbox"/> Removed Type of Perforator _____ <input type="checkbox"/> Other _____	
GROUING MATERIAL(S) (One bag of cement = 94 lbs., one bag of bentonite = 50 lbs.) Grouting Material Neat Cement from 0 to 606 ft. _____ yards _____ bags _____ from _____ to _____ ft. _____ yards _____ bags _____ from _____ to _____ ft. _____ yards _____ bags		OTHER WELLS AND BORINGS Other unsealed and unused well or boring on property? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No How many? _____ LICENSED OR REGISTERED CONTRACTOR CERTIFICATION This well or boring was sealed in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.	
MINN. DEPT. OF HEALTH COPY		Licensee Business Name _____ License or Registration No. _____  Certified Representative Signature _____ Certified Rep. No. _____ Date _____  Name of Person Sealing Well or Boring _____	

WELL OR BORING LOCATION

County Name
Anoka

Township Name
Fridley

Township No.
30

Range No.
24

Section No.
27

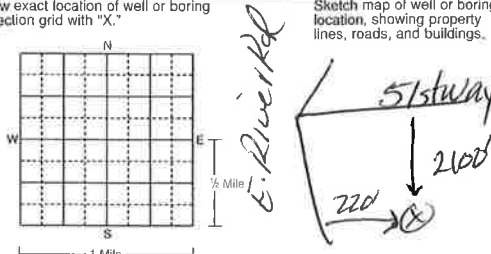
Fraction (sm. → lg.)
NW NW SE:

Date Sealed
5-18-16

Date Well or Boring Constructed
9-2-15

GPS LOCATION: Latitude _____ degrees _____ minutes _____ seconds
Longitude _____ degrees _____ minutes _____ seconds

Numerical Street Address or Fire Number and City of Well or Boring Location
4800 E River Rd, Fridley MN 55421

Show exact location of well or boring in section grid with "X."


Sketch map of well or boring location, showing property lines, roads, and buildings.

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING SEALING RECORD

Minnesota Statutes, Chapter 1031

Minnesota Well and Boring Sealing No.
H 339283

Minnesota Unique Well No. or W-series No.
814761

AQUIFER(S)
 Single Aquifer Multiaquifer

WELL/BORING
 Water-Supply Well Monit. Well
 Env. Bore Hole Other

STATIC WATER LEVEL
 Measured Estimated Date Measure _____
28.5 ft. below above land surface

CASING TYPE(S)
 Steel Plastic Tile Other

WELL HEAD COMPLETION

Outside: Well House At Grade Pitless Adapter/Unit Well Pit Other
 Buried

Inside: Basement Offset Well Pit Buried Other

CASING(S)

Diameter	Depth	Set in oversized hole?	Annular space initially grouted?
2 in. from 0 to 70 ft.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	
_____ in. from _____ to _____ ft.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	
_____ in. from _____ to _____ ft.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	

SCREEN/OPEN HOLE
Screen from **70** to **75** ft. Open Hole from _____ to _____ ft.

OBSTRUCTIONS
 Rods/Drop Pipe Check Valve(s) Debris Fill No Obstruction

Type of Obstructions (Describe) _____

Obstructions removed? Yes No Describe _____

PUMP
Type
 Removed Not Present Other _____

METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE:
 No Annular Space Exists Annular Space Grouted with Tremie Pipe Casing Perforation/Removal
_____ in. from _____ to _____ ft. Perforated Removed
_____ in. from **unknown** to _____ ft. Perforated Removed

Type of Perforator _____
 Other _____

GROUTING MATERIAL(S) (One bag of cement = 94 lbs., one bag of bentonite = 50 lbs.)
Grouting Material: **neat cement** from **0** to **75** ft. _____ yards **1** bags
_____ from _____ to _____ ft. _____ yards _____ bags
_____ from _____ to _____ ft. _____ yards _____ bags

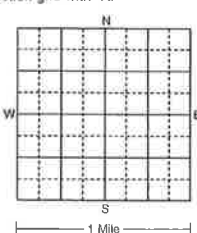
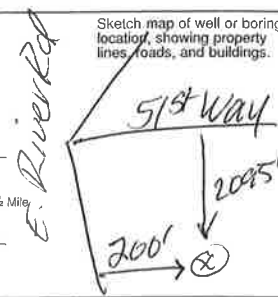
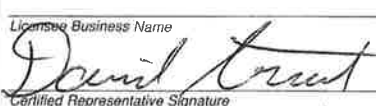
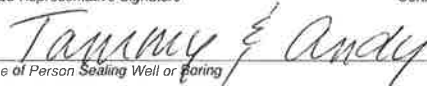
OTHER WELLS AND BORINGS
Other unsealed and unused well or boring on property? Yes No How many? _____

LICENSED OR REGISTERED CONTRACTOR CERTIFICATION
This well or boring was sealed in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

Licensee Business Name _____ License or Registration No. _____
David Trout
Certified Representative Signature _____ Certified Rep. No. _____ Date _____
Tammy & Andy
Name of Person Sealing Well or Boring _____

REMARKS, SOURCE OF DATA, DIFFICULTIES IN SEALING

MINN. DEPT. OF HEALTH COPY

MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING SEALING RECORD <i>Minnesota Statutes, Chapter 1031</i>				Minnesota Well and Boring Sealing No. _____ Minnesota Unique Well No. or W-series No. _____ <small>(Leave blank if not known)</small>		H 339284 814146																															
WELL OR BORING LOCATION County Name: Anoka																																					
Township Name	Township No.	Range No.	Section No.	Fraction (sm. → lg.)	Date Sealed	Date Well or Boring Constructed																															
Fridley	30	24	27	NW NW SE	5-18-16	9-3-15																															
GPS LOCATION: Latitude _____ degrees _____ minutes _____ seconds Longitude _____ degrees _____ minutes _____ seconds				Depth Before Sealing <u>75</u> ft. Original Depth <u>75</u> ft.		AQUIFER(S) <input checked="" type="checkbox"/> Single Aquifer <input type="checkbox"/> Multiaquifer																															
Numerical Street Address or Fire Number and City of Well or Boring Location 4800 E River Rd, Fridley MN 55421				WELL/BORING <input type="checkbox"/> Water-Supply Well <input checked="" type="checkbox"/> Monit. Well <input type="checkbox"/> Env. Bore Hole <input type="checkbox"/> Other _____		STATIC WATER LEVEL <input checked="" type="checkbox"/> Measured <input type="checkbox"/> Estimated Date Measure _____ <u>28.5</u> ft. <input type="checkbox"/> below <input type="checkbox"/> above land surface																															
Show exact location of well or boring in section grid with "X." 				Sketch map of well or boring location, showing property lines, roads, and buildings. 				CASING TYPE(S) <input type="checkbox"/> Steel <input checked="" type="checkbox"/> Plastic <input type="checkbox"/> Tile <input type="checkbox"/> Other _____																													
PROPERTY OWNER'S NAME/COMPANY NAME NAVFAC - Midlant Property owner's mailing address if different than well location address indicated above 9324 Virginia Ave Norfolk, VA 23511				CASING(S) Diameter <u>2</u> in. from <u>0</u> to <u>70</u> ft. Depth <u>70</u> ft. Set in oversized hole? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Angular space initially grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown _____ in. from _____ to _____ ft. <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown _____ in. from _____ to _____ ft. <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown																																	
WELL OWNER'S NAME/COMPANY NAME Same Well owner's mailing address if different than property owner's address indicated above				SCREEN/OPEN HOLE Screen from <u>70</u> to <u>75</u> ft. Open Hole from _____ to _____ ft.																																	
OBSTRUCTIONS <input type="checkbox"/> Rods/Drop Pipe <input type="checkbox"/> Check Valve(s) <input type="checkbox"/> Debris <input type="checkbox"/> Fill <input checked="" type="checkbox"/> No Obstruction Type of Obstructions (Describe) _____				Obstructions removed? <input type="checkbox"/> Yes <input type="checkbox"/> No Describe _____																																	
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>GEOLOGICAL MATERIAL</th> <th>COLOR</th> <th>HARDNESS OR FORMATION</th> <th>FROM</th> <th>TO</th> </tr> </thead> <tbody> <tr> <td>Concrete</td> <td>Gray</td> <td>H</td> <td>0</td> <td>1</td> </tr> <tr> <td>Sand & gravel</td> <td>Brn</td> <td>S</td> <td>1</td> <td>10</td> </tr> <tr> <td>Sand</td> <td>↓</td> <td>↓</td> <td>10</td> <td>26</td> </tr> <tr> <td>Clay w/ sand</td> <td>↓</td> <td>↓</td> <td>26</td> <td>26</td> </tr> <tr> <td>Sand</td> <td>↓</td> <td>↓</td> <td>26</td> <td>75</td> </tr> </tbody> </table>				GEOLOGICAL MATERIAL	COLOR	HARDNESS OR FORMATION	FROM	TO	Concrete	Gray	H	0	1	Sand & gravel	Brn	S	1	10	Sand	↓	↓	10	26	Clay w/ sand	↓	↓	26	26	Sand	↓	↓	26	75	PUMP Type _____ <input type="checkbox"/> Removed <input checked="" type="checkbox"/> Not Present <input type="checkbox"/> Other _____			
GEOLOGICAL MATERIAL	COLOR	HARDNESS OR FORMATION	FROM	TO																																	
Concrete	Gray	H	0	1																																	
Sand & gravel	Brn	S	1	10																																	
Sand	↓	↓	10	26																																	
Clay w/ sand	↓	↓	26	26																																	
Sand	↓	↓	26	75																																	
METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: <input type="checkbox"/> No Annular Space Exists <input type="checkbox"/> Annular Space Grouted with Tremie Pipe <input type="checkbox"/> Casing Perforation/Removal _____ in. from _____ to _____ ft. <input type="checkbox"/> Perforated <input type="checkbox"/> Removed _____ in. from <u>unknown</u> to _____ ft. <input type="checkbox"/> Perforated <input type="checkbox"/> Removed Type of Perforator _____ <input type="checkbox"/> Other _____				GROUING MATERIAL(S) (One bag of cement = 94 lbs., one bag of bentonite = 50 lbs.) Grouting Material <u>Next Cement</u> from <u>0</u> to <u>75</u> ft. _____ yards _____ bags _____ from _____ to _____ ft. _____ yards _____ bags _____ from _____ to _____ ft. _____ yards _____ bags																																	
REMARKS, SOURCE OF DATA, DIFFICULTIES IN SEALING				OTHER WELLS AND BORINGS Other unsealed and unused well or boring on property? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No How many? _____																																	
LICENSED OR REGISTERED CONTRACTOR CERTIFICATION This well or boring was sealed in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.				Licensee Business Name _____ License or Registration No. _____  Certified Representative Signature _____ Certified Rep. No. _____ Date _____  Name of Person Sealing Well or Boring _____																																	
MINN. DEPT. OF HEALTH COPY																																					

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING SEALING RECORD
 Minnesota Statutes, Chapter 103I

Minnesota Well and Boring Sealing No.
 Minnesota Unique Well No. or W-series No.
 (Leave blank if not known)

H 339285
 818601

WELL OR BORING LOCATION
 County Name Anoka

Township Name Fridley Township No. 30 Range No. 24 Section No. 27 Fraction (sm. → lg.) NW 1/4 SE 1/4

Date Sealed 5-18-16

Date Well or Boring Constructed 12-20-15

GPS LOCATION – decimal degrees (to four decimal places)
 Latitude _____ Longitude _____

Depth Before Sealing 76 ft. Original Depth 76 ft.

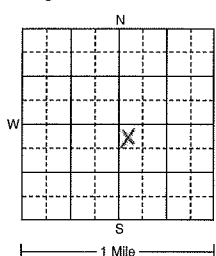
Numerical Street Address or Fire Number and City of Well or Boring Location
4800 E. River Rd, Fridley

AQUIFER(S)
 Single Aquifer Multiaquifer

STATIC WATER LEVEL
 Measured Estimated Date Measured 5-18-16

Show exact location of well or boring in section grid with "X."

Sketch map of well or boring location, showing property lines, roads, and buildings.



WELL/BORING
 Water-Supply Well Monit. Well
 Env. Bore Hole Other injection well 28.5 ft. below above land surface

CASING TYPE(S)
 Steel Plastic Tile Other _____

WELLHEAD COMPLETION
Outside: Well House At Grade Pitless Adapter/Unit Buried
 Well Pit Other 6" protop
Inside: Basement Offset Well Pit Buried Other _____

PROPERTY OWNER'S NAME/COMPANY NAME
NAVFAAC - Midlant

CASING(S)
 Diameter 2 in. from 0 to 71 ft. Set in oversize hole? Yes No Annular space initially grouted? Yes No Unknown
 _____ in. from _____ to _____ ft. Yes No Yes No Unknown
 _____ in. from _____ to _____ ft. Yes No Yes No Unknown

Property owner's mailing address if different than well location address indicated above
9324 Virginia Ave
Norfolk, VA 23511

WELL OWNER'S NAME/COMPANY NAME
Same

SCREEN/OPEN HOLE
 Screen from 71 to 76 ft. Open Hole from _____ to _____ ft.

Well owner's mailing address if different than property owner's address indicated above

OBSTRUCTIONS
 Rods/Drop Pipe Check Valve(s) Debris Fill No Obstruction
 Type of Obstructions (Describe) _____

GEOLOGICAL MATERIAL

Obstructions removed? Yes No Describe _____

If not known, indicate estimated formation log from nearby well or boring.

PUMP
 Type _____
 Removed Not Present Other _____

GEOLOGICAL MATERIAL	COLOR	HARDNESS OR FORMATION	FROM	TO
Top soil	Blk	S	0	4
Sand & gravel	Ben	S	4	10
Sand	Ben	S	10	20
Clay w/ sand	Ben	S	20	26
Sand	Ben	S	26	77

METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE:
 No Annular Space Exists Annular Space Grouted with Tremie Pipe Casing Perforation/Removal
 _____ in. from _____ to _____ ft. Perforated Removed
 _____ in. from Unknown to _____ ft. Perforated Removed
 Type of Perforator _____

VARIANCE
 Was a variance granted from the MDH for this well? Yes No TN# _____

GRROUTING MATERIAL(S) (One bag of cement = 94 lbs., one bag of bentonite = 50 lbs.)
 Grouting Material Neat Cement from 0 to 76 ft. _____ yards 1 bags
 _____ from _____ to _____ ft. _____ yards _____ bags
 _____ from _____ to _____ ft. _____ yards _____ bags

REMARKS, SOURCE OF DATA, DIFFICULTIES IN SEALING
IW-1

OTHER WELLS AND BORINGS
 Other unsealed and unused well or boring on property? Yes No How many? _____

LICENSED OR REGISTERED CONTRACTOR CERTIFICATION
 This well or boring was sealed in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

Mark J Trane Wells, Inc. Licensee Business Name License or Registration No. 1404
Daniel Trane Certified Representative Signature 589 Certified Rep. No. 6-7-16 Date

Tammy Wahl Name of Person Sealing Well or Boring

LOCAL COPY **H 339285**

WELL OR BORING LOCATION
County Name Anoka

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING SEALING RECORD
Minnesota Statutes, Chapter 103I

Minnesota Well and Boring Sealing No.
Minnesota Unique Well No. or W-series No.
(Leave blank if not known)

H 339286
818602

Township Name Fridley Township No. 30 Range No. 24 Section No. 27 Fraction (sm. → lg.) NW 1/4, NW 1/4, SE 1/4 Date Sealed 5-18-16 Date Well or Boring Constructed 12-18-15

GPS LOCATION - decimal degrees (to four decimal places)
Latitude _____ Longitude _____

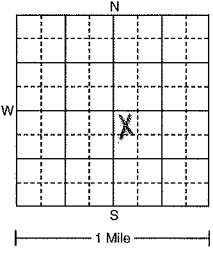
Depth Before Sealing 76 ft. Original Depth 76 ft.

Numerical Street Address or Fire Number and City of Well or Boring Location
4800 E. River Rd, Fridley 55421

AQUIFER(S)
 Single Aquifer Multiaquifer
WELL/BORING
 Water-Supply Well Monit. Well
 Env. Bore Hole Other inj. well

Show exact location of well or boring in section grid with "X"

STATIC WATER LEVEL
 Measured Estimated Date Measured _____
28.5 ft. below above land surface



Sketch map of well or boring location, showing property lines, roads, and buildings.
E. River Rd.

CASING TYPE(S)
 Steel Plastic Tile Other

PROPERTY OWNER'S NAME/COMPANY NAME
NAVFAC - Midlant
Property owner's mailing address if different than well location address indicated above
9324 Virginia Ave.
Norfolk, VA 23511

WELLHEAD COMPLETION
Outside: Well House At Grade Pitless Adapter/Unit Buried
 Well Pit
 Other 6" protop
Inside: Basement Offset Well Pit Buried Other _____

WELL OWNER'S NAME/COMPANY NAME
Same
Well owner's mailing address if different than property owner's address indicated above

CASING(S)
Diameter Depth Set in oversized hole? Annular space initially grouted?
2 in. from 0 to 71 ft. Yes No Yes No Unknown
_____ in. from _____ to _____ ft. Yes No Yes No Unknown
_____ in. from _____ to _____ ft. Yes No Yes No Unknown

SCREEN/OPEN HOLE
Screen from 71 to 76 ft. Open Hole from _____ to _____ ft.

OBSTRUCTIONS
 Rods/Drop Pipe Check Valve(s) Debris Fill No Obstruction
Type of Obstructions (Describe) _____

GEOLOGICAL MATERIAL	COLOR	HARDNESS OR FORMATION	FROM	TO
<u>Top Soil</u>	<u>Blk</u>	<u>S</u>	<u>0</u>	<u>4</u>
<u>Sand/gravel</u>	<u>Brn</u>	<u>S</u>	<u>4</u>	<u>10</u>
<u>Sand</u>	<u>Brn</u>	<u>S</u>	<u>10</u>	<u>20</u>
<u>Clay w/sand</u>	<u>Brn</u>	<u>S</u>	<u>20</u>	<u>26</u>
<u>Sand</u>	<u>Brn</u>	<u>S</u>	<u>26</u>	<u>76</u>

Obstructions removed? Yes No Describe _____
PUMP
Type _____
 Removed Not Present Other _____

METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE:
 No Annular Space Exists Annular Space Grouted with Tremie Pipe Casing Perforation/Removal
_____ in. from _____ to _____ ft. Perforated Removed
_____ in. from Unknown to _____ ft. Perforated Removed
Type of Perforator _____

VARIANCE
Was a variance granted from the MDH for this well? Yes No TN# _____

GROUTING MATERIAL(S) (One bag of cement = 94 lbs., one bag of bentonite = 50 lbs.)
Grouting Material Heat Cement from 0 to 76 ft. _____ yards 1 bags
_____ from _____ to _____ ft. _____ yards _____ bags
_____ from _____ to _____ ft. _____ yards _____ bags

REMARKS, SOURCE OF DATA, DIFFICULTIES IN SEALING
IW - 2

OTHER WELLS AND BORINGS
Other unsealed and unused well or boring on property? Yes No How many? _____

LICENSED OR REGISTERED CONTRACTOR CERTIFICATION
This well or boring was sealed in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

Mark J Trant Wells, Inc. 1404
Licensee Business Name License or Registration No.
Daniel Trant 589
Certified Representative Signature Certified Rep. No. Date
16-7-16

LOCAL COPY H 339286

Tammy Wake
Name of Person Sealing Well or Boring

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING SEALING RECORD
 Minnesota Statutes, Chapter 103I

Minnesota Well and Boring Sealing No.
 Minnesota Unique Well No. or W-series No.
 (Leave blank if not known)

H 339287
 818603

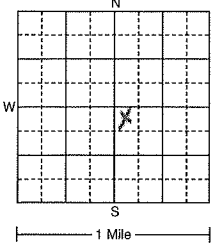
WELL OR BORING LOCATION
 County Name Anoka

Township Name Fridley Township No. 30 Range No. 24 Section No. 27 Fraction (sm. → lg.) NW 1/4 NW 1/4 SE 1/4 Date Sealed 5-18-16 Date Well or Boring Constructed 12-19-15

GPS LOCATION - decimal degrees (to four decimal places)
 Latitude _____ Longitude _____
 Depth Before Sealing 76 ft. Original Depth 76 ft.

Numerical Street Address or Fire Number and City of Well or Boring Location
4800 E. River Rd, Fridley

Show exact location of well or boring in section grid with "X". Sketch map of well or boring location, showing property lines, roads, and buildings.
 Single Aquifer Multiaquifer
 Water-Supply Well Monit. Well
 Env. Bore Hole Other inj. wells 28.5 ft. below above land surface



CASING TYPE(S)
 Steel Plastic Tile Other _____

WELLHEAD COMPLETION
 Outside: Well House At Grade Pitless Adapter/Unit Well Pit Other 6" protop
 Inside: Basement Offset Well Pit Buried Other _____

PROPERTY OWNER'S NAME/COMPANY NAME
NAVFAC - Midlant
 Property owner's mailing address if different than well location address indicated above
9324 Virginia Ave
Norfolk, VA 23511

WELL OWNER'S NAME/COMPANY NAME
same
 Well owner's mailing address if different than property owner's address indicated above

SCREEN/OPEN HOLE
 Screen from 71 to 76 ft. Open Hole from _____ to _____ ft.
 OBSTRUCTIONS
 Rods/Drop Pipe Check Valve(s) Debris Fill No Obstruction
 Type of Obstructions (Describe) _____

Obstructions removed? Yes No Describe _____

PUMP
 Type _____
 Removed Not Present Other _____

METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE:
 No Annular Space Exists Annular Space Grouted with Tremie Pipe Casing Perforation/Removal
 _____ in. from _____ to _____ ft. Perforated Removed
 _____ in. from Unknown to _____ ft. Perforated Removed
 Type of Perforator _____

VARIANCE
 Was a variance granted from the MDH for this well? Yes No TN# _____

GROUTING MATERIAL(S) (One bag of cement = 94 lbs., one bag of bentonite = 50 lbs.)
 Grouting Material Neat Cement from 0 to 76 ft. _____ yards 1 bags
 _____ from _____ to _____ ft. _____ yards _____ bags
 _____ from _____ to _____ ft. _____ yards _____ bags

OTHER WELLS AND BORINGS
 Other unsealed and unused well or boring on property? Yes No How many? _____

REMARKS, SOURCE OF DATA, DIFFICULTIES IN SEALING
IW-3

LICENSED OR REGISTERED CONTRACTOR CERTIFICATION
 This well or boring was sealed in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.
Mark J. Trant Wells, Inc. Licensee Business Name 14/04 License or Registration No.
David Trant Certified Representative Signature 589 Certified Rep. No. 10-7-16 Date

LOCAL COPY **H** 339287
Tammy Wahl Name of Person Sealing Well or Boring

Appendix D
Monitoring and Injection Well
Construction Forms

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING CONSTRUCTION RECORD
 Minnesota Statutes, Chapter 103I

818601

WELL OR BORING LOCATION

County Name

Anoka

Township Name

Fridley

Township No.

30

Range No.

24

Section No.

27

Fraction NW $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$

WELL/BORING DEPTH (completed)

76

DATE WORK COMPLETED

12-20-15

GPS LOCATION - decimal degrees (to four decimal places).

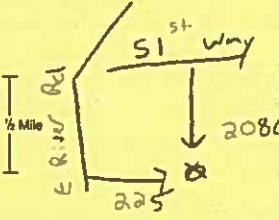
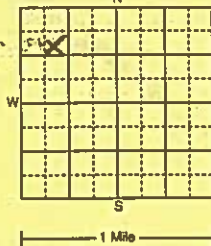
Latitude 45.319 Longitude 93.1642

House Number, Street Name, City, and ZIP Code of Well Location

Not Assigned E. River St Fridley

Show exact location of well/boring in section grid with "X".

Sketch map of well/boring location. Showing property lines, roads, buildings, and direction.



DRILLING METHOD

- Cable Tool
- Auger
- Other Roto Sonic
- Driven
- Rotary

DRILLING FLUID

WATER

WELL HYDROFRACTURED? Yes No

USE

- Domestic
- Noncommunity PWS
- Community PWS
- Elevator
- Monitoring
- Environ. Bore Hole
- Irrigation
- Dewatering
- Heating/Cooling
- Industry/Commercial
- Remedial
- Injection

CASING MATERIAL

- Steel
- Plastic
- Drive Shoe? Yes No
- Threaded
- Welded

HOLE DIAM.

CASING Diameter Weight Specifications

2 in. To 71 ft. 3.65 lbs./ft. SCH 40

6 in. To 76 ft.

SCREEN Yes

Make Johnson

OPEN HOLE

From _____ ft. To _____ ft.

Type 304 Stainless

Diam. 2"

Slot/Gauge 10

Length 5'

Set between 71 ft. and 76 ft. FITTINGS NPT (pressed couplings)

STATIC WATER LEVEL

33 ft. Below Above land surface

Measured from TOC Date measured 12-21-15

PUMPING LEVEL (below land surface)

NA ft. after _____ hrs. pumping _____ g.p.m.

WELLHEAD COMPLETION

- Pitless/adaptor manufacturer
- Casing protection 6" Steel, 3' above grade
- At-grade
- Well House
- Hand Pump

Model _____

12 in. above grade

GROUT INFORMATION (specify bentonite, cement-sand, neat-cement, concrete, cuttings, or other)

Material neat-cement From 1 To 67 ft. 6 Yds. Bags

Material _____ From _____ To _____ ft. _____ Yds. Bags

Material _____ From _____ To _____ ft. _____ Yds. Bags

Driven casing seal From _____ To _____ Bags

GEOLOGICAL MATERIALS	COLOR	HARDNESS OF MATERIAL	FROM	TO
Topsoil	Black	S	0	4
Sand Gravel	Brown	S	4	10
Sand	Brown	S	10	20
Clay w/ Sand	Brown	S	20	26
Sand	Brown	S	26	77

NEAREST KNOWN SOURCE OF CONTAMINATION

NA feet _____ direction _____ type _____

Well disinfected upon completion? Yes No

PUMP

Not Installed Date Installed _____

Manufacturer's name _____

Model Number _____ HP _____ Volts _____

Length of drop pipe _____ ft. Capacity _____ g.p.m.

Type: Submersible L.S. Turbine Reciprocating Jet _____

ABANDONED WELLS

Does property have any not in use and not sealed well(s)? Yes No

VARIANCE

Was a variance granted from the MDH for this well? Yes No TN# _____

WELL CONTRACTOR CERTIFICATION

This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

REMARKS, ELEVATION, SOURCE OF DATA, etc.

IW-1

MATECO Drilling Co. 1586M

Licensee Business Name Lic. or Reg. No.

[Signature] 1045M 12-24-15

Certified Representative Signature Certified Rep. No. Date

John Pitsch

Name of Driller

IMPORTANT - FILE WITH PROPERTY PAPERS WELL OWNER COPY

818601

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING CONSTRUCTION RECORD
 Minnesota Statutes, Chapter 1031

MINNESOTA UNIQUE WELL
 AND BORING NO.

818602

WELL OR BORING LOCATION

County Name

Anoka

Township Name: Fridley Township No. 30 Range No. 24 Section No. 27 Fraction NW NW SE
¼ ¼ ¼

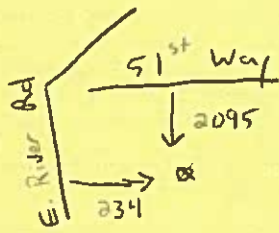
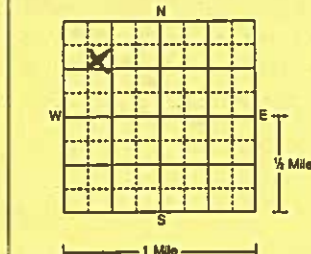
WELL/BORING DEPTH (completed) 76 ft. DATE WORK COMPLETED 12-18-15

GPS LOCATION — decimal degrees (to four decimal places).
 Latitude 45.0553 Longitude 93.2783

DRILLING METHOD
 Cable Tool Driven
 Auger Rotary
 Other Rotary

House Number, Street Name, City, and ZIP Code of Well Location
Not Assigned E River St Fridley
 Show exact location of well/boring in section grid with "X." Sketch map of well/boring location. Showing property lines, roads, buildings, and direction.

DRILLING FLUID water WELL HYDROFRACTURED? Yes No
 From _____ ft. To _____ ft.



USE
 Domestic Monitoring Heating/Cooling
 Noncommunity PWS Environ. Bore Hole Industry/Commercial
 Community PWS Irrigation Remedial
 Elevator Dewatering Injection

CASING MATERIAL Drive Shoe? Yes No
 Steel Threaded Welded
 Plastic

CASING Diameter 2 in. To 71 ft. Weight 3.65 lbs./ft. Specifications SCH 40 HOLE DIAM. 6 in. To 76 ft.
 in. To _____ ft. lbs./ft. _____ in. To _____ ft.
 in. To _____ ft. lbs./ft. _____ in. To _____ ft.

PROPERTY OWNER'S NAME/COMPANY NAME
NAVFAC-MIDLANT

Property owner's mailing address if different than well location address indicated above.
9324 Virginia Ave.
Norfolk VA, 23511

SCREEN Var OPEN HOLE
 Make Johnson From _____ ft. To _____ ft.
 Type 304 stainless Diam. 2"
 Slot/Gauze 10 Length 5'
 Set between 71 ft. and 76 ft. FITTINGS NPT recessed coupl.

STATIC WATER LEVEL Measured from TOC
33 ft. Below Above land surface Date measured 12-20-15

WELL OWNER'S NAME/COMPANY NAME
NAVFAC-MIDLANT

Well/boring owner's mailing address if different than property owner's address indicated above.

PUMPING LEVEL (below land surface)
N/A ft. after _____ hrs. pumping _____ g.p.m.

WELLHEAD COMPLETION
 Pitless/adaptor manufacturer _____ Model _____
 Casing protection 6" steel 3' above grade 12 in. above grade
 At-grade Well House Hand Pump

GROUT INFORMATION (specify bentonite, cement-sand, neat-cement, concrete, cuttings, or other)
 Material neat-cement From 1 To 67 ft. 6 Yds. Bags
 Material _____ From _____ To _____ ft. _____ Yds. Bags
 Material _____ From _____ To _____ ft. _____ Yds. Bags
 Driven casing seal From _____ To _____ Bags

GEOLOGICAL MATERIALS	COLOR	HARDNESS OF MATERIAL	FROM	TO
Topsoil	Black	5	0	4
Sand Gravel	Brown	5	4	10
Sand	Brown	5	10	20
Clay w/ sand	Brown	5	20	26
Sand	Brown	5	26	76

NEAREST KNOWN SOURCE OF CONTAMINATION
N/A feet _____ direction _____ type

Well disinfected upon completion? Yes No

PUMP
 Not installed Date installed _____
 Manufacturer's name _____
 Model Number _____ HP _____ Volts _____
 Length of drop pipe _____ ft. Capacity _____ g.p.m.
 Type: Submersible L.S. Turbine Reciprocating Jet _____

ABANDONED WELLS
 Does property have any not in use and not sealed well(s)? Yes No

VARIANCE
 Was a variance granted from the MDH for this well? Yes No TN# NO

WELL CONTRACTOR CERTIFICATION
 This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

REMARKS, ELEVATION, SOURCE OF DATA, etc.
IW-2

MATECO Drilling Co. 1586 M
 Licensee Business Name Lic. or Reg. No.
[Signature] 1045 M 12-24-15
 Certified Representative Signature Certified Rep. No. Date

IMPORTANT - FILE WITH PROPERTY PAPERS WELL OWNER COPY **818602**

John Pitsch
 Name of Driller

WELL OR BORING LOCATION

County Name

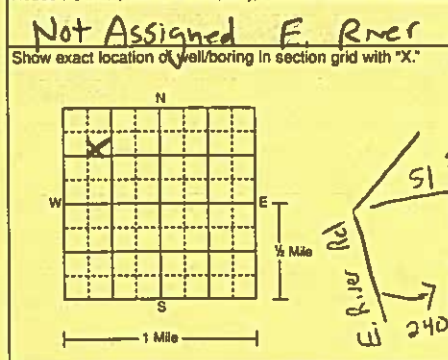
Anoka

Township Name **Fridley** Township No. **30** Range No. **24** Section No. **27** Fraction **NW NW SE**

GPS LOCATION decimal degrees (to four decimal places).
Latitude **45.319** Longitude **93.1642**

House Number, Street Name, City, and ZIP Code of Well Location
Not Assigned E. Rner St. Fridley.

Show exact location of well/boring in section grid with "X".
Sketch map of well/boring location. Showing property lines, roads, buildings, and direction.



MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING CONSTRUCTION RECORD
Minnesota Statutes, Chapter 103I

MINNESOTA UNIQUE WELL AND BORING NO.

818603

WELL/BORING DEPTH (completed) **76** ft. DATE WORK COMPLETED **12-19-15**

DRILLING METHOD
 Cable Tool Driven
 Auger Rotary
 Other **Roto Sonic**

DRILLING FLUID **WATER** WELL HYDROFRACTURED? Yes No
From _____ ft. To _____ ft.

USE
 Domestic Monitoring Heating/Cooling
 Noncommunity PWS Environ. Bore Hole Industry/Commercial
 Community PWS Irrigation Remedial
 Elevator Dewatering Injection

CASING MATERIAL Drive Shoe? Yes No HOLE DIAM. **6"**
 Steel Threaded Welded
 Plastic

CASING Diameter **2** in. To **71** ft. Weight **3.65** lbs./ft. Specifications **SCH 40**
in. To _____ ft. lbs./ft. _____ in. To _____ ft.
in. To _____ ft. lbs./ft. _____ in. To _____ ft.

PROPERTY OWNER'S NAME/COMPANY NAME **NAVFAC - MIDLANT**
Property owner's mailing address if different than well location address indicated above.
**9324 Virginia Ave.
Norfolk VA, 23511**

SCREEN **Yes** OPEN HOLE
Make **Johnson** From _____ ft. To _____ ft.
Type **304 stainless** Diam. **2"**
Slot/Gauze **10** Length **5'**
Set between **71** ft. and **76** ft. FITTINGS **NPT recessed Couplings**

STATIC WATER LEVEL Measured from **TOC**
33 ft. Below Above land surface Date measured **12-20-15**

WELL OWNER'S NAME/COMPANY NAME **NAVFAC - MIDLANT**
Well/boring owner's mailing address if different than property owner's address indicated above.

PUMPING LEVEL (below land surface) **NA** ft. after _____ hrs. pumping _____ g.p.m.

WELLHEAD COMPLETION
 Pileless/adaptor manufacturer _____ Model _____
 Casing protection **6" Steel, 3' above grade** 12 in. above grade
 At-grade Well House Hand Pump

GROUT INFORMATION (specify bentonite, cement-sand, neat-cement, concrete, cuttings, or other)
Material **Neat Cement** From **1** To **67** ft. **6** Yds. Bags
Material _____ From _____ To _____ ft. _____ Yds. Bags
Material _____ From _____ To _____ ft. _____ Yds. Bags

NEAREST KNOWN SOURCE OF CONTAMINATION **NA** feet _____ direction _____ type

Well disinfected upon completion? Yes No
PUMP

Not installed Date installed _____
Manufacturer's name _____

Model Number _____ HP _____ Volts _____
Length of drop pipe _____ ft. Capacity _____ g.p.m.

Type: Submersible L.S. Turbine Reciprocating Jet _____

ABANDONED WELLS
Does property have any not in use and not sealed well(s)? Yes No

VARIANCE
Was a variance granted from the MDH for this well? Yes No TN# _____

WELL CONTRACTOR CERTIFICATION
This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

REMARKS, ELEVATION, SOURCE OF DATA, etc.
IW-3

MATECO Drilling Co. **1586M**
Licensee Business Name Lic. or Reg. No.
John Pitsch **1045M 12-24-15**
Certified Representative Signature Certified Rep. No. Date

John Pitsch
Name of Driller

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING CONSTRUCTION RECORD

Minnesota Statutes, Chapter 103I

814759

WELL OR BORING LOCATION

County Name

Anoka

Township Name: Excelsior Township No. 30 Range No. 24 Section No. 27 Fraction NW 1/4 NW 1/4 SE 1/4

WELL/BORING DEPTH (completed) 66 ft. DATE WORK COMPLETED 9-2-15

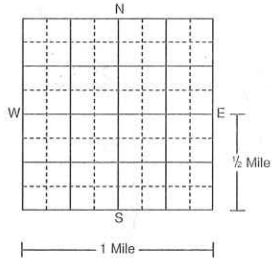
GPS LOCATION — decimal degrees (to four decimal places).
Latitude 45 32 13 Longitude 96 16 31 4

DRILLING METHOD
 Cable Tool Driven
 Auger Rotary
 Other RotoSonic

House Number, Street Name, City, and ZIP Code of Well Location
Not Assigned E River St Excelsior MN

DRILLING FLUID Water WELL HYDROFRACTURED? Yes No

Show exact location of well/boring in section grid with "X." Sketch map of well/boring location. Showing property lines, roads, buildings, and direction.



USE
 Domestic Monitoring Heating/Cooling
 Noncommunity PWS Environ. Bore Hole Industry/Commercial
 Community PWS Irrigation Remedial
 Elevator Dewatering

CASING MATERIAL Drive Shoe? Yes No
 Steel Threaded Welded
 Plastic Flush Thread

CASING Diameter 2 in. To 61 ft. Weight 1.92 lbs./ft. Specifications SH 40 HOLE DIAM. 7 in. To 66 ft.

PROPERTY OWNER'S NAME/COMPANY NAME

Nuvera Atlantic

Property owner's mailing address if different than well location address indicated above.

6506 Hampton Blvd, Bldg H
North, VA 23508

SCREEN Yes OPEN HOLE

Make John Deere From _____ ft. To _____ ft.
Type Ver. 43 Diam. 2
Slot/Gauze 10 Length 5'
Set between 61 ft. and 66 ft. FITTINGS Flush Thread

STATIC WATER LEVEL Measured from Gratic
17 ft. Below Above land surface Date measured 9-3-15

WELL OWNER'S NAME/COMPANY NAME

Same

Well/boring owner's mailing address if different than property owner's address indicated above.

PUMPING LEVEL (below land surface)
66 ft. after 1 hrs. pumping 2 g.p.m.

WELLHEAD COMPLETION
 Pitless/adaptor manufacturer _____ Model _____
 Casing protection _____ 12 in. above grade
 At-grade Well House Hand Pump

GROUT INFORMATION (specify bentonite, cement-sand, neat-cement, concrete, cuttings, or other)
Material 11.5 Bent From 1 To 57 ft. 5 Yds. Bags
Material _____ From _____ To _____ ft. _____ Yds. Bags
Material _____ From _____ To _____ ft. _____ Yds. Bags
Driven casing seal From _____ To _____ Bags

GEOLOGICAL MATERIALS	COLOR	HARDNESS OF MATERIAL	FROM	TO
Concrete	Gray	H	0	1
Sandy Gravel	Brn	S	1	14
Sand	Brn	S	14	66

NEAREST KNOWN SOURCE OF CONTAMINATION
WIA feet _____ direction _____ type _____

Well disinfected upon completion? Yes No

PUMP

Not installed Date installed _____

Manufacturer's name _____

Model Number _____ HP _____ Volts _____

Length of drop pipe _____ ft. Capacity _____ g.p.m.

Type: Submersible L.S. Turbine Reciprocating Jet

ABANDONED WELLS

Does property have any not in use and not sealed well(s)? Yes No

VARIANCE

Was a variance granted from the MDH for this well? Yes No TN# _____

WELL CONTRACTOR CERTIFICATION

This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

WELL CONTRACTOR COPY

814759

Mark J Traut Well, Inc 1401
Licensee Business Name Lic. or Reg. No.
Darryl Karach 589 9-25-15
Certified Representative Signature Certified Rep. No. Date
Darryl Karach
Name of Driller

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING CONSTRUCTION RECORD

Minnesota Statutes, Chapter 103I

814760

WELL OR BORING LOCATION

County Name

Anoka

Township Name: Fridley
Township No.: 30
Range No.: 24
Section No.: 27
Fraction: NW 1/4 NW 1/4 SE 1/4

WELL/BORING DEPTH (completed): 66 ft.
DATE WORK COMPLETED: 9-2-15

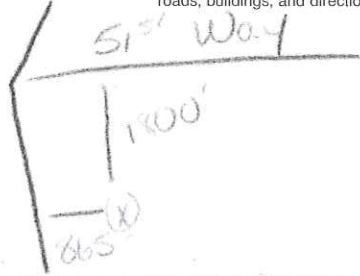
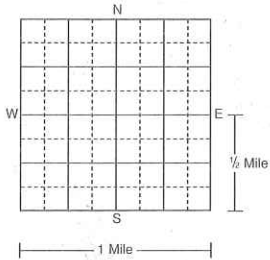
GPS LOCATION — decimal degrees (to four decimal places).
Latitude: 45 3 21.3 Longitude: 93 16 34.7

DRILLING METHOD
 Cable Tool Driven
 Auger Rotary
 Other: Roto Son

House Number, Street Name, City, and ZIP Code of Well Location
14185 Grand E River St Fridley

DRILLING FLUID: Water
WELL HYDROFRACTURED? Yes No

Show exact location of well/boring in section grid with "X." Sketch map of well/boring location. Showing property lines, roads, buildings, and direction.



USE
 Domestic Monitoring Heating/Cooling
 Noncommunity PWS Environ. Bore Hole Industry/Commercial
 Community PWS Irrigation Remedial
 Elevator Dewatering

CASING MATERIAL: Steel Plastic
Drive Shoe? Yes No
 Threaded Welded
 Flush Thread

CASING Diameter: 2 in. To 61 ft. Weight: 192 lbs./ft. Specifications: SDR 21
HOLE DIAM.: 7 in. To 66 ft.

PROPERTY OWNER'S NAME/COMPANY NAME
NAVEAC Alliance

SCREEN: Yes
Make: Johnson
Type: Vee Wire
Slot/Gauge: 10
Set between: 61 ft. and 66 ft. FITTINGS: Flush Thread

Property owner's mailing address if different than well location address indicated above.
6506 Hampton Blvd Bldg H
Norfolk, VA 23508

STATIC WATER LEVEL: 17 ft. Below Above land surface
Measured from: Grade
Date measured: 9-3-15

WELL OWNER'S NAME/COMPANY NAME
Same

PUMPING LEVEL (below land surface): 66 ft. after 1 hrs. pumping 2 g.p.m.

Well/boring owner's mailing address if different than property owner's address indicated above.

WELLHEAD COMPLETION
 Pitless/adaptor manufacturer Model
 Casing protection 12 in. above grade
 At-grade Well House Hand Pump

GROUT INFORMATION (specify bentonite, cement-sand, neat-cement, concrete, cuttings, or other)
Material: 115 Bags From 1 To 57 ft. 5 Yds. Bags

GEOLOGICAL MATERIALS	COLOR	HARDNESS OF MATERIAL	FROM	TO
Concrete	Gray	A	0	1
Sands Gravel	Brown	S	1	13
Sand	Brown	S	13	66

NEAREST KNOWN SOURCE OF CONTAMINATION
N/A feet direction type

Well disinfected upon completion? Yes No

PUMP
 Not installed Date installed
Manufacturer's name
Model Number HP Volts
Length of drop pipe ft. Capacity g.p.m.
Type: Submersible L.S. Turbine Reciprocating Jet

ABANDONED WELLS
Does property have any not in use and not sealed well(s)? Yes No

VARIANCE
Was a variance granted from the MDH for this well? Yes No TN#

WELL CONTRACTOR CERTIFICATION
This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

REMARKS, ELEVATION, SOURCE OF DATA, etc.

Paul J. Trent Well Inc. 11401
Licensee Business Name Lic. or Reg. No.
Paul Trent 599 925 15
Certified Representative Signature Certified Rep. No. Date

WELL CONTRACTOR COPY 814760

Daryl Karasch
Name of Driller

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING CONSTRUCTION RECORD
 Minnesota Statutes, Chapter 1031

MINNESOTA UNIQUE WELL
AND BORING NO.

814761

WELL OR BORING LOCATION

County Name
Anoka

Township Name
Fordley

Township No.
30

Range No.
24

Section No.
27

Fraction
NW 1/4 NW 1/4 NE 1/4

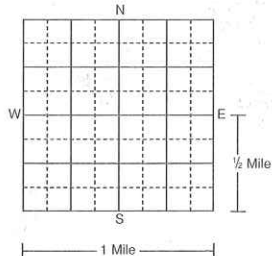
WELL/BORING DEPTH (completed)
75 ft.

DATE WORK COMPLETED
9-2-15

GPS LOCATION — decimal degrees (to four decimal places).
 Latitude 43.319 Longitude 93.16417

House Number, Street Name, City, and ZIP Code of Well Location
4011 Kernal E River St Fordley

Show exact location of well/boring in section grid with "X." Sketch map of well/boring location. Showing property lines, roads, buildings, and direction.



PROPERTY OWNER'S NAME/COMPANY NAME
NAVEAC Atlantic

Property owner's mailing address if different than well location address indicated above.
1506 Hampton Blvd City #1
Norfolk, VA 23508

WELL OWNER'S NAME/COMPANY NAME
Same

Well/boring owner's mailing address if different than property owner's address indicated above.

DRILLING METHOD
 Cable Tool Driven
 Auger Rotary
 Other Rotary

DRILLING FLUID _____ WELL HYDROFRACTURED? Yes No
 From _____ ft. To _____ ft.

USE
 Domestic Monitoring Heating/Cooling
 Noncommunity PWS Environ. Bore Hole Industry/Commercial
 Community PWS Irrigation Remedial
 Elevator Dewatering

CASING MATERIAL Drive Shoe? Yes No
 Steel Threaded Welded
 Plastic Threaded

CASING Diameter _____ Weight _____ Specifications _____
2 in. To 70 ft. 190 lbs./ft. SDR 21
 _____ in. To _____ ft. _____ lbs./ft. _____
 _____ in. To _____ ft. _____ lbs./ft. _____

SCREEN Yes OPEN HOLE
 Make Johnson From _____ ft. To _____ ft.
 Type Vee Wire Diam. _____
 Slot/Gauze 10 Length 5'
 Set between 70 ft. and 75 ft. FITTINGS Flush Thread

STATIC WATER LEVEL Measured from Grade
26 ft. Below Above land surface Date measured 9-3-15

PUMPING LEVEL (below land surface)
75 ft. after 1 hrs. pumping 2 g.p.m.

WELLHEAD COMPLETION
 Pitless/adaptor manufacturer _____ Model _____
 Casing protection _____ 12 in. above grade
 At-grade Well House Hand Pump

GROUT INFORMATION (specify bentonite, cement-sand, neat-cement, concrete, cuttings, or other)
 Material 11' Bent From 1 To 66 ft. 6 Yds. Bags
 Material _____ From _____ To _____ ft. _____ Yds. Bags
 Material _____ From _____ To _____ ft. _____ Yds. Bags
 Driven casing seal From _____ To _____ Bags

GEOLOGICAL MATERIALS	COLOR	HARDNESS OF MATERIAL	FROM	TO
Top Soil	Black	5	0	4
Sand, Gravel	Brown	5	4	10
Sand	Brown	5	10	20
Clay w/ Sand	Brown	5	20	26
Sand	Brown	5	26	77

NEAREST KNOWN SOURCE OF CONTAMINATION
N/A feet _____ direction _____ type _____

Well disinfected upon completion? Yes No

PUMP
 Not installed Date installed _____
 Manufacturer's name _____
 Model Number _____ HP _____ Volts _____
 Length of drop pipe _____ ft. Capacity _____ g.p.m.
 Type: Submersible L.S. Turbine Reciprocating Jet

ABANDONED WELLS
 Does property have any not in use and not sealed well(s)? Yes No

VARIANCE
 Was a variance granted from the MDH for this well? Yes No TN# _____

WELL CONTRACTOR CERTIFICATION
 This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

REMARKS, ELEVATION, SOURCE OF DATA, etc.

Mark J. Truitt Wells Inc 1104
 Licensee Business Name _____ Lic. or Reg. No. _____
Daryl Karasch 589 9-25-15
 Certified Representative Signature _____ Certified Rep. No. _____ Date _____
Daryl Karasch
 Name of Driller _____

WELL CONTRACTOR COPY **814761**

MINNESOTA DEPARTMENT OF HEALTH
WELL AND BORING CONSTRUCTION RECORD
 Minnesota Statutes, Chapter 103I

MINNESOTA UNIQUE WELL
AND BORING NO.

814766

WELL OR BORING LOCATION

County Name

Anoka

Township Name: Finley Township No.: 30 Range No.: 24 Section No.: 27 Fraction: NW 1/4 NW 1/4 SE 1/4

WELL/BORING DEPTH (completed) 75 ft.

DATE WORK COMPLETED 9-3-15

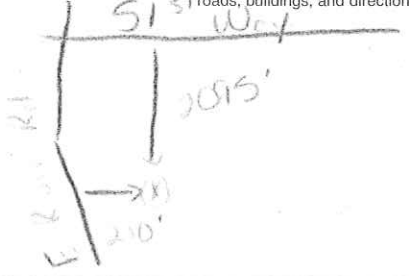
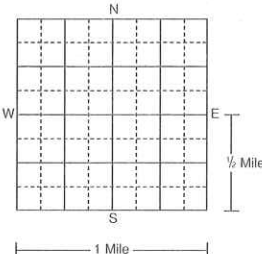
GPS LOCATION — decimal degrees (to four decimal places).
 Latitude 45.28 167 Longitude 93.26 423

DRILLING METHOD
 Cable Tool Driven
 Auger Auger Rotary
 Other Rotary

House Number, Street Name, City, and ZIP Code of Well Location
411 Resigned E River St Finley

DRILLING FLUID: Water WELL HYDROFRACTURED? Yes No

Show exact location of well/boring in section grid with "X." Sketch map of well/boring location. Showing property lines, roads, buildings, and direction.



USE
 Domestic Monitoring Heating/Cooling
 Noncommunity PWS Environ. Bore Hole Industry/Commercial
 Community PWS Irrigation Remedial
 Elevator Dewatering

CASING MATERIAL: Steel Plastic Drive Shoe? Yes No Threaded Welded

CASING Diameter: 2 in. To 70 ft. Weight: 192 lbs./ft. Specifications: 5140 HOLE DIAM.: 7 in. To 75 ft.

PROPERTY OWNER'S NAME/COMPANY NAME
NAVENIC Atlantic

SCREEN: Peg OPEN HOLE: 5'
 Make: Johns From: _____ ft. To: _____ ft.
 Type: Wire Diam.: _____
 Slot/Gauze: 10 Length: _____
 Set between 70 ft. and 75 ft. FITTINGS: 1/2" threaded

Property owner's mailing address if different than well location address indicated above.
6506 Hampton Blvd Bldg 11
Northolt, VA 23508

STATIC WATER LEVEL: 26 ft. Below Above land surface Date measured: _____

WELL OWNER'S NAME/COMPANY NAME
Sum

PUMPING LEVEL (below land surface): 75 ft. after 1 hrs. pumping 2 g.p.m.

Well/boring owner's mailing address if different than property owner's address indicated above.

WELLHEAD COMPLETION
 Pitless/adaptor manufacturer _____ Model _____
 Casing protection _____ 12 in. above grade
 At-grade Well House Hand Pump

GROUT INFORMATION (specify bentonite, cement-sand, neat-cement, concrete, cuttings, or other)
 Material: 1/2" sand From 1 To 46 ft. _____ Yds. Bags
 Material: _____ From _____ To _____ ft. _____ Yds. Bags
 Material: _____ From _____ To _____ ft. _____ Yds. Bags
 Driven casing seal: _____ From _____ To _____ Bags

GEOLOGICAL MATERIALS	COLOR	HARDNESS OF MATERIAL	FROM	TO
Concrete	Grey	5	0	1
Sand Gravel	Brown	5	1	10
Sand	Brown	5	10	20
Clay w/ sand	Brown	5	20	26
Sand	Brown	5	26	75

NEAREST KNOWN SOURCE OF CONTAMINATION
N/A feet _____ direction _____ type _____

Well disinfected upon completion? Yes No

PUMP
 Not installed Date installed _____
 Manufacturer's name _____
 Model Number _____ HP _____ Volts _____
 Length of drop pipe _____ ft. Capacity _____ g.p.m.
 Type: Submersible L.S. Turbine Reciprocating Jet

ABANDONED WELLS
 Does property have any not in use and not sealed well(s)? Yes No

VARIANCE
 Was a variance granted from the MDH for this well? Yes No TN# _____

WELL CONTRACTOR CERTIFICATION
 This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

REMARKS, ELEVATION, SOURCE OF DATA, etc.

Licensee Business Name: Man J Tran Well Ties 1101 Lic. or Reg. No.: _____
 Certified Representative Signature: [Signature] Certified Rep. No.: 519 925 15 Date: _____

WELL CONTRACTOR COPY **814766**

Name of Driller: Dr. J. Korasch

Appendix E
Groundwater Sample Collection
Record Forms

Ground Water Sample Collection Record

CONT.
2 of 2

Client: Nirop Date: 9/16/15
 Project No: 60276080 Time: Start 1241
 Site Location: Fridley, MN Finish 1500
 Weather Conds: Sunny, windy, 70s Collector(s) M. M. ELLERSON

WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 65.15' c. Casing Material STEEL Well Piezometer
 b. Water Table Depth 15.78' d. Casing Diameter 2" e. Length of Water Column 49.37'
 f. Calculated Well Volume 8.1469 gal

WELL PURGING DATA

a. Purge Method BLADDER Pump
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes) _____
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters _____ %
 c. Field Testing Equipment Used: SOLINST BLADDER Pump Compressor 407 200295
 Make Model Serial Number
YSI 556 MPS 556-4MPS 12J100963
YSI 556 FIELD CABLE 12654
 d. Field Testing Equipment Calibration Documentation Found: QED SAMPLE PRO 1.75 BLADDER pump 11579
QED BLADDER Pump CONTROLLER MP10 2405

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
1405	2.0	18.59	7.38	1303	9.5	8.58	—	CLEAR	
1410	2.5	17.65	7.39	1293	15.2	8.35	—	CLEAR	
1415	3.0	17.43	7.41	1261	21.5	8.52	—	CLEAR	
1420	3.5	17.52	7.36	1288	29.7	8.02	—	CLEAR	
1425	4.0	17.49	7.29	1331	40.0	6.90	—	CLEAR	
1430	4.5	17.40	7.25	1371	48.5	7.26	—	CLEAR	
1435	5.0	17.36	7.24	1402	52.2	5.78	—	CLEAR	

e. Acceptance criteria pass/fail

Has required volume been removed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.
TURBIDITY WAS NOT MEASURED; WORK PLAN DID NOT INCLUDE VOLUME REMOVED

SAMPLE COLLECTION: Method: BLADDER Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
		SEE PAGE 1 OF 2			

Comments _____

Signature [Signature] Date 9/16/15

Ground Water Sample Collection Record 1 of 2

Client: NIROP Date: 9/16/15
 Project No: 60276080 Time: Start 1241
 Site Location: FRIDLEY, MN Finish 1500
 Weather Conds: Windy, 70's, Sunny Collector(s) M. MEELUNSEN

WATER LEVEL DATA: (measured from Top of Casing) Well Piezometer
 a. Total Well Length 65.15' c. Casing Material STEEL e. Length of Water Column 49.37'
 b. Water Table Depth 15.78' d. Casing Diameter 2" f. Calculated Well Volume 8.146 gal

WELL PURGING DATA
 a. Purge Method BLADDER Pump
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes) _____
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters _____ %

c. Field Testing Equipment Used: SOLINST BLADDER pump Compressor 200295
 Make Model Serial Number
YSE 556 MPS 556-4 MPS 125100963
YSE 556 FIELD GAUGE 12654

d. Field Testing Equipment Calibration Documentation Found:
RED SAMPLE PRO 1.75 BLADDER 11579
RED BLADDER PUMP MPIO 2405

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
1325	<u>0.5</u>	<u>20.40</u>	<u>7.14</u>	<u>1352</u>	<u>-74.9</u>	<u>3.41</u>	<u>—</u>	<u>6 BROWN</u>	<u>7.5</u>
1330	<u>1.0</u>	<u>19.77</u>	<u>7.18</u>	<u>1405</u>	<u>-46.6</u>	<u>4.78</u>	<u>—</u>	<u>CLEAR</u>	<u>7.5</u>
1335	<u>1.5</u>	<u>19.14</u>	<u>7.21</u>	<u>1419</u>	<u>-23.0</u>	<u>5.88</u>	<u>—</u>	<u>CLEAR</u>	
1340	<u>2.0</u>	<u>19.09</u>	<u>7.26</u>	<u>1409</u>	<u>-12.1</u>	<u>6.36</u>	<u>—</u>	<u>CLEAR</u>	
1345	<u>2.5</u>	<u>19.63</u>	<u>7.28</u>	<u>1388</u>	<u>-8.2</u>	<u>6.93</u>	<u>—</u>	<u>CLEAR</u>	
1350	<u>3.0</u>	<u>19.47</u>	<u>7.33</u>	<u>1370</u>	<u>-4.2</u>	<u>7.36</u>	<u>—</u>	<u>CLEAR</u>	
1355	<u>3.5</u>	<u>18.98</u>	<u>7.36</u>	<u>1352</u>	<u>-0.2</u>	<u>7.83</u>	<u>—</u>	<u>CLEAR</u>	

1400 e. Acceptance criteria pass/fail
 Has required volume been removed Yes No N/A
 Has required turbidity been reached Yes No N/A
 Have parameters stabilized Yes No N/A
 If no or N/A - Explain below.
TURBIDITY WAS NOT MEASURED; WORK PLAN DID NOT INCLUDE VOLUME MEASUREMENTS/ REMOVAL
 Found oring on tube from pmw-02
 Started 2nd page for stabilizing.

SAMPLE COLLECTION: Method: BLADDER Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
<u>PMW-01</u>		<u>SEE ATTACHED</u>	<u>CO2</u>		<u>1435</u>

Comments _____

Signature [Signature] Date 9/16/15

Ground Water Sample Collection Record

Client: NIROP Date: 9/16/15
 Project No: 60276080 Time: Start 1105
 Site Location: FRANCE, IEN Finish 1210
 Weather Conds: WINDY, 70's, Sunny Collector(s) M. MEGANSEN

WATER LEVEL DATA: (measured from Top of Casing)

Well Piezometer
 a. Total Well Length 65.81' c. Casing Material STEEL e. Length of Water Column 49.97'
 b. Water Table Depth 15.84' d. Casing Diameter 2" f. Calculated Well Volume 8.245 gal

WELL PURGING DATA

a. Purge Method BLADDER Pump

b. Acceptance Criteria defined (from workplan)

- Minimum Required Purge Volume (@ _____ well volumes) _____
- Maximum Allowable Turbidity _____ NTUs
- Stabilization of parameters 10 %

c. Field Testing Equipment Used:

SOLINST BLADDER Pump Compressor 407 200295
 Make Model Serial Number
YSI 556 MPS 556-4MPS 12J100963
YSI 556 FIELD TABLE 12654

d. Field Testing Equipment Calibration Documentation Found:

RED SAMPLE AND 1.75 BLADDER pump 11579
RED BLADDER Pump CONTROLLER MP10 2405

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
<u>1100</u>	<u>0.5</u>	<u>16.85</u>	<u>7.74</u>	<u>1339</u>	<u>-147.7</u>	<u>0.57</u>	<u>—</u>	<u>lt. brown</u>	<u>—</u>
<u>1115</u>	<u>1.0</u>	<u>16.74</u>	<u>7.19</u>	<u>1364</u>	<u>-142.7</u>	<u>0.32</u>	<u>—</u>	<u>clear</u>	<u>—</u>
<u>1120</u>	<u>1.5</u>	<u>16.62</u>	<u>7.14</u>	<u>1373</u>	<u>-132.7</u>	<u>0.34</u>	<u>—</u>	<u>clear</u>	<u>—</u>
<u>1125</u>	<u>2.0</u>	<u>16.59</u>	<u>7.12</u>	<u>1384</u>	<u>-125.5</u>	<u>0.39</u>	<u>—</u>	<u>clear</u>	<u>—</u>
<u>1130</u>	<u>2.5</u>	<u>16.62</u>	<u>7.11</u>	<u>1384</u>	<u>-117.2</u>	<u>0.39</u>	<u>—</u>	<u>clear</u>	<u>—</u>

e. Acceptance criteria pass/fail

Has required volume been removed	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

TURBIDITY WAS NOT MEASURED; VOLUME WAS INCLUDED IN WORK PLAN

SAMPLE COLLECTION:

Method: BLADDER Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
<u>PMW-02</u>		<u>SEE ATTACHED</u>	<u>COL.</u>		<u>1135</u>

Comments _____

Signature [Signature]

Date 9/16/15

Ground Water Sample Collection Record

Client: NiROP Date: 9/15/15
 Project No: 60276080 Time: Start 1505
 Site Location: FRIDLEY, MN Finish 1610
 Weather Conds: windy, 80's, Sun Collector(s) M. MEEMSEN, D. PHELPS

WATER LEVEL DATA: (measured from Top of Casing)

Well Piezometer
 a. Total Well Length 75.09 c. Casing Material Steel e. Length of Water Column 50.07
 b. Water Table Depth 25.02 d. Casing Diameter 2" f. Calculated Well Volume 41.91

WELL PURGING DATA

a. Purge Method BLADDER pump
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes) _____
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters 10 %
 c. Field Testing Equipment Used: SOLINST BLADDER pump COMPRESSOR 407 200295
 Make Model Serial Number
YSE 556 MPS 556-4mps 12J100963
YSE 556 FIELD CABLE 12634
RED SAMPLE PRO 1:75 BLADDER pump 11579
RED BLADDER Pump CONTROLLER MP10 2405
 d. Field Testing Equipment Calibration Documentation Found:

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
1520	0.5	17.47	7.46	760	-173.0	1.74	-	H. Brown	-
1525	1.0	16.80	7.11	940	-132.5	0.64	-	clear	-
1530	1.5	16.70	7.06	1007	-114.3	0.60	-	clear	-
1535	2.0	16.51	7.05	1044	-100.7	0.59	-	clear	-
1540	2.5	16.45	7.05	1062	-92.0	0.59	-	clear	-

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

TURBIDITY WAS NOT MEASURED; WORK PLAN DID INCLUDE VOLUME REMOVED

SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
<u>PMW-035</u>		<u>See attached coc</u>	<u>coc</u>		<u>1545</u>

Comments _____

Signature [Signature]

Date 9/15/15

Ground Water Sample Collection Record

Client: NIROP Date: 9/15/15
 Project No: 60276080 Time: Start 1344
 Site Location: RIPLEY, MN Finish 1445
 Weather Conds: Windy, 80's, Sun Collector(s) M. MELUNSON

WATER LEVEL DATA: (measured from Top of Casing) Well Piezometer
 a. Total Well Length 74.73 c. Casing Material Steel e. Length of Water Column 50.12
 b. Water Table Depth 24.61 d. Casing Diameter 2" f. Calculated Well Volume 8.17

WELL PURGING DATA
 a. Purge Method Bladder Pump
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes) _____
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters _____ %
 c. Field Testing Equipment Used:
 SOLINST BLADDER PUMP COMPRESSOR 407 200295
 Make Model Serial Number
 YSI 556 MPS 556-4MPS 12J100963
 YSI 556 FIELD CABLE 12G54
 RED SAMPLE PND 1.75 BLADDER PUMP 11579
 d. Field Testing Equipment Calibration Documentation Found:
 RED BLADDER PUMP CONTROLLER MP10 2405

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
1350	0.5	16.32	7.17	755	-165.5	0.79	-	clear	
1355	1.0	16.31	7.11	807	-179.7	0.62	-	clear	
1400	1.5	16.23	7.12	818	-179.1	0.65	-	clear	
1405	2.0	16.24	7.11	824	-173.7	0.60	-	clear	
1410	2.5	16.24	7.12	827	-162.7	0.60	-	clear	
1415	3.0	16.20	7.11	827	-169.9	0.60	-	clear	
1420	3.5	16.22	7.12	828	-173.9	0.60	-	clear	

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have parameters stabilized	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.
TURBIDITY WAS NOT MEASURED; WORK PLAN DID NOT INCLUDE VOLUME REMOVAL

SAMPLE COLLECTION: Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
PMW-04		See Attached COC			1425

Comments _____

Signature [Signature] Date 9/16/15

Ground Water Sample Collection Record

Client: NIROP / US NAVY Date: 9/25/15
 Project No: 6026080 Time: Start 1330
 Site Location: FRIDLEY, MN Finish 1432
 Weather Conds: CLOUDY, 70'S Collector(s) MELISSA MEADOWSEN

WATER LEVEL DATA: (measured from Top of Casing) Well Piezometer
 a. Total Well Length 65.11' c. Casing Material 2" STEEL e. Length of Water Column 49.45'
 b. Water Table Depth 15.06' d. Casing Diameter 21" f. Calculated Well Volume 8.16

WELL PURGING DATA

a. Purge Method BLADDER PUMP

- b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes) _____
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters NO %

c. Field Testing Equipment Used: Make Model Serial Number
RED SAMPLE PUMP 1.75" BLADDER PUMP S/N: 471852X
RED MPD CONTROLLER COMPRESSOR S/N: 471852X
YSI HANDHELD 556 S/N: 13J100664

d. Field Testing Equipment Calibration Documentation Found:
YSI 556 FIELD CABLE 4m 14610

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
1355	0.5	18.22	7.18	1539	-89.2	0.83	—	(Lt Brown)	—
1400	1.0	18.15	7.17	1558	-73.9	0.82	—	CLEAR	—
1405	1.5	18.02	7.17	1571	-62.5	0.75	—	CLEAR	—
1410	2.0	17.97	7.16	1572	-52.0	0.73	—	CLEAR	—
1415	2.5	17.98	7.17	1571	-47.9	0.69	—	CLEAR	—

- e. Acceptance criteria pass/fail
- | | | | |
|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| | Yes | No | N/A |
| Has required volume been removed | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Has required turbidity been reached | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Have parameters stabilized | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

If no or N/A - Explain below.
NO TURBIDITY WAS MEASURED; WORK PLAN DID NOT INCLUDE VOLUME REMOVED.

SAMPLE COLLECTION: Method: BLADDER PUMP

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
<u>PUW-01</u>	<u>40mL VOA</u>	<u>3</u>	<u>HCL</u>	<u>VOC</u>	<u>1420</u>

Comments _____

Signature *[Signature]*

Date 9/25/15

Ground Water Sample Collection Record

Client: NIROP / US NAVY Date: 9/25
 Project No: 60276080 Time: Start 12:22
 Site Location: FRIDLEY, MN Finish 13:36
 Weather Conds: Cloudy, F0's Collector(s) HESSA MEEUWSEN

WATER LEVEL DATA: (measured from Top of Casing)

Well Piezometer

- a. Total Well Length 15.72' c. Casing Material STEEL e. Length of Water Column 50.1'
 b. Water Table Depth 15.82' d. Casing Diameter 2" f. Calculated Well Volume 8.27 gal

WELL PURGING DATA

a. Purge Method BLADDER Pump

- b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes)
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters 10 %

c. Field Testing Equipment Used: Make _____ Model _____ Serial Number _____
USED MP50 CONTROLLER COMPRESSOR
YSI S/N 1311001664, BLADDER pump S/N 471852K;
QED Sample -> BLADDER Pump S/N 10852
PROD 1.75

d. Field Testing Equipment Calibration Documentation Found: YSI 556 FIELD CABLE 4M 14610

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
1245	0.5	18.09	7.25	1433	-84.6	1.32	—	4 BROWN	—
1250	1.75	17.90	7.21	1459	-78.5	1.40	—	110AR	—
1255	1.75	17.78	7.19	1488	-57.2	1.06	—	CLEAR	—
1300	1.75	17.86	7.18	1490	-45.8	0.96	—	CLEAR	—
1305	2.25	18.02	7.18	1493	-40.6	0.93	—	CLEAR	—
1310	2.75	18.17.93	7.16	1496	-32.7	0.83	—	CLEAR	—
1315	3.25	17.97	7.15	1497	-25.9	0.82	—	CLEAR	—

- e. Acceptance criteria pass/fail
 Has required volume been removed Yes No N/A
 Has required turbidity been reached Yes No N/A
 Have parameters stabilized Yes No N/A

If no or N/A - Explain below.
NO TURBIDITY WAS MEASURED; WORK PLAN DID NOT INCLUDE VOLUME REMOVED.

SAMPLE COLLECTION: Method: BLADDER pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
<u>PMW-02-1320</u>	<u>40 mL VOA</u>	<u>3</u>	<u>HCL</u>	<u>VOC</u>	<u>1320</u>

Comments _____

Signature [Signature] Date 9/25/15

Ground Water Sample Collection Record

Client: US NAVY - NIROP Date: 10/26/15
 Project No: _____ Time: Start 1352
 Site Location: FRIPLEY, MN Finish 1512
 Weather Conds: _____ Collector(s) MELISSA MEEUWSEN

WATER LEVEL DATA: (measured from Top of Casing)

Well Piezometer
 a. Total Well Length 105.29' c. Casing Material STEEL e. Length of Water Column 49.02
 b. Water Table Depth 16.27' d. Casing Diameter 2" f. Calculated Well Volume 8.08

WELL PURGING DATA

a. Purge Method BLADDER Pump - QED BLADDER pump CONTROLLER SN# 2738
 - QED WELL WIZARD 3020 DC COMPRESSOR SN# 22
 - QED SAMPLE PRO 1.75" BLADDER pump SN# 115:
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes) _____
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters _____ %

c. Field Testing Equipment Used:

Make	Model	Serial Number
<u>LA MOTE</u>	<u>2020 WE TURBIDITY</u>	<u>4711-3514</u>
<u>YSE</u>	<u>SS6 MIP5</u>	<u>RFW 22090 - HANDHELD, 4' FIELD CABLE FLOWTHRU CELL</u>

d. Field Testing Equipment Calibration Documentation Found:

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
1415	0.25	17.47	8.40	1761	-249.5	1.55	-73	BLACK	—
1420	1.25	17.31	8.34	1809	-253.2	0.95	-73	BLACK	—
1425	2.25	17.37	8.28	1814	-223.8	0.85	-73	BLACK	—
1430	3.00	17.33	8.21	1816	-188.4	0.76	-73	BLACK	—
1435	3.75	17.26	8.16	1814	-159.7	0.71	-73	BLACK	—

e. Acceptance criteria pass/fail

Has required volume been removed	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

WORKPLAN DID NOT INCLUDE TURBIDITY MEASUREMENT REQUIREMENTS OR VOLUME REMOVED

SAMPLE COLLECTION: Method: _____

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
<u>PMW-01</u>	<u>—</u>	<u>SEE ATTACHED COC</u>	<u>—</u>	<u>—</u>	<u>1440</u>

Comments _____

Signature [Signature] Date 10/26/15

Ground Water Sample Collection Record

Client: US NAVY - Nirop Date: 10/26/15
 Project No: 60276080 Time: Start 12:18
 Site Location: FRIDLEY, MN Finish 13:51
 Weather Conds: PARTLY CLOUDY Collector(s) MEUSSA MEEUWSEN
48° LIGHT WIND

WATER LEVEL DATA: (measured from Top of Casing) Well Piezometer
 a. Total Well Length 65.78' c. Casing Material STEEL e. Length of Water Column 49.48'
 b. Water Table Depth 16.30' d. Casing Diameter 2" f. Calculated Well Volume 8.16

WELL PURGING DATA
 a. Purge Method BLADDER Pump - RED BLADDER pump CONTROLLER ^{SN#} 2738
 - RED WELL WIZARD 3020 DC COMPRESSOR ^{SN#} 22937

- b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes)
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters _____ %

c. Field Testing Equipment Used:

Make	Model	Serial Number
LA MOTTE	2020 WE TURBIDITY	4711-3514
VST	556 MPS	RFW 22090
RED	SAMPLE PRO 1.75"	11534

HAND HELD, 4' FIEL CABLE FLOW THROUGH CELL

d. Field Testing Equipment Calibration Documentation Found:

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
1250	0.5	16.84	7.31	1425	-140.0	3.78	16.3	LT. GRAY	—
1255	1.5	16.79	7.27	1436	-110.2	2.32	7.32	V. LT. GRAY	—
1300	2.25	16.84	7.20	1431	-101.4	2.26	5.26	CLEAR	—
1305	3.00	16.85	7.18	1429	-95.8	2.54	3.36	CLEAR	—
1310	3.75	16.85	7.17	1425	-80.6	2.01	2.31	CLEAR	—
1315	4.50	16.87	7.17	1426	-80.9	1.65	1.75	CLEAR	—

e. Acceptance criteria pass/fail

Has required volume been removed	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.
WORK PLAN DID NOT INCLUDE TURBIDITY MEASUREMENT REQUIREMENTS OR VOLUME REMOVED

SAMPLE COLLECTION: Method: BLADDER Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
PMW-03		SEE ATTACHED COPIES			13:20

Comments _____

Signature [Signature] Date 10/26/15

Ground Water Sample Collection Record

Client: US NAVY - NIKOP Date: 10/26/15
 Project No: 60276080 Time: Start 1631
 Site Location: FRIDLEY, MN Finish 1738
 Weather Conds: _____ Collector(s) MEUSA MEUNSEN

WATER LEVEL DATA: (measured from Top of Casing) Well Piezometer
 a. Total Well Length 75.06' c. Casing Material 2" STEEL e. Length of Water Column 43.55'
 b. Water Table Depth 31.51' d. Casing Diameter 2" f. Calculated Well Volume 7.18 gal

WELL PURGING DATA

a. Purge Method BLADDER Pump - QED BLADDER pump CONTROLLER SN#-2738
 - QED WELL WIZARD 3020 DC Compressor SN# 2203
 - QED SAMPLE PRO 1.75" BLADDER pump SN# 1153
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes)
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters _____ %
 c. Field Testing Equipment Used: Make Model Serial Number
LA MOTTE 2020 WE TURBIDITY 4711-3514
YSE 556 MPS RFW 72090 HANDHELD, 4' FIELD CABIN FLOW THROUGH CELL
 d. Field Testing Equipment Calibration Documentation Found:

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
<u>1650</u> <u>1655</u> <u>1700</u> <u>1705</u>	<u>0.25</u> <u>1.00</u> <u>1.75</u> <u>3.00</u>	<u>15.91</u> <u>15.92</u> <u>15.91</u> <u>15.90</u>	<u>7.30</u> <u>7.27</u> <u>7.27</u> <u>7.27</u>	<u>1019</u> <u>1026</u> <u>1029</u> <u>1029</u>	<u>-105.0</u> <u>-97.5</u> <u>-96.2</u> <u>-90.6</u>	<u>2.21</u> <u>2.37</u> <u>2.69</u> <u>3.10</u>	<u>20.0</u> <u>13.5</u> <u>11.15</u> <u>11.4</u>	<u>CLEAR</u> <u>CLEAR</u> <u>CLEAR</u> <u>CLEAR</u>	<u>-</u> <u>-</u> <u>-</u> <u>-</u>

e. Acceptance criteria pass/fail Yes No N/A
 Has required volume been removed
 Has required turbidity been reached
 Have parameters stabilized
 If no or N/A - Explain below.

WORK PLAN DID NOT INCLUDE TURBIDITY MEASUREMENT REQUIREMENTS OR VOLUME REMOVED

SAMPLE COLLECTION: Method: _____

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
<u>PRLW-03</u>	<u>-</u>	<u>SEE ATTACHED COC</u>	<u>-</u>	<u>-</u>	<u>1710</u>

Comments _____

Signature [Signature] Date 10/26/15

Ground Water Sample Collection Record

Client: US NAVY - NIROP Date: 10/26/15
 Project No: 60276000 Time: Start 1518
 Site Location: FRIELEY, MN Finish 1630
 Weather Conds: _____ Collector(s) MEGESSA MEEUWSEN

WATER LEVEL DATA: (measured from Top of Casing)

Well Piezometer

a. Total Well Length 74.72' c. Casing Material STEEL e. Length of Water Column 43.34'
 b. Water Table Depth 31.38' d. Casing Diameter 2" f. Calculated Well Volume 7.15 gal

WELL PURGING DATA

a. Purge Method BLADDER Pump - QED BLADDER pump CONTROLLER SN# 2738
 - QED WELL WIZARD 3020 DC COMPRESSOR SN# 22937
 - QED SAMPLE PRO 1.75" BLADDER pump SN# 11534
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes) _____
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters _____ %

c. Field Testing Equipment Used:

Make	Model	Serial Number
LAMORTE	QD20WE TURBIDITY	4711-3514
YSI	556 MPS	RFW 22090 HANDHELD, 4' FIELD CAB FLOWTHRU CELL

d. Field Testing Equipment Calibration Documentation Found:

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
1540	0.25	16.24	7.39	640	-90.6	2.25	20.1	CLEAR	—
1545	1.00	16.23	7.22	802	-80.2	1.73	15.7	CLEAR	—
1550	1.75	16.23	7.19	706	-49.6	1.55	13.4	CLEAR	—
1555	2.50	16.27	7.19	727	-54.9	1.24	10.07	CLEAR	—
1600	3.25	16.28	7.19	898	-50.2	1.09	7.86		

e. Acceptance criteria pass/fail

Has required volume been removed	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: _____

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
PMW-04	—	—	SEE ATTACHED LOG	—	1605

Comments _____

Signature [Signature]

Date 10/26/15

Ground Water Sample Collection Record

Client: US NAVY - NIROP Date: 11/6/15
 Project No: 60276080 Time: Start 1405
 Site Location: FRIDLEY, MN Finish 1500
 Weather Conds: CLOUDY, WINDY, 40'S Collector(s) MELISSA MEEUWSEN

WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 65.77' c. Casing Material STEEL Well Piezometer
 b. Water Table Depth 16.23' d. Casing Diameter 2" e. Length of Water Column 49.04'
 f. Calculated Well Volume 8.09

WELL PURGING DATA

a. Purge Method BLADDER Pump - SN: 11128
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes) _____
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters 10 %

c. Field Testing Equipment Used:

Make	Model	Serial Number
<u>FAIRBANKS</u>	<u>2020WE</u>	<u>4711-3514</u>
<u>YSE</u>	<u>556 mps</u>	<u>13.5100663</u>

MELISSA MEEUWSEN

d. Field Testing Equipment Calibration Documentation Found:

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
1429	0.5	15.95	7.97	2033	-217.8	0.30	-73	black	-
1434	1.25	15.98	7.78	2055	-208.8	0.16	-73	black	-
1439	1.75	15.98	7.70	2052	-199.2	0.15	-73	black	-
1444	2.25	16.06	7.67	2051	-189.6	0.15	-73	black	-

e. Acceptance criteria pass/fail

Yes	No	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Has required volume been removed		
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Has required turbidity been reached		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.
VOLUME REMOVED AND TURBIDITY MEASUREMENTS ARE NOT IN WORKPLAN

SAMPLE COLLECTION: Method: BLADDER pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
<u>PMW-01</u>	<u>---</u>	<u>SEE ATTACHED COC</u>	<u>---</u>	<u>---</u>	<u>1445</u>

Comments _____

Signature *[Signature]* Date 11/6/15

Ground Water Sample Collection Record

Client: US NAVY - NIROP Date: 11/6/15
 Project No: 60276080 Time: Start 1249
 Site Location: FRIEDLEY, MN Finish 1403
 Weather Conds: CLEAR, WIND, 40'S Collector(s) MEUSSA MEELUNSEN / TOGO FORTUNE

WATER LEVEL DATA: (measured from Top of Casing) Well Piezometer
 a. Total Well Length 65.79 c. Casing Material 2" STEEL e. Length of Water Column 49.47'
 b. Water Table Depth 16.32' d. Casing Diameter 2" f. Calculated Well Volume 8.16

WELL PURGING DATA
 a. Purge Method BLADDER PUMP - SN: 11128
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes)
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters 10 %
 c. Field Testing Equipment Used:
 Make Model Serial Number
LA MOTTE 2020 WE 4711-3514 TURBIDITY METER
YSE 556 MPS 13J100163
 d. Field Testing Equipment Calibration Documentation Found:

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
1314	0.5	16.16	7.31	1723	-160.2	0.81	11.5	clear	-
1319	1.0	16.14	7.19	1712	-135.0	0.75	6.50	clear	-
1324	1.5	16.04	7.13	1706	-118.7	0.76	4.00	clear	-
1329	2.0	16.02	7.11	1698	-110.2	0.81	2.83	clear	-

e. Acceptance criteria pass/fail
 Has required volume been removed Yes No N/A
 Has required turbidity been reached Yes No N/A
 Have parameters stabilized Yes No N/A
 If no or N/A - Explain below.
VOLUME REMOVED AND TURBIDITY MEASUREMENTS ARE NOT IN WORKPLAN.

SAMPLE COLLECTION: Method: BLADDER PUMP

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
<u>PMW-2</u>	<u>SEE ATTACHED CDC</u>				<u>1330</u>

Comments VOL/CSIA = 20 VIAL; 1 BROKE

Signature [Signature] Date 11/6/15

Ground Water Sample Collection Record

Client: US NAVY - NIROP Date: 11/6/15
 Project No: 60276080 Time: Start 930
 Site Location: FRIDLEY, MN Finish 1105
 Weather Conds: Cloudy, Wind, 40'S Collector(s) MELISSA MEEUWSEN, TODD FORTAN

WATER LEVEL DATA: (measured from Top of Casing) Well Piezometer
 a. Total Well Length 74.70' c. Casing Material STEEL e. Length of Water Column 46.43
 b. Water Table Depth 28.28' d. Casing Diameter 2" f. Calculated Well Volume 7.66'

WELL PURGING DATA
 a. Purge Method Bladder Pump - SN: 11128
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes)
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters 10 %
 c. Field Testing Equipment Used:

Make	Model	Serial Number
<u>LA MOTTE</u>	<u>2020 WE</u>	<u>4711-3514</u>
<u>YSE</u>	<u>550 MPS</u>	<u>13J100663</u>

Serial Number TURBIDITY METER
 d. Field Testing Equipment Calibration Documentation Found:

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (us/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
<u>1006</u>	<u>0.75</u>	<u>15.30</u>	<u>6.91</u>	<u>1137</u>	<u>-87.4</u>	<u>6.00</u>	<u>11.81</u>	<u>Clear</u>	<u>—</u>
<u>1011</u>	<u>1.25</u>	<u>15.30</u>	<u>6.95</u>	<u>1142</u>	<u>-90.4</u>	<u>6.03</u>	<u>10.26</u>	<u>Clear</u>	<u>—</u>
<u>1016</u>	<u>2.0</u>	<u>15.29</u>	<u>6.97</u>	<u>1139</u>	<u>-90.6</u>	<u>6.99</u>	<u>9.67</u>	<u>Clear</u>	<u>—</u>
<u>1021</u>	<u>2.5</u>	<u>15.52</u>	<u>7.00</u>	<u>1137</u>	<u>-91.2</u>	<u>6.90</u>	<u>8.80</u>	<u>Clear</u>	<u>—</u>

e. Acceptance criteria pass/fail
 Has required volume been removed Yes No N/A
 Has required turbidity been reached Yes No N/A
 Have parameters stabilized Yes No N/A
 If no or N/A - Explain below.
VOLUME REMOVED AND TURBIDITY MEASUREMENTS ARE NOT IN WORKPLAN

SAMPLE COLLECTION: Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
<u>PMW-04</u>	<u>—</u>	<u>SEE ATTACHED LOC</u>	<u>—</u>	<u>—</u>	<u>1025</u>

Comments _____

Signature [Signature] Date 11/6/15

Ground Water Sample Collection Record

Client: US NAVY INIROP Date: 11/6/15
 Project No: 60276080 Time: Start 1108
 Site Location: FRIDLEY, MN Finish 1210
 Weather Conds: PARTLY SUNNY, 40'S Collector(s) MEUSSA MEENUSEN / TODD FORTUNE
WIND

WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 75.03' c. Casing Material STEEL Well Piezometer
 b. Water Table Depth 28.70' d. Casing Diameter 2" e. Length of Water Column 46.33'
 f. Calculated Well Volume 7.64

WELL PURGING DATA

a. Purge Method BLADDER PUMP SN: 11128

- b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes) _____
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters 10 %

c. Field Testing Equipment Used:

Make	Model	Serial Number
<u>LANOTTE</u>	<u>2020 WE</u>	<u>4711-3514 TURBIDITY METER</u>
<u>YSI</u>	<u>556 MPS</u>	<u>13J100663</u>

d. Field Testing Equipment Calibration Documentation Found:

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
<u>1146</u>	<u>0.75</u>	<u>15.22</u>	<u>7.06</u>	<u>1408</u>	<u>-110.1</u>	<u>0.77</u>	<u>35.7</u>	<u>clear/light</u>	<u>-</u>
<u>1145</u>	<u>1.25</u>	<u>15.47</u>	<u>7.07</u>	<u>1413</u>	<u>-107.7</u>	<u>0.73</u>	<u>24.0</u>	<u>clear/light</u>	<u>-</u>
<u>1150</u>	<u>2.0</u>	<u>15.39</u>	<u>7.06</u>	<u>1412</u>	<u>-104.7</u>	<u>0.78</u>	<u>17.5</u>	<u>clear/light</u>	<u>-</u>
<u>1155</u>	<u>2.5</u>	<u>15.55</u>	<u>7.07</u>	<u>1410</u>	<u>-104.3</u>	<u>0.82</u>	<u>13.5</u>	<u>clear</u>	<u>-</u>

e. Acceptance criteria pass/fail

Has required volume been removed	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

VOLUME REMOVED AND TURBIDITY MEASUREMENTS ARE NOT IN WORKPLAN

SAMPLE COLLECTION:

Method: BLADDER PUMP

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
<u>PMW-03</u>	<u>-</u>	<u>SEE ATTACHED</u>	<u>CDC</u>	<u>-</u>	<u>1200</u>

Comments _____

Signature [Signature]

Date 11/6/15

Ground Water Sample Collection Record

Client: NIROD - NAVY Date: 12/4/15
 Project No: 60276080 Time: Start 1300
 Site Location: FRIDLEY, MN Finish 1355
 Weather Conds: SUN, WIND, 30'S Collector(s) A. MEILLWSEN R. BANASIAK

WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 66.39' c. Casing Material STEEL e. Length of Water Column 50.5'
 b. Water Table Depth 15.89' d. Casing Diameter 2" f. Calculated Well Volume 8.33

Well Piezometer

WELL PURGING DATA

a. Purge Method BLADDER Pump - RED WELL WIZARD 3020DC COMPRESSOR SN: 23085
 - RED BLADDER Pump CONTROLLER 2817
 - RED SAMPLE PRO 1.75" BLADDER Pump SN: 11128
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes) _____
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters _____ %

c. Field Testing Equipment Used:

Make	Model	Serial Number
<u>HANNA</u>	<u>TURBIDITY METER</u>	<u>20001384</u>
<u>YSI</u>	<u>556 MPS</u>	<u>146103834</u>

d. Field Testing Equipment Calibration Documentation Found:

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
<u>1321</u>	<u>0.5</u>	<u>15.16</u>	<u>7.44</u>	<u>1682</u>	<u>-199.2</u>	<u>0.81</u>	<u>L LD</u>	<u>BLACK</u>	<u>BLACK</u>
<u>1326</u>	<u>1.0</u>	<u>15.06</u>	<u>7.38</u>	<u>1652</u>	<u>-197.5</u>	<u>0.76</u>	<u>L LD</u>	<u>BLACK</u>	<u>BLACK</u>
<u>1331</u>	<u>1.5</u>	<u>15.13</u>	<u>7.31</u>	<u>1647</u>	<u>-190.2</u>	<u>0.58</u>	<u>L LD</u>	<u>BLACK</u>	<u>BLACK</u>
<u>1336</u>	<u>2.0</u>	<u>15.21</u>	<u>7.29</u>	<u>1649</u>	<u>-185.4</u>	<u>0.52</u>	<u>L LD</u>	<u>BLACK</u>	<u>BLACK</u>

16.02
15.95
15.85
15.95

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.
WORK PLAN DID NOT INCLUDE PARAMETERS FOR VOLUME REMOVED, TURBIDITY, AND STABILIZATION

SAMPLE COLLECTION: Method: BLADDER Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
<u>W4340 PMW-1</u>			<u>SEE CHAIN OF CUSTODY</u>		<u>1340</u>

Comments HANNA TURBIDITY METER CANNOT READ SAMPLES

Signature [Signature] Date 12/4/15

Ground Water Sample Collection Record

Client: NIROD - WAWY Date: 12/4/15
 Project No: 10276080 Time: Start 1135
 Site Location: FRIDLEY, MN Finish 1245
 Weather Conds: SW, WIND, 20'S Collector(s) H. MEEHUSEN, R. BANASIAK

WATER LEVEL DATA: (measured from Top of Casing)

Well Piezometer
 a. Total Well Length 46.62' c. Casing Material STEEL e. Length of Water Column 50.67'
 b. Water Table Depth 15.95' d. Casing Diameter 2" f. Calculated Well Volume 8.36 gal

WELL PURGING DATA

a. Purge Method BLADDER PUMP - RED WELL WIZARD 3020 DC COMPRESSOR SW: 23085
 - RED BLADDER PUMP CONTROLLER SW: 12817
 - RED SAMPLE PRO 1.75" BLADDER PUMP SW: 11128
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes) _____
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters _____ %

c. Field Testing Equipment Used:

Make	Model	Serial Number
<u>HANNA</u>	<u>TURBIDITY METER</u>	<u>20001384</u>
<u>YSI</u>	<u>556 MYS</u>	<u>14h103834</u>

d. Field Testing Equipment Calibration Documentation Found:

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other	WL
1210	0.5	14.75	7.34	1454	-154.3	1.41	-	CLEAR	17 GAL	15.98
1215	1.0	14.72	7.24	1447	-135.6	0.62	5.85	CLEAR	17 GAL	15.99
1220	1.5	14.68	7.18	1438	-121.2	1.37	4.48	CLEAR	-	16.02
1225	2.0	14.65	7.16	1433	-112.6	1.08	3.48	CLEAR	-	16.00
1230	2.5	14.56	7.15	1425	-105.5	1.02	2.44	CLEAR	-	16.02

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

WORK PLAN DID NOT INCLUDE PARAMETERS FOR VOLUME REMOVED, TURBIDITY, AND STABILIZATION

SAMPLE COLLECTION: Method: BLADDER PUMP

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
<u>W1235 PMW-2</u>		<u>SEE CHAIN CUSTODY</u>			<u>1235</u>

Comments _____

Signature [Signature]

Date 12/4/15

Ground Water Sample Collection Record

Client: NICOP - NAVY Date: 12/4/15
 Project No: 60276080 Time: Start 1000
 Site Location: FRIDLEY, MN Finish 1125
 Weather Conds: SW, 20'S, WIND Collector(s) M. MCKENSEN, R. BANKSIK

WATER LEVEL DATA: (measured from Top of Casing) Well Piezometer
 a. Total Well Length 76.43' c. Casing Material STEEL e. Length of Water Column 46.31'
 b. Water Table Depth 30.12' d. Casing Diameter 2" f. Calculated Well Volume 7.64 gal

WELL PURGING DATA
 a. Purge Method BLADDER PUMP - QED WELL WIZARD 3020 DC COMPRESSOR SN: 23085
 - QED BLADDER PUMP CONTROLLER SN: 2817
 - QED SAMPLE PRO 1.75" BLADDER PUMP SN: 11128
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes)
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters _____ %
 c. Field Testing Equipment Used:
 Make Model Serial Number
HANNA TURBIDITY METER 2.0001384
YST 556 MDS 145 103834
 d. Field Testing Equipment Calibration Documentation Found:

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
1030	0.5	12.62	7.16	1.498	-125.0	1.73	18.1	CLEAR	GRAY
1035	1.0	12.60	7.17	1.51	-126.3	1.53	8.76	1 CLEAR	LT GRAY
1040	1.5	12.64	7.15	1.51	-120.5	1.38	5.57	1 CLEAR	LT GRAY
1045	2.0	12.65	7.14	1.52	-117.6	1.29	5.57	1 CLEAR	LT GRAY
							3.71		

30.15
30.15
30.13
30.14

e. Acceptance criteria pass/fail
 Has required volume been removed Yes No N/A
 Has required turbidity been reached Yes No N/A
 Have parameters stabilized Yes No N/A
 If no or N/A - Explain below.
WORK PLAN DOES NOT INCLUDE PARAMETERS FOR VOLUME REMOVED, TURBIDITY, AND STABILIZATION

SAMPLE COLLECTION: Method: BLADDER PUMP

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
PMW-3		SEE CHAIN OF CUSTODY			1050

Comments _____
 Signature [Signature] Date 12/4/15

Ground Water Sample Collection Record

Client: NIRUZ - NATY Date: 12/4/15
 Project No: 60217 6080 Time: Start 0820
 Site Location: FRIDLEY, MN Finish 0955
 Weather Conds: 20'S, WIND, SUN Collector(s) M. MEENHUSEN / R. BANASIAK

WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 74.69' c. Casing Material STEEL Well Piezometer
 b. Water Table Depth 29.78' d. Casing Diameter 2" e. Length of Water Column 44.91'
 f. Calculated Well Volume 7.41 gal

WELL PURGING DATA

a. Purge Method BLADDER Pump - QED WELL WIZARD 3020 DC COMPRESSOR SW: 23085
 - QED BLADDER Pump CONTROLLER SW: 2817
 - QED SAMPLE PRO 1.75" BLADDER pump SW: 11128
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes)
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters _____ %

c. Field Testing Equipment Used:

Make	Model	Serial Number
HANNA	TURBIDITY METER	E0001384
USE	556 UPS	146103834

d. Field Testing Equipment Calibration Documentation Found:

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
907	2.5	12.48	7.09	1.129	-87.5	2.25	14	Clear	—
913	1.0	12.28	7.05	1.156	-96.9	1.67	11	Clear	—
907	1.5	12.36	7.05	1.160	-99.2	1.48	9.76	Clear	—
923	2.0	12.33	7.06	1.164	-100.6	1.43	5.88	Clear	—

Gal w/l
29.80
29.81
29.76
29.80

e. Acceptance criteria pass/fail

Has required volume been removed	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.
WORK PLAN DID NOT INCLUDE PARAMETERS FOR VOLUME REMOVED, TURBIDITY, AND STABILIZATION

SAMPLE COLLECTION: Method: _____

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
PMW-4	—	SEE CHAIN OF CUSTODY	—	—	0925

Comments _____

Signature oullke Date 12/4/15

Ground Water Sample Collection Record

Client: US NAVY - NIKOP Date: 1/6/16
 Project No: 60276080 Time: Start 1345
 Site Location: FRIELEY, MN Finish 1430
 Weather Conds: CLOUDY, 20°F, SLIGHT WIND Collector(s) M. MEENHUSEN R. BANASAK

WATER LEVEL DATA: (measured from Top of Casing) Well Piezometer
 a. Total Well Length 66.35' c. Casing Material STEEL e. Length of Water Column 50.14'
 b. Water Table Depth 16.21' d. Casing Diameter 2" f. Calculated Well Volume 8.17

WELL PURGING DATA
 a. Purge Method BLADDER PUMP - QED WELL WIZARD 3020 DC COMPRESSOR SW: 23085
 - QED MPID BLADDER PUMP CONTROLLER SW: 2817
 - QED SAMPLE PAD 1.75" BLADDER SW: 11771
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes) _____
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters _____ %
 c. Field Testing Equipment Used:

Make	Model	Serial Number
<u>YSE</u>	<u>SS6 HANDHELD</u>	<u>13J100662</u>
<u>YSE</u>	<u>SS6 FIELD CABLE</u>	<u>15A22-2</u>
<u>LAMOTTE</u>	<u>2020USE TURBIDITY METER</u>	<u>SN 5214-0115</u>

 d. Field Testing Equipment Calibration Documentation Found: 1099ALL

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
<u>1400</u>	<u>0.5</u>	<u>14.03</u>	<u>6.87</u>	<u>180.3</u>	<u>-158.9</u>	<u>1.24</u>	<u>BLACK</u>	<u>BLACK</u>	<u>-</u>
<u>1405</u>	<u>1.0</u>	<u>14.05</u>	<u>6.97</u>	<u>165.5</u>	<u>-163.3</u>	<u>1.14</u>	<u>SOFT</u>	<u>LT GRAY</u>	<u>-</u>
<u>1410</u>	<u>1.5</u>	<u>14.10</u>	<u>6.97</u>	<u>161.4</u>	<u>-154.3</u>	<u>1.18</u>	<u>49</u>	<u>LT GRAY</u>	<u>-</u>
<u>1415</u>	<u>2.0</u>	<u>14.02</u>	<u>6.95</u>	<u>160.3</u>	<u>-150.6</u>	<u>1.13</u>	<u>49</u>	<u>LT GRAY</u>	<u>-</u>

e. Acceptance criteria pass/fail
 Has required volume been removed Yes No N/A
 Has required turbidity been reached Yes No N/A
 Have parameters stabilized Yes No N/A
 If no or N/A - Explain below.

WORK PLAN DID NOT INCLUDE PARAMETERS FOR VOLUME REMOVED, TURBIDITY, AND STABILIZATION.

SAMPLE COLLECTION: Method: BLADDER PUMP

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
<u>PMW-01</u>	<u>-</u>	<u>SEE LOC</u>	<u>-</u>	<u>-</u>	<u>1420</u>

Comments _____

Signature [Signature] Date 1/6/16

Ground Water Sample Collection Record

Client: US NAVY - NIROP Date: 11/6/15
 Project No: 60276080 Time: Start 1230
 Site Location: FRIDLEY, MN Finish: 1330
 Weather Conds: _____ Collector(s) _____

WATER LEVEL DATA: (measured from Top of Casing) Well Piezometer
 a. Total Well Length 66.95' c. Casing Material STEEL e. Length of Water Column _____
 b. Water Table Depth 16.29' d. Casing Diameter 2" f. Calculated Well Volume _____

WELL PURGING DATA
 a. Purge Method BLADDER PUMP - QED WELL WIZARD 3020 DC COMPRESSOR SN: 23085
 - QED MPID BLADDER PUMP CONTROLLER SN: 2817
 - QED SAMPLE PRO 1.75" BLADDER SN: 11711
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes) _____
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters _____ %
 c. Field Testing Equipment Used:
 Make Model Serial Number
YSE SS6 HANDHELD 13J100662
YSE SS6 FIELD CABLE 15A22-2
LAMORTE 2020 WE TURBIDITY METER SN: 5514-015
 d. Field Testing Equipment Calibration Documentation Found: _____

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
1256	0.5	14.23	7.44	1436	-162.9	1.84	20.9	1.1 GRAY	— CLEAR
1301	1.0	14.35	7.35	1436	-139.4	1.70	16.98	1.1 GRAY	— CLEAR
1306	1.5	14.47	7.28	1479	-124.3	1.47	7.54	1.1 GRAY	— CLEAR
1311	2.0	14.54	7.23	1418	-111.5	1.38	5.78	1.1 GRAY	— CLEAR
1316	2.5	14.65	7.22	1415	-106.3	1.29	4.93	CLEAR	—

e. Acceptance criteria pass/fail Yes No N/A
 Has required volume been removed
 Has required turbidity been reached
 Have parameters stabilized
 If no or N/A - Explain below.
WORK PLAN DID NOT INCLUDE PARAMETERS FOR VOLUME REMOVED, TURBIDITY, AND STABILIZATION.

SAMPLE COLLECTION: Method: BLADDER PUMP

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
<u>PMW-02</u>	—	<u>SEE LOG</u>	—	—	<u>1325</u>

Comments _____

Signature [Signature] Date 11/6/15

Ground Water Sample Collection Record

Client: US NAVY - NROD Date: 1/6/16
 Project No: 60276080 Time: Start 1015
 Site Location: FRIELEY, MN Finish 1130
 Weather Conds: CLOUDY, WIND, 20.5F Collector(s) M. MEEUNSON R. BALASIAK

WATER LEVEL DATA: (measured from Top of Casing) Well Piezometer
 a. Total Well Length 75.89' c. Casing Material STEEL e. Length of Water Column 44.71'
 b. Water Table Depth 31.18' d. Casing Diameter 2" f. Calculated Well Volume 7.28 gal

WELL PURGING DATA
 a. Purge Method BLADDER PUMP - QED WELL WIZARD 3020 DC COMPRESSOR SN: 23085
 - QED MP10 BLADDER PUMP CONTROLLER SN: 2817
 - QED SAMPLE PRO 1.75" BLADDER SN: 11771
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes) _____
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters _____ %
 c. Field Testing Equipment Used:
 Make Model Serial Number
VSI 556 HANDHELD 13J100662
VSI 5510 FIELD TABLE 15A22-2
LA MOTTE 2020 WTS TURBIDITY METER SN: 5214-0115
 d. Field Testing Equipment Calibration Documentation Found:

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
1034	0.5	12.93	7.30	1058	-104.2	2.93	7.80	CLEAR	—
1039	1.5	13.18	7.28	1087	-97.3	3.04	5.6	CLEAR	—
1044	2.5	13.40	7.27	1099	-98.5	2.99	6.73	CLEAR	—

e. Acceptance criteria pass/fail
 Has required volume been removed Yes No N/A
 Has required turbidity been reached Yes No N/A
 Have parameters stabilized Yes No N/A
 If no or N/A - Explain below.

WORK PLAN DID NOT INCLUDE PARAMETERS FOR VOLUME REMOVED, TURBIDITY, AND STABILIZATION.

SAMPLE COLLECTION: Method: BLADDER PUMP

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
<u>PMW-03</u>		<u>SEE COL</u>			<u>1055</u>

Comments _____

Signature [Signature] Date 1/6/16

Ground Water Sample Collection Record

Client: US NAVY - NI ROD Date: 1/6/16
 Project No: 60276080 Time: Start 0815
 Site Location: FRIDLEY, MN Finish 0935
 Weather Conds: PARTLY CLOUDY 24°F WIND Collector(s) M. MEEUWSEN, R. BALASIAK

WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 75.75 c. Casing Material STEEL Well Piezometer
 b. Water Table Depth 30.85' d. Casing Diameter 2" e. Length of Water Column 44.90'
 f. Calculated Well Volume 7.32 gal

WELL PURGING DATA

a. Purge Method BLADDER Pump -- QED WELL WIZARD 3020 DC COMPRESSOR SN: 23085
 -- QED MP10 BLADDER Pump CONTROLLER SN: 2817
 -- QED SIMPLE PRO 1.75" BLADDER SN: 11771
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes) _____
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters _____ %

c. Field Testing Equipment Used:

Make	Model	Serial Number
YSI	556 HANDHELD	13J164422
YSI	556 FIELD CABLE	15A22-2
LA MOTE	2020 WE TURBIDITY METER	SN: 5214-0115

d. Field Testing Equipment Calibration Documentation Found:

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (us/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
902	0.50	12.52	7.26	870	-63.7	3.13	3.97	CLEAR	—
905	1.25	12.74	7.24	881	-61.9	2.65	2.27	CLEAR	—
910	2.00	12.82	7.23	884	-62.8	2.53	3.26	CLEAR	—
915	3.00	13.00	7.23	889	-62.6	2.17	5.7	CLEAR	—

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

WORK PLANNED NOT INCLUDE PARAMETERS FOR VOLUME REMOVED, TURBIDITY, AND STABILIZATION.

SAMPLE COLLECTION: Method: BLADDER Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
<u>0920-PMW-04</u>		<u>SEE COC</u>			<u>0925</u>

Comments _____

Signature [Signature] Date 1/6/16

Ground Water Sample Collection Record

Client: US NAVY - NIROP Date: 1/25/16
 Project No: 60276080 Time: Start 11:35
 Site Location: FRIDLEY, MN Finish 12:50
 Weather Conds: CLOUDY, DRIZZLE, 28F Collector(s) M. MEEUWSEN

WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 75.03 c. Casing Material STEEL Well Piezometer
 b. Water Table Depth 30.29' d. Casing Diameter 2" e. Length of Water Column 44.74
 f. Calculated Well Volume 7.29 gal

WELL PURGING DATA

a. Purge Method BLADDER Pump - QED WELL WIZARD 3020 DC COMPRESSOR SN: 2308
 - QED BLADDER Pump CONTROLLER SN: 2817
 - QED SAMPLE PRO 1.75" BLADDER pump SN: 11771
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes)
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters _____ %

c. Field Testing Equipment Used:

Make	Model	Serial Number
<u>YSE</u>	<u>SS6 HANDHELD</u>	<u>05H2352A0</u>
<u>YSE</u>	<u>SS6 FIELD CABLE</u>	<u>10645-2</u>

d. Field Testing Equipment Calibration Documentation Found:

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
<u>11:56</u>	<u>0.5</u>	<u>13.26</u>	<u>7.31</u>	<u>0.981</u>	<u>-125.7</u>	<u>2.07</u>		<u>CLEAR</u>	
<u>12:01</u>	<u>1.0</u>	<u>13.62</u>	<u>7.27</u>	<u>1.008</u>	<u>-117.5</u>	<u>2.80</u>		<u>CLEAR</u>	
<u>12:06</u>	<u>1.5</u>	<u>13.46</u>	<u>7.26</u>	<u>1.012</u>	<u>-113.3</u>	<u>3.60</u>		<u>CLEAR</u>	
<u>12:11</u>	<u>2.0</u>	<u>13.51</u>	<u>7.26</u>	<u>1.016</u>	<u>-112.2</u>	<u>3.78</u>		<u>CLEAR</u>	
<u>12:16</u>	<u>2.5</u>	<u>13.51</u>	<u>7.25</u>	<u>1.017</u>	<u>-110.4</u>	<u>3.95</u>		<u>CLEAR</u>	
								<u>1.0 COY</u>	<u>TO CLEAR.</u>

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

WORK PLAN DID NOT INCLUDE PARAMETERS FOR VOLUME REMOVED, TURBIDITY, AND STABILIZATION.

SAMPLE COLLECTION: Method: BLADDER Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
<u>PMW-03</u>	<u>SEE CHAIN OF CUSTODY</u>				<u>12:25</u>

Comments _____

Signature [Signature]

Date 1/25/16

Ground Water Sample Collection Record

Client: US NAVY - NIROP Date: 1/25/16
 Project No: 6R27608D Time: Start 1015
 Site Location: FRIDLEY, MN Finish 1132
 Weather Conds: CLOUDY, DRIZZLE, 28°F Collector(s) M. MEFUNSEN

WATER LEVEL DATA: (measured from Top of Casing) Well Piezometer
 a. Total Well Length 74.67' c. Casing Material STEEL e. Length of Water Column 44.74'
 b. Water Table Depth 29.93' d. Casing Diameter 2" f. Calculated Well Volume 7.29

WELL PURGING DATA - QED WELL WIZARD 3020 DC COMPRESSOR SN: 23085
 a. Purge Method BLADDER PUMP - QED BLADDER PUMP CONTROL USA SN: 2817
 - QED SAMPLE PRO 1.75" BLADDER PUMP SN: 11771
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes) _____
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters _____ %
 c. Field Testing Equipment Used:
 Make Model Serial Number
YSI SSL HANDHELD 05H2352AQ
YSI SSL FIELD CABLE 10L45-2

d. Field Testing Equipment Calibration Documentation Found:

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
1043	0.5	13.55	7.31	0.744	-103.4	0.80		LT GRAY	
1048	1.0	13.68	7.26	0.781	-85.6	0.83		V. LT GRAY	
1053	1.5	13.72	7.23	0.786	-69.3	0.85		V. LT GRAY	SLIGHT ODOUR
1058	2.0	13.71	7.22	0.785	-57.7	0.85		V. LT GRAY	"
									TO CLEAR

e. Acceptance criteria pass/fail Yes No N/A
 Has required volume been removed
 Has required turbidity been reached
 Have parameters stabilized

If no or N/A - Explain below.

WORK PLAN DID NOT INCLUDE PARAMETERS FOR VOLUME REMOVED, TURBIDITY, AND STABILIZATION.

SAMPLE COLLECTION: Method: BLADDER PUMP.

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
<u>PMW-04</u>	<u>---</u>	<u>SEE CHAIN OF CUSTODY</u>	<u>---</u>	<u>---</u>	<u>1105</u>

Comments _____

Signature [Signature]

Date 1/25/16

Ground Water Sample Collection Record

Client: US NAVY - NIROP Date: 2/8/16
 Project No: 60276080 Time: Start 0950
 Site Location: FRIDLEY, MN Finish 1044
 Weather Conds: CLOUDY, WIND, 11°F Collector(s) M. MEDWISSEN R. BANASIAK
WINTER WEATHER ADVISORY

WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 75.94' c. Casing Material STEEL Well Piezometer
 b. Water Table Depth 31.08' d. Casing Diameter 2" e. Length of Water Column 44.86'
 f. Calculated Well Volume 7.31 gal

WELL PURGING DATA

a. Purge Method BLADDER Pump - QED MP 10 BLADDER Pump Controller SN: 2817
 - QED SAMPLE Pkg 1.75" BLADDER Pump SN: 11771
 - QED WELL WIZARD 3020 DC Controller SN: 23085
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes) _____
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters _____ %
 c. Field Testing Equipment Used:
 Make Model Serial Number
VSI 556 HANDHELD 07J101339
VSI 556 FIELD CABLE 13 K14
LA MOTT TURBIDITY METER 2020 WE 37544013
 d. Field Testing Equipment Calibration Documentation Found: _____

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µS/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
1008	0.5	10.31	7.03	1.020	-87.7	1.66	4.85	CLEAR	
1013	1.0	10.43	7.13	1.035	-83.6	1.50	11.2	CLEAR	
1018	1.5	10.69	7.15	1.044	-57.5	2.26	16.1	CLEAR	
1025	2.0	10.88	7.16	1.058	-78.4	1.83	9.29	CLEAR	

e. Acceptance criteria pass/fail Yes No N/A
 Has required volume been removed
 Has required turbidity been reached
 Have parameters stabilized

If no or N/A - Explain below.

WORK PLAN DID NOT INCLUDE PARAMETERS FOR VOLUME REMOVED, TURBIDITY, AND STABILIZATION.

SAMPLE COLLECTION:

Method: BLADDER Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
PMW-03	<u>SEE CHAIN OF CUSTODY</u>		<u>CUSTODY</u>		1030

Comments _____

Signature [Signature]

Date 2/8/16

Ground Water Sample Collection Record

Client: US-NAVY N/ROP Date: 2/8/16
 Project No: 602760810 Time: Start 0810
 Site Location: FRIDLEY, MN Finish 0915
 Weather Conds: WINDY, CLOUDY, 11°F Collector(s) M. MEEUWSEN, P. BANASIAK

WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 76.03' c. Casing Material STEEL Well Piezometer
 b. Water Table Depth 35.30.72' d. Casing Diameter 2" e. Length of Water Column 45.31'
 f. Calculated Well Volume 7.38 gal

WELL PURGING DATA

a. Purge Method BLADDER Pump - QED MPIO BLADDER Pump CONTROLLER SN: 2817
 - QED Sample Pro 1-75" BLADDER pump SN: 11771
 - QED WELL WIZARD 302D DC COMPRESSOR SN: 23085
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes) _____
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters _____ %
 c. Field Testing Equipment Used:
 Make Model Serial Number
YSI YSI 556 HANDHELD 07J101339
YSI YSI 556 FIELD CABLE 13K14
LAMORTE TURBIDITY METER 200WE 3754-4013
 d. Field Testing Equipment Calibration Documentation Found:

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µS/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
0840	0.5	11.88	7.01	0.758	-66.1	1.92	6.83	CLEAR	CE
0845	1.0	12.10	7.15	0.776	-69.8	1.36	5.49	CLEAR	
0850	1.5	12.04	7.09	0.781	-68.6	1.12	4.15	CLEAR	
0855	2.0	12.35	7.11	0.789	-69.0	1.01	4.33	CLEAR	LAMORTE TURBIDITY METER

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

WORK PLAN DID NOT INCLUDE PARAMETERS FOR VOLUME REMOVED, TURBIDITY, AND STABILIZATION.

SAMPLE COLLECTION:

Method: BLADDER Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
<u>PMW-04</u>	<u>---</u>	<u>SEE CHAIN OF CUSTODY</u>	<u>---</u>	<u>---</u>	<u>0900</u>

Comments _____

Signature [Signature]

Date 2/8/16

Ground Water Sample Collection Record

Client: US NAVY - NIROP Date: 3/31/16
 Project No: 60276080.PT.1PT Time: Start 1314
 Site Location: FRIDLEY, MN Finish 1422
 Weather Conds: P. Sunny, Wind 40°F Collector(s) MELISSA HEELUNSON

WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 65.26' c. Casing Material STEEL e. Length of Water Column 48.91'
 b. Water Table Depth 16.35' d. Casing Diameter 2" f. Calculated Well Volume 8.07 gal

Well Piezometer

WELL PURGING DATA

a. Purge Method BLADDER PUMP - QED MP10 BLADDER pump CONTROLLER SN: 1839
 - QED SAMPLE PRD 1.75" BLADDER Pump SN: 11695
 - QED WELL WIZARD 3020 DC COMPRESSOR SN: 23085
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes) _____
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters _____ %

c. Field Testing Equipment Used:

Make	Model	Serial Number
YSI	556 HANDHELD	05F1542AI
YSI	556 FIELD CABLE	13J19

d. Field Testing Equipment Calibration Documentation Found: LAMOTTE TURBIDITY METER 2020 WE 5214-0115

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µS/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
1328	0.5	15.22	7.35	1.357	-144.7	0.45	15.3	Green	
1333	1.0	15.20	7.23	1.380	-151.8	0.39	12.3	Green	
1338	1.5	15.17	7.12	1.387	-142.6	0.48	10.86	Green	
1343	2.0	15.04	7.08	1.383	-138.7	0.37	8.99	Green	

e. Acceptance criteria pass/fail

Yes	No	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Has required volume been removed	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

WORK PLAN DID NOT INCLUDE PARAMETERS FOR VOLUME REMOVED, TURBIDITY, AND STABILIZATION.

SAMPLE COLLECTION: Method: BLADDER PUMP

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
<u>1350m</u>					
<u>PMW-01</u>	<u>PLEASE SEE CHAIN OF CUSTODY</u>				<u>1350</u>

Comments _____

Signature all

Date 3/31/16

Ground Water Sample Collection Record

Client: US NAVY - NIPAP Date: 3/31/16
 Project No: 60276080.PT.PT Time: Start 1145
 Site Location: FRIDLEY, MN Finish: 1309
 Weather Conds: P. Cloudy, 40-45°F Collector(s): MEUSA MEIJUSSEN

WATER LEVEL DATA: (measured from Top of Casing)

Well Piezometer

- a. Total Well Length 65.79' c. Casing Material STEEL e. Length of Water Column 44.36'
 b. Water Table Depth 16.43' d. Casing Diameter 2" f. Calculated Well Volume 8.14 gal

WELL PURGING DATA

- a. Purge Method BLADDER PUMP - QED MP10 BLADDER PUMP CONTROLLER SN: 1834
 - QED SAMPLE PRO 1.75" BLADDER PUMP SN: 11695
 - QED WELL WIZARD 3020 DC COMPRESSOR SN: 23085
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes) _____
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters _____ %

- c. Field Testing Equipment Used:
- | Make | Model | Serial Number |
|----------------|--------------------------------|-------------------|
| <u>YSI</u> | <u>SS6 HANDHELD</u> | <u>05 F1542AI</u> |
| <u>YSI</u> | <u>SS6 FIELD CABLE</u> | <u>13J19</u> |
| <u>LAMORTE</u> | <u>TURBIDITY METER 2020 WE</u> | <u>5214-0115</u> |

d. Field Testing Equipment Calibration Documentation Found:

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond (µMhos/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	Other
<u>1211</u>	<u>0.5</u>	<u>14.04</u>	<u>7.48</u>	<u>1.545</u>	<u>-151.2</u>	<u>0.32</u>	<u>27.5</u>	<u>GRAY</u>	
<u>1214</u>	<u>1.0</u>	<u>14.24</u>	<u>7.43</u>	<u>1.359</u>	<u>-135.1</u>	<u>0.27</u>	<u>22.2</u>	<u>GRAY</u>	
<u>1221</u>	<u>1.5</u>	<u>14.34</u>	<u>7.32</u>	<u>1.259</u>	<u>-118.1</u>	<u>0.24</u>	<u>13.0</u>	<u>GRAY</u>	
<u>1226</u>	<u>2.0</u>	<u>14.25</u>	<u>7.26</u>	<u>1.353</u>	<u>-105.8</u>	<u>0.25</u>	<u>11.53</u>		

- e. Acceptance criteria pass/fail
- | | Yes | No | N/A |
|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| Has required volume been removed | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Has required turbidity been reached | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Have parameters stabilized | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

If no or N/A - Explain below.

WORK PLAN DID NOT INCLUDE PARAMETERS FOR VOLUME REMOVED, TURBIDITY, AND STABILIZATION.

SAMPLE COLLECTION: Method: BLADDER PUMP

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
<u>1230</u>					
<u>PMW-02</u>		<u>PLEASE SEE CHAIN OF CUSTODY</u>			<u>1230</u>

Comments _____

Signature [Signature] Date 3/31/16

Ground Water Sample Collection Record

Client: US NAVY - NIRD Date: 3/31/16
 Project No: 60276080. PT. PT Time: Start 1021
 Site Location: FRIDLEY, MN Finish 1175
 Weather Conds: Cloudy, wind, 40F Collector(s) MELISSA MEENSON

WATER LEVEL DATA: (measured from Top of Casing) Well Piezometer
 a. Total Well Length 75.04' c. Casing Material STEEL e. Length of Water Column 45.47'
 b. Water Table Depth 29.57' d. Casing Diameter 2" f. Calculated Well Volume 7.50gal

WELL PURGING DATA
 a. Purge Method BLADDER Pump - QED MPIO BLADDER Pump CONTROLLER SN: 1839
 - QED SAMPLE PRO 1.75" BLADDER Pump SN: 11695
 - QED WELL WIZARD 3020 DC COMPRESSOR SN: 23085
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes) _____
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters _____ %
 c. Field Testing Equipment Used:
 Make Model Serial Number
YSI SS6 HANDHELD 05F2542AI
YSI SS6 HANDHELD 13J19
LAMOTTE TURBIDITY METER 2020 WE 5214-0115
 d. Field Testing Equipment Calibration Documentation Found:

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond <u>Mus/cm</u>	ORP	DO mg/L	Turbidity (NTU)	Color	Other
1040	0.5	14.21	7.29	1.059	-75.3	0.55	9.25	lt Gray	
1045	1.0	14.25	7.27	1.103	-87.4	0.34	5.52	lt Gray	
1050	1.5	14.28	7.28	1.103	-96.0	0.31	5.16	lt Gray	
1055	2.0	14.31	7.27	1.103	-100.5	0.31	3.05	lt Gray	

e. Acceptance criteria pass/fail
 Has required volume been removed Yes No N/A
 Has required turbidity been reached Yes No N/A
 Have parameters stabilized Yes No N/A
 If no or N/A - Explain below.
WORK PLAN DID NOT INCLUDE PARAMETERS FOR VOLUME REMOVED, TURBIDITY, AND STABILIZATION.

SAMPLE COLLECTION: Method: BLADDER Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
1040					
1045					
1050					
1100					
PMW-03		PLEASE SEE CHAIN OF CUSTODY			1100

Comments _____

Signature [Signature] Date 3/31/16

Ground Water Sample Collection Record

Client: US NAVY - NIROP Date: 3/31/16
 Project No: 00276080. PT. PT Time: Start 0850
 Site Location: FRIDLEY, MN Finish 1016
 Weather Conds: CLOUDY, 40%, WIND Collector(s) MELISSA MEERWSEN

WATER LEVEL DATA: (measured from Top of Casing) Well Piezometer
 a. Total Well Length 74.66' c. Casing Material STEEL e. Length of Water Column 45.46'
 b. Water Table Depth 29.20' d. Casing Diameter 2" f. Calculated Well Volume 7.50

WELL PURGING DATA
 a. Purge Method BLADDER PUMP - QED MP10 BLADDER PUMP CONTROLLER SN: 1839
 - QED SAMPLE PRO 1.75" BLADDER PUMP SN: 11645
 - QED WELL WIZARD 3020 DC COMPRESSOR SN: 23085
 b. Acceptance Criteria defined (from workplan)
 - Minimum Required Purge Volume (@ _____ well volumes) _____
 - Maximum Allowable Turbidity _____ NTUs
 - Stabilization of parameters _____ %
 c. Field Testing Equipment Used:
 Make Model Serial Number
YSI SSL HANDHELD OSF 1542AI
YSI SSL FIELD CABLE SM4-015-13J19
LA MOITE TURBIDITY METER 2020WB 5214-0115
 d. Field Testing Equipment Calibration Documentation Found:

Time	Volume Removed (gal)	T° (C)	pH	Spec. Cond <u>µS/cm</u>	ORP	DO mg/L	Turbidity (NTU)	Color	Other
<u>0922</u>	<u>1.0</u>	<u>14.31</u>	<u>7.32</u>	<u>0.781</u>	<u>-70.0</u>	<u>0.50</u>	<u>9.67</u>	<u>lt Gray</u>	<u>-</u>
<u>0927</u>	<u>1.5</u>	<u>14.31</u>	<u>7.30</u>	<u>0.787</u>	<u>-73.3</u>	<u>1.19</u>	<u>7.33</u>	<u>lt gray</u>	
<u>0932</u>	<u>2.0</u>	<u>14.34</u>	<u>7.29</u>	<u>0.784</u>	<u>-71.6</u>	<u>1.25</u>	<u>6.16</u>	<u>lt Gray</u>	
<u>0937</u>	<u>2.5</u>	<u>14.38</u>	<u>7.28</u>	<u>0.781</u>	<u>-66.0</u>	<u>1.17</u>	<u>4.23</u>	<u>lt Gray</u>	

e. Acceptance criteria pass/fail Yes No N/A
 Has required volume been removed
 Has required turbidity been reached
 Have parameters stabilized
 If no or N/A - Explain below.
WORK PLAN DID NOT INCLUDE PARAMETERS FOR VOLUME REMOVED, TURBIDITY, AND STABILIZATION.

SAMPLE COLLECTION: Method: BLADDER PUMP

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
<u>0942</u> <u>PMW-04</u>				<u>PLEASE SEE CHAIN OF CUSTODY</u>	<u>0942</u>

Comments _____

Signature [Signature] Date 3/31/16

Appendix F
Regenesis Technical Memorandums
and Injection Summary Logs



NIROP - Fridley, Minnesota
 PlumeStop, HRC, & BDI Plus Injection Log
 Area 1
 Table 1



Injection Point	Date	Time	Injection Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Volume of PlumeStop Injected			Total gallons per Location	BDI Plus application (liters)	HRC Application (pounds)	Comments
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected per Interval				
1	9/30/2015	2:40	67-65	80	3.60	0	82	82.00	290.0	0.26	--	First and second attempt resulted in heaving up into the rods.
		2:54	65-63	78	4.01	82	164	82.00		0.26	--	
		3:09	63-61	70	4.37	164	246	82.00		0.26	--	
		3:50	61-60	90	4.25	246	290	44.00		0.12	--	Flushed with 25 gallons of water.
2	10/1/2015	12:35	67-65	90	1.85	0	82	82.00	290.0	0.26	--	
		12:35	65-63	70	3.45	82	164	82.00		0.26	--	
		12:35	63-61	72	3.89	164	246	82.00		0.26	--	
		11:35	61-60	72	3.99	246	290	44.00		0.12	--	Flushed with 25 gallons of water.
3	10/1/2015	12:12	67-65	110	1.08	0	56	56.00	290.0	0.26	--	Pulled up early due to high pressure. Screen likely didn't open on initial pull.
		12:59	66-64	65	3.09	56	97	41.00		0.26	--	
		1:23	64-62	70	3.25	97	193	96.00		0.26	--	
		1:49	62-60	68	4.25	193	290	97.00		0.12	--	Flushed with 25 gallons of water.
4	10/1/2015	1:58	67-65	70	2.25	0	82	82.00	290.0	0.26	--	
		2:23	65-63	70	3.56	82	164	82.00		0.26	--	
		2:46	63-61	64	3.79	164	246	82.00		0.26	--	
		2:59	61-60	64	3.67	246	290	44.00		0.12	--	Flushed with 25 gallons of water.
5	10/1/2015	3:13	67-65	70	4.25	0	82	82.00	290.0	0.26	--	
		3:30	65-63	64	5.34	82	164	82.00		0.26	--	
		3:48	63-61	60	2.50	164	246	82.00		0.26	--	
		4:09	61-60	55	3.08	246	290	44.00		0.12	--	Surfacing through rods at IP-2 at 195 gallons. Flushed with 25 gallons of water.
6	10/2/2015	9:37	67-65	55	2.85	0	82	82.00	290.0	0.26	--	
		9:52	65-63	60	3.85	82	164	82.00		0.26	--	
		10:04	63-61	64	3.20	164	246	82.00		0.26	--	
		10:25	61-60	60	3.56	246	290	44.00		0.12	--	Flushed with 20 gallons of water.



**NIROP - Fridley, Minnesota
PlumeStop, HRC, & BDI Plus Injection Log
Area 1
Table 1**



Injection Point	Date	Time	Injection Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Volume of PlumeStop Injected			Total gallons per Location	BDI Plus application (liters)	HRC Application (pounds)	Comments
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected per Interval				
7	10/2/2015	10:54	67-65	64	3.13	0	82	82.00	290.0	0.26	--	
		11:18	65-63	54	3.10	82	164	82.00		0.26	--	
		11:42	63-61	54	3.32	164	246	82.00		0.26	--	
		12:09	61-60	52	3.25	246	290	44.00		0.12	--	Flushed with 15 gallons of water.
8	10/2/2015	12:35	67-65	78	3.46	0	82	82.00	290.0	0.26	--	
		1:08	65-63	74	3.04	82	164	82.00		0.26	--	
		1:31	63-61	70	3.11	164	246	82.00		0.26	--	
		1:54	61-60	60	3.21	246	290	44.00		0.12	--	Flushed with 20 gallons of water.
9	10/5/2015	9:45	67-65	34	3.64	0	82	82.00	290.0	0.26	--	
		10:10	65-63	24	3.51	82	164	82.00		0.26	--	
		10:30	63-61	18	3.75	164	246	82.00		0.26	--	
		10:53	61-60	18	3.56	246	290	44.00		0.12	--	Flushed with 20 gallons of water.
10	10/5/2015	11:25	67-65	96	2.68	0	82	82.00	290.0	0.26	--	Pressure dropped to 64 psi at 50 gallons. Flow rate increased to 4.09 gpm. Slowed pump to 3.58 gpm.
		11:52	65-63	46	3.58	82	164	82.00		0.26	--	Pressure continues to drop. 34 psi at 162 gallons.
		12:15	63-61	24	3.66	164	246	82.00		0.26	--	
		12:35	61-60	24	3.72	246	290	44.00		0.12	--	Flushed with 20 gallons of water.
HRC-1	10/5/2015	2:15	67-66	--	--	0.00	0.69	0.69	4.84	--	7.50	
			66-65	--	--	0.69	1.38	0.69		--	7.50	
			65-64	--	--	1.38	2.07	0.69		--	7.50	
			64-53	--	--	2.07	2.76	0.69		--	7.50	
			63-62	--	--	2.76	3.46	0.69		--	7.50	
			62-61	--	--	3.46	4.15	0.69		--	7.50	
			61-60	--	--	4.15	4.84	0.69		--	7.50	Flushed with 3 gallons of water.
HRC-2	10/5/2015	2:45	67-66	--	--	0.00	0.69	0.69	4.84	--	7.50	
			66-65	--	--	0.69	1.38	0.69		--	7.50	
			65-64	--	--	1.38	2.07	0.69		--	7.50	
			64-53	--	--	2.07	2.76	0.69		--	7.50	
			63-62	--	--	2.76	3.46	0.69		--	7.50	
			62-61	--	--	3.46	4.15	0.69		--	7.50	
			61-60	--	--	4.15	4.84	0.69		--	7.50	Flushed with 3 gallons of water.
HRC-3	10/5/2015	3:28	67-66	--	--	0.00	0.69	0.69	4.84	--	7.50	
			66-65	--	--	0.69	1.38	0.69		--	7.50	
			65-64	--	--	1.38	2.07	0.69		--	7.50	
			64-53	--	--	2.07	2.76	0.69		--	7.50	
			63-62	--	--	2.76	3.46	0.69		--	7.50	
			62-61	--	--	3.46	4.15	0.69		--	7.50	
			61-60	--	--	4.15	4.84	0.69		--	7.50	Flushed with 3 gallons of water.
HRC-4	10/5/2014	3:56	67-66	--	--	0.00	0.69	0.69	4.84	--	7.50	
			66-65	--	--	0.69	1.38	0.69		--	7.50	
			65-64	--	--	1.38	2.07	0.69		--	7.50	
			64-53	--	--	2.07	2.76	0.69		--	7.50	
			63-62	--	--	2.76	3.46	0.69		--	7.50	
			62-61	--	--	3.46	4.15	0.69		--	7.50	
			61-60	--	--	4.15	4.84	0.69		--	7.50	Flushed with 3 gallons of water.

	PlumeStop (Gallons)	BDI+ (Liters)	HRC (pounds)
Totals:	2900.0	9.00	210.0



NIROP - Fridley, Minnesota
 PlumeStop, HRC, & BDI Plus Injection Log
 Area 2
 Table 2



Injection Point	Date	Time	Injection Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Volume of PlumeStop Injected			Total gallons per Location	BDI Plus application (liters)	HRC Application (pounds)	Comments
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected per Interval				
1	10/6/2015	11:10	77-75	190	1.14	0	9	9.00	45.0	--	--	
		11:25	75-73	190	0.98	9	28	19.00		--	--	Pulled early to determine if screen was open.
		11:36	73-71	180	1.06	28	40	12.00		--	--	Pulled early to determine if screen was open or related to back pressure from aquifer. Turned pump down.
		11:50	71-70	90	0.68	40	45	5.00		--	--	Abandoned point due to high pressures. Pulled rods to look at screen, which didn't open resulting in the high pressures. Appears fine sands penetrated the screen causing it to not open. Re-advanced rods with screen, but couldn't initiate flow. Abandoned point.
1A	10/7/2015	8:43	77-76	30	3.38	0	34	34.00	195.0	0.13	--	3rd attempt with expendable point tip.
		8:52	76-75	6	3.92	34	68	34.00		0.13	--	Slowed flow rate down to 3.53 gpm at 54 gallons.
		9:00	75-74	2	3.49	68	102	34.00		0.13	--	
		9:10	74-73	2	3.56	102	136	34.00		0.13	--	
		9:20	73-72	2	3.54	136	155	19.00		0.13	--	
		9:26	72-71	2	3.51	155	174	19.00		0.13	--	
		9:32	71-70	2	3.50	174	195	21.00		0.12	--	240 gallons total with the 45 gallons applied on 10/6/15.
2	10/6/2015	1:23	77-76	170	0.00	0	0	0.00	240.0	--	--	Couldn't initiate flow. Abandoned point and re-advanced rods with expendable point.
		2:28	77-76	74	2.21	0	34	34.00		0.13	--	Second attempt with expendable point tip.
		2:36	76-75	58	2.68	34	68	34.00		0.13	--	
		2:49	75-74	66	2.86	68	102	34.00		0.13	--	
		3:01	74-73	66	2.84	102	136	34.00		0.13	--	
		3:13	73-72	62	2.75	136	170	34.00		0.13	--	
		3:26	72-71	62	2.80	170	204	34.00		0.13	--	Flushed with 12 gallons of water.
3:39	71-70	62	2.76	204	240	36.00	0.12	--	1st attempt screen didn't open initially...bent screen due to subsurface conditions.			
3	10/7/2015	10:32	77-75	12	3.20	0	68	68.00	240.0	0.26	--	Point didn't dropped. Used inner rods to clear point. 2 foot pull to get flow initiated.
		10:50	75-74	12	3.25	68	102	34.00		0.13	--	
		11:03	74-73	6	3.38	102	136	34.00		0.13	--	
		11:13	73-72	6	3.43	136	170	34.00		0.13	--	
		11:23	72-71	4	3.42	170	204	34.00		0.13	--	
		11:36	71-70	4	3.46	204	240	36.00		0.12	--	
4	10/7/2015	1:15	77-76	64	3.25	0	34	34.00	240.0	0.13	--	Pressure dropping as we injection more volume...60 to 18 psi.
		1:25	76-75	4	3.53	34	68	34.00		0.13	--	
		1:34	75-74	0	3.74	68	102	34.00		0.13	--	
		1:43	74-73	0	3.78	102	136	34.00		0.13	--	
		1:52	73-72	0	3.85	136	170	34.00		0.13	--	
		2:02	72-71	0	3.82	170	204	34.00		0.13	--	
		2:10	71-70	0	3.67	204	240	36.00		0.12	--	Flushed with 10 gallons of water.
5	10/7/2015	12:33	77-76	12	3.33	0	34	34.00	240.0	0.13	--	
		12:43	76-75	4	3.54	34	68	34.00		0.13	--	Heave when breaking rods. Had abandoned an re-advance rods.
		2:40	75-74	0	3.64	68	99	31.00		0.13	--	
		2:53	74-73	0	3.74	99	136	37.00		0.13	--	
		3:04	73-72	0	3.74	136	170	34.00		0.13	--	
		3:13	72-71	0	3.78	170	204	34.00		0.13	--	
6	10/7/2015	3:22	71-70	0	3.71	204	240	36.00	240.0	0.12	--	
		4:26	77-76	6	3.74	0	34	34.00		0.13	--	Heave up in rods on first attempt. Had abandoned an re-advanced rods.
		4:33	76-75	6	3.91	34	68	34.00		0.13	--	
		4:41	75-74	4	3.86	68	102	34.00				



NIROP - Fridley, Minnesota
PlumeStop, HRC, & BDI Plus Injection Log
Area 2
Table 2



Injection Point	Date	Time	Injection Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Volume of PlumeStop Injected			Total gallons per Location	BDI Plus application (liters)	HRC Application (pounds)	Comments
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected per Interval				
		4:50	74-73	4	3.86	102	136	34.00		0.13	--	
		4:58	73-72	4	3.82	136	170	34.00		0.13	--	
		5:08	72-71	4	3.80	170	204	34.00		0.13	--	
		5:17	71-70	4	3.84	204	240	36.00		0.12	--	Flushed with 12 gallons of water.



NIROP - Fridley, Minnesota
PlumeStop, HRC, & BDI Plus Injection Log
Area 2
Table 2



Injection Point	Date	Time	Injection Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Volume of PlumeStop Injected			Total gallons per Location	BDI Plus application (liters)	HRC Application (pounds)	Comments
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected per Interval				
7	10/7/2015	5:36	77-76	38	2.71	0	34	34.00	240.0	0.13	--	
		5:48	76-75	4	3.82	34	68	34.00		0.13	--	
		5:57	75-74	4	3.78	68	102	34.00		0.13	--	
		6:06	74-73	4	3.81	102	136	34.00		0.13	--	
		6:15	73-72	4	3.76	136	170	34.00		0.13	--	
		6:25	72-71	6	3.74	170	204	34.00		0.13	--	
		6:34	71-70	4	3.76	204	240	36.00		0.12	--	Flushed with 25 gallons of water.
8	10/8/2015	9:42	77-76	4	3.96	0	34	34.00	240.0	0.13	--	Points 8 & 9 done at the same time.
		9:49	76-75	4	3.80	34	68	34.00		0.13	--	
		9:59	75-74	2	3.36	68	102	34.00		0.13	--	
		10:10	74-73	2	3.45	102	136	34.00		0.13	--	
		19-Oct	73-72	2	3.30	136	174	38.00		0.13	--	
		10:31	72-71	2	3.58	174	204	30.00		0.13	--	
		10:39	71-70	2	3.54	204	240	36.00		0.12	--	
9	10/8/2015	9:57	77-76	32	3.07	0	34	34.00	240.0	0.13	--	
		10:03	76-75	2	3.89	34	68	34.00		0.13	--	
		10:12	75-74	2	3.36	68	102	34.00		0.13	--	
		10:20	74-73	2	3.30	102	134	32.00		0.13	--	
		10:30	73-72	2	3.32	134	170	36.00		0.13	--	
		10:41	72-71	2	3.34	170	208	38.00		0.13	--	
		10:52	71-70	2	3.99	208	240	32.00		0.12	--	Flushed with 25 gallons of water.
10	10/8/2015	2:50	77-76	18	3.34	0	34	34.00	240.0	0.13	--	
		2:59	76-75	4	3.78	34	68	34.00		0.13	--	
		3:08	75-74	6	3.83	68	102	34.00		0.13	--	
		3:17	74-73	6	3.89	102	136	34.00		0.13	--	
		3:27	73-72	8	3.94	136	170	34.00		0.13	--	
		3:33	72-71	6	4.25	170	204	34.00		0.13	--	
		3:41	71-70	6	4.24	204	240	36.00		0.12	--	
HRC-1	10/9/2015	8:30	77-76	--	--	0.00	0.69	0.69	4.84	--	7.50	
			76-75	--	--	0.69	1.38	0.69		--	7.50	
			75-74	--	--	1.38	2.07	0.69		--	7.50	
			74-73	--	--	2.07	2.76	0.69		--	7.50	
			73-72	--	--	2.76	3.46	0.69		--	7.50	
			72-71	--	--	3.46	4.15	0.69		--	7.50	
			71-70	--	--	4.15	4.84	0.69		--	7.50	Flushed with 5 gallons of water.
HRC-2	10/9/2015	9:15	77-76	--	--	0.00	0.69	0.69	4.84	--	7.50	
			76-75	--	--	0.69	1.38	0.69		--	7.50	
			75-74	--	--	1.38	2.07	0.69		--	7.50	
			74-73	--	--	2.07	2.76	0.69		--	7.50	
			73-72	--	--	2.76	3.46	0.69		--	7.50	
			72-71	--	--	3.46	4.15	0.69		--	7.50	
			71-70	--	--	4.15	4.84	0.69		--	7.50	Flushed with 5 gallons of water.
HRC-3	10/9/2015	10:00	77-76	--	--	0.00	0.69	0.69	4.84	--	7.50	
			76-75	--	--	0.69	1.38	0.69		--	7.50	
			75-74	--	--	1.38	2.07	0.69		--	7.50	
			74-73	--	--	2.07	2.76	0.69		--	7.50	
			73-72	--	--	2.76	3.46	0.69		--	7.50	
			72-71	--	--	3.46	4.15	0.69		--	7.50	
			71-70	--	--	4.15	4.84	0.69		--	7.50	Flushed with 5 gallons of water.
			77-76	--	--	0.00	0.69	0.69		--	7.50	
			76-75	--	--	0.69	1.38	0.69		--	7.50	



NIROP - Fridley, Minnesota
PlumeStop, HRC, & BDI Plus Injection Log
Area 2
Table 2



Injection Point	Date	Time	Injection Depth (feet)	Injection Pressure (psi)	Flow Rate (gpm)	Volume of PlumeStop Injected			Total gallons per Location	BDI Plus application (liters)	HRC Application (pounds)	Comments
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected per Interval				
HRC-4	10/9/2015	10:40	75-74	--	--	1.38	2.07	0.69	4.84	--	7.50	
			74-73	--	--	2.07	2.76	0.69		--	7.50	
			73-72	--	--	2.76	3.46	0.69		--	7.50	
			72-71	--	--	3.46	4.15	0.69		--	7.50	
			71-70	--	--	4.15	4.84	0.69		--	7.50	Flushed with 5 gallons of water.

	PlumeStop (Gallons)	BDI+ (Liters)	HRC (pounds)
Totals:	2400.0	9.00	210.0



AECOM - NIROP
 Plumestop Injection Summary Log
 Injection Area Description



Table 1

Injection Point	Date	Time	Injection Depth (feet)	Avg. Injection Pressure (psi)	Avg. Flow Rate (gpm)	Volume of PlumeStop Injected			Total gallons Per Location	Batches Injected Per Location	Pounds of PlumeStop Injected Per Location	Comments
						Beginning Flow Meter (gal)	Ending Flow Meter (gal)	Gallons Injected Per Interval				
IW-1	1/8/2016	13:40	69-76	0.0	10.5	0	1066	1066	1066	1.00	666.95	
IW-2	1/8/2016	10:05	69-76	6.0	10.4	0	1066	1066	1066	1.00	666.95	
IW-3	1/8/2016	11:45	69-76	7.0	10.8	0	1066	1066	1066	1.00	666.95	

**TECHNICAL
MEMORANDUM**

October 21, 2015

To: Chris Boehm Carlson – AECOM, Brian Murray–NAVFAC**From:** Craig Sandefur, Steve Barnes, and Kristen Thoreson–REGENESIS**Cc:** Ryan Moore–REGENESIS**RE: Early Field Observations related to PlumeStop® Liquid Activated Carbon™ Field Test at the Naval Industrial Reserve Ordinance Plan (NIROP), Fridley, MN**

Dear Team,

REGENESIS recently completed an *in-situ* application of PlumeStop® Liquid Activated Carbon™ (PlumeStop), HRC®, and Bio-Dechlor INOCULUM® Plus (BDI Plus) at the NIROP site located in Fridley MN. The application consisted of two (2) separate test locations within the facility and have been identified as Test Area 1 and Test Area 2. The scope of work for this effort is outlined in the AECOM Work-plan dated August 2015. Below are a few key observations that we wanted to share with the team as we move into the post application monitoring program.

Previous assessments of groundwater (GW) in the two (2) test areas indicated elevated GW chlorinated volatile organic compounds (cVOCs) present. As part of the pre-application program REGENESIS and AECOM mobilized to the site and installed two (2) GW monitoring wells in each of the test area locations (total of four (4) newly installed monitoring wells). At that time the AECOM/REGENESIS team assumed that GW concentrations would likely be within the same order of magnitude for each of the test areas. Based on the information provided, it was presumed the total cVOCs concentrations in Test Area 1 would be in the range of 100 mg/L and in the range of 10 mg/L in Test Area 2.

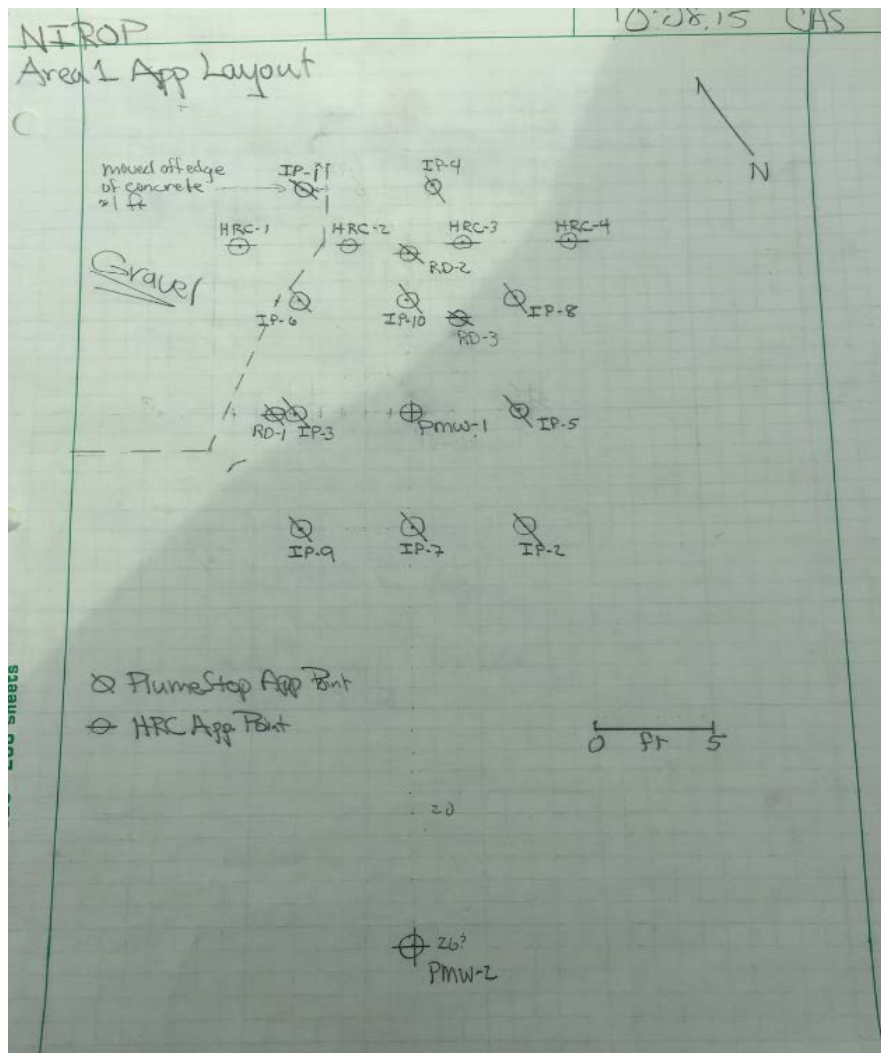
Test Area 1:

This area is considered a source area at the NIROP site and is adjacent to the sites former plating room. In this area no GW elevation change was present between the newly installed monitoring wells. These wells were installed with 5 feet (ft) of screen (61-66 ft below ground surface (bgs)). This section is within the vertical section of elevated cVOCs concentrations reported in previous site wide GW assessment programs. GW analytical results in these wells, collected during the pre-application program (September 15th and 25th, 2015), indicated significantly lower total cVOC concentrations present, approximately 0.4 to 0.5 mg/L.

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In Test Area 1, the application of PlumeStop went without significant difficulties beyond the elevated aquifer pressure present. The injection activities were initiated with greater than typical pressure but stabilized over the course of the application to more typical pressures and flowrates. The injection pressure ranged from 18 to 110 pounds per square inch (psi) with an average injection pressure of 62 psi. The PlumeStop solution flowrates ranged from 1.08 to 5.34 gallons per minute (gpm) with an average of 3.42 gpm. Pressure and flowrates were conversely related throughout the injection application. Due to this, the injection pump was adjusted to maintain a flowrate in the range of 3.50 gpm. Below is a field map of the injection point array.

Field Map of Test Area 1



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Upon completion of the PlumeStop application a bailer was lowered into the well; PlumeStop water was observed upon removal of about 4.0 gallons of pre-application GW from the unscreened section of the well. A picture of PlumeStop in groundwater from PMW-1 is provided below (jar on the left).

Photo of Bailed GW from TTZ in Area 1 and Area 2, Post-application



A soil cores were also collected from within the Target Treatment Zones (TTZ) of both test areas after the injection activities were completed. The soil cores from the test areas were then sent to the REGENESIS lab in San Clemente, CA for a detailed logging. Below is a photograph taken by AECOM that shows the bottom most section of the soil core collected from Test Area 1 with a total depth of 67 ft bgs. It shows the presence of PlumeStop (black soil) within the TTZ saturated soil column at approximately 64-66 ft bgs. The lighter section of soil present at the core base is below the TTZ (left side of picture). The screened interval of the adjacent performance well is 61-66 ft bgs.

Photo of Soil Core from Area 1, Post-application



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Test Area 2:

Test Area 2 is positioned in a downgradient “hot spot” and does not appear to be directly associated to a known source at the site. This area is within approximately 150 ft of the nearest site GW extraction well, AT-12. During the injection applications, the extraction well network was not operating. The two (2) GW monitoring wells were installed with 5 ft of screen (71 to 76 ft bgs) during the pre-application program. This section is within the vertical section of elevated cVOCs reported in the previous site wide GW assessment programs. GW analytical results from these newly installed wells indicate a significantly lower cVOCs concentration than presumed. Total cVOCs GW concentrations in these wells ranged from approximately 0.05 to 0.6 mg/L. Below are photographs of Area 2.

Photos of Area 2 Injection Array and Monitoring Wells



Application of PlumeStop was a bit more complicated in this area. Starting at approximately 40 to 45 ft bgs, a fine grained stratigraphy was encountered that resulted in “heaving” of the soils into the injection screens, which ultimately locked the screens closed. In one instance these tighter soils bent the injection screen tooling, which also locked the screen closed. For either case, the injection screen tooling malfunction resulted in no PlumeStop delivery. After four unsuccessful attempts using the injection screen tooling to reach the TTZ depths and inject PlumeStop, the application team elected to use an expendable tip rod for the PlumeStop injection. This method does not require opening of the tool, it merely uses the elevated pressure generated by the pump to “drop” the expendable tip out the

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end of the rod's tip holder and thus PlumeStop is applied continuously and minimizes sand heave into the rods. This method along with an elevated pressure, >50 psi, allowed the initiation of PlumeStop without the significant sand heave experienced when using the injection retractable screen tools. Although effective in preventing the clogging of injection rods this method has a disadvantage in that it directs the reagent directly downward and not outward (laterally) as does the retractable injection tool.

In this aquifer setting (coarsening downward/fining upward) the pressure of initiation (e.g., "popping" the tip) was higher than typical, however, the application pressures after that initial phase was very low. The injection pressures ranged from 0.0 to 74 psi with an average pressure of 15 psi. The flowrates ranged from 2.21 to 4.25 gpm with an average rate of 3.48 gpm. Pressures typically were in the low to moderate range (12 to 74 psi) from approximately 76 to 77 ft bgs and decreased to a lower range (4.0 to 58 psi) as the injection tooling was pulled upward. Pressure and flowrates were conversely related throughout the injection application. Similar to Test Area 1, the injection pump would be adjusted to maintain a ideal flowrate in the range of 3.50 gpm.

Upon completion of the PlumeStop application a bailer was lowered into well PMW-3. No PlumeStop (black water) was observed from the bailed water. REGENESIS then hand bailed approximately 12 gallons of GW from the well without a significant change in the GW color. PlumeStop water was not observed in PMW-3 during the bailing activities. Below is a picture of the water from PMW-3 (Jar on the right).

Photo of Bailed GW from TTZ in Area 1 and Area 2, Post-application



**TECHNICAL
MEMORANDUM****Working Model**

Based on the post application soil cores it may be that the coarse gravel layer present (approx. 3 ft below the total depth of wells PMW-3 and PMW-4) was contacted by PlumeStop during application. The “expendable tip” method may have emphasized a downward direction rather than lateral application of PlumeStop. At most sites the downward force of injection is more than off-set by much greater horizontal hydraulic conductivities (K_h) in unconsolidated sediments/soil. Most sediment/soils have a lateral K_h that are 10x those of the same soil’s vertical K_h . However, at this site a very high K_h layer of well sorted gravel present near the base of the TTZ interval may have skewed the application dimensions. Given the application method required in this area it may be that the more typical lateral movement of PlumeStop was effectively short-circuited downward by direct contact with the highly transmissive gravel section below the TTZ. Below is a photograph of the contact between the upper medium grained sand and the underlying gravel layer. Wells PMW-3 and PMW-4 were completed approximately 3 ft above the gravel layer and is within the medium-coarse grained sand zone shown on the right side of the photo.

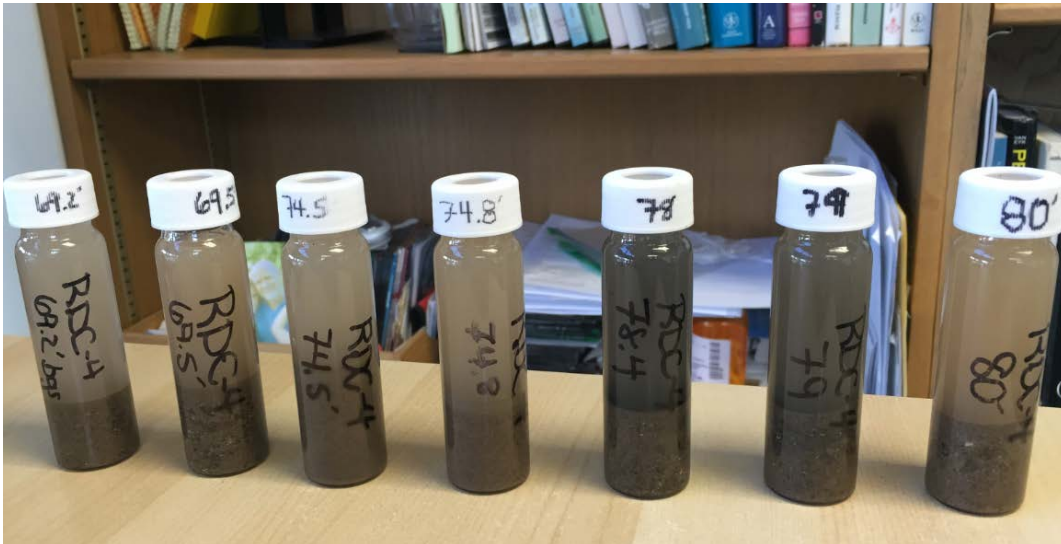
Photo of the contact between the lower Gravel Section and the Upper Sand Section



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As part of the soil logging process Regenesis staff use field settling tubes to assess the relative quantities of fine grained particles (clay and silt) and coarse grained particles in soil samples. This is a technique that is simple in that it requires only addition of soil + water to a unpreserved 40 ml VOA, the VOA is shaken to separate the fines and then set aside to allow settling of the coarse to fine grain soil particles. A relative visual percentage based on volume can be estimated using a ruler/tape measure. This method is beneficial in that it allows better visual observation of more detailed soil texture. These include grain size distribution, sand particle angularity or roundness etc. Finally, the presence of PlumeStop becomes somewhat more discernable (compared to dark colored soil). This is because upon agitation of the VOA pre-stabilized PlumeStop present in the soil matrix is transferred back into the water phase and can be observed separately from the soil matrix. See the settling tube picture below for more detail.

Photo: settling tubes with PlumeStop present in water at 78 to 79 ft bgs (3 ft. below the TTZ)



Based on the delivery method required (expendable tip) and soil core observations, including those from soil settling tubes shown above, it seems likely that the application of PlumeStop in Test Area 2 was delivered below the TTZ. It may be that PlumeStop contacted the coarse gravel layer underlying the TTZ and consequently little of PlumeStop was distributed above this gravel zone and within the actual TTZ (PMW-3 well screened interval). Based on field observations of the available soil from post-application soil cores (limited soil returns from within the TTZ), it appears that a minor amount of PlumeStop *may* be present at the base of the screened interval 71-76 bgs. The strong presence of PlumeStop was noted below 74.8 ft bgs in the soil core samples from 78-79 ft bgs. PlumeStop was not apparent in the soil sample from 80 ft bgs.

**TECHNICAL
MEMORANDUM****Possible PlumeStop CVOC Responses:**Area 1

Based on the presence of Plumestop in the soil column and in GW from the TTZ in this test area, it is likely that a significant and sustained reduction in CVOC GW concentrations will be achieved.

Area 2

PlumeStop was not obviously present in the soil core samples collected within the TTZ nor was it readily identifiable in the GW removed from well PMW-3. Given the possibility that the “as designed” quantity of PlumeStop may not be present in the planned TTZ, we might expect one or more of the following:

- an immediate yet diminished contaminant capture efficiency as evidenced by a lesser initial sorption effect; might be evidenced by a less than the typical robust decline in CVOC concentration, and/or
- a shortened duration of capture (lifespan); this is evidenced by a rebound in contaminant concentration

Next Steps

REGENESIS recommends that we monitor the GW in both Area 1 and 2 per the Work Plan and proceed based on the interim results in each test area. REGENESIS believes that within 2-3 months of the application, some more clear trends will become evident. REGENESIS will continue to provide technical assistance and review of all data sets associated with the upcoming GW monitoring events. REGENESIS will confer directly with AECOM on all data and the appropriate next steps throughout the study.

In order to assess if some PlumeStop may remain in the Area 2 TTZ, GW chemistry changes should be tracked (field parameters and laboratory based) and the field visual observation of GW should be recorded (dark GW coloration). Additionally, Volatile Fatty Acid results will help us track HRC related metabolites (bioremediation).

Finally AECOM has agreed to perform a one time over purge (remove 75 gallons) from well MWP-3 in Area 2 prior to the 1st post-application GW sampling event. This GW sampling event is scheduled for Friday October 23rd, 2015.

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May 9, 2016

To: Chris Boehm Carlson – AECOM, Brian Murray–NAVFAC

From: Craig Sandefur, Ryan Moore, Kristen Thoreson–REGENESIS

RE: Summary Report of a PlumeStop® Liquid Activated Carbon™ Field Test at the Naval Industrial Reserve Ordinance Plant (NIROP), Fridley, MN

Dear Team,

REGENESIS recently completed a Pilot Scale study of a new *in-situ* technology called PlumeStop® Liquid Activated Carbon™ (PlumeStop) at the NIROP site located in Fridley MN. The study consisted of an initial application of PlumeStop, Hydrogen Release Compound (HRC) and Bio-Dechlor Inoculum Plus (BDI) in two (2) test locations within the facility. The two Pilot Test areas are referred to as Test Area 1 and Test Area 2, shown in Figure 1. A second application of PlumeStop only was applied in Area 2 as a follow up to the initial application. The scope of work for the above efforts are outlined in and AECOM Work-Plan dated August 2015, a REGENESIS Reapplication Technical Memo dated November 6, 2016, and an AECOM memo to the Minnesotan Department of Health (MDH) dated December 2, 2015. Below is a summary of activities performed and key observations that we want to share with the team as we conclude the Pilot Test Study.

Previous assessments of groundwater (GW) in the two (2) test areas indicated elevated GW chlorinated volatile organic compounds (CVOCs) present. As part of the pre-application program REGENESIS and AECOM mobilized to the site and installed two (2) GW monitoring wells in each of the test area locations (total of four (4) newly installed monitoring wells). At that time the AECOM/REGENESIS team assumed that GW concentrations would likely be within the same order of magnitude for each of the test areas. Based on the information provided, it was presumed the total cVOCs concentrations in Test Area 1 would be in the range of 100 mg/L and in the range of 10 mg/L in Test Area 2.

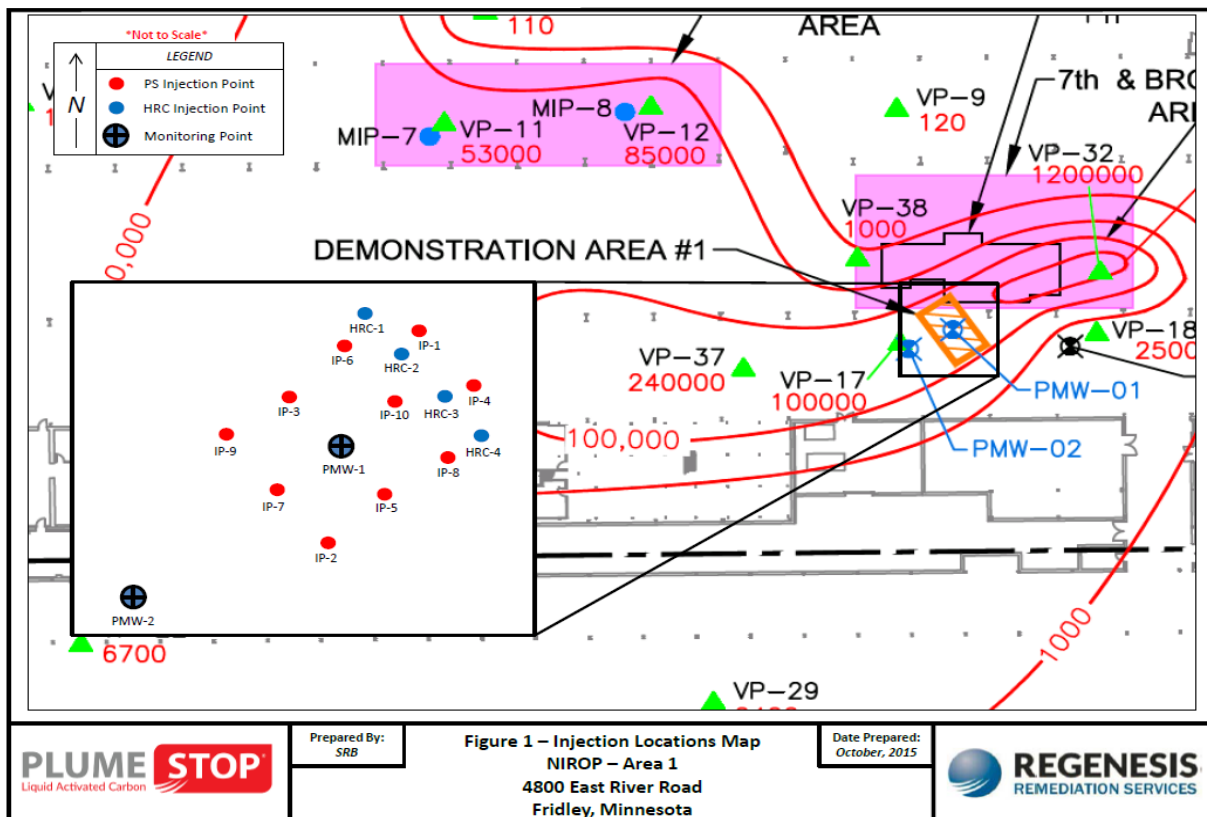
TEST AREA 1:

This area is considered a source area at the NIROP site and is adjacent to the sites former plating room. In this area of the site GW elevation/gradient was zero. That is no change in GW elevation was present between the newly installed monitoring wells installed as part of this study. These wells were installed with 5 feet (ft) of screen extending from 61-66 ft below ground surface (bgs). This screened section of the aquifer is within the same vertical section that contained elevated cVOC concentrations as reported in the previous site wide GW assessment program. Groundwater analytical results in these wells, collected during the pre-application program (September 15th and 25th, 2015), indicated significantly lower total cVOC concentrations were present. The total CVOC concentration present ranged from approximately 0.4 to >1 mg/L.

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Test Area 1 Application Program

PlumeStop and a bioaugmentation culture Bio-Dechlor Inoculum (BDI) were applied via a series of 10 Direct Push Injection (DPI) points using typical DPI methods. In addition, the electron donor Hydrogen Release Compound (HRC) was applied via 4 separate DPI points. In Test Area 1 REGENESIS used a 3 foot long retractable screen injection tool to apply the remedial reagents across a 7 foot thick target treatment zone (TTZ) extending from 60-67 feet BGS. The application delivered 4,400 pounds of PlumeStop, 9 Liters of BDI and 210 pounds of HRC. See the attached map (below) for application point locations and orientation.

Application of remedial reagents in Test Area 1 was without significant difficulties beyond overcoming the unanticipated high (native) aquifer pressure present. Although injection activities were initiated with higher than typical pressures stabilized application pressures were generally typical for the flowrates used. Injection pressures ranged from 18 to 110 pounds per square inch (psi) with an average injection pressure of 62 psi. PlumeStop application rate ranged from 1.08 to 5.34 gallons per minute (gpm) and averaged about 3.42 gpm. Pressure and flowrates were conversely related throughout the injection application. As a result, the injection pumping rate was adjusted to maintain an application rate in the range of 3.50 gpm. Below is a map of Pilot Test Injection array.

Figure 1: Field Map of Test Area 1


**TECHNICAL
MEMORANDUM****Photo 1: Test Area 1 Application Array**

Upon completion of the PlumeStop application a bailer was lowered into PMW-1; PlumeStop water was observed upon removal of about 4.0 gallons of GW from the screened section of the well. A picture of PlumeStop in groundwater from PMW-1 is provided in Photo 2 below.

Photo 2: Bailed GW from TTZ in Area 1, Post-application

A soil core was collected from within the TTZ of both test areas after the injection activities were completed. The soil cores from the test areas were then sent to the REGENESIS lab in San Clemente, CA

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for a detailed logging. Below is a photograph taken by AECOM that shows the bottom most section of the soil core collected from Test Area 1 with a total depth of 67 ft bgs. This photo shows the presence of PlumeStop (black soil) within the TTZ saturated soil column at approximately 64-66 ft bgs. The lighter section of soil present at the core base is below the TTZ (left side of picture). The screened interval of the adjacent performance well is 61-66 ft bgs.

Photo 3: Soil Core from Area 1, Post-application

***Test Area 1 Application Results***

Application of PlumeStop in this section of the aquifer resulted in an almost immediate and complete removal of CVOC from GW in Well PMW-1. This well is positioned within the PlumeStop application area. The baseline concentration 1,026 ug/L CVOC were removed to Below Detection Limits (BDL) within 2 weeks of application and remained BDL for the duration of the Pilot Test Program (6 months). Results of PMW-2 GW analysis indicate a gradual increase over the past 6 months from a baseline total CVOC concentration of approximately 550 ug/L to approximately 825 ug/L. The majority of the increases in CVOC species in PMW-2 were in TCE and cDCE. A table of analytical results is provided as an attachment.

Results in well PMW-2 do not appear to be consistent with a well that is positioned downgradient of the PlumeStop application. Based on depth to groundwater data, and the previous GW potentiometric surface maps it appears that this well pair (PMW-1/PMW-2) may be located in a section of the aquifer that has a flat or zero gradient. This may explain the unanticipated disconnect between results in PMW-1 and PMW-2. Without a gradient to advectively move PlumeStop the dose response is essentially limited to the area of application. This notion is supported by the lack of typical TEA shifts associated with the presence and advection of the HRC electron donor present in Area 1.

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Area 1 Results Discussion

Infield well PMW-1 present within Area 1 exhibited an immediate and sustained decrease of CVOC's in GW. In this well total CVOC's were reduced from baseline concentrations of approximately 450 ug/L to below detection limits for a period of 6 months (end point of the pilot test).

The downgradient control Well PMW-2 (approximately 30 feet downgradient of the PlumeStop injection area) exhibited an overall increase over the same time period. Given the flat GW gradient in this section of the Plume and the short time frame wells PMW-01 and PMW-02 were present prior to PlumeStop application it is REGENESIS opinion that GW conditions in this area were likely stabilizing and had not reached a steady state concentration in this area prior to application of PlumeStop. It is likely that given the GW conditions and the proximity of PMW-1 to the former source area that total CVOC's would have likely increased in this well to near or above PMW-2 over the same timeframe.

Essentially we think that Well PMW-2 is control well that provides representative CVOC levels for this section of the aquifer.

Test Area 1 Conclusion

Based on the PlumeStop dose response as well as performance over the course of this study, REGENESIS recommends a full scale PlumeStop program in this section of the site.

TEST AREA 2:

This area is positioned within a downgradient "hot spot" that does not appear to be directly associated with a known source. This area is positioned within 150 ft of GW extraction well, AT-12. This well is part of a network of GW extraction wells that have been used to control the sites CVOC GW plume since the 1980's. This network has extracted over a billion gallons of water over the course of the last 30 years. During the PlumeStop application, the extraction well network was shut down for a few days.

Test Area 2 Application Program

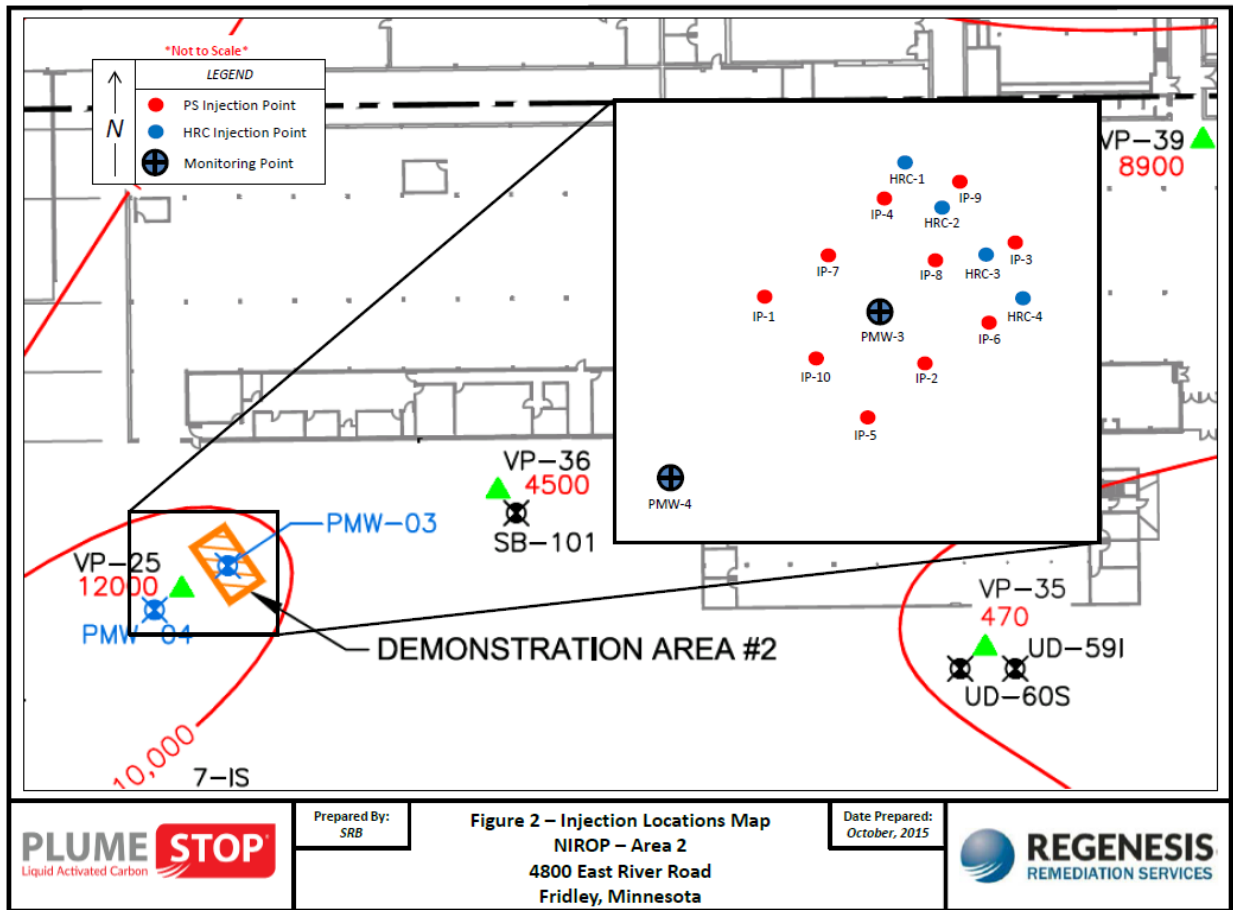
PlumeStop and BDI were applied via a series of 10 DPI points using typical methods. In addition, the electron donor HRC was applied via 4 separate DPI points. In Test Area 2 REGENESIS attempted to use a 3 foot long retractable screen injection tool to apply the remedial reagents across a 7 foot thick TTZ extending from 70-77 feet BGS. The application delivered 2,000 pounds of PlumeStop, 9 Liters of BDI and 210 pounds of HRC. See the map below for application point locations and orientation.

Prior to the PlumeStop application, two (2) Pilot Test GW monitoring wells (PMW-3 and PMW-4) were installed within the test area. These wells were installed with a 5 ft of screen that extend from 71 to 76 ft bgs. The screened intervals of these wells are within the vertical section of elevated cVOC reported in the previous site wide GW assessment program. GW analytical results from these newly installed wells indicate a significantly lower cVOC concentration than was previously presumed. Total cVOC GW

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concentrations in these wells ranged from approximately 0.05 to 0.6 mg/L. Below is a map of the PlumeStop Pilot Test Area.

Figure 2: Map of Test Area 2



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MEMORANDUM****Photo 4: Area 2 Injection Array and Monitoring Wells**

Application of PlumeStop in Area 2 was more challenging than in Area 1. At approximately 40 to 45 ft bgs, a fine grained soil horizon is present that resulted in “heaving” soil into the injection tool screen. This influx of fine sand into the tool screen cause the tool to become “locked” in the closed position. Further, advancing the injection tool through the soil present in this section of the aquifer resulted in a bent injection tool. The bent tool resulted in the screen section of the tool to remain (locked) in the closed position. In both cases, the injection tool malfunction resulted in no PlumeStop being delivered to the TTZ. After four unsuccessful attempts to reach the TTZ using the screened injection tool the application team elected to switch to an expendable point rod set. This method does not require opening a tool. This method uses the pressure generated by the pump to “expel or drop” the expendable point/tip from a tip holder positioned at the end of the rod set. This allows PlumeStop to be applied continuously and so minimizes the sand heave into the rode. This method along with an elevated application pressure (>50 psi) allowed delivery of PlumeStop without problems associated with sand heave experienced during the previous attempts at application of PlumeStop using the retractable screen injection tool. It should be noted that although this method is effective in preventing the clogging of injection rods this method has a disadvantage in that it directs the PlumeStop directly downward rather than outward (laterally) from the tool. This lateral application of PlumeStop is one of the main benefits of using a retractable screen injection tool.

In this aquifer setting (coarsening downward/fining upward) the initiation pressure (e.g., “dropping” the tip) was higher than typical, however, application pressures upon initiation were low. Injection

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pressures in this section of the aquifer ranged from 0.0 to 74 psi with an average pressure of 15 psi. The application rates ranged from 2.21 to 4.25 gpm with an average rate of 3.48 gpm. Overall application pressures were low to moderate range. In the deep section of the aquifer application pressures ranged from 12 to 74 psi at 76 to 77 ft bgs and decreased into the range of 4.0 to 58 psi as the injection interval was raised (shallower zones). Pressure and flowrate were conversely related throughout the injection application. Similar to Test Area 1, the injection pump was adjusted to maintain an optimal flowrate of approximately 3.50 gpm.

Upon completion of the PlumeStop application a bailer was lowered into well PMW-3. No PlumeStop (black water) was observed from the bailed water. REGENESIS then hand bailed approximately 12 gallons of GW from the well without a significant change in the GW color. PlumeStop water was not observed in PMW-3 during the bailing activities. Below is a picture of the water from PMW-3.

Photo 5: Bailed GW from TTZ in Area 2, Post-application

***Test Area 2 Application Results***

Application of PlumeStop in this section of the aquifer resulted in an almost immediate removal of a significant 88% of the total CVOC's from GW in the infield Well PMW-3. Two weeks after application CVOC concentrations in PMW-3 were reduced from 581 to 72 ug/L. Over the next 2-3 months CVOC levels stabilized between 120-130 ug/L. A reapplication program was proposed and implemented in this area. See the discussion below for details.

Results in PMW-4 did not appear to be consistent with a well that is positioned downgradient of the PlumeStop application area. Baseline concentrations in PMW-4 (56 ug/L) are 1 OOM lower than baseline concentrations of the upgradient well PMW-3. Results of CVOC analysis from well PMW-4 indicate an

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initial increase from baseline levels to concentrations ranging from 85 to 110 ug/L. Results in this well have been fairly consistent since application of PlumeStop. See the attached table for details.

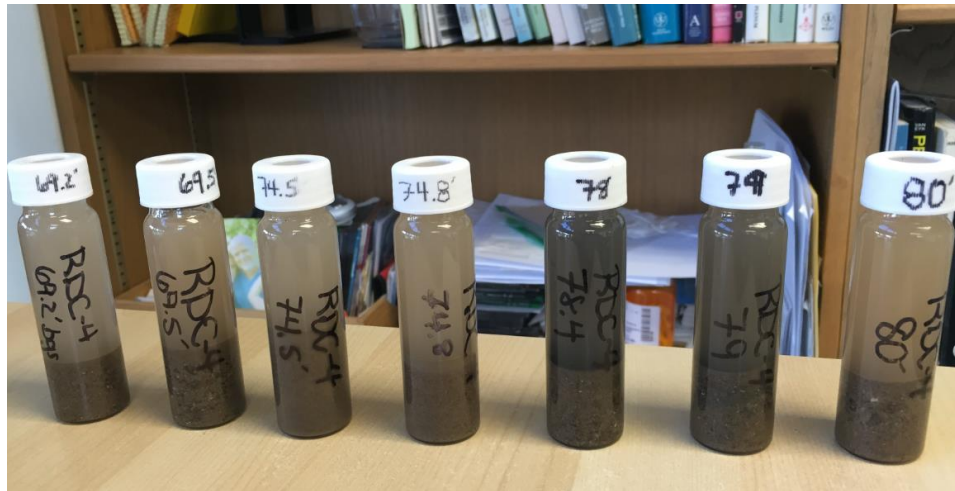
Test Area 2 Results Discussion

Based on Area 2 soil cores, it may be that the coarse gravel layer present (approx. 3 ft below the total depth of wells PMW-3 and PMW-4) was contacted by PlumeStop during application. The “expendable tip” method may have emphasized a downward direction rather than lateral application of PlumeStop. At most sites the downward force of injection is more than off-set by much greater horizontal hydraulic conductivities (K_h) in unconsolidated sediments/soil. Most sediment/soils have a lateral K_h that are 10x those of the same soil’s vertical K_h . However, at this site a very high K_h layer of well sorted gravel present near the base of the TTZ interval may have skewed the application dimensions. Given the application method required in this area it may be that the more typical lateral movement of PlumeStop was effectively short-circuited downward by direct contact with the highly transmissive gravel section below the TTZ. Below is a photograph of the contact between the upper medium grained sand and the underlying gravel layer. Wells PMW-3 and PMW-4 were completed approximately 3 ft above the gravel layer and is within the medium-coarse grained sand zone shown on the right side of the photo.

Photo 6: Contact between the Lower Gravel and the Upper Sand (Test Area 2)



As part of the soil logging process REGENESIS staff use field settling tubes to assess the relative quantities of fine grained particles (clay and silt) and coarse grained particles in soil samples. Using this technique a relative visual percentage of fine grained vs coarse grained soil can be estimated. This method is beneficial in that it allows better visual observation of soil texture. The presence of PlumeStop becomes somewhat more discernable (compared to dark colored soil). This is because upon agitation of the VOA pre-stabilized PlumeStop present in the soil matrix is transferred back into the water phase and can be observed separately from the soil matrix. See the settling tube picture below for more detail.

**TECHNICAL
MEMORANDUM****Photo 7: Settling tubes at 78 to 79 ft bgs from Test Area 2 (3 ft. below the TTZ)**

Based on the delivery method required (expendable tip) and soil core observations, including those from soil settling tubes shown above, it seems likely that at least some of the applied PlumeStop in Test Area 2 was delivered below the TTZ. It may be that PlumeStop contacted the coarse gravel layer underlying the TTZ and consequently little of PlumeStop was distributed above this gravel zone and within the actual TTZ (PMW-3 well screened interval). Based on field observations of the available soil from post-application soil cores (limited soil returns from within the TTZ), it appears that a minor amount of PlumeStop *may* be present at the base of the screened interval 71-76 bgs. The strong presence of PlumeStop was noted below 74.8 ft bgs in the soil core samples from 78-79 ft bgs. PlumeStop was not apparent in the soil sample from 80 ft bgs.

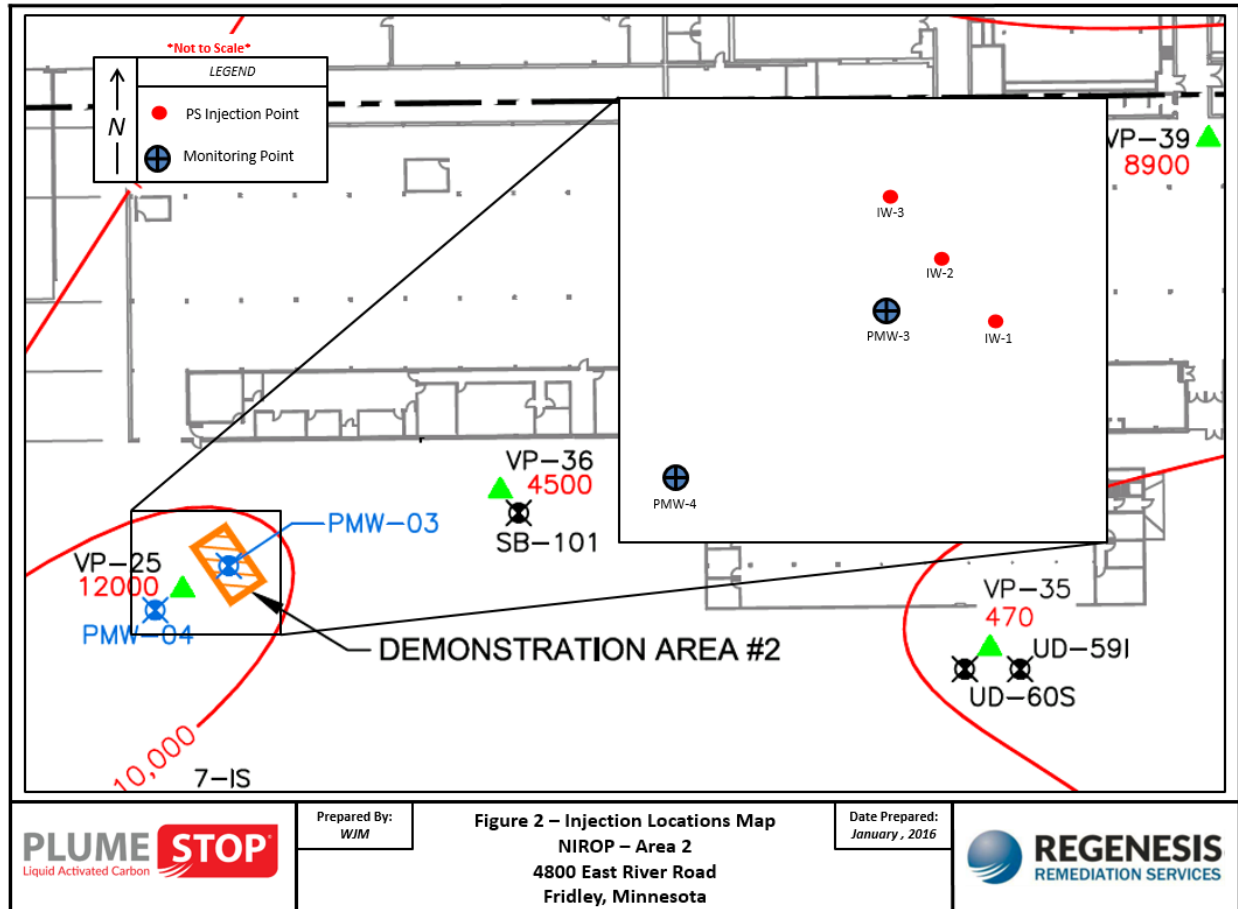
At 3 months post application REGENESIS elected to reapply PlumeStop via a set of newly installed dedicated injection wells. A discussion of this follows.

Test Area 2 Reapplication

Upon electing to reapply PlumeStop in Area 2, REGENESIS designed another round of PlumeStop application using injection wells rather than direct push methods. The thinking was to install the injection wells without contacting the gravel layer thought to be present below 77 feet BGS. In December 2015 REGENESIS + AECOM staff installed 3 injection wells with 5 feet of stainless steel screen (71-76 ft bgs) using sonic drilling techniques. These 3 injection wells were oriented on a line oriented perpendicular to GW flow direction at a distance of approximately 13.5 feet upgradient of PMW-3. The wells were installed at a center spacing of 15 feet. Upon wells installation each well was developed in preparation for PlumeStop application. In January 2016 REGENESIS + AECOM + REGENESIS Remediation Services remobilized to the site and applied 2,000 pounds of PlumeStop only.

The application of PlumeStop in this area via injection wells was without issues. The injection of PlumeStop was performed at an average pressure of 10.8 psi at a rate of 10.5 gpm.

Figure 3: Map of Injection Well Positioning in Test Area 2



Test Area 2 Reapplication Results Discussion

Reapplication of PlumeStop in this section of the aquifer appears to have had no discernable dose response effect in either of the Pilot Test controls wells.

Total CVOC's in PMW-3 have remained at the concentrations that are the same or greater through the final 3 months of the Pilot Test Program. See Table 2 for details of CVOC results over time.

CVOC levels in PMW-4 did not appear to exhibit a dose response. CVOC concentrations remained relatively flat to modestly increase. See Table 2 (separate attachment) for details on CVOC concentration changes in these wells.

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Test Area 2 Initial Application

Post Application Assessment of the Test Area indicates that PlumeStop was not obviously present in the soil core samples collected within the TTZ except for the base of the screen interval and below the TTZ. Further, PlumeStop was not readily identifiable in the GW removed from well PMW-3.

TECHNICAL NOTE: collection of soil core using typical methods in Test Area 2 was not generally successful due to the aquifer soil and GW conditions present in this section of the aquifer. Soil recovery rates were routinely less than 50%. During installation of the 3 injection wells, soil core recovery rates with “sand catcher” subassemblies were unsuccessful in the recovery of soil core.

Test Area 2 Reapplication

Upon re-application of PlumeStop via the 3 injection well array PlumeStop was present in GW from that application.

Given the presence of PlumeStop in Well PMW-3 and the presence of PlumeStop in soil collected from the TTZ it is unclear why the dose response in PMW-3 was not more robust.

- The most likely reason for the lack of CVOC removal from GW is that the PlumeStop applied was rapidly swept from the application field of the existing extraction system present at the property boundary. The closest extraction wells AT-11 and AT-12 are within 150 feet of the PlumeStop work area.
- Based on communication with AECOM, REGENESIS understands that the GW extraction system was restarted within 3 days after installation of PlumeStop. Given the high Kh present in this section of the aquifer REGENESIS believes the majority of the PlumeStop applied in this section of the aquifer as a stable colloid was swept into the extraction system before it time to destabilize and deposit onto the soil matrix. The on-going extraction system is accelerating GW flow in this area reducing the expected number of collisions between CVOC and PlumeStop as well as accelerating the flux rate of CVOC's in this section.

Given the possibility that the “as designed” quantity of PlumeStop may not be present in the Area 2 TTZ, we might expect one or more of the following:

- an immediate yet diminished contaminant capture efficiency as evidence by a lesser initial sorption effect; might be evidenced by a less than the typical robust decline in CVOC concentration, and/or
- a shortened duration of capture (lifespan); this is evidence by a rebound in contaminant concentration

Based on the data sets for Area 2 we believe the above relatively predicted outcome is very likely what occurred in this section of the aquifer.

TECHNICAL MEMORANDUM

Test Area 2 Conclusion

PlumeStop achieved a cVOC reduction of between 70-80% with an operating P&T system in place.

It is reasonable to assume that PlumeStop performance results were affected by the operating P&T system. REGENESIS believes upon shut down the P&T system that native GW velocity will be much slower. The slower GW velocity will result in a longer residence time of CVOC within the PlumeStop reactive zone. This will result in more complete sorption and ultimately a higher CVOC removal rates. REGENESIS believes that under native GW gradient and flow conditions that Test Area 2 will be conducive to success with PlumeStop at full scale given PlumeStop's reasonably good performance under the current GW flow and velocity conditions.

Conceptual Full Scale Project Approach

Given the positive dose response in both Test Areas of the site the conceptual approach for PlumeStop in full-scale is as follows.

PlumeStop would be implemented as a series of reactive zones positioned perpendicular to GW flow in strategically selected areas along the CVOC plumes long axis. Upon implementation the systematic removal of CVOC's along the plume center line will result in a dramatic reductions in CVOC mass flux along the DG property boundary. The lowered CVOC present will require a less robust system to manage the mass flux. REGENESIS proposes using an iterative design program combined with a phased implementation approach that provides the Navy+AECOM+REGENESIS Remediation Team with maximum flexibility in managing the design and application based on system performance. This will allow the NIROP Remediation Team to optimize the program so minimizing the chance of over- or under- design. Using this approach REGENESIS is very confident in PlumeStop's ability to achieve high efficiency removal of CVOC's to NIROP cleanup requirements under a full scale scenario.

Summary Results - Area 1
PlumeStop Demonstration Study Report
NIROP Fridley, Minnesota

Well ID			PMW-01						PMW-02							
Sample ID			PWM-01	PMW-01	PMW-01	PMW-01	PMW-01	PMW-01	PMW-01	PWM-02	PMW-02	PMW-02	PMW-02	PMW-02	PMW-02	PMW-02
Date Sampled			9/16/2015	9/25/2015	10/26/2015	11/6/2015	12/4/2015	1/6/2015	3/31/2016	9/16/2015	9/25/2015	10/26/2015	11/6/2015	12/4/2015	1/6/2016	3/31/2016
Days				0							0					
Monitoring Event			Baseline	Baseline	2 weeks	1 month	2 month	3 months	6 months	Baseline	Baseline	2 weeks	1 month	2 month	3 months	6 months
Field Parameters	Units	PQL														
Temperature	°C		17.36	17.98	17.26	16	15.21	14.02	15.07	16.62	17.97	16.87	16.02	14.56	14.65	14.75
pH			7.24	7.17	8.16	7.67	7.29	6.95	7.08	7.11	7.15	7.17	7.11	7.15	7.22	7.26
Conductivity	uS/cm		1402	1571	1814	2051	1649	1603	1383	1384	1497	1429	1698	1425	1415	1353
D.O.	mg/L		5.78	0.69	0.71	0.15	0.52	1.13	0.37	0.59	0.92	1.65	0.81	1.02	1.29	0.25
ORP	mV		52.2	-47.9	-159.7	-189.6	-185.4	-150.6	-135.7	-117.2	-25.9	-80.9	-110.2	-105.5	-106.3	-105.8
Turbidity	NTU		---	---	-73	-73	no read	-49	8.99	---	---	1.75	2.83	2.44		
Depth to Water (DTW)	ft		15.78	15.66	16.27	16.23	15.89	16.21	16.35	15.84	15.72	16.3	16.32	15.95	16.29	16.43
Total well Depth (TD)	ft		65.15	65.11	65.29	65.27	66.39	66.35	65.26	65.81	65.82	65.78	65.79	66.62	66.95	65.79
General Chemistry																
Nitrate+Nitrite	mg/L		< 0.020	---	< 0.020	2.6	< 0.20	< 0.020	< 0.020	< 0.020	---	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Chemical Oxygen Demand	mg/L		< 50.0	---	1240	995	342	278	< 50	< 50.0	---	< 50	< 50	< 50	< 50	< 50
Total Organic Carbon	mg/L		2.8	---	35.1	< 100	36.7	91.9	14.5	3.1	---	2.3	2.5	2.5	2.4	5.3
Sulfide	mg/L		< 0.10	---	< 50	< 20	< 5.0		0.25	< 0.10	---	< 0.10	< 0.10	< 0.10		0.13
Sulfate	mg/L		157	---	172	172	117	104	102	108	---	156	149	147	157	128
Alkalinity, total as CaCO3	mg/L		373	---	603	519	611	605	519	305	---	409	409	413	421	499
Alkalinity, bicarbonate CaCO3	mg/L		383	---	595	521	575	605	519	318	---	427	426	425	421	499
Carbon Dioxide, free	mg/L		34.8	---		< 25	< 100	103	100	35.3	---		34.8	51.9	54	60.7
Volatile Fatty Acids																
Acetic acid	mg/L		5.0 U	---	< 1.0	< 1.0	30	120	17	1.7 J	---	< 1.0	< 1.0	< 0.10	< 0.10	2.7
Propionic Acid	mg/L		5.0 U	---	1.5	< 1.0	15	86	10	5.0 U	---	< 1.0	< 1.0	< 0.10	< 0.10	2.2
Pyruvic Acid	mg/L		5.0 U	---	< 1.0	< 1.0	< 0.10	< 1.0	0.066	5.0 U	---	< 1.0	< 1.0	< 0.10	< 0.10	< 0.10
Butyric Acid	mg/L		5.0 U	---	< 1.0	< 1.0	< 0.10	1.8	1.4	5.0 U	---	< 1.0	< 1.0	< 0.10	< 0.10	< 0.10
Lactic Acid	mg/L		10 U	---	< 2.0	< 2.0	< 2.0	< 2.0	0.1	10 U	---	< 2.0	< 2.0	< 0.20	< 0.20	0.043
Formic Acid			n/m	---	< 1.0	< 1.0	< 0.10	< 1.0	0.044	n/m	---	< 1.0	< 1.0	< 0.10	< 0.10	< 0.10
i-Pentanoic Acid			n/m	---	< 1.0	< 1.0	< 0.10	< 1.0	0.054	n/m	---	< 1.0	< 1.0	< 0.10	< 0.10	< 0.10
Pentanoic Acid			n/m	---	< 1.0	< 1.0	< 0.10	< 1.0	< 0.10	n/m	---	< 1.0	< 1.0	< 0.10	< 0.10	< 0.10
i-Hexanoic Acid			n/m	---	< 2.0	< 2.0	< 0.20	< 1.0	< 0.20	n/m	---	< 2.0	< 2.0	< 0.20	< 0.20	< 0.20
Hexanoic Acid			n/m	---	< 2.0	< 2.0	< 0.20	< 1.0	< 0.20	n/m	---	< 2.0	< 2.0	< 0.20	< 0.20	< 0.20
Dissolved Gases																
Ethane	ug/L		< 10.0	---	< 10	< 10	< 10	< 10	< 10	< 10.0	---	< 10	< 10	< 10	< 10	< 10
Ethylene	ug/L		< 10.0	---	< 10	< 10	< 10	< 10	< 10	< 10.0	---	< 10	< 10	< 10	< 10	< 10
Methane (TCD)	ug/L		< 10.0	---	< 10	< 10	< 10	31.7	1710	< 10.0	---	14.4	16	13.2	13	18.6
Total Metals																
Iron	ug/L		10200	---	21400	10500	13300	17600	12100	10800	---	3430	3860	7070	8910	9170
Dissolved Metals																
Iron	ug/L		135	---	2580	833	2190	11600	7240	1620	---	2600	3420	5480	6320	6320
8260 VOCs																
1,1,1-Trichloroethane	ug/L		< 1.0	< 1.0	< 10.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10.0	< 10	< 1.0	< 1.0	< 2.0
1,1 - Dichloroethane	ug/L		7.1	17.3	< 10.0	< 1.0	< 1.0	< 1.0	< 1.0	27.2	31.7	46.5	34.3	50.5	37.8	35.2
1,1-Dichloroethene	ug/L		2.3	10.1	< 10.0	< 1.0	< 1.0	< 1.0	< 1.0	16.9	21.6	32.1	20.5	30.7	22.2	23.6
Chloroethane	ug/L		< 1.0	< 1.0	< 10.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10.0	< 10	< 1.0	< 1.0	< 2.0
cis-1,2- Dichloroethene	ug/L		141	229	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	192	224	248	264	257	282	361
trans-1,2-dichloroethene	ug/L		154	438	< 10.0	< 1.0	< 1.0	< 1.0	< 1.0	230	276	303	318	284	320	309
Ethylbenzene	ug/L		< 1.0	< 1.0	< 10.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10.0	< 10	< 1.0	< 1.0	< 2.0
Tetrachloroethene	ug/L		< 1.0	< 1.0	< 10.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10.0	< 10	< 1.0	< 1.0	< 2.0
Trichloroethene	ug/L		156	332	< 4.0	< 1.0	< 1.0	< 1.0	< 0.40	35.4	30.2	39.7	36.6	54.4	51.2	93.8
Toluene			< 1.0	< 1.0	< 10.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10.0	< 10	< 1.0	< 1.0	< 2.0
Total xylene			< 1.0	< 1.0	< 30.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 30.0	< 30	< 30	< 1.0	< 6.0
Vinyl chloride	ug/L		0.66	< 5.0	< 4.0	< 0.40	< 0.40	< 0.40	< 1.0	2.7	3.6	4.5	4.8	4.1	< 0.80	3.7
Total VOCs	ug/L		461.06	1026.4	BDL	BDL	BDL	BDL	BDL	504.2	587.1	673.8	678.2	680.7	713.2	826.3
% VOC Removed			---	---	99.9+%	99.9+%	99.9+%	99.9+%	99.9+%	99.9%	---	-15%	-16%	-16%	-21%	-41%

Summary Results - Area 2
 PlumeStop Demonstration Study Report
 NIROP Fridley, Minnesota

Well ID	Sample ID	PMW-03									PMW-04								
		PMW-03	PMW-03	PMW-03	PMW-03	PMW-03	PMW-03	PMW-03	PMW-03	PMW-03	PMW-04	PMW-04	PMW-04	PMW-04	PMW-04	PMW-04	PMW-04	PMW-04	
Date Sampled		9/15/2015	10/26/2015	11/6/2015	12/4/2015	1/6/2016	1/25/2016	2/8/2016	3/31/2016	9/15/2015	10/26/2015	11/6/2015	12/4/2015	1/6/2016	1/25/2016	2/8/2016	3/31/2016		
Monitoring Event		Baseline	2 weeks	1 month	2 month	3 months	2 weeks post 2nd injection	1 month post 2nd injection	2 months post 2nd	Baseline	2 weeks	1 month	2 month	3 months	2 weeks post 2nd injection	1 month post 2nd injection	2 months post 2nd inj		
Field Parameters	Units	PQL																	
Temperature	°C		16.45	15.9	15.55	12.65	13.4	13.51	10.88	7.26	16.22	16.28	15.52	12.33	13	13.71	12.35	14.38	
pH			7.05	7.27	7.07	7.14	7.27	7.25	7.16	7.27	7.12	7.19	7	7.06	7.23	7.22	7.11	7.28	
Conductivity	uS/cm		1062	1029	1410	1152	1099	1017	1058	1103	828	898	1137	1164	889	785	788	781	
D.O.	mg/L		0.59	3.1	0.82	1.29	2.99	3.95	1.83	0.31	0.6	1.09	0.9	1.43	2.17	0.85	1.01	1.17	
ORP	mV		-92	-90.6	104.3	-117.6	-98.5	-110.4	-78.4	-100.5	-173.9	-50.2	-91.2	-100.3	-62.6	-57.7	-69	-60	
Turbidity	NTU		---	11.4	13.5	3.71	6.73	---	9.29	3.05	---	7.86	8.8	5.88	-57	---	3.53	4.93	
Depth to Water (DTW)	ft		25.02	31.51	28.7	30.12	31.18	30.29	31.08	29.57	24.61	31.38	28.27	29.78	30.85	29.93	30.72	29.2	
Total well Depth (TD)	ft		75.09	75.06	75.03	76.43	75.89	75.03	75.94	75.04	74.73	74.72	74.7	74.69	75.75	74.67	76.03	74.66	
General Chemistry																			
Nitrate+Nitrite	mg/L		< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	0.46	< 0.20	< 0.020	< 0.020	
Chemical Oxygen Demand	mg/L		< 50.0	< 50	< 50	< 50	< 50	< 50	< 50.0	< 50	< 50.0	< 50	< 50	< 50	< 50	< 50	50	< 50	
Total Organic Carbon	mg/L		2.6	2.5	2.6	3	2.8	3.1	2.8	3.1	2.2	2.3	2.6	2.9	3.2	3.2	3.3	3.6	
Sulfide	mg/L		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Sulfate	mg/L		98.2	152	121	136	130	141	150	151	85.4	118	115	97.1	101	80.5	84.2	90.5	
Alkalinity, total as CaCO3	mg/L		309	285	357	364	328	341	343	356	261	266	275	268	267	251	241	231	
Alkalinity, bicarbonate CaCO3	mg/L		315	300	369	370	328	341	343	356	264	274	281	273	267	251	241	231	
Carbon Dioxide, free	mg/L		36.7	36.1	28	48	35.9	40.6	55.8	41.3	31.6	32.6	24.5	36	35.9	32.4	30.6	22.7	
Volatile Fatty Acids																			
Acetic acid	mg/L		4.6 J	< 1.0	< 1.0	< 0.10	< 0.10	< 0.10	0.016	0.035	1.1 J	< 1.0	< 1.0	< 0.10	0.14	< 0.10	0.036	0.049	
Propionic Acid	mg/L		5.50 U	< 1.0	< 1.0	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	5.50 U	< 1.0	< 1.0	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Pyruvic Acid	mg/L		5.50 U	< 1.0	< 1.0	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	5.50 U	< 1.0	< 1.0	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Butyric Acid	mg/L		5.50 U	< 1.0	< 1.0	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	5.50 U	< 1.0	< 1.0	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Lactic Acid	mg/L		10 U	< 2.0	< 2.0	< 0.20	< 0.20	< 0.20	< 0.10	< 0.20	10 U	< 2.0	< 2.0	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	
Formic Acid			n/m	< 1.0	< 1.0	< 0.10	< 0.10	< 0.10	0.014	0.028	n/m	< 1.0	< 1.0	< 0.10	< 0.10	< 0.10	0.016	0.016	
i-Pentanoic Acid			n/m	< 1.0	< 1.0	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	n/m	< 1.0	< 1.0	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Pentanoic Acid			n/m	< 1.0	< 1.0	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	n/m	< 1.0	< 1.0	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
i-Hexanoic Acid			n/m	< 2.0	< 2.0	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	n/m	< 2.0	< 2.0	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	
Hexanoic Acid			n/m	< 2.0	< 2.0	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	n/m	< 2.0	< 2.0	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	
Dissolved Gases																			
Ethane	ug/L		< 10.0	< 10	< 10	< 10	< 10	< 10	< 10.0	< 10	< 10.0	< 10.0	< 10.0	< 10	< 10	< 10	< 10.0	< 10	
Ethylene	ug/L		< 10.0	< 10	< 10	< 10	< 10	< 10	< 10.0	< 10	< 10.0	< 10.0	< 10.0	< 10	< 10	< 10	< 10.0	< 10	
Methane (TCD)	ug/L		72.4	26.7	51.3	36.9	24.6	23.1	37	27.3	20.6	17.7	21	< 10	< 10	< 10	< 10.0	< 10	
Total Metals																			
Iron	ug/L		5250	10500	7270	8360	10800	10700	8300	8680	5020	3880	4970	8940	5920	4860	3980	6310	
Dissolved Metals																			
Iron	ug/L		1370	4540	5180	7260	7410	5880	6350	7600	1090	2580	2580	3370	3330	3420	3070	3350	
8260 VOCs																			
1,1,1-Trichloroethane	ug/L		< 1.0	< 10.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,1 - Dichloroethane	ug/L		< 1.0	< 10.0	1.4	3.1	2.6	2.8	3.7	2.7	< 1.0	< 1.0	< 1.0	1.4	< 1.0	1.1	1.2	< 1.0	
1,1-Dichloroethene	ug/L		< 1.0	< 10.0	< 1.0	< 1.0	< 1.0	< 1.0	1.5	1.6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.2	
Chloroethane	ug/L		< 1.0	< 10.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
cis-1,2- Dichloroethene	ug/L		20.5	15.6	19.4	34.5	37.7	42.3	57.6	53.6	11	19.9	18.2	23.2	16.4	19.3	23.8	23.8	
trans-1,2-dichloroethene	ug/L		42.3	35.3	45.0	70.5	67.7	65.9	97.6	91	31.8	55.3	50.5	69	47.1	49.9	60.4	57.5	
Ethylbenzene	ug/L		< 1.0	< 10.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Tetrachloroethene	ug/L		< 1.0	< 10.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Trichloroethene	ug/L		519	20.8	21.0	19.5	13	10.8	12.9	13.9	13.7	17.8	15.4	16.5	14.4	19.3	21.6	28.4	
Toluene			< 1.0	< 10.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Total xylene			< 1.0	< 30.0	< 3.0	< 3.0	< 1.0	< 1.0	< 1.0	< 3.0	< 1.0	< 3.0	< 3.0	< 3.0	< 3.0	< 1.0	< 1.0	< 3.0	
Vinyl chloride	ug/L		0.65	0.92	2.4	1.7	< 0.40	0.72	1.2	< 1.0	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	0.4	< 1.0	
Total VOCs	ug/L		581.8	71.7	89.2	129.3	121	122.52	174.5	162.8	56.5	93	84.1	110.1	77.9	89.6	107.4	110.9	
% VOC Removed			---	88%	85%	78%	79%	79%	70%	72%		-65%	-49%	-95%	-38%	-59%	-90%	-96%	

Appendix G

Investigative Derived Waste Disposal Document

245880

NON-HAZARDOUS WASTE MANIFEST 1. Generator ID Number NOT REQUIRED 2. Page 1 of 1 3. Emergency Response Phone 4. Waste Tracking Number

5. Generator's Name and Mailing Address: Department of the Navy, NAVFAC MW, 201 Decatur Ave., Bldg 1A, Great Lakes, IL 60088. Generator's Site Address (if different than mailing address): 4800 East River Rd., Fridley, MN 55421. Generator's Phone: (847) 698-2600 Attn: Harvey Pokorny

6. Transporter 1 Company Name U.S. EPA ID Number

7. Transporter 2 Company Name U.S. EPA ID Number

8. Designated Facility Name and Site Address: WRR Environmental Services Co, Inc, 5200 Ryder Rd., Eau Claire, WI 54701. Facility's Phone: (715) 834-9624. U.S. EPA ID Number: NOT REQUIRED

Table with 4 columns: 9. Waste Shipping Name and Description, 10. Containers (No., Type), 11. Total Quantity, 12. Unit Wt./Vol. Rows include: 1. Non DOT, Non RCRA Regulated Material (Empty Drums) - 1 container, 20 quantity, P unit. 2. Non DOT, Non RCRA Regulated Material (Soil Cuttings) - 11 containers, 6,600 quantity, P unit.

13. Special Handling Instructions and Additional Information: 1: App# 2014080068-1F0000, 2: App# 2014080068-4WD304. Job# ROAN-SSCH. Handwritten notes: 16/232, 162/182/16.

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offor's Printed/Typed Name: Brian S. Murray. Signature: [Signature]. Month: 03, Day: 09, Year: 2016.

15. International Shipments: [] Import to U.S., [] Export from U.S. Port of entry/exit: [], Date leaving U.S.: []

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Duane Flanagan. Signature: [Signature]. Month: 3, Day: 28, Year: 16.

Transporter 2 Printed/Typed Name: [Blank]. Signature: [Blank]. Month: [Blank], Day: [Blank], Year: [Blank].

17. Discrepancy: Box (e missing transporter information).

17a. Discrepancy Indication Space: [] Quantity, [] Type, [] Residue, [] Partial Rejection, [] Full Rejection.

17b. Alternate Facility (or Generator) Manifest Reference Number: [Blank]. U.S. EPA ID Number: [Blank].

17c. Signature of Alternate Facility (or Generator) Month: [Blank], Day: [Blank], Year: [Blank].

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Brandon Pedersen ACSF Form. Signature: [Signature]. Month: 3, Day: 24, Year: 16.

GENERATOR

INT'L

TRANSPORTER

DESIGNATED FACILITY

57

WASTE PROCESSING CERTIFICATION OF DISPOSAL

Department of the Navy NAVFAC MW
4800 East River Road
Fridley MN 55421

WRR Load 161232
Document Number 16248216
Company Number 207156
Arrival Date 3/24/2016

Manifest Number	NON HAZ	Waste Profile	Treatment Code	Qty	<u>WEIGHT</u>
		2014060068 1F0000	H141	1 DM	45
		2014060069 1HE804	H141	1 DM	202
		2014060069 1ME304	H141	5 DM	2585
		2014060069 4WD304	H141	5 DM	3327
Total Quantity for this Manifest/Document				12	6159

This document certifies that the material listed on the referenced manifest will be beneficially recycled or reused by WRR Environmental Services Co., Inc., located in Eau Claire, WI (EPA# WID990829475). The waste residue from our operations will be utilized in a secondary fuel stream and thermally destroyed in a RCRA permitted cement kiln.

Any material which cannot be treated as indicated above, will be thermally destroyed at a licensed incinerator or treated at a licensed waste water treatment facility.

Containers used to transfer material to WRR Environmental Services Co., Inc. will be recycled for further use at an approved drum reconditioner/recycler.



VP/PLANT OPERATIONS
WRR Environmental Services Co., Inc.
Eau Claire, WI54701

Appendix H
Laboratory Analytical Reports

October 15, 2015

Melinda Pham
Regenesis
1011 Calle Sombra
San Clemente, CA 92673

RE: Project: PS BETA NIROP
Pace Project No.: 10322358

Dear Melinda Pham:

Enclosed are the analytical results for sample(s) received by the laboratory on September 16, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,



Jennifer Anderson
jennifer.anderson@pacelabs.com
Project Manager

Enclosures

cc: Ryan Moore, Regenesis



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PS BETA NIROP
Pace Project No.: 10322358

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

Montana Certification IDs

150 N. 9th Street, Billings, MT 59101
Colorado Asbestos #: 17119
A2LA Certification #: 3590.01
EPA Region 8 Certification #: 8TMS-L
Idaho Certification #: MT00012

Minnesota Dept of Health Certification #: 030-999-442
Montana Certification #: MT CERT0040
North Dakota Dept. Of Health #: R-209
NVLAP Certification #: 101292-0
Washington Department of Ecology #: C993

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification #MN01084
Arizona Department of Health Certification #AZ0785
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203

Wisconsin DNR Certification #: 998027470
WA Department of Ecology Lab ID# C1007
Nevada DNR #MN010842015-1
Oklahoma Department of Environmental Quality

Ormond Beach Certification IDs

8 East Tower Circle, Ormond Beach, FL 32174
Alabama Certification #: 41320
Connecticut Certification #: PH-0216
Delaware Certification: FL NELAC Reciprocity
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Illinois Certification #: 200068
Indiana Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Kentucky Certification #: 90050
Louisiana Certification #: FL NELAC Reciprocity
Louisiana Environmental Certificate #: 05007
Maryland Certification: #346
Michigan Certification #: 9911
Mississippi Certification: FL NELAC Reciprocity

Missouri Certification #: 236
Montana Certification #: Cert 0074
Nebraska Certification: NE-OS-28-14
Nevada Certification: FL NELAC Reciprocity
New Hampshire Certification #: 2958
New York Certification #: 11608
North Carolina Environmental Certificate #: 667
North Carolina Certification #: 12710
North Dakota Certification #: R-216
Pennsylvania Certification #: 68-00547
Puerto Rico Certification #: FL01264
South Carolina Certification: #96042001
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity
US Virgin Islands Certification: FL NELAC Reciprocity
Virginia Environmental Certification #: 460165
West Virginia Certification #: 9962C

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PS BETA NIROP
Pace Project No.: 10322358

Ormond Beach Certification IDs

Wisconsin Certification #: 399079670

Wyoming (EPA Region 8): FL NELAC Reciprocity

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: PS BETA NIROP

Pace Project No.: 10322358

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10322358001	PMW-04	Water	09/15/15 14:25	09/16/15 17:04
10322358002	PMW-03	Water	09/15/15 15:45	09/16/15 17:04
10322358003	PMW-02	Water	09/16/15 11:35	09/16/15 17:04
10322358004	PMW-01	Water	09/16/15 14:25	09/16/15 17:04
10322358005	Trip Blank	Water	09/16/15 00:00	09/16/15 17:04

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SAMPLE ANALYTE COUNT

Project: PS BETA NIROP
Pace Project No.: 10322358

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory		
10322358001	PMW-04	RSK 175	DR1	3	PASI-M		
		EPA 6010C	IP	1	PASI-M		
		6010C Met	BD1	1	PASI-M		
		EPA 8260B	DJB	70	PASI-M		
		SM 4500-S2-D	JME	1	PASI-MT		
		SM 2320B	MW	3	PASI-M		
		SM 2320B	NMT	1	PASI-O		
		EPA 300.0	KEO	1	PASI-M		
		EPA 353.2	KEO	1	PASI-M		
		SM 5220D	KEO	1	PASI-M		
		SM 5310C	KRV	1	PASI-V		
		10322358002	PMW-03	RSK 175	DR1	3	PASI-M
				EPA 6010C	IP	1	PASI-M
6010C Met	BD1			1	PASI-M		
EPA 8260B	DJB			70	PASI-M		
SM 4500-S2-D	JME			1	PASI-MT		
SM 2320B	MW			3	PASI-M		
SM 2320B	NMT			1	PASI-O		
EPA 300.0	KEO			1	PASI-M		
EPA 353.2	KEO			1	PASI-M		
SM 5220D	KEO			1	PASI-M		
SM 5310C	KRV			1	PASI-V		
10322358003	PMW-02			RSK 175	DR1	3	PASI-M
				EPA 6010C	IP	1	PASI-M
		6010C Met	BD1	1	PASI-M		
		EPA 8260B	LPM	70	PASI-M		
		SM 4500-S2-D	JME	1	PASI-MT		
		SM 2320B	MW	3	PASI-M		
		SM 2320B	NMT	1	PASI-O		
		EPA 300.0	KEO	1	PASI-M		
		EPA 353.2	KEO	1	PASI-M		
		SM 5220D	KEO	1	PASI-M		
		SM 5310C	KRV	1	PASI-V		
		10322358004	PMW-01	RSK 175	DR1	3	PASI-M
				EPA 6010C	IP	1	PASI-M
6010C Met	BD1			1	PASI-M		
EPA 8260B	DJB			70	PASI-M		

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: PS BETA NIROP

Pace Project No.: 10322358

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 4500-S2-D	JME	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	NMT	1	PASI-O
		EPA 300.0	KEO	1	PASI-M
		EPA 353.2	KEO	1	PASI-M
		SM 5220D	KEO	1	PASI-M
		SM 5310C	KRV	1	PASI-V
10322358005	Trip Blank	EPA 8260B	DJB	70	PASI-M

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS BETA NIROP

Pace Project No.: 10322358

Sample: PMW-04		Lab ID: 10322358001	Collected: 09/15/15 14:25	Received: 09/16/15 17:04	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace		Analytical Method: RSK 175						
Ethane	ND	ug/L	10.0	1		09/20/15 06:03	74-84-0	
Ethene	ND	ug/L	10.0	1		09/20/15 06:03	74-85-1	
Methane	20.6	ug/L	10.0	1		09/20/15 06:03	74-82-8	
6010C MET ICP		Analytical Method: EPA 6010C Preparation Method: EPA 3010						
Iron	5020	ug/L	50.0	1	09/18/15 14:52	09/22/15 09:36	7439-89-6	
6010C MET ICP, Dissolved		Analytical Method: 6010C Met Preparation Method: EPA 3010						
Iron, Dissolved	1090	ug/L	50.0	1	09/21/15 18:02	09/22/15 00:10	7439-89-6	
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		09/19/15 01:37	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		09/19/15 01:37	107-05-1	
Benzene	ND	ug/L	1.0	1		09/19/15 01:37	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		09/19/15 01:37	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		09/19/15 01:37	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		09/19/15 01:37	75-27-4	
Bromoform	ND	ug/L	4.0	1		09/19/15 01:37	75-25-2	
Bromomethane	ND	ug/L	4.0	1		09/19/15 01:37	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		09/19/15 01:37	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		09/19/15 01:37	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		09/19/15 01:37	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		09/19/15 01:37	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		09/19/15 01:37	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		09/19/15 01:37	108-90-7	
Chloroethane	ND	ug/L	1.0	1		09/19/15 01:37	75-00-3	
Chloroform	ND	ug/L	1.0	1		09/19/15 01:37	67-66-3	
Chloromethane	ND	ug/L	4.0	1		09/19/15 01:37	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		09/19/15 01:37	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		09/19/15 01:37	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		09/19/15 01:37	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		09/19/15 01:37	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		09/19/15 01:37	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		09/19/15 01:37	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		09/19/15 01:37	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		09/19/15 01:37	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		09/19/15 01:37	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		09/19/15 01:37	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		09/19/15 01:37	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		09/19/15 01:37	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		09/19/15 01:37	75-35-4	
cis-1,2-Dichloroethene	11.0	ug/L	1.0	1		09/19/15 01:37	156-59-2	
trans-1,2-Dichloroethene	31.8	ug/L	1.0	1		09/19/15 01:37	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		09/19/15 01:37	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		09/19/15 01:37	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		09/19/15 01:37	142-28-9	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS BETA NIROP

Pace Project No.: 10322358

Sample: PMW-04	Lab ID: 10322358001	Collected: 09/15/15 14:25	Received: 09/16/15 17:04	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
2,2-Dichloropropane	ND	ug/L	4.0	1		09/19/15 01:37	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		09/19/15 01:37	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		09/19/15 01:37	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		09/19/15 01:37	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		09/19/15 01:37	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		09/19/15 01:37	100-41-4	L2
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		09/19/15 01:37	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		09/19/15 01:37	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		09/19/15 01:37	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		09/19/15 01:37	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		09/19/15 01:37	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		09/19/15 01:37	1634-04-4	
Naphthalene	ND	ug/L	4.0	1		09/19/15 01:37	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		09/19/15 01:37	103-65-1	
Styrene	ND	ug/L	1.0	1		09/19/15 01:37	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		09/19/15 01:37	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		09/19/15 01:37	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		09/19/15 01:37	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		09/19/15 01:37	109-99-9	
Toluene	ND	ug/L	1.0	1		09/19/15 01:37	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		09/19/15 01:37	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		09/19/15 01:37	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		09/19/15 01:37	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		09/19/15 01:37	79-00-5	
Trichloroethene	13.7	ug/L	0.40	1		09/19/15 01:37	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		09/19/15 01:37	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		09/19/15 01:37	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		09/19/15 01:37	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		09/19/15 01:37	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		09/19/15 01:37	108-67-8	
Vinyl chloride	ND	ug/L	0.40	1		09/19/15 01:37	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		09/19/15 01:37	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	93	%	75-125	1		09/19/15 01:37	17060-07-0	
Toluene-d8 (S)	92	%	75-125	1		09/19/15 01:37	2037-26-5	
4-Bromofluorobenzene (S)	97	%	75-125	1		09/19/15 01:37	460-00-4	
4500S2D Sulfide Water		Analytical Method: SM 4500-S2-D						
Sulfide	ND	mg/L	0.10	1		09/21/15 15:52		
2320B Alkalinity		Analytical Method: SM 2320B						
Carbon Dioxide (SM4500CO2D)	31.6	mg/L	5.0	1		09/22/15 10:46	124-38-9	
Alkalinity, Total as CaCO3	264	mg/L	5.0	1		09/21/15 10:50		
Alkalinity,Bicarbonate (CaCO3)	264	mg/L	5.0	1		09/21/15 10:50		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	5.0	1		09/21/15 10:50		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS BETA NIROP

Pace Project No.: 10322358

Sample: PMW-04		Lab ID: 10322358001	Collected: 09/15/15 14:25	Received: 09/16/15 17:04	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions		Analytical Method: EPA 300.0						
Sulfate	85.4	mg/L	1.2	1		09/21/15 18:09	14808-79-8	
353.2 Nitrate + Nitrite		Analytical Method: EPA 353.2						
Nitrogen, NO2 plus NO3	ND	mg/L	0.020	1		09/23/15 10:03		M1
5220D COD		Analytical Method: SM 5220D Preparation Method: SM 5220D						
Chemical Oxygen Demand	ND	mg/L	50.0	1	09/21/15 10:11	09/21/15 13:27		
5310C TOC		Analytical Method: SM 5310C						
Total Organic Carbon	2.2	mg/L	1.0	1		09/24/15 02:13	7440-44-0	

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ANALYTICAL RESULTS

Project: PS BETA NIROP

Pace Project No.: 10322358

Sample: PMW-03	Lab ID: 10322358002	Collected: 09/15/15 15:45	Received: 09/16/15 17:04	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace								
Analytical Method: RSK 175								
Ethane	ND	ug/L	10.0	1		09/20/15 06:11	74-84-0	
Ethene	ND	ug/L	10.0	1		09/20/15 06:11	74-85-1	
Methane	72.4	ug/L	10.0	1		09/20/15 06:11	74-82-8	
6010C MET ICP								
Analytical Method: EPA 6010C Preparation Method: EPA 3010								
Iron	5250	ug/L	50.0	1	09/18/15 14:52	09/22/15 09:40	7439-89-6	
6010C MET ICP, Dissolved								
Analytical Method: 6010C Met Preparation Method: EPA 3010								
Iron, Dissolved	1370	ug/L	50.0	1	09/21/15 18:02	09/22/15 00:13	7439-89-6	
8260B VOC								
Analytical Method: EPA 8260B								
Acetone	ND	ug/L	20.0	1		09/19/15 01:52	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		09/19/15 01:52	107-05-1	
Benzene	ND	ug/L	1.0	1		09/19/15 01:52	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		09/19/15 01:52	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		09/19/15 01:52	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		09/19/15 01:52	75-27-4	
Bromoform	ND	ug/L	4.0	1		09/19/15 01:52	75-25-2	
Bromomethane	ND	ug/L	4.0	1		09/19/15 01:52	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		09/19/15 01:52	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		09/19/15 01:52	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		09/19/15 01:52	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		09/19/15 01:52	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		09/19/15 01:52	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		09/19/15 01:52	108-90-7	
Chloroethane	ND	ug/L	1.0	1		09/19/15 01:52	75-00-3	
Chloroform	ND	ug/L	1.0	1		09/19/15 01:52	67-66-3	
Chloromethane	ND	ug/L	4.0	1		09/19/15 01:52	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		09/19/15 01:52	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		09/19/15 01:52	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		09/19/15 01:52	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		09/19/15 01:52	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		09/19/15 01:52	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		09/19/15 01:52	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		09/19/15 01:52	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		09/19/15 01:52	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		09/19/15 01:52	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		09/19/15 01:52	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		09/19/15 01:52	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		09/19/15 01:52	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		09/19/15 01:52	75-35-4	
cis-1,2-Dichloroethene	20.5	ug/L	1.0	1		09/19/15 01:52	156-59-2	
trans-1,2-Dichloroethene	42.3	ug/L	1.0	1		09/19/15 01:52	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		09/19/15 01:52	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		09/19/15 01:52	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		09/19/15 01:52	142-28-9	

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ANALYTICAL RESULTS

Project: PS BETA NIROP

Pace Project No.: 10322358

Sample: PMW-03	Lab ID: 10322358002	Collected: 09/15/15 15:45	Received: 09/16/15 17:04	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
2,2-Dichloropropane	ND	ug/L	4.0	1		09/19/15 01:52	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		09/19/15 01:52	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		09/19/15 01:52	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		09/19/15 01:52	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		09/19/15 01:52	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		09/19/15 01:52	100-41-4	L2
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		09/19/15 01:52	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		09/19/15 01:52	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		09/19/15 01:52	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		09/19/15 01:52	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		09/19/15 01:52	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		09/19/15 01:52	1634-04-4	
Naphthalene	ND	ug/L	4.0	1		09/19/15 01:52	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		09/19/15 01:52	103-65-1	
Styrene	ND	ug/L	1.0	1		09/19/15 01:52	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		09/19/15 01:52	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		09/19/15 01:52	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		09/19/15 01:52	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		09/19/15 01:52	109-99-9	
Toluene	ND	ug/L	1.0	1		09/19/15 01:52	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		09/19/15 01:52	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		09/19/15 01:52	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		09/19/15 01:52	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		09/19/15 01:52	79-00-5	
Trichloroethene	519	ug/L	2.0	5		09/21/15 16:31	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		09/19/15 01:52	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		09/19/15 01:52	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		09/19/15 01:52	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		09/19/15 01:52	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		09/19/15 01:52	108-67-8	
Vinyl chloride	0.65	ug/L	0.40	1		09/19/15 01:52	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		09/19/15 01:52	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	94	%	75-125	1		09/19/15 01:52	17060-07-0	
Toluene-d8 (S)	91	%	75-125	1		09/19/15 01:52	2037-26-5	
4-Bromofluorobenzene (S)	98	%	75-125	1		09/19/15 01:52	460-00-4	
4500S2D Sulfide Water		Analytical Method: SM 4500-S2-D						
Sulfide	ND	mg/L	0.10	1		09/21/15 15:54		
2320B Alkalinity		Analytical Method: SM 2320B						
Alkalinity, Total as CaCO3	315	mg/L	5.0	1		09/21/15 10:54		
Carbon Dioxide (SM4500CO2D)	36.7	mg/L	5.0	1		09/22/15 11:01	124-38-9	
Alkalinity,Bicarbonate (CaCO3)	315	mg/L	5.0	1		09/21/15 10:54		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	5.0	1		09/21/15 10:54		

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ANALYTICAL RESULTS

Project: PS BETA NIROP

Pace Project No.: 10322358

Sample: PMW-03		Lab ID: 10322358002	Collected: 09/15/15 15:45	Received: 09/16/15 17:04	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions		Analytical Method: EPA 300.0						
Sulfate	98.2	mg/L	2.4	2		09/21/15 23:19	14808-79-8	
353.2 Nitrate + Nitrite		Analytical Method: EPA 353.2						
Nitrogen, NO ₂ plus NO ₃	ND	mg/L	0.020	1		09/23/15 10:07		
5220D COD		Analytical Method: SM 5220D Preparation Method: SM 5220D						
Chemical Oxygen Demand	ND	mg/L	50.0	1	09/21/15 10:11	09/21/15 13:27		
5310C TOC		Analytical Method: SM 5310C						
Total Organic Carbon	2.6	mg/L	1.0	1		09/24/15 02:53	7440-44-0	

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ANALYTICAL RESULTS

Project: PS BETA NIROP

Pace Project No.: 10322358

Sample: PMW-02	Lab ID: 10322358003	Collected: 09/16/15 11:35	Received: 09/16/15 17:04	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace								
Analytical Method: RSK 175								
Ethane	ND	ug/L	10.0	1		09/20/15 06:19	74-84-0	
Ethene	ND	ug/L	10.0	1		09/20/15 06:19	74-85-1	
Methane	ND	ug/L	10.0	1		09/20/15 06:19	74-82-8	
6010C MET ICP								
Analytical Method: EPA 6010C Preparation Method: EPA 3010								
Iron	10800	ug/L	50.0	1	09/18/15 14:52	09/22/15 09:44	7439-89-6	
6010C MET ICP, Dissolved								
Analytical Method: 6010C Met Preparation Method: EPA 3010								
Iron, Dissolved	1620	ug/L	50.0	1	09/21/15 18:02	09/22/15 00:16	7439-89-6	
8260B VOC								
Analytical Method: EPA 8260B								
Acetone	ND	ug/L	20.0	1		09/21/15 18:57	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		09/21/15 18:57	107-05-1	
Benzene	ND	ug/L	1.0	1		09/21/15 18:57	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		09/21/15 18:57	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		09/21/15 18:57	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		09/21/15 18:57	75-27-4	
Bromoform	ND	ug/L	4.0	1		09/21/15 18:57	75-25-2	
Bromomethane	ND	ug/L	4.0	1		09/21/15 18:57	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		09/21/15 18:57	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		09/21/15 18:57	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		09/21/15 18:57	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		09/21/15 18:57	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		09/21/15 18:57	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		09/21/15 18:57	108-90-7	
Chloroethane	ND	ug/L	1.0	1		09/21/15 18:57	75-00-3	
Chloroform	ND	ug/L	1.0	1		09/21/15 18:57	67-66-3	
Chloromethane	ND	ug/L	4.0	1		09/21/15 18:57	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		09/21/15 18:57	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		09/21/15 18:57	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		09/21/15 18:57	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		09/21/15 18:57	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		09/21/15 18:57	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		09/21/15 18:57	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		09/21/15 18:57	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		09/21/15 18:57	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		09/21/15 18:57	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		09/21/15 18:57	75-71-8	
1,1-Dichloroethane	27.2	ug/L	1.0	1		09/21/15 18:57	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		09/21/15 18:57	107-06-2	
1,1-Dichloroethene	16.9	ug/L	1.0	1		09/21/15 18:57	75-35-4	
cis-1,2-Dichloroethene	192	ug/L	1.0	1		09/21/15 18:57	156-59-2	
trans-1,2-Dichloroethene	230	ug/L	1.0	1		09/21/15 18:57	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		09/21/15 18:57	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		09/21/15 18:57	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		09/21/15 18:57	142-28-9	

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ANALYTICAL RESULTS

Project: PS BETA NIROP

Pace Project No.: 10322358

Sample: PMW-02	Lab ID: 10322358003	Collected: 09/16/15 11:35	Received: 09/16/15 17:04	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
2,2-Dichloropropane	ND	ug/L	4.0	1		09/21/15 18:57	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		09/21/15 18:57	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		09/21/15 18:57	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		09/21/15 18:57	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		09/21/15 18:57	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		09/21/15 18:57	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		09/21/15 18:57	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		09/21/15 18:57	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		09/21/15 18:57	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		09/21/15 18:57	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		09/21/15 18:57	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		09/21/15 18:57	1634-04-4	
Naphthalene	ND	ug/L	4.0	1		09/21/15 18:57	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		09/21/15 18:57	103-65-1	
Styrene	ND	ug/L	1.0	1		09/21/15 18:57	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		09/21/15 18:57	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		09/21/15 18:57	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		09/21/15 18:57	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		09/21/15 18:57	109-99-9	
Toluene	ND	ug/L	1.0	1		09/21/15 18:57	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		09/21/15 18:57	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		09/21/15 18:57	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		09/21/15 18:57	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		09/21/15 18:57	79-00-5	
Trichloroethene	35.4	ug/L	0.40	1		09/21/15 18:57	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		09/21/15 18:57	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		09/21/15 18:57	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		09/21/15 18:57	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		09/21/15 18:57	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		09/21/15 18:57	108-67-8	
Vinyl chloride	2.7	ug/L	1.0	1		09/21/15 18:57	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		09/21/15 18:57	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%	75-125	1		09/21/15 18:57	17060-07-0	
Toluene-d8 (S)	102	%	75-125	1		09/21/15 18:57	2037-26-5	
4-Bromofluorobenzene (S)	99	%	75-125	1		09/21/15 18:57	460-00-4	
4500S2D Sulfide Water		Analytical Method: SM 4500-S2-D						
Sulfide	ND	mg/L	0.10	1		09/21/15 15:55		
2320B Alkalinity		Analytical Method: SM 2320B						
Carbon Dioxide (SM4500CO2D)	35.3	mg/L	5.0	1		09/22/15 11:09	124-38-9	
Alkalinity, Total as CaCO3	318	mg/L	5.0	1		09/21/15 11:02		
Alkalinity,Bicarbonate (CaCO3)	318	mg/L	5.0	1		09/21/15 11:02		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	5.0	1		09/21/15 11:02		

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ANALYTICAL RESULTS

Project: PS BETA NIROP

Pace Project No.: 10322358

Sample: PMW-02		Lab ID: 10322358003		Collected: 09/16/15 11:35	Received: 09/16/15 17:04	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions		Analytical Method: EPA 300.0						
Sulfate	108	mg/L	2.4	2		09/21/15 23:37	14808-79-8	
353.2 Nitrate + Nitrite		Analytical Method: EPA 353.2						
Nitrogen, NO ₂ plus NO ₃	ND	mg/L	0.020	1		09/23/15 10:08		
5220D COD		Analytical Method: SM 5220D Preparation Method: SM 5220D						
Chemical Oxygen Demand	ND	mg/L	50.0	1	09/21/15 10:11	09/21/15 13:28		
5310C TOC		Analytical Method: SM 5310C						
Total Organic Carbon	3.1	mg/L	1.0	1		09/24/15 03:06	7440-44-0	

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ANALYTICAL RESULTS

Project: PS BETA NIROP

Pace Project No.: 10322358

Sample: PMW-01	Lab ID: 10322358004	Collected: 09/16/15 14:25	Received: 09/16/15 17:04	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace								
Analytical Method: RSK 175								
Ethane	ND	ug/L	10.0	1		09/20/15 06:28	74-84-0	
Ethene	ND	ug/L	10.0	1		09/20/15 06:28	74-85-1	
Methane	ND	ug/L	10.0	1		09/20/15 06:28	74-82-8	
6010C MET ICP								
Analytical Method: EPA 6010C Preparation Method: EPA 3010								
Iron	10200	ug/L	50.0	1	09/18/15 14:52	09/22/15 09:49	7439-89-6	
6010C MET ICP, Dissolved								
Analytical Method: 6010C Met Preparation Method: EPA 3010								
Iron, Dissolved	135	ug/L	50.0	1	09/21/15 18:02	09/22/15 00:20	7439-89-6	
8260B VOC								
Analytical Method: EPA 8260B								
Acetone	ND	ug/L	20.0	1		09/19/15 02:20	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		09/19/15 02:20	107-05-1	
Benzene	ND	ug/L	1.0	1		09/19/15 02:20	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		09/19/15 02:20	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		09/19/15 02:20	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		09/19/15 02:20	75-27-4	
Bromoform	ND	ug/L	4.0	1		09/19/15 02:20	75-25-2	
Bromomethane	ND	ug/L	4.0	1		09/19/15 02:20	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		09/19/15 02:20	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		09/19/15 02:20	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		09/19/15 02:20	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		09/19/15 02:20	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		09/19/15 02:20	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		09/19/15 02:20	108-90-7	
Chloroethane	ND	ug/L	1.0	1		09/19/15 02:20	75-00-3	
Chloroform	ND	ug/L	1.0	1		09/19/15 02:20	67-66-3	
Chloromethane	ND	ug/L	4.0	1		09/19/15 02:20	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		09/19/15 02:20	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		09/19/15 02:20	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		09/19/15 02:20	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		09/19/15 02:20	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		09/19/15 02:20	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		09/19/15 02:20	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		09/19/15 02:20	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		09/19/15 02:20	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		09/19/15 02:20	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		09/19/15 02:20	75-71-8	
1,1-Dichloroethane	7.1	ug/L	1.0	1		09/19/15 02:20	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		09/19/15 02:20	107-06-2	
1,1-Dichloroethene	2.3	ug/L	1.0	1		09/19/15 02:20	75-35-4	
cis-1,2-Dichloroethene	141	ug/L	1.0	1		09/19/15 02:20	156-59-2	
trans-1,2-Dichloroethene	154	ug/L	1.0	1		09/19/15 02:20	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		09/19/15 02:20	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		09/19/15 02:20	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		09/19/15 02:20	142-28-9	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS BETA NIROP

Pace Project No.: 10322358

Sample: PMW-01	Lab ID: 10322358004	Collected: 09/16/15 14:25	Received: 09/16/15 17:04	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
2,2-Dichloropropane	ND	ug/L	4.0	1		09/19/15 02:20	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		09/19/15 02:20	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		09/19/15 02:20	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		09/19/15 02:20	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		09/19/15 02:20	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		09/19/15 02:20	100-41-4	L2
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		09/19/15 02:20	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		09/19/15 02:20	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		09/19/15 02:20	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		09/19/15 02:20	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		09/19/15 02:20	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		09/19/15 02:20	1634-04-4	
Naphthalene	ND	ug/L	4.0	1		09/19/15 02:20	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		09/19/15 02:20	103-65-1	
Styrene	ND	ug/L	1.0	1		09/19/15 02:20	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		09/19/15 02:20	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		09/19/15 02:20	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		09/19/15 02:20	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		09/19/15 02:20	109-99-9	
Toluene	ND	ug/L	1.0	1		09/19/15 02:20	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		09/19/15 02:20	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		09/19/15 02:20	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		09/19/15 02:20	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		09/19/15 02:20	79-00-5	
Trichloroethene	156	ug/L	0.40	1		09/19/15 02:20	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		09/19/15 02:20	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		09/19/15 02:20	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		09/19/15 02:20	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		09/19/15 02:20	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		09/19/15 02:20	108-67-8	
Vinyl chloride	0.66	ug/L	0.40	1		09/19/15 02:20	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		09/19/15 02:20	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	92	%	75-125	1		09/19/15 02:20	17060-07-0	
Toluene-d8 (S)	92	%	75-125	1		09/19/15 02:20	2037-26-5	
4-Bromofluorobenzene (S)	97	%	75-125	1		09/19/15 02:20	460-00-4	
4500S2D Sulfide Water		Analytical Method: SM 4500-S2-D						
Sulfide	ND	mg/L	0.10	1		09/21/15 15:56		
2320B Alkalinity		Analytical Method: SM 2320B						
Alkalinity, Total as CaCO3	383	mg/L	5.0	1		09/21/15 11:06		
Carbon Dioxide (SM4500CO2D)	34.8	mg/L	5.0	1		09/22/15 11:18	124-38-9	
Alkalinity,Bicarbonate (CaCO3)	383	mg/L	5.0	1		09/21/15 11:06		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	5.0	1		09/21/15 11:06		

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ANALYTICAL RESULTS

Project: PS BETA NIROP

Pace Project No.: 10322358

Sample: PMW-01		Lab ID: 10322358004		Collected: 09/16/15 14:25	Received: 09/16/15 17:04	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions		Analytical Method: EPA 300.0						
Sulfate	157	mg/L	2.4	2		09/21/15 23:56	14808-79-8	
353.2 Nitrate + Nitrite		Analytical Method: EPA 353.2						
Nitrogen, NO2 plus NO3	ND	mg/L	0.020	1		09/23/15 10:09		
5220D COD		Analytical Method: SM 5220D Preparation Method: SM 5220D						
Chemical Oxygen Demand	ND	mg/L	50.0	1	09/21/15 10:11	09/21/15 13:28		
5310C TOC		Analytical Method: SM 5310C						
Total Organic Carbon	2.8	mg/L	1.0	1		09/24/15 03:19	7440-44-0	

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ANALYTICAL RESULTS

Project: PS BETA NIROP

Pace Project No.: 10322358

Sample: Trip Blank		Lab ID: 10322358005	Collected: 09/16/15 00:00	Received: 09/16/15 17:04	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		09/18/15 23:14	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		09/18/15 23:14	107-05-1	
Benzene	ND	ug/L	1.0	1		09/18/15 23:14	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		09/18/15 23:14	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		09/18/15 23:14	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		09/18/15 23:14	75-27-4	
Bromoform	ND	ug/L	4.0	1		09/18/15 23:14	75-25-2	
Bromomethane	ND	ug/L	4.0	1		09/18/15 23:14	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		09/18/15 23:14	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		09/18/15 23:14	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		09/18/15 23:14	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		09/18/15 23:14	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		09/18/15 23:14	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		09/18/15 23:14	108-90-7	
Chloroethane	ND	ug/L	1.0	1		09/18/15 23:14	75-00-3	
Chloroform	ND	ug/L	1.0	1		09/18/15 23:14	67-66-3	
Chloromethane	ND	ug/L	4.0	1		09/18/15 23:14	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		09/18/15 23:14	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		09/18/15 23:14	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		09/18/15 23:14	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		09/18/15 23:14	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		09/18/15 23:14	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		09/18/15 23:14	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		09/18/15 23:14	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		09/18/15 23:14	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		09/18/15 23:14	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		09/18/15 23:14	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		09/18/15 23:14	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		09/18/15 23:14	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		09/18/15 23:14	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		09/18/15 23:14	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		09/18/15 23:14	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		09/18/15 23:14	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		09/18/15 23:14	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		09/18/15 23:14	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		09/18/15 23:14	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		09/18/15 23:14	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		09/18/15 23:14	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		09/18/15 23:14	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		09/18/15 23:14	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		09/18/15 23:14	100-41-4	L2
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		09/18/15 23:14	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		09/18/15 23:14	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		09/18/15 23:14	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		09/18/15 23:14	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		09/18/15 23:14	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		09/18/15 23:14	1634-04-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS BETA NIROP

Pace Project No.: 10322358

Sample: Trip Blank		Lab ID: 10322358005	Collected: 09/16/15 00:00	Received: 09/16/15 17:04	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		09/18/15 23:14	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		09/18/15 23:14	103-65-1	
Styrene	ND	ug/L	1.0	1		09/18/15 23:14	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		09/18/15 23:14	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		09/18/15 23:14	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		09/18/15 23:14	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		09/18/15 23:14	109-99-9	
Toluene	ND	ug/L	1.0	1		09/18/15 23:14	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		09/18/15 23:14	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		09/18/15 23:14	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		09/18/15 23:14	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		09/18/15 23:14	79-00-5	
Trichloroethene	ND	ug/L	0.40	1		09/18/15 23:14	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		09/18/15 23:14	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		09/18/15 23:14	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		09/18/15 23:14	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		09/18/15 23:14	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		09/18/15 23:14	108-67-8	
Vinyl chloride	ND	ug/L	0.40	1		09/18/15 23:14	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		09/18/15 23:14	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	93	%.	75-125	1		09/18/15 23:14	17060-07-0	
Toluene-d8 (S)	93	%.	75-125	1		09/18/15 23:14	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1		09/18/15 23:14	460-00-4	

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QUALITY CONTROL DATA

Project: PS BETA NIROP

Pace Project No.: 10322358

QC Batch: AIR/24188 Analysis Method: RSK 175
 QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE
 Associated Lab Samples: 10322358001, 10322358002, 10322358003, 10322358004

METHOD BLANK: 2083940 Matrix: Water
 Associated Lab Samples: 10322358001, 10322358002, 10322358003, 10322358004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	10.0	09/20/15 05:55	
Ethene	ug/L	ND	10.0	09/20/15 05:55	
Methane	ug/L	ND	10.0	09/20/15 05:55	

LABORATORY CONTROL SAMPLE & LCSD: 2083941

Parameter	Units	2083942								
		Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Ethane	ug/L	114	127	122	112	107	85-115	4	20	
Ethene	ug/L	106	118	113	112	107	85-115	4	20	
Methane	ug/L	60.7	67.4	64.2	111	106	85-115	5	20	

SAMPLE DUPLICATE: 2083943

Parameter	Units	10322151005		Max RPD	Qualifiers
		Result	Dup Result		
Ethane	ug/L	<5.0	ND	20	
Ethene	ug/L	<0.47	ND	20	
Methane	ug/L	5.2J	6.6J	20	

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QUALITY CONTROL DATA

Project: PS BETA NIROP

Pace Project No.: 10322358

QC Batch: MPRP/57887

Analysis Method: EPA 6010C

QC Batch Method: EPA 3010

Analysis Description: 6010C Water

Associated Lab Samples: 10322358001, 10322358002, 10322358003, 10322358004

METHOD BLANK: 2081627

Matrix: Water

Associated Lab Samples: 10322358001, 10322358002, 10322358003, 10322358004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron	ug/L	ND	50.0	09/22/15 08:24	

LABORATORY CONTROL SAMPLE: 2081628

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	10000	9920	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2081629 2081630

Parameter	Units	10321990001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Iron	ug/L	1940	10000	10000	12300	12200	104	102	75-125	1	20	

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QUALITY CONTROL DATA

Project: PS BETA NIROP

Pace Project No.: 10322358

QC Batch: MPRP/57978

Analysis Method: 6010C Met

QC Batch Method: EPA 3010

Analysis Description: 6010C Water Dissolved

Associated Lab Samples: 10322358001, 10322358002, 10322358003, 10322358004

METHOD BLANK: 2084155

Matrix: Water

Associated Lab Samples: 10322358001, 10322358002, 10322358003, 10322358004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron, Dissolved	ug/L	ND	50.0	09/22/15 00:04	

LABORATORY CONTROL SAMPLE: 2084156

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron, Dissolved	ug/L	10000	9610	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2084157 2084158

Parameter	Units	10322726001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Iron, Dissolved	ug/L	54.3	10000	10000	9430	9710	94	97	75-125	3	20	

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QUALITY CONTROL DATA

Project: PS BETA NIROP

Pace Project No.: 10322358

QC Batch: MSV/33204

Analysis Method: EPA 8260B

QC Batch Method: EPA 8260B

Analysis Description: 8260B MSV 465 W

Associated Lab Samples: 10322358001, 10322358002, 10322358004, 10322358005

METHOD BLANK: 2082570

Matrix: Water

Associated Lab Samples: 10322358001, 10322358002, 10322358004, 10322358005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	09/18/15 22:45	
1,1,1-Trichloroethane	ug/L	ND	1.0	09/18/15 22:45	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	09/18/15 22:45	
1,1,2-Trichloroethane	ug/L	ND	1.0	09/18/15 22:45	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	1.0	09/18/15 22:45	
1,1-Dichloroethane	ug/L	ND	1.0	09/18/15 22:45	
1,1-Dichloroethene	ug/L	ND	1.0	09/18/15 22:45	
1,1-Dichloropropene	ug/L	ND	1.0	09/18/15 22:45	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	09/18/15 22:45	
1,2,3-Trichloropropane	ug/L	ND	4.0	09/18/15 22:45	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	09/18/15 22:45	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	09/18/15 22:45	
1,2-Dibromo-3-chloropropane	ug/L	ND	4.0	09/18/15 22:45	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	09/18/15 22:45	
1,2-Dichlorobenzene	ug/L	ND	1.0	09/18/15 22:45	
1,2-Dichloroethane	ug/L	ND	1.0	09/18/15 22:45	
1,2-Dichloropropane	ug/L	ND	4.0	09/18/15 22:45	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	09/18/15 22:45	
1,3-Dichlorobenzene	ug/L	ND	1.0	09/18/15 22:45	
1,3-Dichloropropane	ug/L	ND	1.0	09/18/15 22:45	
1,4-Dichlorobenzene	ug/L	ND	1.0	09/18/15 22:45	
2,2-Dichloropropane	ug/L	ND	4.0	09/18/15 22:45	
2-Butanone (MEK)	ug/L	ND	5.0	09/18/15 22:45	
2-Chlorotoluene	ug/L	ND	1.0	09/18/15 22:45	
4-Chlorotoluene	ug/L	ND	1.0	09/18/15 22:45	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	09/18/15 22:45	
Acetone	ug/L	ND	20.0	09/18/15 22:45	
Allyl chloride	ug/L	ND	4.0	09/18/15 22:45	
Benzene	ug/L	ND	1.0	09/18/15 22:45	
Bromobenzene	ug/L	ND	1.0	09/18/15 22:45	
Bromochloromethane	ug/L	ND	1.0	09/18/15 22:45	
Bromodichloromethane	ug/L	ND	1.0	09/18/15 22:45	
Bromoform	ug/L	ND	4.0	09/18/15 22:45	
Bromomethane	ug/L	ND	4.0	09/18/15 22:45	
Carbon tetrachloride	ug/L	ND	1.0	09/18/15 22:45	
Chlorobenzene	ug/L	ND	1.0	09/18/15 22:45	
Chloroethane	ug/L	ND	1.0	09/18/15 22:45	
Chloroform	ug/L	ND	1.0	09/18/15 22:45	
Chloromethane	ug/L	ND	4.0	09/18/15 22:45	
cis-1,2-Dichloroethene	ug/L	ND	1.0	09/18/15 22:45	
cis-1,3-Dichloropropene	ug/L	ND	4.0	09/18/15 22:45	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS BETA NIROP

Pace Project No.: 10322358

METHOD BLANK: 2082570

Matrix: Water

Associated Lab Samples: 10322358001, 10322358002, 10322358004, 10322358005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/L	ND	1.0	09/18/15 22:45	
Dibromomethane	ug/L	ND	4.0	09/18/15 22:45	
Dichlorodifluoromethane	ug/L	ND	1.0	09/18/15 22:45	
Dichlorofluoromethane	ug/L	ND	1.0	09/18/15 22:45	
Diethyl ether (Ethyl ether)	ug/L	ND	4.0	09/18/15 22:45	
Ethylbenzene	ug/L	ND	1.0	09/18/15 22:45	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	09/18/15 22:45	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	09/18/15 22:45	
Methyl-tert-butyl ether	ug/L	ND	1.0	09/18/15 22:45	
Methylene Chloride	ug/L	ND	4.0	09/18/15 22:45	
n-Butylbenzene	ug/L	ND	1.0	09/18/15 22:45	
n-Propylbenzene	ug/L	ND	1.0	09/18/15 22:45	
Naphthalene	ug/L	ND	4.0	09/18/15 22:45	
p-Isopropyltoluene	ug/L	ND	1.0	09/18/15 22:45	
sec-Butylbenzene	ug/L	ND	1.0	09/18/15 22:45	
Styrene	ug/L	ND	1.0	09/18/15 22:45	
tert-Butylbenzene	ug/L	ND	1.0	09/18/15 22:45	
Tetrachloroethene	ug/L	ND	1.0	09/18/15 22:45	
Tetrahydrofuran	ug/L	ND	10.0	09/18/15 22:45	
Toluene	ug/L	ND	1.0	09/18/15 22:45	
trans-1,2-Dichloroethene	ug/L	ND	1.0	09/18/15 22:45	
trans-1,3-Dichloropropene	ug/L	ND	4.0	09/18/15 22:45	
Trichloroethene	ug/L	ND	0.40	09/18/15 22:45	
Trichlorofluoromethane	ug/L	ND	1.0	09/18/15 22:45	
Vinyl chloride	ug/L	ND	0.40	09/18/15 22:45	
Xylene (Total)	ug/L	ND	3.0	09/18/15 22:45	
1,2-Dichloroethane-d4 (S)	%	94	75-125	09/18/15 22:45	
4-Bromofluorobenzene (S)	%	98	75-125	09/18/15 22:45	
Toluene-d8 (S)	%	93	75-125	09/18/15 22:45	

LABORATORY CONTROL SAMPLE: 2082571

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	20	17.8	89	75-125	
1,1,1-Trichloroethane	ug/L	20	17.9	89	75-125	
1,1,2,2-Tetrachloroethane	ug/L	20	15.4	77	75-125	
1,1,2-Trichloroethane	ug/L	20	17.2	86	75-125	
1,1,2-Trichlorotrifluoroethane	ug/L	20	15.2	76	60-135	
1,1-Dichloroethane	ug/L	20	16.1	81	69-125	
1,1-Dichloroethene	ug/L	20	16.9	84	68-125	
1,1-Dichloropropene	ug/L	20	16.4	82	74-125	
1,2,3-Trichlorobenzene	ug/L	20	15.8	79	69-136	
1,2,3-Trichloropropane	ug/L	20	16.7	84	75-125	
1,2,4-Trichlorobenzene	ug/L	20	15.6	78	73-127	

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QUALITY CONTROL DATA

Project: PS BETA NIROP

Pace Project No.: 10322358

LABORATORY CONTROL SAMPLE: 2082571

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	15.0	75	75-125	
1,2-Dibromo-3-chloropropane	ug/L	50	41.6	83	65-145	
1,2-Dibromoethane (EDB)	ug/L	20	15.1	76	75-125	
1,2-Dichlorobenzene	ug/L	20	15.8	79	75-125	
1,2-Dichloroethane	ug/L	20	16.9	85	73-125	
1,2-Dichloropropane	ug/L	20	17.3	86	75-125	
1,3,5-Trimethylbenzene	ug/L	20	15.0	75	75-125	
1,3-Dichlorobenzene	ug/L	20	16.4	82	74-125	
1,3-Dichloropropane	ug/L	20	15.8	79	75-125	
1,4-Dichlorobenzene	ug/L	20	15.8	79	75-125	
2,2-Dichloropropane	ug/L	20	16.2	81	59-139	
2-Butanone (MEK)	ug/L	100	100	100	63-130	
2-Chlorotoluene	ug/L	20	14.8	74	72-125	
4-Chlorotoluene	ug/L	20	15.5	77	73-125	
4-Methyl-2-pentanone (MIBK)	ug/L	100	98.3	98	71-126	
Acetone	ug/L	100	91.3	91	69-131	
Allyl chloride	ug/L	20	16.7	84	67-125	
Benzene	ug/L	20	16.7	84	71-125	
Bromobenzene	ug/L	20	15.3	77	75-125	
Bromochloromethane	ug/L	20	17.6	88	75-125	
Bromodichloromethane	ug/L	20	16.0	80	75-125	
Bromoform	ug/L	20	16.7	84	70-125	
Bromomethane	ug/L	20	8.1	41	30-150	
Carbon tetrachloride	ug/L	20	17.2	86	75-126	
Chlorobenzene	ug/L	20	15.8	79	75-125	
Chloroethane	ug/L	20	17.2	86	65-134	
Chloroform	ug/L	20	17.0	85	75-125	
Chloromethane	ug/L	20	14.9	75	39-150	
cis-1,2-Dichloroethene	ug/L	20	16.3	82	72-125	
cis-1,3-Dichloropropene	ug/L	20	17.7	89	75-125	
Dibromochloromethane	ug/L	20	15.9	79	75-125	
Dibromomethane	ug/L	20	18.2	91	75-125	
Dichlorodifluoromethane	ug/L	20	14.9	75	50-134	
Dichlorofluoromethane	ug/L	20	16.5	82	69-125	
Diethyl ether (Ethyl ether)	ug/L	20	17.0	85	72-125	
Ethylbenzene	ug/L	20	14.8	74	75-125 L0	
Hexachloro-1,3-butadiene	ug/L	20	14.9	74	70-138	
Isopropylbenzene (Cumene)	ug/L	20	17.5	87	75-125	
Methyl-tert-butyl ether	ug/L	20	16.5	83	73-125	
Methylene Chloride	ug/L	20	16.8	84	73-125	
n-Butylbenzene	ug/L	20	15.8	79	72-133	
n-Propylbenzene	ug/L	20	15.9	79	72-126	
Naphthalene	ug/L	20	15.0	75	70-127	
p-Isopropyltoluene	ug/L	20	14.9	74	72-132	
sec-Butylbenzene	ug/L	20	15.9	79	73-132	
Styrene	ug/L	20	16.2	81	75-125	
tert-Butylbenzene	ug/L	20	16.4	82	73-128	

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QUALITY CONTROL DATA

Project: PS BETA NIROP

Pace Project No.: 10322358

LABORATORY CONTROL SAMPLE: 2082571

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethane	ug/L	20	14.8	74	74-125	
Tetrahydrofuran	ug/L	200	147	74	62-133	
Toluene	ug/L	20	15.5	77	74-125	
trans-1,2-Dichloroethene	ug/L	20	17.3	86	69-125	
trans-1,3-Dichloropropene	ug/L	20	16.1	80	75-125	
Trichloroethene	ug/L	20	18.3	92	75-125	
Trichlorofluoromethane	ug/L	20	14.8	74	74-127	
Vinyl chloride	ug/L	20	14.9	75	66-132	
Xylene (Total)	ug/L	60	50.6	84	75-125	
1,2-Dichloroethane-d4 (S)	%			96	75-125	
4-Bromofluorobenzene (S)	%			95	75-125	
Toluene-d8 (S)	%			94	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2082572 2082573

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10321843001 Result	Spike Conc.	Spike Conc.	MS Result						
1,1,1,2-Tetrachloroethane	ug/L	1.0 U	15	15	14.0	14.1	93	94	70-138	1	30
1,1,1-Trichloroethane	ug/L	1.0 U	15	15	14.6	14.2	97	95	55-150	3	30
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	15	15	12.2	12.0	82	80	64-140	2	30
1,1,2-Trichloroethane	ug/L	1.0 U	15	15	13.1	13.1	87	87	67-137	0	30
1,1,2-Trichlorotrifluoroethane	ug/L	1.0 U	15	15	14.9	15.0	99	100	51-150	1	30
1,1-Dichloroethane	ug/L	1.0 U	15	15	13.4	12.3	89	82	49-150	9	30
1,1-Dichloroethene	ug/L	1.0 U	15	15	14.3	14.0	96	93	40-150	2	30
1,1-Dichloropropene	ug/L	1.0 U	15	15	14.5	13.7	97	91	50-150	6	30
1,2,3-Trichlorobenzene	ug/L	1.0 U	15	15	12.0	12.9	80	86	59-148	7	30
1,2,3-Trichloropropane	ug/L	4.0 U	15	15	12.7	13.3	84	89	65-141	5	30
1,2,4-Trichlorobenzene	ug/L	1.0 U	15	15	11.8	12.2	79	81	61-140	3	30
1,2,4-Trimethylbenzene	ug/L	1.0 U	15	15	11.7	11.9	78	79	58-141	1	30
1,2-Dibromo-3-chloropropane	ug/L	4.0 U	37.5	37.5	32.1	33.7	85	90	53-150	5	30
1,2-Dibromoethane (EDB)	ug/L	1.0 U	15	15	11.9	12.1	79	81	65-137	2	30
1,2-Dichlorobenzene	ug/L	1.0 U	15	15	12.2	12.5	81	83	66-133	3	30
1,2-Dichloroethane	ug/L	1.0 U	15	15	13.2	13.2	88	88	54-138	0	30
1,2-Dichloropropane	ug/L	4.0 U	15	15	13.3	13.3	89	89	62-138	0	30
1,3,5-Trimethylbenzene	ug/L	1.0 U	15	15	12.0	11.9	80	79	58-140	0	30
1,3-Dichlorobenzene	ug/L	1.0 U	15	15	13.0	12.7	86	85	66-132	2	30
1,3-Dichloropropane	ug/L	1.0 U	15	15	12.4	12.2	82	82	66-134	1	30
1,4-Dichlorobenzene	ug/L	1.0 U	15	15	13.1	12.4	87	82	65-129	5	30
2,2-Dichloropropane	ug/L	4.0 U	15	15	12.9	13.3	86	89	40-150	3	30
2-Butanone (MEK)	ug/L	5.0 U	75	75	70.9	72.8	94	97	51-147	3	30
2-Chlorotoluene	ug/L	1.0 U	15	15	11.7	11.9	78	79	58-147	2	30
4-Chlorotoluene	ug/L	1.0 U	15	15	12.4	12.2	83	81	64-138	2	30
4-Methyl-2-pentanone (MIBK)	ug/L	5.0 U	75	75	70.9	74.6	95	99	59-143	5	30
Acetone	ug/L	20.0 U	75	75	64.7	69.0	86	92	63-147	6	30

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QUALITY CONTROL DATA

Project: PS BETA NIROP

Pace Project No.: 10322358

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:		2082572		2082573							
Parameter	Units	10321843001	MS	MSD	MS	MSD	MS	MSD	% Rec	Max	Qual
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD	
Allyl chloride	ug/L	4.0 U	15	15	13.8	12.8	92	85	45-150	7	30
Benzene	ug/L	1.0 U	15	15	13.6	13.3	91	89	53-139	2	30
Bromobenzene	ug/L	1.0 U	15	15	12.3	12.1	82	81	66-136	1	30
Bromochloromethane	ug/L	1.0 U	15	15	14.3	12.9	95	86	64-136	10	30
Bromodichloromethane	ug/L	1.0 U	15	15	13.9	13.9	93	92	66-138	1	30
Bromoform	ug/L	4.0 U	15	15	12.1	12.7	81	84	59-136	4	30
Bromomethane	ug/L	4.0 U	20	20	6.8	7.0	34	35	30-150	2	30
Carbon tetrachloride	ug/L	1.0 U	15	15	14.7	14.1	98	94	56-150	4	30
Chlorobenzene	ug/L	1.0 U	15	15	12.6	12.2	84	81	65-133	3	30
Chloroethane	ug/L	1.0 U	20	20	14.9	13.3	74	67	48-150	11	30
Chloroform	ug/L	1.0 U	15	15	13.5	13.8	90	92	57-145	2	30
Chloromethane	ug/L	4.0 U	20	20	13.0	11.5	65	58	30-150	12	30
cis-1,2-Dichloroethene	ug/L	1.0 U	15	15	13.5	13.1	90	87	49-150	3	30
cis-1,3-Dichloropropene	ug/L	4.0 U	15	15	14.3	13.9	95	93	64-130	3	30
Dibromochloromethane	ug/L	1.0 U	15	15	12.7	12.6	85	84	68-138	1	30
Dibromomethane	ug/L	4.0 U	15	15	14.7	14.0	98	93	67-134	5	30
Dichlorodifluoromethane	ug/L	1.0 U	20	20	15.1	14.0	75	70	45-150	8	30
Dichlorofluoromethane	ug/L	1.0 U	20	20	13.7	13.2	69	66	54-150	4	30
Diethyl ether (Ethyl ether)	ug/L	4.0 U	15	15	13.7	13.2	91	88	50-145	3	30
Ethylbenzene	ug/L	1.0 U	15	15	12.4	11.9	82	79	55-139	4	30
Hexachloro-1,3-butadiene	ug/L	1.0 U	15	15	12.0	12.3	80	82	49-150	3	30
Isopropylbenzene (Cumene)	ug/L	1.0 U	15	15	14.1	13.9	94	93	64-142	1	30
Methyl-tert-butyl ether	ug/L	1.0 U	15	15	13.4	13.4	90	89	62-129	0	30
Methylene Chloride	ug/L	4.0 U	15	15	12.4	12.5	82	83	57-132	1	30
n-Butylbenzene	ug/L	1.0 U	15	15	12.3	13.1	82	87	55-150	6	30
n-Propylbenzene	ug/L	1.0 U	15	15	12.6	12.7	84	85	59-142	1	30
Naphthalene	ug/L	4.0 U	15	15	11.1	12.1	74	81	51-150	9	30
p-Isopropyltoluene	ug/L	1.0 U	15	15	12.0	12.4	80	82	60-149	3	30
sec-Butylbenzene	ug/L	1.0 U	15	15	12.7	13.0	85	87	60-150	2	30
Styrene	ug/L	1.0 U	15	15	13.2	13.2	88	88	68-134	0	30
tert-Butylbenzene	ug/L	1.0 U	15	15	13.0	13.2	87	88	62-146	2	30
Tetrachloroethene	ug/L	1.0 U	15	15	12.8	12.6	85	84	50-150	2	30
Tetrahydrofuran	ug/L	10.0 U	150	150	122	124	81	83	59-145	2	30
Toluene	ug/L	1.0 U	15	15	12.4	12.2	82	81	52-148	2	30
trans-1,2-Dichloroethene	ug/L	1.0 U	15	15	14.2	13.2	94	88	45-150	7	30
trans-1,3-Dichloropropene	ug/L	4.0 U	15	15	13.1	12.6	87	84	68-132	4	30
Trichloroethene	ug/L	0.40 U	15	15	15.2	14.7	102	98	52-150	4	30
Trichlorofluoromethane	ug/L	1.0 U	20	20	13.7	13.3	68	67	55-150	3	30
Vinyl chloride	ug/L	0.40 U	20	20	12.7	12.7	64	64	43-150	0	30
Xylene (Total)	ug/L	3.0 U	45	45	40.7	39.5	91	88	54-144	3	30
1,2-Dichloroethane-d4 (S)	%						97	95	75-125		
4-Bromofluorobenzene (S)	%						96	98	75-125		
Toluene-d8 (S)	%						92	95	75-125		

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QUALITY CONTROL DATA

Project: PS BETA NIROP

Pace Project No.: 10322358

QC Batch: MSV/33205

Analysis Method: EPA 8260B

QC Batch Method: EPA 8260B

Analysis Description: 8260B MSV 465 W

Associated Lab Samples: 10322358003

METHOD BLANK: 2083584

Matrix: Water

Associated Lab Samples: 10322358003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	09/21/15 16:01	
1,1,1-Trichloroethane	ug/L	ND	1.0	09/21/15 16:01	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	09/21/15 16:01	
1,1,2-Trichloroethane	ug/L	ND	1.0	09/21/15 16:01	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	1.0	09/21/15 16:01	
1,1-Dichloroethane	ug/L	ND	1.0	09/21/15 16:01	
1,1-Dichloroethene	ug/L	ND	1.0	09/21/15 16:01	
1,1-Dichloropropene	ug/L	ND	1.0	09/21/15 16:01	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	09/21/15 16:01	
1,2,3-Trichloropropane	ug/L	ND	4.0	09/21/15 16:01	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	09/21/15 16:01	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	09/21/15 16:01	
1,2-Dibromo-3-chloropropane	ug/L	ND	4.0	09/21/15 16:01	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	09/21/15 16:01	
1,2-Dichlorobenzene	ug/L	ND	1.0	09/21/15 16:01	
1,2-Dichloroethane	ug/L	ND	1.0	09/21/15 16:01	
1,2-Dichloropropane	ug/L	ND	4.0	09/21/15 16:01	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	09/21/15 16:01	
1,3-Dichlorobenzene	ug/L	ND	1.0	09/21/15 16:01	
1,3-Dichloropropane	ug/L	ND	1.0	09/21/15 16:01	
1,4-Dichlorobenzene	ug/L	ND	1.0	09/21/15 16:01	
2,2-Dichloropropane	ug/L	ND	4.0	09/21/15 16:01	
2-Butanone (MEK)	ug/L	ND	5.0	09/21/15 16:01	
2-Chlorotoluene	ug/L	ND	1.0	09/21/15 16:01	
4-Chlorotoluene	ug/L	ND	1.0	09/21/15 16:01	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	09/21/15 16:01	
Acetone	ug/L	ND	20.0	09/21/15 16:01	
Allyl chloride	ug/L	ND	4.0	09/21/15 16:01	
Benzene	ug/L	ND	1.0	09/21/15 16:01	
Bromobenzene	ug/L	ND	1.0	09/21/15 16:01	
Bromochloromethane	ug/L	ND	1.0	09/21/15 16:01	
Bromodichloromethane	ug/L	ND	1.0	09/21/15 16:01	
Bromoform	ug/L	ND	4.0	09/21/15 16:01	
Bromomethane	ug/L	ND	4.0	09/21/15 16:01	
Carbon tetrachloride	ug/L	ND	1.0	09/21/15 16:01	
Chlorobenzene	ug/L	ND	1.0	09/21/15 16:01	
Chloroethane	ug/L	ND	1.0	09/21/15 16:01	
Chloroform	ug/L	ND	1.0	09/21/15 16:01	
Chloromethane	ug/L	ND	4.0	09/21/15 16:01	
cis-1,2-Dichloroethene	ug/L	ND	1.0	09/21/15 16:01	
cis-1,3-Dichloropropene	ug/L	ND	4.0	09/21/15 16:01	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS BETA NIROP

Pace Project No.: 10322358

METHOD BLANK: 2083584

Matrix: Water

Associated Lab Samples: 10322358003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/L	ND	1.0	09/21/15 16:01	
Dibromomethane	ug/L	ND	4.0	09/21/15 16:01	
Dichlorodifluoromethane	ug/L	ND	1.0	09/21/15 16:01	
Dichlorofluoromethane	ug/L	ND	1.0	09/21/15 16:01	
Diethyl ether (Ethyl ether)	ug/L	ND	4.0	09/21/15 16:01	
Ethylbenzene	ug/L	ND	1.0	09/21/15 16:01	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	09/21/15 16:01	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	09/21/15 16:01	
Methyl-tert-butyl ether	ug/L	ND	1.0	09/21/15 16:01	
Methylene Chloride	ug/L	ND	4.0	09/21/15 16:01	
n-Butylbenzene	ug/L	ND	1.0	09/21/15 16:01	
n-Propylbenzene	ug/L	ND	1.0	09/21/15 16:01	
Naphthalene	ug/L	ND	4.0	09/21/15 16:01	
p-Isopropyltoluene	ug/L	ND	1.0	09/21/15 16:01	
sec-Butylbenzene	ug/L	ND	1.0	09/21/15 16:01	
Styrene	ug/L	ND	1.0	09/21/15 16:01	
tert-Butylbenzene	ug/L	ND	1.0	09/21/15 16:01	
Tetrachloroethene	ug/L	ND	1.0	09/21/15 16:01	
Tetrahydrofuran	ug/L	ND	10.0	09/21/15 16:01	
Toluene	ug/L	ND	1.0	09/21/15 16:01	
trans-1,2-Dichloroethene	ug/L	ND	1.0	09/21/15 16:01	
trans-1,3-Dichloropropene	ug/L	ND	4.0	09/21/15 16:01	
Trichloroethene	ug/L	ND	0.40	09/21/15 16:01	
Trichlorofluoromethane	ug/L	ND	1.0	09/21/15 16:01	
Vinyl chloride	ug/L	ND	1.0	09/21/15 16:01	
Xylene (Total)	ug/L	ND	3.0	09/21/15 16:01	
1,2-Dichloroethane-d4 (S)	%	98	75-125	09/21/15 16:01	
4-Bromofluorobenzene (S)	%	101	75-125	09/21/15 16:01	
Toluene-d8 (S)	%	100	75-125	09/21/15 16:01	

LABORATORY CONTROL SAMPLE: 2083585

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	20	20.6	103	75-125	
1,1,1-Trichloroethane	ug/L	20	19.0	95	75-125	
1,1,2,2-Tetrachloroethane	ug/L	20	20.3	102	75-125	
1,1,2-Trichloroethane	ug/L	20	20.0	100	75-125	
1,1,2-Trichlorotrifluoroethane	ug/L	20	19.3	97	60-135	
1,1-Dichloroethane	ug/L	20	20.5	102	69-125	
1,1-Dichloroethene	ug/L	20	19.6	98	68-125	
1,1-Dichloropropene	ug/L	20	19.5	97	74-125	
1,2,3-Trichlorobenzene	ug/L	20	18.2	91	69-136	
1,2,3-Trichloropropane	ug/L	20	20.6	103	75-125	
1,2,4-Trichlorobenzene	ug/L	20	19.7	99	73-127	

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QUALITY CONTROL DATA

Project: PS BETA NIROP

Pace Project No.: 10322358

LABORATORY CONTROL SAMPLE: 2083585

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	20.2	101	75-125	
1,2-Dibromo-3-chloropropane	ug/L	50	53.3	107	65-145	
1,2-Dibromoethane (EDB)	ug/L	20	20.1	101	75-125	
1,2-Dichlorobenzene	ug/L	20	19.3	97	75-125	
1,2-Dichloroethane	ug/L	20	20.6	103	73-125	
1,2-Dichloropropane	ug/L	20	19.5	97	75-125	
1,3,5-Trimethylbenzene	ug/L	20	19.9	100	75-125	
1,3-Dichlorobenzene	ug/L	20	18.9	95	74-125	
1,3-Dichloropropane	ug/L	20	20.8	104	75-125	
1,4-Dichlorobenzene	ug/L	20	20.0	100	75-125	
2,2-Dichloropropane	ug/L	20	20.9	104	59-139	
2-Butanone (MEK)	ug/L	100	112	112	63-130	
2-Chlorotoluene	ug/L	20	19.9	100	72-125	
4-Chlorotoluene	ug/L	20	19.6	98	73-125	
4-Methyl-2-pentanone (MIBK)	ug/L	100	109	109	71-126	
Acetone	ug/L	100	104	104	69-131	
Allyl chloride	ug/L	20	19.5	98	67-125	
Benzene	ug/L	20	18.9	94	71-125	
Bromobenzene	ug/L	20	21.2	106	75-125	
Bromochloromethane	ug/L	20	19.5	98	75-125	
Bromodichloromethane	ug/L	20	20.2	101	75-125	
Bromoform	ug/L	20	20.7	104	70-125	
Bromomethane	ug/L	20	24.2	121	30-150	
Carbon tetrachloride	ug/L	20	18.2	91	75-126	
Chlorobenzene	ug/L	20	20.4	102	75-125	
Chloroethane	ug/L	20	22.1	111	65-134	
Chloroform	ug/L	20	19.9	100	75-125	
Chloromethane	ug/L	20	21.5	108	39-150	
cis-1,2-Dichloroethene	ug/L	20	20.6	103	72-125	
cis-1,3-Dichloropropene	ug/L	20	19.9	99	75-125	
Dibromochloromethane	ug/L	20	20.4	102	75-125	
Dibromomethane	ug/L	20	20.7	103	75-125	
Dichlorodifluoromethane	ug/L	20	21.4	107	50-134	
Dichlorofluoromethane	ug/L	20	20.1	100	69-125	
Diethyl ether (Ethyl ether)	ug/L	20	21.6	108	72-125	
Ethylbenzene	ug/L	20	19.6	98	75-125	
Hexachloro-1,3-butadiene	ug/L	20	18.6	93	70-138	
Isopropylbenzene (Cumene)	ug/L	20	18.4	92	75-125	
Methyl-tert-butyl ether	ug/L	20	21.8	109	73-125	
Methylene Chloride	ug/L	20	18.2	91	73-125	
n-Butylbenzene	ug/L	20	18.7	94	72-133	
n-Propylbenzene	ug/L	20	18.4	92	72-126	
Naphthalene	ug/L	20	19.2	96	70-127	
p-Isopropyltoluene	ug/L	20	20.3	102	72-132	
sec-Butylbenzene	ug/L	20	17.5	87	73-132	
Styrene	ug/L	20	20.0	100	75-125	
tert-Butylbenzene	ug/L	20	18.6	93	73-128	

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QUALITY CONTROL DATA

Project: PS BETA NIROP

Pace Project No.: 10322358

LABORATORY CONTROL SAMPLE: 2083585

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	ug/L	20	19.4	97	74-125	
Tetrahydrofuran	ug/L	200	198	99	62-133	
Toluene	ug/L	20	18.6	93	74-125	
trans-1,2-Dichloroethene	ug/L	20	19.8	99	69-125	
trans-1,3-Dichloropropene	ug/L	20	19.9	99	75-125	
Trichloroethene	ug/L	20	19.2	96	75-125	
Trichlorofluoromethane	ug/L	20	20.3	101	74-127	
Vinyl chloride	ug/L	20	19.1	96	66-132	
Xylene (Total)	ug/L	60	58.9	98	75-125	
1,2-Dichloroethane-d4 (S)	%			96	75-125	
4-Bromofluorobenzene (S)	%			98	75-125	
Toluene-d8 (S)	%			100	75-125	

MATRIX SPIKE SAMPLE: 2083602

Parameter	Units	10321760001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<1.0	20	22.2	111	70-138	
1,1,1-Trichloroethane	ug/L	<1.0	20	21.4	107	55-150	
1,1,2,2-Tetrachloroethane	ug/L	<1.0	20	20.9	105	64-140	
1,1,2-Trichloroethane	ug/L	<1.0	20	20.5	102	67-137	
1,1,2-Trichlorotrifluoroethane	ug/L	<1.0	20	25.2	126	51-150	
1,1-Dichloroethane	ug/L	<1.0	20	21.9	110	49-150	
1,1-Dichloroethene	ug/L	<1.0	20	22.1	111	40-150	
1,1-Dichloropropene	ug/L	<1.0	20	21.8	109	50-150	
1,2,3-Trichlorobenzene	ug/L	<1.0	20	20.8	104	59-148	
1,2,3-Trichloropropane	ug/L	<4.0	20	19.0	95	65-141	
1,2,4-Trichlorobenzene	ug/L	<1.0	20	21.0	105	61-140	
1,2,4-Trimethylbenzene	ug/L	<1.0	20	21.6	108	58-141	
1,2-Dibromo-3-chloropropane	ug/L	<4.0	50	50.8	102	53-150	
1,2-Dibromoethane (EDB)	ug/L	<1.0	20	20.1	101	65-137	
1,2-Dichlorobenzene	ug/L	<1.0	20	21.0	105	66-133	
1,2-Dichloroethane	ug/L	<1.0	20	21.1	105	54-138	
1,2-Dichloropropane	ug/L	<4.0	20	21.3	107	62-138	
1,3,5-Trimethylbenzene	ug/L	<1.0	20	21.4	107	58-140	
1,3-Dichlorobenzene	ug/L	<1.0	20	20.6	103	66-132	
1,3-Dichloropropane	ug/L	<1.0	20	21.5	107	66-134	
1,4-Dichlorobenzene	ug/L	<1.0	20	21.7	109	65-129	
2,2-Dichloropropane	ug/L	<4.0	20	21.7	109	40-150	
2-Butanone (MEK)	ug/L	<5.0	100	107	107	51-147	
2-Chlorotoluene	ug/L	<1.0	20	21.2	106	58-147	
4-Chlorotoluene	ug/L	<1.0	20	20.8	104	64-138	
4-Methyl-2-pentanone (MIBK)	ug/L	<5.0	100	119	119	59-143	
Acetone	ug/L	<20.0	100	109	109	63-147	
Allyl chloride	ug/L	<4.0	20	21.3	107	45-150	
Benzene	ug/L	<1.0	20	20.6	103	53-139	

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QUALITY CONTROL DATA

Project: PS BETA NIROP

Pace Project No.: 10322358

MATRIX SPIKE SAMPLE: 2083602		10321760001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Bromobenzene	ug/L	<1.0	20	21.8	109	66-136	
Bromochloromethane	ug/L	<1.0	20	21.2	106	64-136	
Bromodichloromethane	ug/L	<1.0	20	20.7	104	66-138	
Bromoform	ug/L	<4.0	20	20.1	101	59-136	
Bromomethane	ug/L	<4.0	20	25.7	128	30-150	
Carbon tetrachloride	ug/L	<1.0	20	21.2	106	56-150	
Chlorobenzene	ug/L	<1.0	20	22.2	111	65-133	
Chloroethane	ug/L	<1.0	20	24.3	121	48-150	
Chloroform	ug/L	<1.0	20	22.1	111	57-145	
Chloromethane	ug/L	<4.0	20	23.6	118	30-150	
cis-1,2-Dichloroethene	ug/L	<1.0	20	21.3	107	49-150	
cis-1,3-Dichloropropene	ug/L	<4.0	20	20.1	100	64-130	
Dibromochloromethane	ug/L	<1.0	20	21.3	106	68-138	
Dibromomethane	ug/L	<4.0	20	21.2	106	67-134	
Dichlorodifluoromethane	ug/L	<1.0	20	27.5	137	45-150	
Dichlorofluoromethane	ug/L	<1.0	20	21.5	107	54-150	
Diethyl ether (Ethyl ether)	ug/L	<4.0	20	22.4	112	50-145	
Ethylbenzene	ug/L	<1.0	20	20.9	105	55-139	
Hexachloro-1,3-butadiene	ug/L	<1.0	20	20.4	102	49-150	
Isopropylbenzene (Cumene)	ug/L	<1.0	20	20.1	101	64-142	
Methyl-tert-butyl ether	ug/L	<1.0	20	21.8	109	62-129	
Methylene Chloride	ug/L	<4.0	20	19.0	95	57-132	
n-Butylbenzene	ug/L	<1.0	20	20.9	105	55-150	
n-Propylbenzene	ug/L	<1.0	20	20.0	100	59-142	
Naphthalene	ug/L	<4.0	20	20.2	101	51-150	
p-Isopropyltoluene	ug/L	<1.0	20	22.2	111	60-149	
sec-Butylbenzene	ug/L	<1.0	20	19.0	95	60-150	
Styrene	ug/L	<1.0	20	21.8	109	68-134	
tert-Butylbenzene	ug/L	<1.0	20	19.5	97	62-146	
Tetrachloroethene	ug/L	<1.0	20	21.2	104	50-150	
Tetrahydrofuran	ug/L	<10.0	200	208	104	59-145	
Toluene	ug/L	<1.0	20	20.1	100	52-148	
trans-1,2-Dichloroethene	ug/L	<1.0	20	21.8	109	45-150	
trans-1,3-Dichloropropene	ug/L	<4.0	20	20.9	105	68-132	
Trichloroethene	ug/L	<0.40	20	19.5	97	52-150	
Trichlorofluoromethane	ug/L	<1.0	20	23.5	118	55-150	
Vinyl chloride	ug/L	<1.0	20	22.1	111	43-150	
Xylene (Total)	ug/L	<3.0	60	63.8	106	54-144	
1,2-Dichloroethane-d4 (S)	%				98	75-125	
4-Bromofluorobenzene (S)	%				97	75-125	
Toluene-d8 (S)	%				101	75-125	

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QUALITY CONTROL DATA

Project: PS BETA NIROP

Pace Project No.: 10322358

SAMPLE DUPLICATE: 2083603

Parameter	Units	10321760002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<1.0	ND		30	
1,1,1-Trichloroethane	ug/L	<1.0	ND		30	
1,1,2,2-Tetrachloroethane	ug/L	<1.0	ND		30	
1,1,2-Trichloroethane	ug/L	<1.0	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/L	<1.0	ND		30	
1,1-Dichloroethane	ug/L	<1.0	ND		30	
1,1-Dichloroethene	ug/L	<1.0	ND		30	
1,1-Dichloropropene	ug/L	<1.0	ND		30	
1,2,3-Trichlorobenzene	ug/L	<1.0	ND		30	
1,2,3-Trichloropropane	ug/L	<4.0	ND		30	
1,2,4-Trichlorobenzene	ug/L	<1.0	ND		30	
1,2,4-Trimethylbenzene	ug/L	<1.0	ND		30	
1,2-Dibromo-3-chloropropane	ug/L	<4.0	ND		30	
1,2-Dibromoethane (EDB)	ug/L	<1.0	ND		30	
1,2-Dichlorobenzene	ug/L	<1.0	ND		30	
1,2-Dichloroethane	ug/L	<1.0	ND		30	
1,2-Dichloropropane	ug/L	<4.0	ND		30	
1,3,5-Trimethylbenzene	ug/L	<1.0	ND		30	
1,3-Dichlorobenzene	ug/L	<1.0	ND		30	
1,3-Dichloropropane	ug/L	<1.0	ND		30	
1,4-Dichlorobenzene	ug/L	<1.0	ND		30	
2,2-Dichloropropane	ug/L	<4.0	ND		30	
2-Butanone (MEK)	ug/L	<5.0	ND		30	
2-Chlorotoluene	ug/L	<1.0	ND		30	
4-Chlorotoluene	ug/L	<1.0	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/L	<5.0	ND		30	
Acetone	ug/L	<20.0	ND		30	
Allyl chloride	ug/L	<4.0	ND		30	
Benzene	ug/L	<1.0	ND		30	
Bromobenzene	ug/L	<1.0	ND		30	
Bromochloromethane	ug/L	<1.0	ND		30	
Bromodichloromethane	ug/L	<1.0	ND		30	
Bromoform	ug/L	<4.0	ND		30	
Bromomethane	ug/L	<4.0	ND		30	
Carbon tetrachloride	ug/L	<1.0	ND		30	
Chlorobenzene	ug/L	<1.0	ND		30	
Chloroethane	ug/L	<1.0	ND		30	
Chloroform	ug/L	<1.0	ND		30	
Chloromethane	ug/L	<4.0	ND		30	
cis-1,2-Dichloroethene	ug/L	<1.0	ND		30	
cis-1,3-Dichloropropene	ug/L	<4.0	ND		30	
Dibromochloromethane	ug/L	<1.0	ND		30	
Dibromomethane	ug/L	<4.0	ND		30	
Dichlorodifluoromethane	ug/L	<1.0	ND		30	
Dichlorofluoromethane	ug/L	<1.0	ND		30	
Diethyl ether (Ethyl ether)	ug/L	<4.0	ND		30	
Ethylbenzene	ug/L	<1.0	ND		30	

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QUALITY CONTROL DATA

Project: PS BETA NIROP

Pace Project No.: 10322358

SAMPLE DUPLICATE: 2083603

Parameter	Units	10321760002 Result	Dup Result	RPD	Max RPD	Qualifiers
Hexachloro-1,3-butadiene	ug/L	<1.0	ND		30	
Isopropylbenzene (Cumene)	ug/L	<1.0	ND		30	
Methyl-tert-butyl ether	ug/L	<1.0	ND		30	
Methylene Chloride	ug/L	<4.0	ND		30	
n-Butylbenzene	ug/L	<1.0	ND		30	
n-Propylbenzene	ug/L	<1.0	ND		30	
Naphthalene	ug/L	<4.0	1.1J		30	
p-Isopropyltoluene	ug/L	<1.0	ND		30	
sec-Butylbenzene	ug/L	<1.0	ND		30	
Styrene	ug/L	<1.0	ND		30	
tert-Butylbenzene	ug/L	<1.0	ND		30	
Tetrachloroethene	ug/L	<1.0	.29J		30	
Tetrahydrofuran	ug/L	<10.0	ND		30	
Toluene	ug/L	<1.0	.15J		30	
trans-1,2-Dichloroethene	ug/L	<1.0	ND		30	
trans-1,3-Dichloropropene	ug/L	<4.0	ND		30	
Trichloroethene	ug/L	<0.40	ND		30	
Trichlorofluoromethane	ug/L	<1.0	ND		30	
Vinyl chloride	ug/L	<1.0	ND		30	
Xylene (Total)	ug/L	<3.0	ND		30	
1,2-Dichloroethane-d4 (S)	%	98	100	2		
4-Bromofluorobenzene (S)	%	100	98	2		
Toluene-d8 (S)	%	98	99	0		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS BETA NIROP

Pace Project No.: 10322358

QC Batch: MT/20609

Analysis Method: SM 4500-S2-D

QC Batch Method: SM 4500-S2-D

Analysis Description: 4500S2D Sulfide Water

Associated Lab Samples: 10322358001, 10322358002, 10322358003, 10322358004

METHOD BLANK: 2084368

Matrix: Water

Associated Lab Samples: 10322358001, 10322358002, 10322358003, 10322358004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfide	mg/L	ND	0.10	09/21/15 15:50	

LABORATORY CONTROL SAMPLE: 2084369

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide	mg/L	1	1.0	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2084371 2084372

Parameter	Units	10322623002 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	Max		Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	
Sulfide	mg/L	ND	1	1	0.90	0.94	87	91	80-120	5	20	

SAMPLE DUPLICATE: 2084370

Parameter	Units	10322358001 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide	mg/L	ND	.01J		20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS BETA NIROP

Pace Project No.: 10322358

QC Batch: WET/33115 Analysis Method: SM 2320B
 QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
 Associated Lab Samples: 10322358001, 10322358002, 10322358003, 10322358004

METHOD BLANK: 1338387 Matrix: Water

Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Carbon Dioxide (SM4500CO2D)	mg/L	ND	5.0	09/22/15 10:32	

SAMPLE DUPLICATE: 1338389

Parameter	Units	10322358001 Result	Dup Result	RPD	Max RPD	Qualifiers
Carbon Dioxide (SM4500CO2D)	mg/L	31.6	30.0	5		

SAMPLE DUPLICATE: 1338390

Parameter	Units	35208023002 Result	Dup Result	RPD	Max RPD	Qualifiers
Carbon Dioxide (SM4500CO2D)	mg/L	<5.0	ND			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS BETA NIROP
Pace Project No.: 10322358

QC Batch: WET/44230 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 10322358001, 10322358002, 10322358003, 10322358004

METHOD BLANK: 2084191 Matrix: Water
Associated Lab Samples: 10322358001, 10322358002, 10322358003, 10322358004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	ND	5.0	09/21/15 09:11	
Alkalinity,Bicarbonate (CaCO3)	mg/L	ND	5.0	09/21/15 09:11	
Alkalinity,Carbonate (CaCO3)	mg/L	ND	5.0	09/21/15 09:11	

LABORATORY CONTROL SAMPLE & LCSD: 2084192 2084193

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	40	43.1	40.8	108	102	90-110	5	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2084196 2084197

Parameter	Units	10321567002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	357000 ug/L	40	40	394	396	93	98	80-120	1	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2084310 2084311

Parameter	Units	10321999002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	43.4	40	40	82.1	85.1	97	104	80-120	4	30	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS BETA NIROP

Pace Project No.: 10322358

QC Batch: WETA/24782 Analysis Method: EPA 300.0
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
 Associated Lab Samples: 10322358001, 10322358002, 10322358003, 10322358004

METHOD BLANK: 2084245 Matrix: Water
 Associated Lab Samples: 10322358001, 10322358002, 10322358003, 10322358004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.2	09/21/15 14:38	

LABORATORY CONTROL SAMPLE: 2084246

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	12.5	11.9	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2084247 2084248

Parameter	Units	10322326001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	20.4	12.5	12.5	30.5	30.5	81	81	90-110	0	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2084249 2084250

Parameter	Units	10322326002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	151	62.5	62.5	197	197	74	74	90-110	0	20	M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS BETA NIROP

Pace Project No.: 10322358

QC Batch: WETA/24726 Analysis Method: EPA 353.2
 QC Batch Method: EPA 353.2 Analysis Description: 353.2 Nitrate + Nitrite, preserved
 Associated Lab Samples: 10322358001, 10322358002, 10322358003, 10322358004

METHOD BLANK: 2080328 Matrix: Water
 Associated Lab Samples: 10322358001, 10322358002, 10322358003, 10322358004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	ND	0.020	09/23/15 10:01	

LABORATORY CONTROL SAMPLE: 2080329

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	1	0.98	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2080330 2080331

Parameter	Units	10322358001 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.								
Nitrogen, NO2 plus NO3	mg/L	ND	1	1	0.81	0.81	81	81	90-110	0	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2080332 2080333

Parameter	Units	10322384003 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.								
Nitrogen, NO2 plus NO3	mg/L	14.9	20	20	34.2	34.4	96	98	90-110	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS BETA NIROP

Pace Project No.: 10322358

QC Batch: WETA/24784 Analysis Method: SM 5220D
 QC Batch Method: SM 5220D Analysis Description: 5220D COD
 Associated Lab Samples: 10322358001, 10322358002, 10322358003, 10322358004

METHOD BLANK: 2084265 Matrix: Water
 Associated Lab Samples: 10322358001, 10322358002, 10322358003, 10322358004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50.0	09/21/15 13:23	

LABORATORY CONTROL SAMPLE: 2084266

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	300	295	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2084267 2084268

Parameter	Units	10322271001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chemical Oxygen Demand	mg/L	896	500	500	1270	1250	74	71	80-120	2	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2084269 2084270

Parameter	Units	10321930001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chemical Oxygen Demand	mg/L	ND	250	250	272	256	100	93	80-120	6	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS BETA NIROP

Pace Project No.: 10322358

QC Batch: WETA/13828

Analysis Method: SM 5310C

QC Batch Method: SM 5310C

Analysis Description: 5310C TOC

Associated Lab Samples: 10322358001, 10322358002, 10322358003, 10322358004

METHOD BLANK: 249994

Matrix: Water

Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	09/24/15 01:46	

LABORATORY CONTROL SAMPLE: 249995

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	25	25.5	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 249996 249997

Parameter	Units	10322358001		249996		249997		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec					MSD % Rec
Total Organic Carbon	mg/L	2.2	25	25	27.5	26.8	101	98	80-120	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 249998 249999

Parameter	Units	10322626001		249998		249999		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec					MSD % Rec
Total Organic Carbon	mg/L	0.46J	25	25	25.9	25.5	102	100	80-120	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: PS BETA NIROP
Pace Project No.: 10322358

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M Pace Analytical Services - Minneapolis
PASI-MT Pace Analytical Services - Montana
PASI-O Pace Analytical Services - Ormond Beach
PASI-V Pace Analytical Services - Virginia

ANALYTE QUALIFIERS

L0 Analyte recovery in the laboratory control sample (LCS) was outside QC limits.

L2 Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results may be biased low.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PS BETA NIROP
Pace Project No.: 10322358

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10322358001	PMW-04	RSK 175	AIR/24188		
10322358002	PMW-03	RSK 175	AIR/24188		
10322358003	PMW-02	RSK 175	AIR/24188		
10322358004	PMW-01	RSK 175	AIR/24188		
10322358001	PMW-04	EPA 3010	MPRP/57887	EPA 6010C	ICP/25328
10322358002	PMW-03	EPA 3010	MPRP/57887	EPA 6010C	ICP/25328
10322358003	PMW-02	EPA 3010	MPRP/57887	EPA 6010C	ICP/25328
10322358004	PMW-01	EPA 3010	MPRP/57887	EPA 6010C	ICP/25328
10322358001	PMW-04	EPA 3010	MPRP/57978	6010C Met	ICP/25343
10322358002	PMW-03	EPA 3010	MPRP/57978	6010C Met	ICP/25343
10322358003	PMW-02	EPA 3010	MPRP/57978	6010C Met	ICP/25343
10322358004	PMW-01	EPA 3010	MPRP/57978	6010C Met	ICP/25343
10322358001	PMW-04	EPA 8260B	MSV/33204		
10322358002	PMW-03	EPA 8260B	MSV/33204		
10322358003	PMW-02	EPA 8260B	MSV/33205		
10322358004	PMW-01	EPA 8260B	MSV/33204		
10322358005	Trip Blank	EPA 8260B	MSV/33204		
10322358001	PMW-04	SM 4500-S2-D	MT/20609		
10322358002	PMW-03	SM 4500-S2-D	MT/20609		
10322358003	PMW-02	SM 4500-S2-D	MT/20609		
10322358004	PMW-01	SM 4500-S2-D	MT/20609		
10322358001	PMW-04	SM 2320B	WET/33115		
10322358001	PMW-04	SM 2320B	WET/44230		
10322358002	PMW-03	SM 2320B	WET/33115		
10322358002	PMW-03	SM 2320B	WET/44230		
10322358003	PMW-02	SM 2320B	WET/33115		
10322358003	PMW-02	SM 2320B	WET/44230		
10322358004	PMW-01	SM 2320B	WET/33115		
10322358004	PMW-01	SM 2320B	WET/44230		
10322358001	PMW-04	EPA 300.0	WETA/24782		
10322358002	PMW-03	EPA 300.0	WETA/24782		
10322358003	PMW-02	EPA 300.0	WETA/24782		
10322358004	PMW-01	EPA 300.0	WETA/24782		
10322358001	PMW-04	EPA 353.2	WETA/24726		
10322358002	PMW-03	EPA 353.2	WETA/24726		
10322358003	PMW-02	EPA 353.2	WETA/24726		
10322358004	PMW-01	EPA 353.2	WETA/24726		
10322358001	PMW-04	SM 5220D	WETA/24784	SM 5220D	WETA/24789
10322358002	PMW-03	SM 5220D	WETA/24784	SM 5220D	WETA/24789
10322358003	PMW-02	SM 5220D	WETA/24784	SM 5220D	WETA/24789

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PS BETA NIROP

Pace Project No.: 10322358

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10322358004	PMW-01	SM 5220D	WETA/24784	SM 5220D	WETA/24789
10322358001	PMW-04	SM 5310C	WETA/13828		
10322358002	PMW-03	SM 5310C	WETA/13828		
10322358003	PMW-02	SM 5310C	WETA/13828		
10322358004	PMW-01	SM 5310C	WETA/13828		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

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

W0322358



Page: 1 of 2
1988129
REGULATORY AGENCY
NPDES GROUND WATER DRINKING WATER
UST RCRA OTHER
Site Location STATE: M

Section C Invoice Information:
Attention: BAHAR NAPIRI
Company Name: REGENESIS
Address: 1011 CALLE SOMBERA
Pace Quote Reference: 21466
Pace Project Manager:
Pace Profile #:

Section B Required Project Information:
Report To: MEUSSA PHAM
Copy To:
Purchase Order No.:
Project Name: PS-BETA-NIROP
Project Number: PS BETA NIROP

Section A Required Client Information:
Company: REGENESIS
Address: 1011 CALLE SOMBERA
City: SAN CLEMENTE, CA 95067
Email: MEUSSA@REGENESIS.COM
Phone: 916-366-8000 Fax: 313-366-8000
Requested Due Date/TAT: 10 DAYS

ITEM #	Section D Required Client Information SAMPLE ID (A-Z, 0-9 / . -) Sample IDs MUST BE UNIQUE	Matrix Codes MATRIX / CODE DW Drinking Water WT Waste Water WW Waste Water P Product SL Soil/Solid OL Oil WP Wipe AR Air TS Tissue OT Other	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP) (see valid codes to left)	MATRIX CODE (see valid codes to left)	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	PRESERVATIVES		Requested Analysis Filtered (Y/N)																				
			COMPOSITE START	COMPOSITE END/GRAB					DATE	TIME	UNPRESERVED	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other Zn/C Acetate	ALKALINITY CaCO3 IN WATER	CHEMICAL OXYGEN DEMAND	TOTAL IRON	DISSOLVED IRON	Volatile fatty Acids	GREEN BIOGAS IN WATER	NITRATE + NITRITE	SULFATE IN WATER	SULFIDE IN WATER	TOTAL DELTAIC CARBON	CARBON IN WATER	ETHANOL ETHANE METHANE	Residual Chlorine (Y/N)
1	PMW-04				9/15/15	1425			33	3	2	18																			901
2	PMW-03				9/15/15	1545			33	9	3	18																		002	
3	PMW-02				9/16/15	1335			33	9	3	18																		003	
4	PMW-01				9/16/15	1425			33	9	3	18																		004	
5																															
6																															
7																															
8																															
9																															
10																															
11																															
12																															

RECEIVED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION		DATE	TIME	SAMPLE CONDITIONS		
			DATE	TIME			Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
<u>Meussa Meuwesen</u>	<u>9/14/15</u>	<u>1704</u>	<u>Bl M</u>	<u>Pace</u>	<u>9/16/15</u>	<u>1704</u>	<u>Y</u>	<u>N</u>	<u>Y</u>
							<u>Y</u>	<u>N</u>	<u>Y</u>

ORIGINAL
SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: MEUSSA MEUWSEN
SIGNATURE of SAMPLER: [Signature]
DATE Signed (MM/DD/YY): 9/16/15



CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 2 of 2
 1796538

Section A
 Required Client Information:
 Company: REGENESIS
 Address: 1011 CALLE SOMBRERA
 Email To: SAN CLEMENTE, CA 92263
 Phone: MPHAM@REGENESIS.COM
 949-366-8000 / 343-366-8080
 Requested Due Date/TAT: 10 days

Section B
 Required Project Information:
 Report To: MELINDA PHAM
 Copy To:
 Purchase Order No.:
 Project Name: PS BETA - NIROP
 Project Number: PS BETA - NIROP

Section C
 Invoice Information:
 Attention: BARBAR NABER
 Company Name: REGENESIS
 Address: 1011 CALLE SOMBRERA
 Pace Quote Reference: 21466
 Pace Project Manager:
 Pace Profile #:

Section D
 Required Client Information:
 Matrix Codes
 MATRIX L CODE
 Drinking Water DW
 Water WT
 Waste Water WW
 Product P
 Soil/Solid SL
 Oil OL
 Wipe WP
 Air AR
 Tissue TS
 Other OT

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

ITEM #	Matrix Codes	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	MATRIX CODE (see valid codes to left)	Requested Analysis Filtered (Y/N)		Preservatives	# OF CONTAINERS	ACCEPTED BY / AFFILIATION	DATE	TIME	DATE	TIME	SAMPLE CONDITIONS	Temp in °C	Received on	Ice (Y/N)	Custody	Sealed Cooler (Y/N)	Samples Intact (Y/N)	
		COMPOSITE START	COMPOSITE END/GRAB			DATE	TIME															DATE
1	PMW-04																					
2	PMW-03																					
3	PMW-02																					
4	PMW-01																					
5	TRIP BLANK																					
6																						
7																						
8																						
9																						
10																						
11																						
12																						

Section D
 Additional Comments: 9/16/15 / AELOM

RELINQUISHED BY / AFFILIATION: BLM Pace DATE: 9/16/15 TIME: 1704

ACCEPTED BY / AFFILIATION: BLM Pace DATE: 9/16/15 TIME: 1704

SAMPLER NAME AND SIGNATURE: MELINDA PHAM

PRINT Name of SAMPLER: MELINDA PHAM DATE Signed (MM/DD/YY): 9/16/15


SIGNATURE of SAMPLER: [Signature]

ORIGINAL

Sample Condition Upon Receipt

Client Name: Acion Project #: _____

WO#: 10322358



10322358

Courier: Fed Ex UPS USPS Client
 Commercial Pace SpeeDee Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No Optional: Proj. Due Date: _____ Proj. Name: _____

Packing Material: Bubble Wrap Bubble Bags None Other: _____ Temp Blank? Yes No

Thermometer Used: B88A9130516413 B88A912167504 B88A0143310098 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temp Read (°C): 1.9, 2.2 Cooler Temp Corrected (°C): 1.7, 2.0 Biological Tissue Frozen? Yes No N/A
 Temp should be above freezing to 6°C Correction Factor: -0.2 Date and Initials of Person Examining Contents: RA 9/16/15

USDA Regulated Soil (N/A, water sample)
 Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or WA (check maps)? Yes No Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No
If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WJ</u>	
All containers needing acid/base preservation have been checked? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13. <u>2/3</u> <input checked="" type="checkbox"/> HNO ₃ <u>2/3</u> <input type="checkbox"/> H ₂ SO ₄ <u>1</u> <input checked="" type="checkbox"/> NaOH <input type="checkbox"/> HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Sample # <u>01-04</u>
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Initial when completed: <u>RA</u> Lot # of added preservative: <u>1115070</u>
Headspace in VOA Vials (>6mm)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): <u>072315-01</u>	

CLIENT NOTIFICATION/RESOLUTION


Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____
 Comments/Resolution: Received BP3S for TOC analysis, Confirmed with client to proceed with analysis. JUN 9/17/15

Project Manager Review: [Signature]

Date: 9/17/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

	Document Name: MN to MT Sample Transfer Form	Revised Date: 14 Jul 2014 Page: 1 of 1
	Document Number: F-MN-C-043-rev.11	Issuing Authority: Pace Minnesota Quality Office

Shipping (circle):	UPS Fed Ex
Tracking #:	6484 86916218
Client:	Regenesis
Due Date:	1-Oct-2015 9/24/15
Pace WO:	10322358
Project Manager:	JMA

MN to MT Sample Transfer Condition Upon Receipt Form

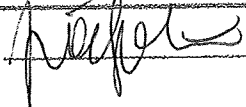
ANALYSIS REQUESTED					
Method Number & Description	Container Type	# of Bottles	Lab ID's	Preservative Yes or No	Verify Arrival Date & Initials
4600S2D Sulfide Water	BP2Z	1	001-004		10/19/15

REPORTING REQUIREMENTS/ADDITIONAL COMMENTS

MONTANA SAMPLE RECEIPT INFORMATION			
IR Gun: B88A0140728348, Correction Factor:		Sample Matrix:	H ₂ O
Cooler Temp Read (°C): 1.8	Cooler Temp Corrected (°C): 1.6	Filtered volume rec'd for dissolved tests:	Yes ___ No ___ NA <input checked="" type="checkbox"/>
Arrived on Ice:	Yes <input checked="" type="checkbox"/> No ___	Samples pH have been checked:	Yes <input checked="" type="checkbox"/> No ___ NA ___
Custody Seal Present:	Yes <input checked="" type="checkbox"/> No ___	Trip Blank Present:	Yes ___ No ___ NA <input checked="" type="checkbox"/>
Short Hold Time Requested < 72 Hours:	Yes ___ No <input checked="" type="checkbox"/>	Trip Blank Custody Seals Present:	Yes ___ No ___ NA <input checked="" type="checkbox"/>
Rush TAT Requested:	Yes ___ No <input checked="" type="checkbox"/>	Pace Trip Blank Lot #:	N/A
Sufficient Sample Volume:	Yes <input checked="" type="checkbox"/> No ___	Sample Composites Required:	Yes ___ No ___ NA <input checked="" type="checkbox"/>
Samples Arrived within Hold Time:	Yes <input checked="" type="checkbox"/> No ___	Report Samples:	Wet Wt. ___ Dry Wt. ___
Containers Intact:	Yes <input checked="" type="checkbox"/> No ___	Reporting Units:	

CUSTODY TRANSFER					
Relinquished by/Affiliation	Date	Time	Accepted By/Affiliation	Date	Time
CAI Pace Fed Ex	9/17/15	11:59	M. J. J. - Pace	9/19/15	12:40

CLIENT NOTIFICATION/RESOLUTION	
Person Contacted: _____	Date: _____
Comments/Resolution: _____	

Project Manager Review:  Date: 9/21/2015

Chain of Custody

MO# : 1253758

PM: HRZ Due Date: 09/25/15
 CLIENT: PACE MPLS

eAnalytical
 www.pacepls.com

Workorder: 10322358 Workorder Name: PS BETA NIROP

Owner Received Date: 9/16/2015 Results Requested By:

10/11/2015 10/11/15

Jennifer Anderson
 Pace Analytical Services, Inc.
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone (612)607-1700
 Fax (612)607-6444

Pace Analytical Virginia MN
 315 Chestnut Street
 Virginia, MN 55792
 Phone (218)742-1042


Lab ID	Sample ID	Collect Date/Time	Lab ID	Water	H2SO4	Requester	Analysis	Requested	Analysis	Requested	Analysis	Requested	Analysis	Requested	Analysis	Requested	Analysis
1	PMW-04	9/15/2015 14:25	10322358001	Water	1												
2	PMW-03	9/15/2015 15:45	10322358002	Water	1												
3	PMW-02	9/16/2015 11:35	10322358003	Water	1												
4	PMW-01	9/16/2015 14:25	10322358004	Water	1												
5																	
Comments																	
Cooler Temperature on Receipt 2-5°C Custody Seal <i>DF</i> N Received on Ice <i>DF</i> or N Samples Intact <i>DF</i> N																	
Transfers		Released By	Date/Time	Received By	Date/Time												
1		<i>[Signature]</i>	9/17/15 10:34	<i>[Signature]</i>	9/17/15 18:45												
2		<i>[Signature]</i>	9/17/15 22:44														
3																	

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.**

Sample Condition Upon Receipt

Client Name: Pace - MN Project #: _____

WO# : 1253758



1253758

Courier: Fed Ex UPS USPS Client
 Commercial Pace Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No

Optional: Proj. Due Date: _____ Proj. Name: _____

Packing Material: Bubble Wrap Bubble Bags None Other: _____ Temp Blank? Yes No

Thermometer Used: 140792808 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temp Read °C: 2.8 Cooler Temp Corrected °C: 9.1 Biological Tissue Frozen? Yes No N/A
 Temp should be above freezing to 6°C Correction Factor: 6.3 Date and Initials of Person Examining Contents: JJE 9/22/15

Comments:

Chain of Custody Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and Signature on COC?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix:		
All containers needing acid/base preservation will be checked and documented in the pH logbook.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: [Signature] Date: 9/22/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

WO#: 35208148



35208148



Pace Analytical
www.pacelabs.com

Workorder: 10322358 Workorder Name: PS BETA NIROP

Owner Received Date: 9/16/2015 Results Requested By: 10/1/2015

9/24/15

Jennifer Anderson
Pace Analytical Services, Inc.
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone (612)607-1700
Fax (612)607-6444

Pace Analytical Ormond Beach
8 East Tower Circle
Ormond Beach, FL 32174
Phone (386)672-5668

Requested Analysis

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers				LAB USE ONLY	
						H	C	Q	W		
1	PMW-04	PS	9/15/2015 14:25	10322358001	Water	1					
2	PMW-03	PS	9/15/2015 15:45	10322358002	Water	1					
3	PMW-02	PS	9/16/2015 11:35	10322358003	Water	1					
4	PMW-01	PS	9/16/2015 14:25	10322358004	Water	1					
5											

Carbon Dioxide in water

Transfers	Released By	Date/Time	Received By	Date/Time	Received on Ice	Y or N	Y or N	Y or N
1	JAC Pace	9/17/15 11:20	MOS	7/16/15				
2								
3								

756922

Cooler Temperature on Receipt 4.1 °C Custody Seal Y or N Received on Ice Y or N Samples Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.



Document Name:
Sample Condition Upon Receipt Form
Document No.:
F-FL-C-007-rev-06

Document Revised:
August 11, 2014
Issuing Authority:
Pace Florida Quality Office

Sample Condition Upon Receipt Form (SCUR)

Table Number: _____

Client Name: Pace Minneapolis Project # 35208148

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking # 6484 8091 6230

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Date and Initials of person examining contents: 9/18/15 SD

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used T-213 Type of Ice: Wet Blue None

Cooler Temperature°C 4.1 (Visual) 0 (Correction Factor) 4.1 (Actual)

(Temp should be above freezing to 6°C). If below 0°C, then was sample frozen?
 Yes No

Receipt of samples satisfactory: Yes No

Rush TAT requested on COC: _____

If yes, then all conditions below were met:

If no, then mark box & describe issue (use comments area if necessary):

Chain of Custody Present	<input type="checkbox"/>
Chain of Custody Filled Out	<input type="checkbox"/>
Relinquished Signature & Sampler Name COC	<input type="checkbox"/>
Samples Arrived within Hold Time	<input type="checkbox"/>
Sufficient Volume	<input type="checkbox"/>
Correct Containers Used	<input type="checkbox"/>
Containers Intact	<input type="checkbox"/>
Sample Labels match COC (sample IDs & date/time of collection)	<input type="checkbox"/>
	No Labels: <input type="checkbox"/> No Time/Date on Labels: <input type="checkbox"/>
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/>
No Headspace in VOA Vials (>6mm):	<input type="checkbox"/>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____

Comments/ Resolution (use back for additional comments):

Project Manager Review: _____ Date: 9/21

Finished Product Information Only	
F.P. Sample ID: _____	Size & Qty of Bottles Received _____ x 5 Gal _____ x 2.5 Gal _____ x 1 Gal _____ x 1 Liter _____ x 500 mL _____ x 250 mL _____ x Other: _____
Production Code: _____	
Date/Time Opened: _____	
Number of Unopened Bottles Remaining: _____	
Extra Sample in Shed: Yes No	



Pace Analytical Energy Services, LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

September 30, 2015

Jennifer Anderson
Pace Analytical Services, Inc.
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: **PS BETA NIROP / 10322358**

Pace Workorder: 16727

Dear Jennifer Anderson:

Enclosed are the analytical results for sample(s) received by the laboratory on Tuesday, September 22, 2015. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

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

Sincerely,

Ruth Welsh 09/30/2015

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email info@microseeps.com.

Total Number of Pages 13

Report ID: 16727 - 708946

Page 1 of 11



CERTIFICATE OF ANALYSIS

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LABORATORY ACCREDITATIONS & CERTIFICATIONS

Accreditor:	Pennsylvania Department of Environmental Protection, Bureau of Laboratories
Accreditation ID:	02-00538
Scope:	NELAP Non-Potable Water and Solid & Hazardous Waste
Accreditor:	South Carolina Department of Health and Environmental Control, Office of Environmental Laboratory Certification
Accreditation ID:	89009003
Scope:	Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: New Jersey, Department of Environmental Protection
Accreditation ID:	PA026
Scope:	Non-Potable Water; Solid and Chemical Materials
Accreditor:	NELAP: New York, Department of Health Wadsworth Center
Accreditation ID:	11815
Scope:	Non-Potable Water; Solid and Hazardous Waste
Accreditor:	State of Connecticut, Department of Public Health, Division of Environmental Health
Accreditation ID:	PH-0263
Scope:	Clean Water Act (CWA) Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: Texas, Commission on Environmental Quality
Accreditation ID:	T104704453-09-TX
Scope:	Non-Potable Water
Accreditor:	State of New Hampshire
Accreditation ID:	299409
Scope:	Non-potable water
Accreditor:	State of Georgia
Accreditation ID:	Chapter 391-3-26
Scope:	As per the Georgia EPD Rules and Regulations for Commercial Laboratories, PAES is accredited by the Pennsylvania Department of Environmental Protection Bureau of Laboratories under the National Environmental Laboratory Approval Program (NELAC).



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Pace Analytical Energy Services, LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

SAMPLE SUMMARY

Workorder: 16727 PS BETA NIROP / 10322358

Lab ID	Sample ID	Matrix	Date Collected	Date Received
167270001	PMW-04	Water	9/15/2015 14:25	9/22/2015 12:00
167270002	PMW-03	Water	9/15/2015 15:45	9/22/2015 12:00
167270003	PMW-02	Water	9/16/2015 11:35	9/22/2015 12:00
167270004	PMW-01	Water	9/16/2015 14:25	9/22/2015 12:00



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Pace Analytical Energy Services, LLC
 220 William Pitt Way
 Pittsburgh, PA 15238
 Phone: (412) 826-5245
 Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 16727 PS BETA NIROP / 10322358

Lab ID: 167270001 Date Received: 9/22/2015 12:00 Matrix: Water
 Sample ID: PMW-04 Date Collected: 9/15/2015 14:25

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM21G			Analytical Method: AM21G					
Acetic Acid	1.1J	mg/l	5.0	0.89	1	9/29/2015 21:54	BW	n
Propionic Acid	5.0	U mg/l	5.0	0.73	1	9/29/2015 21:54	BW	n
Pyruvic Acid	5.0	U mg/l	5.0	0.41	1	9/29/2015 21:54	BW	n
Butyric Acid	5.0	U mg/l	5.0	1.4	1	9/29/2015 21:54	BW	n
Lactic Acid	10	U mg/l	10	2.4	1	9/29/2015 21:54	BW	n



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ANALYTICAL RESULTS

Workorder: 16727 PS BETA NIROP / 10322358

Lab ID: 167270002 Date Received: 9/22/2015 12:00 Matrix: Water
 Sample ID: PMW-03 Date Collected: 9/15/2015 15:45

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM21G			Analytical Method: AM21G					
Acetic Acid	4.6J	mg/l	5.0	0.89	1	9/29/2015 00:17	BW	n
Propionic Acid	5.0 U	mg/l	5.0	0.73	1	9/29/2015 00:17	BW	n
Pyruvic Acid	5.0 U	mg/l	5.0	0.41	1	9/29/2015 00:17	BW	n
Butyric Acid	5.0 U	mg/l	5.0	1.4	1	9/29/2015 00:17	BW	n
Lactic Acid	10 U	mg/l	10	2.4	1	9/29/2015 00:17	BW	n



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Pace Analytical Energy Services, LLC
 220 William Pitt Way
 Pittsburgh, PA 15238
 Phone: (412) 826-5245
 Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 16727 PS BETA NIROP / 10322358

Lab ID: 167270003 Date Received: 9/22/2015 12:00 Matrix: Water
 Sample ID: PMW-02 Date Collected: 9/16/2015 11:35

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM21G			Analytical Method: AM21G					
Acetic Acid	1.7J	mg/l	5.0	0.89	1	9/29/2015 00:40	BW	n
Propionic Acid	5.0 U	mg/l	5.0	0.73	1	9/29/2015 00:40	BW	n
Pyruvic Acid	5.0 U	mg/l	5.0	0.41	1	9/29/2015 00:40	BW	n
Butyric Acid	5.0 U	mg/l	5.0	1.4	1	9/29/2015 00:40	BW	n
Lactic Acid	10 U	mg/l	10	2.4	1	9/29/2015 00:40	BW	n



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 Pittsburgh, PA 15238
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ANALYTICAL RESULTS

Workorder: 16727 PS BETA NIROP / 10322358

Lab ID: 167270004 Date Received: 9/22/2015 12:00 Matrix: Water
 Sample ID: PMW-01 Date Collected: 9/16/2015 14:25

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM21G			Analytical Method: AM21G					
Acetic Acid	5.0 U	mg/l	5.0	0.89	1	9/29/2015 01:04	BW	n
Propionic Acid	5.0 U	mg/l	5.0	0.73	1	9/29/2015 01:04	BW	n
Pyruvic Acid	5.0 U	mg/l	5.0	0.41	1	9/29/2015 01:04	BW	n
Butyric Acid	5.0 U	mg/l	5.0	1.4	1	9/29/2015 01:04	BW	n
Lactic Acid	10 U	mg/l	10	2.4	1	9/29/2015 01:04	BW	n



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Pace Analytical Energy Services, LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS QUALIFIERS

Workorder: 16727 PS BETA NIROP / 10322358

DEFINITIONS/QUALIFIERS

Disclaimer : The Pennsylvania Department of Environmental Protection (PADEP) has decided to no longer recognize analyses that do not produce data for primary compliance, for NELAP accreditation. The methods affected by this decision are AM20Gax, AM21G, SW846 7199 and AM4.02. The laboratory shall continue to administer the NELAP/TNI standard requirements in the performance of these methods.

- MDL Method Detection Limit. Can be used synonymously with LOD; Limit Of Detection.
- PQL Practical Quantitation Limit. Can be used synonymously with LOQ; Limit Of Quantitation.
- ND Not detected at or above reporting limit.
- DF Dilution Factor.
- S Surrogate.
- RPD Relative Percent Difference.
- % Rec Percent Recovery.
- U Indicates the compound was analyzed for, but not detected at or above the noted concentration.
- J Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).

- n The laboratory does not hold NELAP/TNI accreditation for this method or analyte.



CERTIFICATE OF ANALYSIS

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QUALITY CONTROL DATA

Workorder: 16727 PS BETA NIROP / 10322358

QC Batch: EDON/2645 Analysis Method: AM21G
 QC Batch Method: AM21G
 Associated Lab Samples: 167270001, 167270002, 167270003, 167270004

METHOD BLANK: 37261

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
EDonors				
Acetic Acid	mg/l	5.0 U	5.0	n
Propionic Acid	mg/l	5.0 U	5.0	n
Pyruvic Acid	mg/l	5.0 U	5.0	n
Butyric Acid	mg/l	5.0 U	5.0	n
Lactic Acid	mg/l	10 U	10	n

LABORATORY CONTROL SAMPLE: 37262

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
EDonors						
Acetic Acid	mg/l	100	95	95	70-130	n
Propionic Acid	mg/l	100	94	94	70-130	n
Pyruvic Acid	mg/l	100	83	83	70-130	n
Butyric Acid	mg/l	100	94	94	70-130	n
Lactic Acid	mg/l	100	90	90	70-130	n

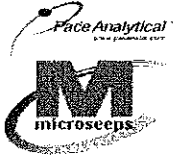
MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 37263 37264 Original: 167270001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	Max RPD	Qualifiers
EDonors										
Acetic Acid	mg/l	1.1	100	120	110	123	111	70-130	10 20	n
Propionic Acid	mg/l	0	100	120	110	117	107	70-130	8.9 20	n
Pyruvic Acid	mg/l	0	100	92	83	92	83	70-130	10 20	n
Butyric Acid	mg/l	0	100	120	110	118	107	70-130	9.8 20	n
Lactic Acid	mg/l	0	100	99	92	99	92	70-130	7.3 20	n



CERTIFICATE OF ANALYSIS

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Pace Analytical Energy Services, LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA QUALIFIERS

Workorder: 16727 PS BETA NIROP / 10322358

QUALITY CONTROL PARAMETER QUALIFIERS

n The laboratory does not hold NELAP/TNI accreditation for this method or analyte.



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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 16727 PS BETA NIROP / 10322358

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
167270001	PMW-04			AM21G	EDON/2645
167270002	PMW-03			AM21G	EDON/2645
167270003	PMW-02			AM21G	EDON/2645
167270004	PMW-01			AM21G	EDON/2645



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Chain of Custody

16727



Workorder: 10322358 Workorder Name: PS BETA NIROP Results Requested: 9/24/2015
 Report/Invoice To: Subcontract To: Requested Analysis:

Jennifer Anderson
 Pace Analytical Minnesota
 1700 Elm Street
 Suite 200
 Minneapolis, MN 55414
 Phone (612)607-1700
 Email: jennifer.anderson@pacelabs.com

Pace Energy Microseeps P.O. 10322358

Item	Sample ID	Collect. Date/Time	Lab ID	Matrix	Preserved Containers		LAB USE ONLY
					Unpreserved	Preserved	
1	PMW-04	9/15/2015 14:25	10322358001	Water	3		
2	PMW-03	9/15/2015 15:45	10322358002	Water	3		
3	PMW-02	9/16/2015 11:35	10322358003	Water	3		
4	PMW-01	9/16/2015 14:25	10322358004	Water	3		
5							

Volatile BathyAerics

Transfers	Released By	Date/Time	Received By	Date/Time	Received on Ice	Y or N	Y or N	Y or N	Comments
1	ALL Pac	9/15/15 08:00	NASA	9/22/15					
2			PAR	9/22/15					
3									

Cooler Temperature on Receipt: 3.8 °C Custody Seal: Y or N Received on Ice: Y or N Samples Intact: Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
 This chain of custody is considered complete as is since this information is available in the owner laboratory.

Cooler Receipt Form

Client Name: Pace - MN Project: 10322358 Lab Work Order: 16727

A. Shipping/Container Information (circle appropriate response)

Courier: FedEx UPS USPS Client Other: _____ Air bill Present: Yes No

Tracking Number: 648486916479

Custody Seal on Cooler/Box Present: Yes No Seals Intact: Yes No

Cooler/Box Packing Material: Bubble Wrap Absorbent Foam Other: _____

Type of Ice: Wet Blue None Ice Intact: Yes Melted

Cooler Temperature: 3.80C Radiation Screened: Yes No Chain of Custody Present: Yes No

Comments: _____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non-Conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished		✓		
Sampler Name & Signature on COC		✓		
Containers intact	✓			
Were samples in separate bags	✓			
Sample container labels match COC	✓			
Sample name/date and time collected	✓			
Sufficient volume provided	✓			
PAES containers used		✓		
Are containers properly preserved for the requested testing? (as labeled)			✓	
If an unknown preservation state, were containers checked? Exception: VOA's coliform			✓	If yes, see pH form.
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			✓	

Comments: _____

Cooler contents examined/received by: LY Date: 9-22-15

Project Manager Review: RW Date: 9-22-15



Pace Analytical Energy Services, LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

October 8, 2015

Jennifer Anderson
Pace Analytical Services, Inc.
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: **PS BETA NIROP / 10322358**

Pace Workorder: 16738

Dear Jennifer Anderson:

Enclosed are the analytical results for sample(s) received by the laboratory on Wednesday, September 23, 2015.

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

Sincerely,

Ruth Welsh 10/08/2015

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email info@microseeps.com.

Total Number of Pages 13

Report ID: 16738 - 712720

Page 1 of 4

CERTIFICATE OF ANALYSIS

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Page 67 of 78



Client Pace MN
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Project PS Beta Nirop
 Project # 10322358
 Report to Jennifer Anderson
 Tel: 612.607.1700
 Email: jennifer.anderson @ pacelabs.com

Pace Analytical CSIA Center
 220 William Pitt Way
 Pittsburgh, PA 15238
 Tel: 412.826.5245
 Report by: Dr. Yi Wang
 Director, CSIA Center of Excellence
 Cell: 609.721.2843
 Email: yi.wang@zymaxusa.com

REPORT OF ENVIRONMENTAL FORENSICS ISOTOPE ANALYSES

Date Received: 9/23/2015

Date Reported: 10/8/2015

Water sample submitted for $\delta^{13}\text{C}$ (‰ VPDB) stable carbon isotope forensics of chlorinated solvents

Pace CSIA Lab ID	Client's Sample ID Description	$\delta^{13}\text{C}$ TCE	$\delta^{13}\text{C}$ cDCE	$\delta^{13}\text{C}$ tDCE	$\delta^{13}\text{C}$ 11DCE	$\delta^{13}\text{C}$ 11DCA	$\delta^{13}\text{C}$ VC
16738-1	PMW-04	5.56	-13.30	-17.99	^U -	^U -	^U -
16738-2	PMW-03	-21.82	-28.09	-28.07	^U -	^U -	-29.94
16738-3	PMW-02	-0.63	-26.20	-35.25	-16.80	-27.41	-29.05
16738-4	PMW-01	-6.24	-29.87	-33.97	^J -13.89	-26.26	-31.62

cDCE & tDCE: *cis* & *trans*-1,2-dichloroethene
 TCE: trichloroethene

11DCA: 1,1-dichloroethane
 11DCE: 1,1-dichloroethene

VC: vinyl chloride

^J-Target analyte produced a low peak signal and the result is considered usable to $\pm 2\%$, but not the standard $\pm 0.5\%$

^U-Either there was no peak corresponding to the target analyte or that such a peak did not produce a reliable CSIA result

Method: Compound Specific Isotope Analysis for ^{13}C and ^2H by GC-IRMS, for ^{37}Cl by GC-qMS

Quality Control STDs	$\delta^{13}\text{C}$ TCE	$\delta^{13}\text{C}$ cDCE	$\delta^{13}\text{C}$ tDCE	$\delta^{13}\text{C}$ 11DCE	$\delta^{13}\text{C}$ 11DCA	$\delta^{13}\text{C}$ VC
QC-1	-25.15	-9.99	-20.51	-28.59	-32.00	-28.05
QC-2	-25.15	-9.89	-20.50	-28.33	-32.40	-28.14
Mean	-25.15	-9.94	-20.51	-28.46	-32.20	-28.10
Analytical precision (1 σ)	0.00	0.07	0.01	0.18	0.28	0.06

Pace CSIA Forensic Isotope Services

Product or Dissolved Organics: Chlorinated Solvents, Oil, Extract, Fraction and Kerogen

3D-CSIA of ^{13}C , ^{37}Cl , and ^2H for PCE, TCE, DCE, MTBE, BTEX, 1,4-Dioxane, Alkanes, Gasoline and Oil; Bulk ^{13}C , ^2H , ^{18}O , ^{34}S , and ^{15}N

Gas Sample

Gas Composition and 2D-CSIA of ^{13}C and ^2H of C1 to C5; ^{13}C of CO_2 ; ^{14}C of C1 and CO_2 ; ^{34}S of H_2S ; ^{15}N and ^{18}O of N_2O gas

Water and Dissolved Inorganics

^2H , ^3H and ^{18}O ; ^{34}S and ^{18}O of dissolved sulfate; ^{34}S of dissolved H_2S

^{15}N and ^{18}O of dissolved Nitrate; ^{15}N of Ammonia; ^{13}C of dissolved CO_2 and Carbonate/Bicarbonate

Soil and Minerals

^{13}C , ^{18}O , ^{15}N , ^{34}S , D/H; ^{14}C of carbonate or organics

Post-Analysis Forensic Isotope Data Interpretation

Pace CSIA Center of Excellence
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report Carbon

16738
 PACE-MN
 Client Project Name: PS Beta Nirop
 Client Project #: 10322358

Vinyl Chloride		Concentration			CSIA (Carbon)				Delta (‰)
		Sample	PQL	Date	Area	Co-elution	Analysis	Date	
Lab ID	Client ID	Sample	PQL	Date	Area	Co-elution	Analysis	Date	Delta (‰)
167380001	PMW-04	<0.4 (U)	0.4	9/19/15	<1 (U)	No	3903	10/6/15	-
167380002	PMW-03	1	0.4	9/19/15	2.60	No	3910	10/6/15	-29.94
167380003	PMW-02	3	1	9/21/15	4.92	No	3908	10/6/15	-29.05
167380004	PMW-01	1	0.4	9/19/15	2.30	No	3909	10/6/15	-31.62
Duplicate	PMW-04	ND	0.4	9/19/15	<1 (U)	No	3904	10/6/15	-
Blank	-	0	-	-	<1 (U)	No	3895	10/6/15	-
LCS_Lo	-	10	-	-	19.0	No	3899	10/6/15	-28.05
LCS_Hi	-	20	-	-	20.3	No	3900	10/6/15	-28.14
LCS acceptance range							-28.90	<=>	-27.90

Method	8260B	AM-24-AR_C	AM-24-DL_C
Units	ug/l	Vs	% VPDB
Analyst	PACE-MN	CJS	CJS

Pace CSIA Center of Excellence
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report Carbon

16738
 PACE-MN
 Client Project Name: PS Beta Nirop
 Client Project #: 10322358

1,1-Dichloroethene		Concentration (ug/l)				CSIA (Carbon)				
		Sample	PQL	Date	Area	Co-elution	Analysis	Date	Delta (%)	
Lab ID	Client ID									
167380001	PMW-04	<1 (U)	1	9/19/15	< 5 (U)	5	No	3903	10/6/15	-
167380002	PMW-03	<1 (U)	1	9/19/15	< 5 (U)	5	No	3910	10/6/15	-
167380003	PMW-02	17	1	9/21/15	16.4	5	No	3908	10/6/15	-16.80
167380004	PMW-01	2	1	9/19/15	4 (J)	5	No	3909	10/6/15	-13.89
Duplicate	PMW-04	ND	1	9/19/15	< 5 (U)	5	No	3904	10/6/15	-
Blank	-	0	-	-	<5 (U)	5	No	3895	10/6/15	-
LCS_Lo	-	10	-	-	9.34	5	No	3899	10/6/15	-28.59
LCS_Hi	-	50	-	-	43.2	5	No	3900	10/6/15	-28.33
LCS acceptance range								-29.48	<=>	-28.48

Method	8260B	AM-24-AR_C	AM-24-DL_C
Units	ug/l	Vs	% VPDB
Analyst	PACE-MN	CJS	CJS

Pace CSIA Center of Excellence
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report Carbon

16738
 PACE-MN
 Client Project Name: PS Beta Nirop
 Client Project #: 10322358

trans-Dichloroethene		Concentration (ug/l)				CSIA (Carbon)				
		Sample	PQL	Date	Area	Co-elution	Analysis	Date	Delta (‰)	
Lab ID	Client ID									
167380001	PMW-04	32	1	9/19/15	Sample 46.3	1	No	3903	10/6/15	-17.99
167380002	PMW-03	42	1	9/19/15	7.08	1	No	3905	10/6/15	-28.07
167380003	PMW-02	230	1	9/21/15	20.7	1	No	3906	10/6/15	-35.25
167380004	PMW-01	154	1	9/19/15	57.1	1	No	3907	10/6/15	-33.97
Duplicate	PMW-04	32	1	9/19/15	50.5	1	No	3904	10/6/15	-19.00
Blank	-	0	-	-	<1 (U)	1	No	3895	10/6/15	-
LCS_Lo	-	10	-	-	9.86	1	No	3899	10/6/15	-20.51
LCS_Hi	-	50	-	-	49.7	1	No	3900	10/6/15	-20.50
LCS acceptance range								-22.08	<=>	-21.08

Method	8260B	AM-24-AR_C	AM-24-DL_C
Units	ug/l	Vs	% VPDB
Analyst	PACE-MN	CJS	CJS

Pace CSIA Center of Excellence
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report Carbon

16738
 PACE-MN

Client Project Name: PS Beta Nirop
 Client Project #: 10322358

1,1-Dichloroethane		Concentration (ug/l)				CSIA (Carbon)				
		Sample	PQL	Date	Area	Co-elution	Analysis	Date	Delta (%)	
Lab ID	Client ID									
167380001	PMW-04	<1 (U)	1	9/19/15	< 4 (U)	4	No	3903	10/6/15	-
167380002	PMW-03	<1 (U)	1	9/19/15	< 4 (U)	4	No	3910	10/6/15	-
167380003	PMW-02	27	1	9/21/15	30.7	4	No	3908	10/6/15	-27.41
167380004	PMW-01	7	1	9/19/15	17.9	4	No	3909	10/6/15	-26.26
Duplicate	PMW-04	ND	1	9/19/15	< 4 (U)	4	No	3904	10/6/15	-
Blank	-	0	-	-	<4 (U)	4	No	3895	10/6/15	-
LCS_Lo	-	10	-	-	10.0	4	No	3901	10/6/15	-32.00
LCS_Hi	-	50	-	-	50.6	4	No	3900	10/6/15	-32.40
LCS acceptance range								-32.88	<=>	-31.88

Method	8260B	AM-24-AR_C	AM-24-DL_C
Units	ug/l	Vs	%o, VPDB
Analyst	PACE-MN	CJS	CJS

Pace CSIA Center of Excellence
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report Carbon

16738
 PACE-MN
 Client Project Name: PS Beta Nirop
 Client Project #: 10322358

cis-Dichloroethene		Concentration				CSIA (Carbon)			
		Sample	PQL	Date	Area	Co-elution	Analysis	Date	Delta (‰)
167380001	PMW-04	11	1	9/19/15	15.4	No	3903	10/6/15	-13.30
167380002	PMW-03	21	1	9/19/15	33.0	No	3910	10/6/15	-28.09
167380003	PMW-02	192	1	9/21/15	17.2	No	3906	10/6/15	-26.20
167380004	PMW-01	141	1	9/19/15	39.1	No	3907	10/6/15	-29.87
Duplicate	PMW-04	11	1	9/19/15	16.5	No	3904	10/6/15	-14.39
Blank	-	0	-	-	<1 (U)	No	3895	10/6/15	-
LCS_Lo	-	10	-	-	12.2	No	3899	10/6/15	-9.99
LCS_Hi	-	50	-	-	62.4	No	3900	10/6/15	-9.89
LCS acceptance range							-12.22	<=>	-11.22

Method	8260B	AM-24-AR_C	AM-24-DL_C
Units	ug/l	Vs	‰, VPDB
Analyst	PACE-MN	CJS	CJS

Pace CSIA Center of Excellence
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report Carbon

16738
 PACE-MN
 Client Project Name: PS Beta Nirop
 Client Project #: 10322358

Trichloroethene		Concentration (ug/l)				CSIA (Carbon)				
		Sample	PQL	Date	Area Sample	PQL	Co-elution	Analysis	Date	Delta (%)
167380001	PMW-04	14	0.4	9/19/15	13.0	1	No	3903	10/6/15	5.56
167380002	PMW-03	519	2	9/21/15	45.5	1	No	3905	10/6/15	-21.82
167380003	PMW-02	35	0.4	9/21/15	24.2	1	No	3908	10/6/15	-0.63
167380004	PMW-01	156	0.4	9/19/15	35.2	1	No	3907	10/6/15	-6.24
Duplicate	PMW-04	14	0.4	9/19/15	14.1	1	No	3904	10/6/15	4.16
Blank	-	0	-	-	<1 (U)	1	No	3895	10/6/15	-
LCS_Lo	-	10	-	-	11.6	1	No	3899	10/6/15	-25.15
LCS_Hi	-	50	-	-	57.2	1	No	3900	10/6/15	-25.15
LCS acceptance range								-26.48	<=>	-25.48

Method	8260B	AM-24-AR_C	AM-24-DL_C
Units	ug/l	Vs	%o, VPDB
Analyst	PACE-MN	CJS	CJS

Pace CSIA Center of Excellence
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report Carbon

16738
 PACE-MN
 Client Project Name: PS Beta Nirop
 Client Project #: 10322358

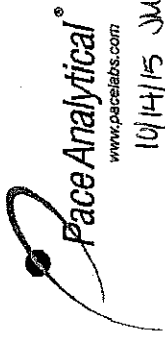
1CP (Surrogate)		CSIA (Carbon)						Delta (‰)
Lab ID	Client ID	Sample Collection	Area	Dilution	PQL	Co-elution	Analysis	Date
167380001	PMW-04	09/15/15	1.83	1	1	No	3903	10/06/15
167380002	PMW-03	09/15/15	1.75	1	1	No	3910	10/06/15
167380002	PMW-03	09/15/15	1.91	10	1	No	3905	10/06/15
167380003	PMW-02	09/16/15	1.76	1	1	No	3908	10/06/15
167380003	PMW-02	09/16/15	1.75	10	1	No	3906	10/06/15
167380004	PMW-01	09/16/15	1.86	1	1	No	3909	10/06/15
167380004	PMW-01	09/16/15	1.78	5	1	No	3907	10/06/15
Duplicate	PMW-04	09/15/15	1.74	1	1	No	3904	10/06/15
Blank	-	-	1.58	1	1	No	3895	10/06/15
LCS_Lo	-	-	1.75	1	1	No	3899	10/06/15
LCS_Hi	-	-	1.76	1	1	No	3900	10/06/15
Surrogate acceptance range							-37.49	<=>

Method	AM-24-AR_C	AM-24-DL_C
Units	Vs	%o, VPDB
Analyst	CJS	CJS

Case Narrative: The blank, LCS's, duplicate and surrogates were all close to or within the acceptance range and the data is reported as valid and representative of the samples as received.

Chain of Custody

16738



Workorder: 10322358 **Workorder Name:** PS BETA NIROP **Owner Received Date:** 9/16/2015 **Results Requested By:** JMA 9/17/15

Report to:
 Jennifer Anderson
 Pace Analytical Services, Inc.
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone (612)607-1700
 Fax (612)607-6444

Subcontract to:
 Pace Analytical Pittsburgh
 1638 Roseytown Road
 Suites 2,3 & 4
 Greensburg, PA 15601
 Phone (724)850-5600


Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers					LAB USE ONLY
						HCL	15	15	15	15	
1	PMW-04	PS	9/15/2015 14:25	10322358001	Water						X
2	PMW-03	PS	9/15/2015 15:45	10322358002	Water						X
3	PMW-02	PS	9/16/2015 11:35	10322358003	Water						X
4	PMW-01	PS	9/16/2015 14:25	10322358004	Water						X

Transfers			Released By	Date/Time	Received By	Date/Time	Received on Ice	Custody Seal	Y or N	Y or N	Samples Intact	Y or N
1	JMA			9/17/15 11:37	Alvin Murchany	9/19/15 09:50	Y	Y	Y	Y	Y	N
2					9/21/15 14:00		N	N	N	N	N	N
3							N	N	N	N	N	N

Cooler Temperature on Receipt 1.3 °C **Custody Seal** Y or N **Received on Ice** Y or N **Samples Intact** Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
 This chain of custody is considered complete as is since this information is available in the owner laboratory.

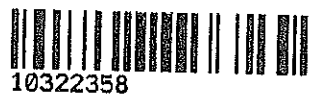
16738

	Document Name: Sample Condition Upon Receipt Form	Document Revised: 23Feb2015 Page 1 of 1
	Document No.: F-MN-L-213-rev.13	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Acorn Project #: WO# : 10322358

WO# : 10322358



10322358

Courier: Fed.Ex UPS USPS Client
 Commercial Pace SpeeDee Other: _____
 Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No Optional: Proj. Due Date: Proj. Name: _____

Packing Material: Bubble Wrap Bubble Bags None Other: _____ Temp Blank? Yes No

Thermometer Used: B88A9130516413 B88A912167504 B88A0143310098 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temp Read (°C): 1.9, 2.2 Cooler Temp Corrected (°C): 1.7, 2.0 Biological Tissue Frozen? Yes No N/A
 Temp should be above freezing to 6°C Correction Factor: -0.2 Date and Initials of Person Examining Contents: RA 9/17/15

USDA Regulated Soil (N/A, water sample)
 Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or WA (check maps)? Yes No Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No
 If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>wt</u>	
All containers needing acid/base preservation have been checked? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13. <u>7/2</u> <input checked="" type="checkbox"/> HNO ₃ <u>7/3</u> <input checked="" type="checkbox"/> H ₂ SO ₄ <input checked="" type="checkbox"/> NaOH <input type="checkbox"/> HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Sample # <u>01-04</u>
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Initial when completed: <u>RA</u> Lot # of added preservative: <u>1115070</u>
Headspace in VOA Vials (>6mm)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): <u>072315-01</u>	

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: Received BP3S for TOC analysis, Confirmed with client to proceed with analysis. JMA 9/17/15

Project Manager Review: [Signature]

Date: 9/17/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Cooler Receipt Form

Client Name: Pace-MN Project: 103 22358 Lab Work Order: 167.38

A. Shipping/Container Information (circle appropriate response)

Courier: FedEx UPS USPS Client Other: Pace-G Air bill Present: Yes No

Tracking Number: _____

Custody Seal on Cooler/Box Present: Yes No Seals Intact: Yes No

Cooler/Box Packing Material: Bubble Wrap Absorbent Foam Other _____

Type of Ice: Wet Blue None Ice Intact: Yes Melted

Cooler Temperature: 1.2°C Radiation Screened: Yes No Chain of Custody Present: Yes No

Comments: _____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non-Conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished	✓			
Sampler Name & Signature on COC		✓		
Containers intact	✓			
Were samples in separate bags	✓			
Sample container labels match COC	✓			
Sample name/date and time collected	✓			
Sufficient volume provided	✓			
PAES containers used		✓		
Are containers properly preserved for the requested testing? (as labeled)	✓			
If an unknown preservation state, were containers checked? Exception: VOA's coliform			✓	If yes, see pH form.
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			✓	

Comments: _____

Cooler contents examined/received by: LG Date: 9-21-15

Project Manager Review: EW Date: 9-23-15

SITE LOGIC Report

QuantArray® (Chlor) Study

Contact: Melinda Pham
Address: Regenesis Bioremediation, Inc.
1011 Calle Sombra
San Clemente, CA 92673

Phone: 949.366.8000

Email: mpham@regenesis.com

MI Identifier: 055MI

Report Date: 10/1/2015

Project: PS Beta - NIROP

Comments:

NOTICE: This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.

The QuantArray® Approach

Quantification of *Dehalococcoides* spp., the only known bacterial group capable of complete reductive dechlorination of PCE and TCE to ethene, has become an indispensable component of assessment, remedy selection, and performance monitoring at sites impacted by chlorinated solvents. While undeniably a key group of halo-respiring bacteria, *Dehalococcoides* spp. are not the only bacteria of interest in the subsurface because reductive dechlorination is not the only potential biodegradation pathway operative at contaminated sites, and chlorinated ethenes are not always the primary contaminants of concern. The Chlorinated QuantArray® not only includes a variety of halo-respiring bacteria (*Dehalococcoides*, *Dehalobacter*, *Dehalogenimonas*, etc.) to assess the potential for reductive dechlorination of chloroethenes, chloroethanes, chlorobenzenes, chlorophenols, and chloroform, but also provides quantification of functional genes involved in aerobic (co)metabolic pathways for biodegradation of chlorinated solvents and even competing biological processes. Thus, the QuantArray® will give site managers the ability to simultaneously yet economically evaluate the potential for biodegradation of a spectrum of common chlorinated contaminants through a multitude of anaerobic and aerobic (co)metabolic pathways to give a much more clear and comprehensive view of contaminant biodegradation.

The Chlorinated QuantArray® is used to quantify specific microorganisms and functional genes to evaluate the following:

Anaerobic Reductive Dechlorination	•Quantification of important halo-respiring bacteria (e.g. <i>Dehalococcoides</i> , <i>Dehalobacter</i> , <i>Dehalogenimonas</i> , <i>Desulfitobacterium</i> spp.) and key functional genes (e.g vinyl chloride reductases, TCE reductase, 1,2-DCP reductase) responsible for reductive dechlorination of a broad spectrum of chlorinated solvents.
Aerobic Cometabolism	•Several different types of bacteria including methanotrophs and some toluene/phenol utilizing bacteria can co-oxidize TCE, DCE, and vinyl chloride. The Chlorinated QuantArray® quantifies functional genes like soluble methane monooxygenase encoding enzymes capable of co-oxidation of chlorinated ethenes.
Aerobic (Co)metabolism of Vinyl chloride	•Ethene oxidizing bacteria are capable of cometabolism of vinyl chloride. In some cases, ethenotrophs can also utilize vinyl chloride as a growth supporting substrate. The QuantArray® targets key functional genes in ethene metabolism.

How do QuantArrays® work?

The QuantArray® in many respects is a hybrid technology combining the highly parallel detection of microarrays with the accurate and precise quantification provided by qPCR into a single platform. The key to highly parallel qPCR reactions is the nanoliter fluidics platform for low volume, solution phase qPCR reactions.

How are QuantArray® results reported?

One of the primary advantages of the Chlorinated QuantArray® is the simultaneous quantification of a broad spectrum of different microorganisms and key functional genes involved in a variety of pathways for chlorinated hydrocarbon biodegradation. However, highly parallel quantification combined with the various metabolic and cometabolic capabilities of different target organisms can complicate data presentation. Therefore, in addition to Summary Tables, QuantArray® results will be presented as Microbial Population Summary and Comparison Figures to aid in data interpretation and subsequent evaluation of site management activities.

Types of Tables and Figures:

Microbial Population Summary

- Figure presenting the concentrations of QuantArray® target populations (e.g. *Dehalococcoides* spp.) and functional genes (e.g. vinyl chloride reductase) relative to typically observed values.

Summary Tables

- Tables of target population concentrations grouped by biodegradation pathway and contaminant type.

Comparison Figures

- Depending on the project, sample results can be presented to compare changes over time or examine differences in microbial populations for along a transect of the dissolved plume.

Results

Table 1. Summary of the QuantArray® results obtained for monitoring wells.

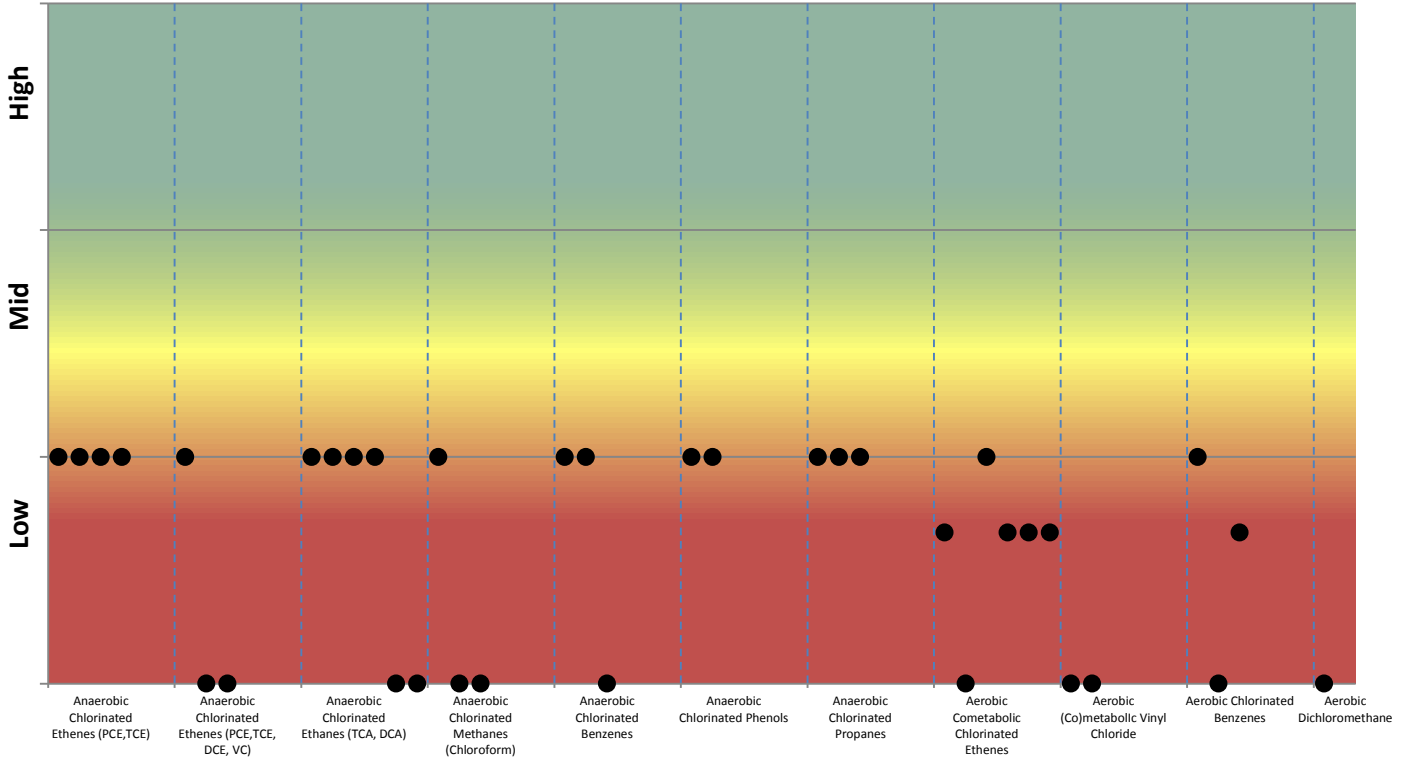
Sample Name	PMW-04	PMW-03	PMW-02	PMW-01
Reductive Dechlorination	(cells/mL)	(cells/mL)	(cells/mL)	(cells/mL)
<i>Dehalococcoides</i> spp. (DHC)	7.78E+02	6.74E+02	7.47E+03	8.90E+03
tceA Reductase (TCE)	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01
BAV1 Vinyl Chloride Reductase (BVC)	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01
Vinyl Chloride Reductase (VCR)	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01
<i>Dehalobacter</i> spp. (DHBt)	1.73E+03	5.51E+02	1.63E+04	2.30E+03
<i>Dehalobacter</i> DCM (DCM)	<4.60E+00	<4.70E+00	<4.70E+00	<4.70E+00
<i>Dehalogenimonas</i> spp. (DHG)	5.89E+03	2.51E+03	3.32E+04	4.90E+04
<i>Desulfitobacterium</i> spp. (DSB)	2.10E+03	2.43E+03	1.12E+04	4.81E+03
<i>Dehalobium chlorocoercia</i> (DECO)	<4.60E+00	<4.70E+00	<4.70E+00	<4.70E+00
<i>Desulfuromonas</i> spp. (DSM)	4.76E+02	1.21E+03	5.64E+02	8.60E+03
Chloroform reductase (CFR)	<4.60E+00	<4.70E+00	<4.70E+00	<4.70E+00
1,1 DCA Reductase (DCA)	<4.60E+00	<4.70E+00	<4.70E+00	<4.70E+00
1,2 DCA Reductase (DCAR)	<4.60E+00	<4.70E+00	<4.70E+00	<4.70E+00
Aerobic (Co)Metabolic				
Soluble Methane Monooxygenase (SMMO)	3.13E+02	1.50E+02	7.52E+02	5.38E+02
Particulate Methane Monooxygenase (PMMO)	9.00E-01 (J)	8.00E-01 (J)	4.27E+02	1.30E+00 (J)
Toluene Dioxygenase (TOD)	1.70E+03	2.56E+04	4.41E+04	2.09E+04
Phenol Hydroxylase (PHE)	5.56E+02	6.71E+02	1.11E+03	1.35E+03
Trichlorobenzene Dioxygenase (TCBO)	<4.60E+00	<4.70E+00	<4.70E+00	<4.70E+00
Toluene Monooxygenase 2 (RDEG)	1.30E+02	<4.70E+00	1.00E+03	4.12E+02
Toluene Monooxygenase (RMO)	1.24E+02	9.16E+01	1.66E+02	1.76E+02
Ethene Monooxygenase (EtnC)	<4.60E+00	<4.70E+00	<4.70E+00	<4.70E+00
Epoxyalkane transferase (EtnE)	<4.60E+00	<4.70E+00	<4.70E+00	<4.70E+00
<i>Dichloromethane dehalogenase</i> (DCMA)	<4.60E+00	<4.70E+00	<4.70E+00	<4.70E+00
Other				
Total Eubacteria (EBAC)	1.58E+06	1.06E+06	4.69E+06	1.66E+06
Sulfate Reducing Bacteria (APS)	1.09E+04	1.24E+02	1.71E+04	2.06E+04
Methanogens (MGN)	6.62E+01	1.58E+01	7.94E+01	3.84E+01

Legend:

NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
 < = Result not detected

Figure 1. Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Microbial Populations PMW-04



Anaerobic – Reductive Dechlorination or Dichloroelimination

Chlorinated Ethenes (PCE, TCE)
 Chlorinated Ethenes (PCE, TCE, DCE, VC)
 Chlorinated Ethanes (TCA and 1,2-DCA)
 Chlorinated Methanes (Chloroform)
 Chlorinated Benzenes
 Chlorinated Phenols
 Chlorinated Propanes

DHC, DHbt, DSB, DSM
 DHC, BVC, VCR
 DHbt, DHG, DHC, DSB¹,
 DCA, DCAR
 DHbt, DCM, CFR
 DHC, DHbt², DECO
 DHC, DSB
 DHC, DHG, DSB¹

¹ *Desulfitobacterium dichloroeliminans* DCA1. ² Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene

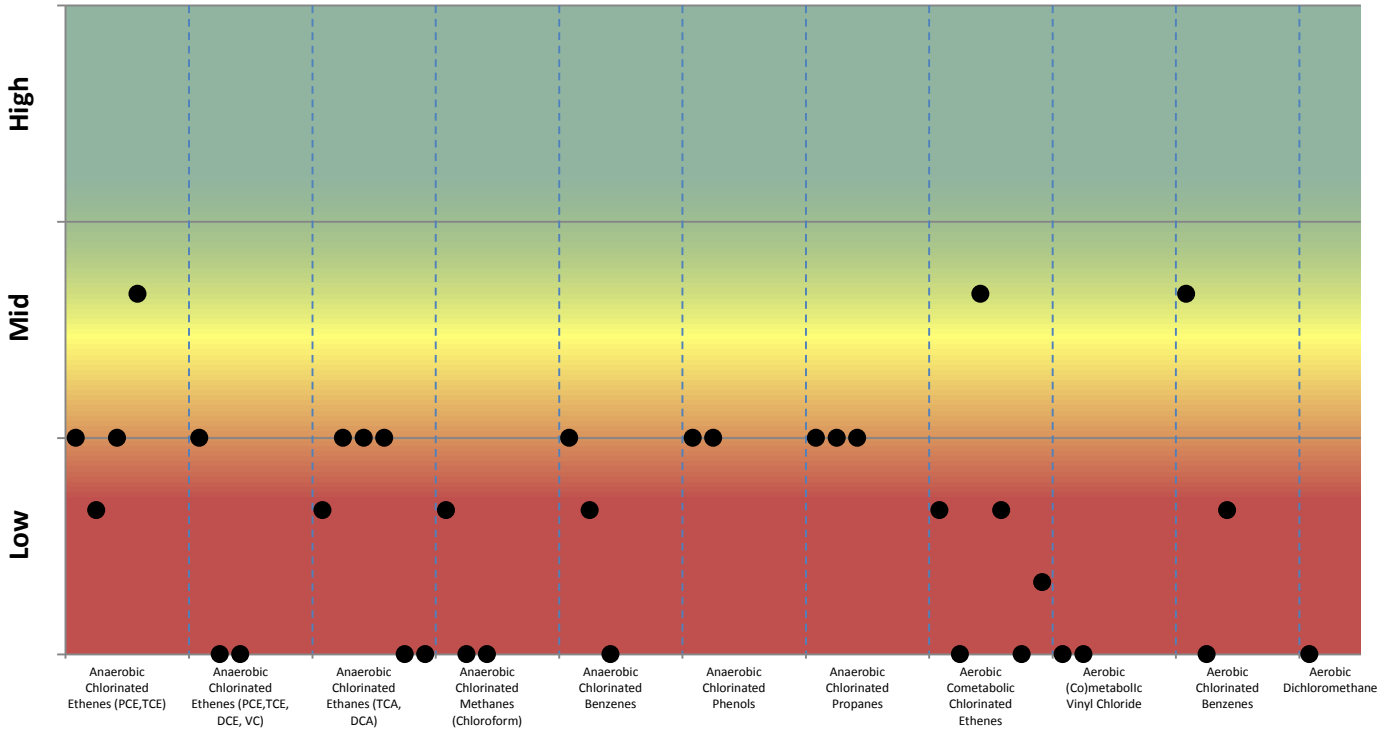
Aerobic – (Co)metabolism

Chlorinated ethenes (TCE, DCE, VC)
 (Co)metabolic vinyl chloride
 Chlorinated Benzenes
 Dichloromethane

sMMO, pMMO, TOD, PHE, RDEG, RMO
 etnC, etnE
 TOD, TCBO, PHE
 DCMA

Figure 2. Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Microbial Populations PMW-03



Anaerobic – Reductive Dechlorination or Dichloroelimination

Chlorinated Ethenes (PCE, TCE)
 Chlorinated Ethenes (PCE, TCE, DCE, VC)
 Chlorinated Ethanes (TCA and 1,2-DCA)
 Chlorinated Methanes (Chloroform)
 Chlorinated Benzenes
 Chlorinated Phenols
 Chlorinated Propanes

DHC, DHbt, DSB, DSM
 DHC, BVC, VCR
 DHbt, DHG, DHC, DSB¹,
 DCA, DCAR
 DHbt, DCM, CFR
 DHC, DHbt², DECO
 DHC, DSB
 DHC, DHG, DSB¹

¹ *Desulfitobacterium dichloroeliminans* DCA1. ² Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene

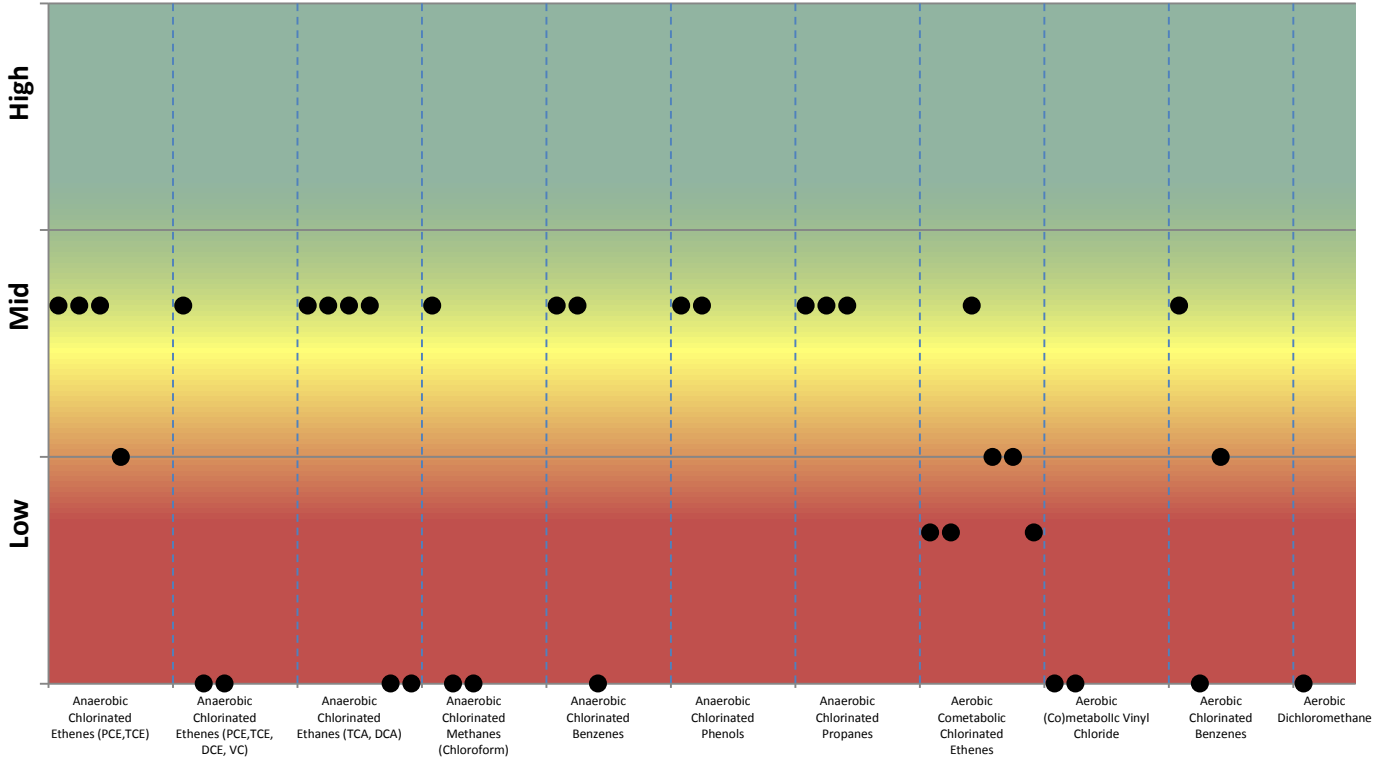
Aerobic – (Co)metabolism

Chlorinated ethenes (TCE, DCE, VC)
 (Co)metabolic vinyl chloride
 Chlorinated Benzenes
 Dichloromethane

sMMO, pMMO, TOD, PHE, RDEG, RMO
 etnC, etnE
 TOD, TCBO, PHE
 DCMA

Figure 3. Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Microbial Populations PMW-02



Anaerobic – Reductive Dechlorination or Dichloroelimination

Chlorinated Ethenes (PCE, TCE)
 Chlorinated Ethenes (PCE, TCE, DCE, VC)
 Chlorinated Ethanes (TCA and 1,2-DCA)
 Chlorinated Methanes (Chloroform)
 Chlorinated Benzenes
 Chlorinated Phenols
 Chlorinated Propanes

DHC, DHbt, DSB, DSM
 DHC, BVC, VCR
 DHbt, DHG, DHC, DSB¹,
 DCA, DCAR
 DHbt, DCM, CFR
 DHC, DHbt², DECO
 DHC, DSB
 DHC, DHG, DSB¹

¹ *Desulfitobacterium dichloroeliminans* DCA1. ² Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene

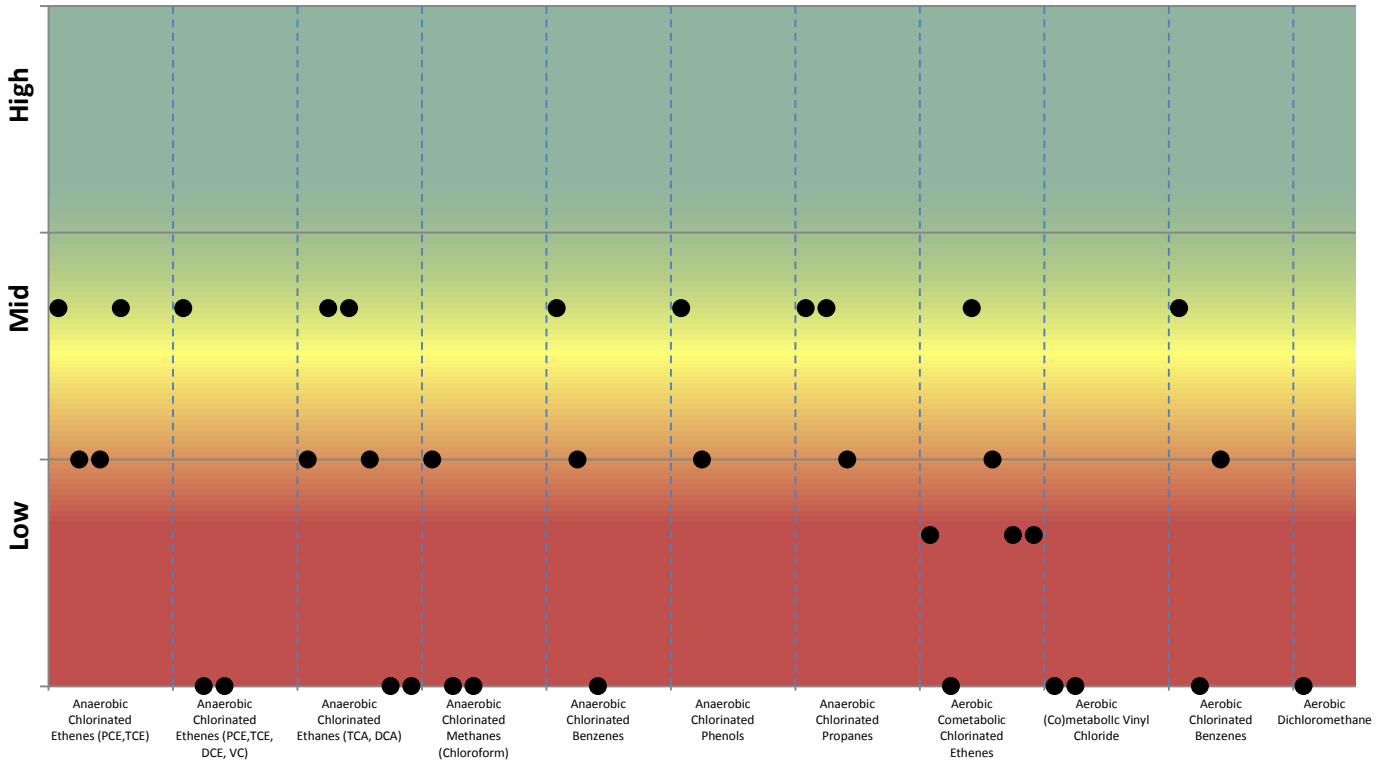
Aerobic – (Co)metabolism

Chlorinated ethenes (TCE, DCE, VC)
 (Co)metabolic vinyl chloride
 Chlorinated Benzenes
 Dichloromethane

sMMO, pMMO, TOD, PHE, RDEG, RMO
 etnC, etnE
 TOD, TCBO, PHE
 DCMA

Figure 4. Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Microbial Populations PMW-01



Anaerobic – Reductive Dechlorination or Dichloroelimination

Chlorinated Ethenes (PCE, TCE)
 Chlorinated Ethenes (PCE, TCE, DCE, VC)
 Chlorinated Ethanes (TCA and 1,2-DCA)
 Chlorinated Methanes (Chloroform)
 Chlorinated Benzenes
 Chlorinated Phenols
 Chlorinated Propanes

DHC, DHbt, DSB, DSM
 DHC, BVC, VCR
 DHbt, DHG, DHC, DSB¹,
 DCA, DCAR
 DHbt, DCM, CFR
 DHC, DHbt², DECO
 DHC, DSB
 DHC, DHG, DSB¹

¹ *Desulfitobacterium dichloroeliminans* DCA1. ² Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene

Aerobic – (Co)metabolism

Chlorinated ethenes (TCE, DCE, VC)
 (Co)metabolic vinyl chloride
 Chlorinated Benzenes
 Dichloromethane

sMMO, pMMO, TOD, PHE, RDEG, RMO
 etnC, etnE
 TOD, TCBO, PHE
 DCMA

Table 2. Summary of the QuantArray® results for microorganisms responsible for reductive dechlorination.

Sample Name	PMW-04	PMW-03	PMW-02	PMW-01
Reductive Dechlorination	(cells/mL)	(cells/mL)	(cells/mL)	(cells/mL)
<i>Dehalococcoides</i> spp. (DHC)	7.78E+02	6.74E+02	7.47E+03	8.90E+03
tceA Reductase (TCE)	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01
BAV1 Vinyl Chloride Reductase (BVC)	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01
Vinyl Chloride Reductase (VCR)	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01
<i>Dehalobacter</i> spp. (DHBt)	1.73E+03	5.51E+02	1.63E+04	2.30E+03
<i>Dehalobacter</i> DCM (DCM)	<4.60E+00	<4.70E+00	<4.70E+00	<4.70E+00
<i>Dehalogenimonas</i> spp. (DHG)	5.89E+03	2.51E+03	3.32E+04	4.90E+04
<i>Desulfitobacterium</i> spp. (DSB)	2.10E+03	2.43E+03	1.12E+04	4.81E+03
<i>Dehalobium chlorocoercia</i> (DECO)	<4.60E+00	<4.70E+00	<4.70E+00	<4.70E+00
<i>Desulfuromonas</i> spp. (DSM)	4.76E+02	1.21E+03	5.64E+02	8.60E+03
Chloroform reductase (CFR)	<4.60E+00	<4.70E+00	<4.70E+00	<4.70E+00
1,1 DCA Reductase (DCA)	<4.60E+00	<4.70E+00	<4.70E+00	<4.70E+00
1,2 DCA Reductase (DCAR)	<4.60E+00	<4.70E+00	<4.70E+00	<4.70E+00

Figure 5. Comparison - Microbial populations involved in reductive dechlorination.

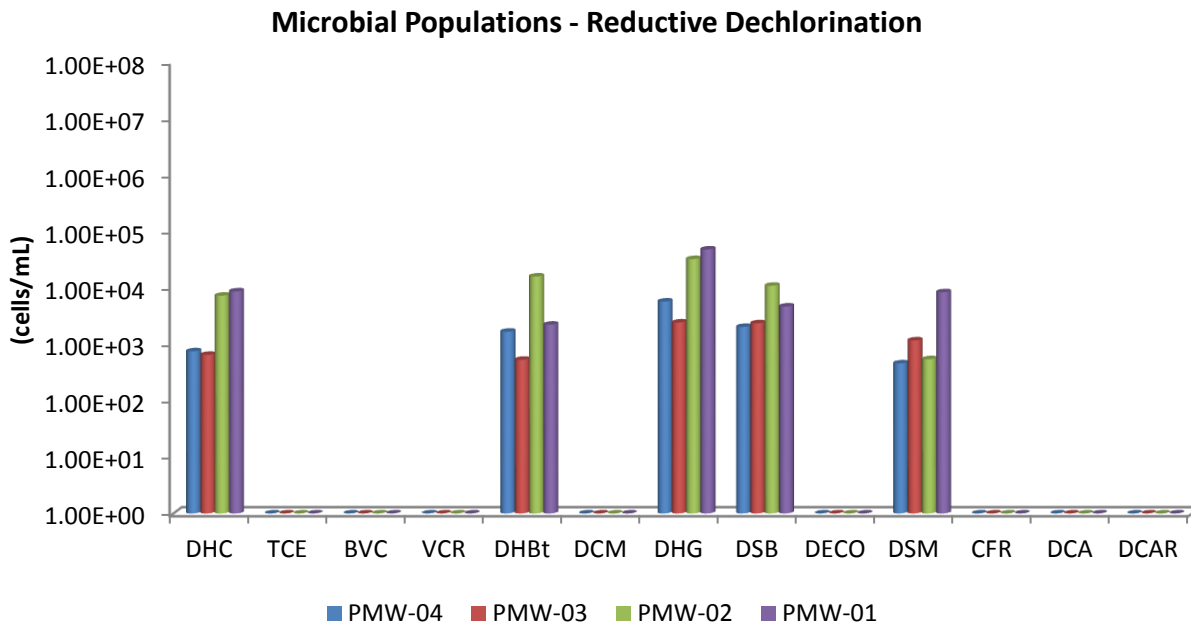


Table 3. Summary of the QuantArray® results for microorganisms responsible for aerobic (Co)metabolism.

Sample Name	PMW-04	PMW-03	PMW-02	PMW-01
Aerobic (Co)Metabolic	(cells/mL)	(cells/mL)	(cells/mL)	(cells/mL)
Soluble Methane Monooxygenase (SMMO)	3.13E+02	1.50E+02	7.52E+02	5.38E+02
Particulate Methane Monooxygenase (PMMO)	9.00E-01 (J)	8.00E-01 (J)	4.27E+02	1.30E+00 (J)
Toluene Dioxygenase (TOD)	1.70E+03	2.56E+04	4.41E+04	2.09E+04
Phenol Hydroxylase (PHE)	5.56E+02	6.71E+02	1.11E+03	1.35E+03
Trichlorobenzene Dioxygenase (TCBO)	<4.60E+00	<4.70E+00	<4.70E+00	<4.70E+00
Toluene Monooxygenase 2 (RDEG)	1.30E+02	<4.70E+00	1.00E+03	4.12E+02
Toluene Monooxygenase (RMO)	1.24E+02	9.16E+01	1.66E+02	1.76E+02
Ethene Monooxygenase (EtnC)	<4.60E+00	<4.70E+00	<4.70E+00	<4.70E+00
Epoxyalkane transferase (EtnE)	<4.60E+00	<4.70E+00	<4.70E+00	<4.70E+00
Dichloromethane dehalogenase (DCMA)	<4.60E+00	<4.70E+00	<4.70E+00	<4.70E+00

Figure 6. Comparison - Microbial populations involved in aerobic (Co)metabolism.

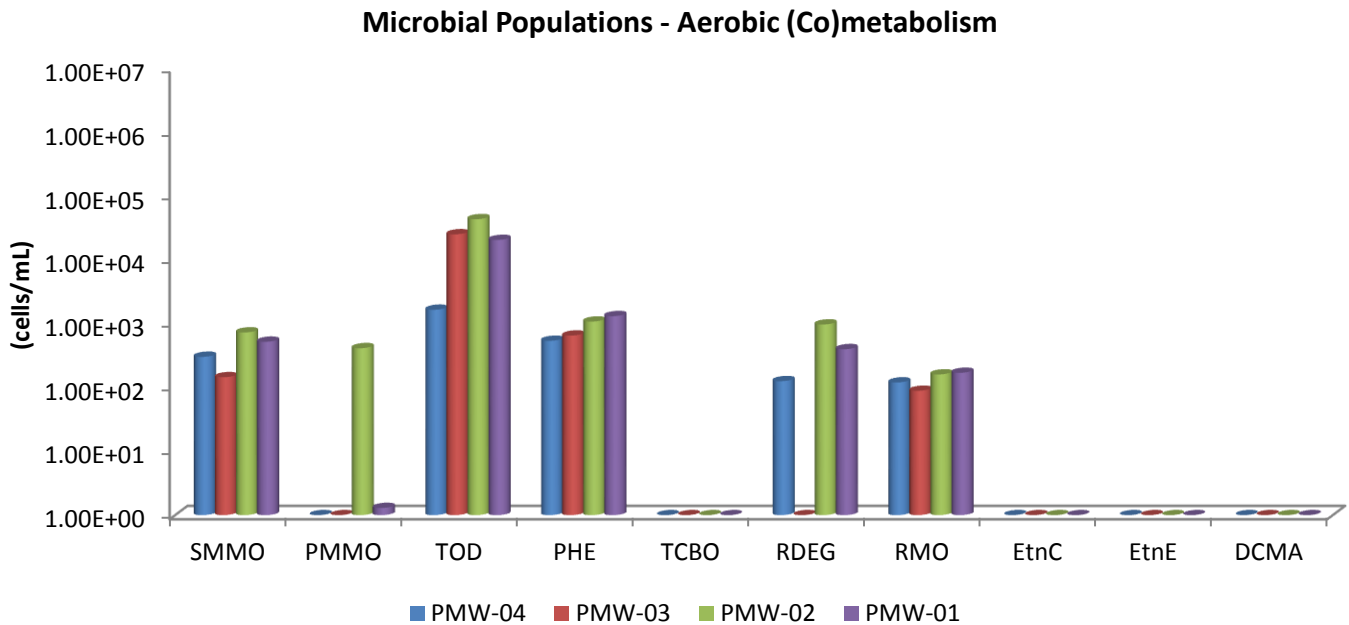
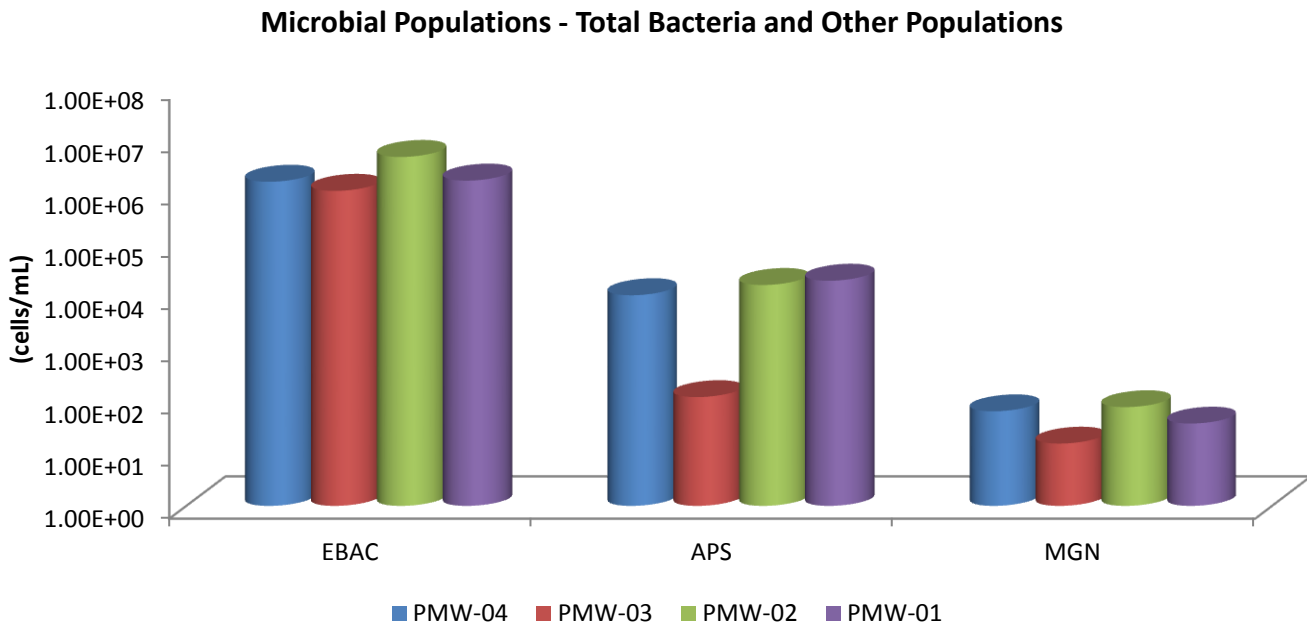


Table 4. Summary of the QuantArray® results for total bacteria and other populations.

Sample Name	PMW-04	PMW-03	PMW-02	PMW-01
Other	(cells/mL)	(cells/mL)	(cells/mL)	(cells/mL)
Total Eubacteria (EBAC)	1.58E+06	1.06E+06	4.69E+06	1.66E+06
Sulfate Reducing Bacteria (APS)	1.09E+04	1.24E+02	1.71E+04	2.06E+04
Methanogens (MGN)	6.62E+01	1.58E+01	7.94E+01	3.84E+01

Figure 7. Comparison - Microbial populations.



Interpretation

The overall purpose of the Chlorinated QuantArray® is to give site managers the ability to simultaneously yet economically evaluate the potential for biodegradation of a spectrum of common chlorinated contaminants through a multitude of anaerobic and aerobic (co)metabolic pathways in order to provide a clearer and more comprehensive view of contaminant biodegradation. The following discussion describes interpretation of results in general terms and is meant to serve as a guide.

Reductive Dechlorination – Chlorinated Ethenes: While a number of bacterial cultures including *Dehalococcoides*, *Dehalobacter*, *Desulfitobacterium*, and *Desulfuromonas* spp. capable of utilizing PCE and TCE as growth-supporting electron acceptors have been isolated [1-5], *Dehalococcoides* spp. may be the most important because they are the only bacterial group that has been isolated to date which is capable of complete reductive dechlorination of PCE to ethene [6]. In fact, the presence of *Dehalococcoides* spp. has been associated with complete reductive dechlorination to ethene at sites across North America and Europe [7]. More recently, Lu et al. [8] have proposed using a *Dehalococcoides* concentration of 1×10^4 cells/mL as a screening criterion to identify sites where biological reductive dechlorination is predicted to proceed at “generally useful” rates.

A “stall” (i.e., where daughter products *cis*-DCE and vinyl chloride accumulate) can occur at PCE- and TCE-impacted sites especially under MNA conditions. The accumulation of vinyl chloride, generally considered more carcinogenic than the parent compounds, is particularly problematic. Although elevated *Dehalococcoides* concentrations correspond to ethene production in numerous studies, the range of chlorinated ethenes metabolized and cometabolized varies by species and strains within the *Dehalococcoides* genus. For example, *Dehalococcoides ethenogenes* str. 195 metabolizes PCE, TCE, and *cis*-DCE and cometabolizes vinyl chloride [6] to produce ethene. Conversely, *Dehalococcoides* sp. CBDB1 utilizes PCE and TCE, but does not cometabolize additional chloroethenes [9]. Quantification of reductive dehalogenase genes is used to more definitively confirm the potential for reductive dechlorination of TCE, *cis*-DCE, and vinyl chloride [10-13].

Reductive Dechlorination – Chlorinated Ethanes: Under anaerobic conditions, chlorinated ethanes are susceptible to reductive dechlorination by several groups of halo-respiring bacteria including *Dehalobacter*, *Dehalogenimonas*, and *Dehalococcoides* spp. While the reported range of chlorinated ethanes utilized varies by genus, species, and sometimes at the strain level, several general observations can be made regarding biodegradation pathways and daughter product formation. *Dehalobacter* spp. have been isolated that are capable of sequential reductive dechlorination of 1,1,1-TCA through 1,1-DCA to chloroethane. Biodegradation of 1,1,2-TCA by several halo-respiring bacteria including *Dehalobacter* and *Dehalogenimonas* spp. proceeds via dichloroelimination producing vinyl chloride. Similarly, 1,2-DCA biodegradation by *Dehalobacter*, *Dehalogenimonas*, and *Dehalococcoides* spp. occurs via dichloroelimination producing ethene. While not utilized by many *Desulfitobacterium* isolates, at least one strain, *Desulfitobacterium dichloroeliminans* strain DCA1, is also capable of dichloroelimination of 1,2-DCA [14].

Reductive Dechlorination – Chlorinated Methanes: Chloroform is a common co-contaminant at chlorinated solvent sites and can inhibit reductive dechlorination of chlorinated ethenes. Grostern et al. demonstrated that a *Dehalobacter* population was capable of reductive dechlorination of chloroform to produce dichloromethane [15]. The *cfrA* gene encodes the reductase which catalyzes this initial step in chloroform biodegradation [16]. Justicia-Leon et al. have since shown that dichloromethane can support growth of a distinct group of *Dehalobacter* strains via fermentation [17]. The *Dehalobacter* DCM assay targets the 16S rRNA gene of these strains.

Reductive Dechlorination – Chlorinated Benzenes: Chlorinated benzenes are an important class of industrial solvents and chemical intermediates in the production of drugs, dyes, herbicides, and insecticides. The physical-chemical properties of chlorinated benzenes as well as susceptibility to biodegradation are functions of their degree of chlorination and the positions of chlorine substituents. Under anaerobic conditions, reductive dechlorination of higher chlorinated benzenes including hexachlorobenzene (HCB), pentachlorobenzene (PeCB), tetrachlorobenzene (TeCB) isomers, and trichlorobenzene (TCB) isomers by halo-respiring bacteria has been well documented [18]. For example, although biodegradation of individual compounds and specific isomers does vary somewhat between isolates, *Dehalococcoides* spp. such as strain CBDB1 have been identified which reductively dechlorinate HCB, PeCB, all three TeCB isomers, 1,2,3-TCB, and 1,2,4-TCB [9, 19]. *Dehalobium chloro-coercia* DF-1 has been shown to be capable of reductive dechlorination of HCB, PeCB, and 1,2,3,5-TeCB [20]. The dichlorobenzene (DCB) isomers and chlorobenzene (CB) were considered relatively recalcitrant under anaerobic conditions. However, new evidence has demonstrated reductive dechlorination of DCBs to CB and CB to benzene [21] with corresponding increases in concentrations of *Dehalobacter* spp. [22].

Reductive Dechlorination – Chlorinated Phenols: Pentachlorophenol (PCP) was one of the most widely used biocides in the U.S. and despite residential use restrictions, is still extensively used industrially as a wood preservative. Along with PCP, the tetrachlorophenol and trichlorophenol isomers were also used as fungicides in wood preserving formulations. 2,4-dichlorophenol and 2,4,5-TCP were used as chemical intermediates in herbicide production (e.g. 2,4-D) and chlorophenols are known byproducts of chlorine bleaching in the pulp and paper industry. While the range of compounds utilized varies by strain, some *Dehalococcoides* isolates are capable of reductive dechlorination of PCP and other chlorinated phenols. For example, *Dehalococcoides* strain CBDB1 is capable of utilizing pentachlorophenol (PCP), all three tetrachlorophenol (TeCP) congeners, all six trichlorophenol (TCP) congeners, and 2,3-dichlorophenol (2,3-DCP). PCP dechlorination by strain CBDB1 produces a mixture of 3,5-DCP, 3,4-DCP, 2,4-DCP, 3-CP, and 4-CP [23]. In the same study, however, *Dehalococcoides ethenogenes* strain 195 dechlorinated a more narrow spectrum of chlorophenols which included 2,3-DCP, 2,3,4-TCP, and 2,3,6-TCP, but no other TCPs or PCP. Similar to *Dehalococcoides*, some species and strains of *Desulfitobacterium* are capable of utilizing PCP and other chlorinated phenols. *Desulfitobacterium hagniense* PCP-1 is capable of reductive dechlorination of PCP to 3-CP [24]. However, the ability to biodegrade PCP is not universal among *Desulfitobacterium* isolates. *Desulfitobacterium* sp. strain PCE1 and *D. chlororespirans* strain Co23, for example, can utilize some TCP and DCP isomers, but not PCP for growth [2, 25].

Reductive Dechlorination – Chlorinated Propanes: *Dehalogenimonas* is a recently described bacterial genus of the phylum *Chloroflexi* which also includes the well-known chloroethene-respiring *Dehalococcoides* spp [26]. The *Dehalogenimonas* isolates characterized to date are also halo-respiring bacteria, but utilize a rather unique range of chlorinated compounds as electron acceptors including chlorinated propanes (1,2,3-TCP and 1,2-DCP) and a variety of other vicinally chlorinated alkanes including 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, and 1,2-dichloroethane [26].

Aerobic – Chlorinated Ethene Cometabolism: Under aerobic conditions, several different types of bacteria including methane-oxidizing bacteria (methanotrophs), ammonia-oxidizing bacteria, and some toluene/phenol-utilizing bacteria can cometabolize or co-oxidize trichloroethene (TCE), dichloroethene (DCE), and vinyl chloride (VC). In general, cometabolism of chlorinated ethenes is mediated by monooxygenase enzymes with “relaxed” specificity that oxidize a primary (growth supporting) substrate and co-oxidize the chlorinated compound. Most methanotrophs are only capable of producing particulate methane monooxygenase (pMMO) which is capable of aerobic cometabolism but often at lower rates. Other methanotrophs are capable of producing both pMMO and soluble methane monooxygenase (sMMO) enzymes, which in general are believed to be capable of greater rates of aerobic cometabolism.

Aerobic – Vinyl Chloride Cometabolism: Beginning in the early 1990s, numerous microcosm studies demonstrated aerobic oxidation of vinyl chloride under MNA conditions without the addition of exogenous primary substrates. Since then, strains of *Mycobacterium*, *Nocardioides*, *Pseudomonas*, *Ochrobactrum*, and *Ralstonia* species have been isolated which are capable of aerobic growth on both ethene and vinyl chloride (see Mattes et al. [27] for a review). The initial steps in the pathway are the monooxygenase (*etn*ABCD) catalyzed conversion of ethene and vinyl chloride to their respective epoxyalkanes (epoxyethane and chlorooxirane), followed by epoxyalkane:CoM transferase (*etn*E) mediated conjugation and breaking of the epoxide [28].

Aerobic – Chlorinated Benzenes: In general, chlorobenzenes with four or less chlorine groups are susceptible to aerobic biodegradation and can serve as growth-supporting substrates. Toluene dioxygenase (TOD) has a relatively relaxed substrate specificity and mediates the incorporation of both atoms of oxygen into the aromatic ring of benzene and substituted benzenes (toluene and chlorobenzene). Comparison of TOD levels in background and source zone samples from a CB-impacted site suggested that CBs promoted growth of TOD-containing bacteria [29]. In addition, aerobic biodegradation of some trichlorobenzene and even tetrachlorobenzene isomers is initiated by a group of related trichlorobenzene dioxygenase genes (TCBO). Finally, phenol hydroxylases catalyze the continued oxidation and in some cases, the initial oxidation of a variety of monoaromatic compounds. In an independent study, significant increases in numbers of bacteria containing PHE genes corresponded to increases in biodegradation of DCB isomers [29].

1,2 Dichloroethane Reductive Dehalogenase: Targets the 1,2 dichloroethane reductive dehalogenase gene from members of *Desulfitobacterium* and *Dehalobacter* which dechlorinate 1,2 DCA to ethene.

1,1 Dichloroethane Reductive Dehalogenase: Targets the 1,1 dichloroethane reductive dehalogenase gene found in some strains of *Dehalobacter*..

Dichloromethane Dehalogenase: Targets the *dcmA* gene responsible for aerobic biodegradation of dichloromethane by methylotrophs..

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September 29, 2015

Ryan Moore
Regenesis
1011 Calle Sombra
San Clemente, CA 92673

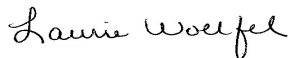
RE: Project: BETA NIROP
Pace Project No.: 40121790

Dear Ryan Moore:

Enclosed are the analytical results for sample(s) received by the laboratory on September 26, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Laurie Woelfel
laurie.woelfel@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: BETA NIROP

Pace Project No.: 40121790

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

US Dept of Agriculture #: S-76505

Wisconsin Certification #: 405132750

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SAMPLE SUMMARY

Project: BETA NIROP

Pace Project No.: 40121790

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40121790001	PMW-02	Water	09/25/15 13:20	09/26/15 09:50
40121790002	PMW-01	Water	09/25/15 14:20	09/26/15 09:50
40121790003	TRIP BLANK	Water	09/25/15 08:00	09/26/15 09:50

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SAMPLE ANALYTE COUNT

Project: BETA NIROP

Pace Project No.: 40121790

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40121790001	PMW-02	EPA 8260	HNW	71	PASI-G
40121790002	PMW-01	EPA 8260	HNW	71	PASI-G
40121790003	TRIP BLANK	EPA 8260	HNW	71	PASI-G

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ANALYTICAL RESULTS

Project: BETA NIROP

Pace Project No.: 40121790

Sample: PMW-02	Lab ID: 40121790001	Collected: 09/25/15 13:20	Received: 09/26/15 09:50	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 8260						
Acetone	ND	ug/L	20.0	1		09/28/15 20:50	67-64-1	
Allyl chloride	ND	ug/L	5.0	1		09/28/15 20:50	107-05-1	
Benzene	ND	ug/L	1.0	1		09/28/15 20:50	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		09/28/15 20:50	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		09/28/15 20:50	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		09/28/15 20:50	75-27-4	
Bromoform	ND	ug/L	1.0	1		09/28/15 20:50	75-25-2	
Bromomethane	ND	ug/L	5.0	1		09/28/15 20:50	74-83-9	
2-Butanone (MEK)	ND	ug/L	20.0	1		09/28/15 20:50	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		09/28/15 20:50	104-51-8	
sec-Butylbenzene	ND	ug/L	5.0	1		09/28/15 20:50	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		09/28/15 20:50	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		09/28/15 20:50	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		09/28/15 20:50	108-90-7	
Chloroethane	ND	ug/L	1.0	1		09/28/15 20:50	75-00-3	
Chloroform	ND	ug/L	5.0	1		09/28/15 20:50	67-66-3	
Chloromethane	ND	ug/L	1.0	1		09/28/15 20:50	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		09/28/15 20:50	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		09/28/15 20:50	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0	1		09/28/15 20:50	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		09/28/15 20:50	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		09/28/15 20:50	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		09/28/15 20:50	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		09/28/15 20:50	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		09/28/15 20:50	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		09/28/15 20:50	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		09/28/15 20:50	75-71-8	
1,1-Dichloroethane	31.7	ug/L	1.0	1		09/28/15 20:50	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		09/28/15 20:50	107-06-2	
1,1-Dichloroethene	21.6	ug/L	1.0	1		09/28/15 20:50	75-35-4	
cis-1,2-Dichloroethene	224	ug/L	1.0	1		09/28/15 20:50	156-59-2	
trans-1,2-Dichloroethene	276	ug/L	1.0	1		09/28/15 20:50	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		09/28/15 20:50	75-43-4	
1,2-Dichloropropane	ND	ug/L	1.0	1		09/28/15 20:50	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		09/28/15 20:50	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		09/28/15 20:50	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		09/28/15 20:50	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		09/28/15 20:50	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		09/28/15 20:50	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	5.0	1		09/28/15 20:50	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		09/28/15 20:50	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	5.0	1		09/28/15 20:50	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		09/28/15 20:50	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		09/28/15 20:50	99-87-6	
Methylene Chloride	ND	ug/L	1.0	1		09/28/15 20:50	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		09/28/15 20:50	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		09/28/15 20:50	1634-04-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BETA NIROP

Pace Project No.: 40121790

Sample: PMW-02	Lab ID: 40121790001	Collected: 09/25/15 13:20	Received: 09/26/15 09:50	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260							
Naphthalene	ND	ug/L	5.0	1		09/28/15 20:50	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		09/28/15 20:50	103-65-1	
Styrene	ND	ug/L	1.0	1		09/28/15 20:50	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		09/28/15 20:50	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		09/28/15 20:50	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		09/28/15 20:50	127-18-4	
Tetrahydrofuran	ND	ug/L	5.0	1		09/28/15 20:50	109-99-9	
Toluene	ND	ug/L	1.0	1		09/28/15 20:50	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	5.0	1		09/28/15 20:50	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	5.0	1		09/28/15 20:50	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		09/28/15 20:50	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		09/28/15 20:50	79-00-5	
Trichloroethene	30.2	ug/L	1.0	1		09/28/15 20:50	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		09/28/15 20:50	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		09/28/15 20:50	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	5.0	1		09/28/15 20:50	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		09/28/15 20:50	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		09/28/15 20:50	108-67-8	
Vinyl chloride	3.6	ug/L	1.0	1		09/28/15 20:50	75-01-4	
m&p-Xylene	ND	ug/L	2.0	1		09/28/15 20:50	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		09/28/15 20:50	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	99	%	70-130	1		09/28/15 20:50	460-00-4	
Dibromofluoromethane (S)	91	%	70-130	1		09/28/15 20:50	1868-53-7	
Toluene-d8 (S)	113	%	70-130	1		09/28/15 20:50	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BETA NIROP

Pace Project No.: 40121790

Sample: PMW-01	Lab ID: 40121790002	Collected: 09/25/15 14:20	Received: 09/26/15 09:50	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 8260						
Acetone	ND	ug/L	100	5		09/29/15 08:21	67-64-1	
Allyl chloride	ND	ug/L	25.0	5		09/29/15 08:21	107-05-1	
Benzene	ND	ug/L	5.0	5		09/29/15 08:21	71-43-2	
Bromobenzene	ND	ug/L	5.0	5		09/29/15 08:21	108-86-1	
Bromochloromethane	ND	ug/L	5.0	5		09/29/15 08:21	74-97-5	
Bromodichloromethane	ND	ug/L	5.0	5		09/29/15 08:21	75-27-4	
Bromoform	ND	ug/L	5.0	5		09/29/15 08:21	75-25-2	
Bromomethane	ND	ug/L	25.0	5		09/29/15 08:21	74-83-9	
2-Butanone (MEK)	ND	ug/L	100	5		09/29/15 08:21	78-93-3	
n-Butylbenzene	ND	ug/L	5.0	5		09/29/15 08:21	104-51-8	
sec-Butylbenzene	ND	ug/L	25.0	5		09/29/15 08:21	135-98-8	
tert-Butylbenzene	ND	ug/L	5.0	5		09/29/15 08:21	98-06-6	
Carbon tetrachloride	ND	ug/L	5.0	5		09/29/15 08:21	56-23-5	
Chlorobenzene	ND	ug/L	5.0	5		09/29/15 08:21	108-90-7	
Chloroethane	ND	ug/L	5.0	5		09/29/15 08:21	75-00-3	
Chloroform	ND	ug/L	25.0	5		09/29/15 08:21	67-66-3	
Chloromethane	ND	ug/L	5.0	5		09/29/15 08:21	74-87-3	
2-Chlorotoluene	ND	ug/L	5.0	5		09/29/15 08:21	95-49-8	
4-Chlorotoluene	ND	ug/L	5.0	5		09/29/15 08:21	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	25.0	5		09/29/15 08:21	96-12-8	
Dibromochloromethane	ND	ug/L	5.0	5		09/29/15 08:21	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	5.0	5		09/29/15 08:21	106-93-4	
Dibromomethane	ND	ug/L	5.0	5		09/29/15 08:21	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	5.0	5		09/29/15 08:21	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	5.0	5		09/29/15 08:21	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	5.0	5		09/29/15 08:21	106-46-7	
Dichlorodifluoromethane	ND	ug/L	5.0	5		09/29/15 08:21	75-71-8	
1,1-Dichloroethane	17.3	ug/L	5.0	5		09/29/15 08:21	75-34-3	
1,2-Dichloroethane	ND	ug/L	5.0	5		09/29/15 08:21	107-06-2	
1,1-Dichloroethene	10.1	ug/L	5.0	5		09/29/15 08:21	75-35-4	
cis-1,2-Dichloroethene	229	ug/L	5.0	5		09/29/15 08:21	156-59-2	
trans-1,2-Dichloroethene	438	ug/L	5.0	5		09/29/15 08:21	156-60-5	
Dichlorofluoromethane	ND	ug/L	5.0	5		09/29/15 08:21	75-43-4	
1,2-Dichloropropane	ND	ug/L	5.0	5		09/29/15 08:21	78-87-5	
1,3-Dichloropropane	ND	ug/L	5.0	5		09/29/15 08:21	142-28-9	
2,2-Dichloropropane	ND	ug/L	5.0	5		09/29/15 08:21	594-20-7	
1,1-Dichloropropene	ND	ug/L	5.0	5		09/29/15 08:21	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	5.0	5		09/29/15 08:21	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	5.0	5		09/29/15 08:21	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	25.0	5		09/29/15 08:21	60-29-7	
Ethylbenzene	ND	ug/L	5.0	5		09/29/15 08:21	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	25.0	5		09/29/15 08:21	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	5		09/29/15 08:21	98-82-8	
p-Isopropyltoluene	ND	ug/L	5.0	5		09/29/15 08:21	99-87-6	
Methylene Chloride	ND	ug/L	5.0	5		09/29/15 08:21	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	25.0	5		09/29/15 08:21	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	5.0	5		09/29/15 08:21	1634-04-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BETA NIROP

Pace Project No.: 40121790

Sample: PMW-01		Lab ID: 40121790002		Collected: 09/25/15 14:20		Received: 09/26/15 09:50		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV		Analytical Method: EPA 8260							
Naphthalene	ND	ug/L	25.0	5		09/29/15 08:21	91-20-3		
n-Propylbenzene	ND	ug/L	5.0	5		09/29/15 08:21	103-65-1		
Styrene	ND	ug/L	5.0	5		09/29/15 08:21	100-42-5		
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0	5		09/29/15 08:21	630-20-6		
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0	5		09/29/15 08:21	79-34-5		
Tetrachloroethene	ND	ug/L	5.0	5		09/29/15 08:21	127-18-4		
Tetrahydrofuran	ND	ug/L	25.0	5		09/29/15 08:21	109-99-9		
Toluene	ND	ug/L	5.0	5		09/29/15 08:21	108-88-3		
1,2,3-Trichlorobenzene	ND	ug/L	25.0	5		09/29/15 08:21	87-61-6		
1,2,4-Trichlorobenzene	ND	ug/L	25.0	5		09/29/15 08:21	120-82-1		
1,1,1-Trichloroethane	ND	ug/L	5.0	5		09/29/15 08:21	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	5.0	5		09/29/15 08:21	79-00-5		
Trichloroethene	332	ug/L	5.0	5		09/29/15 08:21	79-01-6		
Trichlorofluoromethane	ND	ug/L	5.0	5		09/29/15 08:21	75-69-4		
1,2,3-Trichloropropane	ND	ug/L	5.0	5		09/29/15 08:21	96-18-4		
1,1,2-Trichlorotrifluoroethane	ND	ug/L	25.0	5		09/29/15 08:21	76-13-1		
1,2,4-Trimethylbenzene	ND	ug/L	5.0	5		09/29/15 08:21	95-63-6		
1,3,5-Trimethylbenzene	ND	ug/L	5.0	5		09/29/15 08:21	108-67-8		
Vinyl chloride	ND	ug/L	5.0	5		09/29/15 08:21	75-01-4		
m&p-Xylene	ND	ug/L	10.0	5		09/29/15 08:21	179601-23-1		
o-Xylene	ND	ug/L	5.0	5		09/29/15 08:21	95-47-6		
Surrogates									
4-Bromofluorobenzene (S)	100	%	70-130	5		09/29/15 08:21	460-00-4		
Dibromofluoromethane (S)	96	%	70-130	5		09/29/15 08:21	1868-53-7		
Toluene-d8 (S)	108	%	70-130	5		09/29/15 08:21	2037-26-5		

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ANALYTICAL RESULTS

Project: BETA NIROP

Pace Project No.: 40121790

Sample: TRIP BLANK	Lab ID: 40121790003	Collected: 09/25/15 08:00	Received: 09/26/15 09:50	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260							
Acetone	ND	ug/L	20.0	1		09/28/15 20:05	67-64-1	
Allyl chloride	ND	ug/L	5.0	1		09/28/15 20:05	107-05-1	
Benzene	ND	ug/L	1.0	1		09/28/15 20:05	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		09/28/15 20:05	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		09/28/15 20:05	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		09/28/15 20:05	75-27-4	
Bromoform	ND	ug/L	1.0	1		09/28/15 20:05	75-25-2	
Bromomethane	ND	ug/L	5.0	1		09/28/15 20:05	74-83-9	
2-Butanone (MEK)	ND	ug/L	20.0	1		09/28/15 20:05	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		09/28/15 20:05	104-51-8	
sec-Butylbenzene	ND	ug/L	5.0	1		09/28/15 20:05	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		09/28/15 20:05	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		09/28/15 20:05	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		09/28/15 20:05	108-90-7	
Chloroethane	ND	ug/L	1.0	1		09/28/15 20:05	75-00-3	
Chloroform	ND	ug/L	5.0	1		09/28/15 20:05	67-66-3	
Chloromethane	ND	ug/L	1.0	1		09/28/15 20:05	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		09/28/15 20:05	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		09/28/15 20:05	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0	1		09/28/15 20:05	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		09/28/15 20:05	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		09/28/15 20:05	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		09/28/15 20:05	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		09/28/15 20:05	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		09/28/15 20:05	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		09/28/15 20:05	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		09/28/15 20:05	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		09/28/15 20:05	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		09/28/15 20:05	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		09/28/15 20:05	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		09/28/15 20:05	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		09/28/15 20:05	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		09/28/15 20:05	75-43-4	
1,2-Dichloropropane	ND	ug/L	1.0	1		09/28/15 20:05	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		09/28/15 20:05	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		09/28/15 20:05	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		09/28/15 20:05	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		09/28/15 20:05	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		09/28/15 20:05	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	5.0	1		09/28/15 20:05	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		09/28/15 20:05	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	5.0	1		09/28/15 20:05	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		09/28/15 20:05	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		09/28/15 20:05	99-87-6	
Methylene Chloride	ND	ug/L	1.0	1		09/28/15 20:05	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		09/28/15 20:05	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		09/28/15 20:05	1634-04-4	

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ANALYTICAL RESULTS

Project: BETA NIROP

Pace Project No.: 40121790

Sample: TRIP BLANK		Lab ID: 40121790003		Collected: 09/25/15 08:00	Received: 09/26/15 09:50	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 8260						
Naphthalene	ND	ug/L	5.0	1		09/28/15 20:05	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		09/28/15 20:05	103-65-1	
Styrene	ND	ug/L	1.0	1		09/28/15 20:05	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		09/28/15 20:05	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		09/28/15 20:05	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		09/28/15 20:05	127-18-4	
Tetrahydrofuran	ND	ug/L	5.0	1		09/28/15 20:05	109-99-9	
Toluene	ND	ug/L	1.0	1		09/28/15 20:05	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	5.0	1		09/28/15 20:05	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	5.0	1		09/28/15 20:05	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		09/28/15 20:05	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		09/28/15 20:05	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		09/28/15 20:05	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		09/28/15 20:05	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		09/28/15 20:05	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	5.0	1		09/28/15 20:05	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		09/28/15 20:05	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		09/28/15 20:05	108-67-8	
Vinyl chloride	ND	ug/L	1.0	1		09/28/15 20:05	75-01-4	
m&p-Xylene	ND	ug/L	2.0	1		09/28/15 20:05	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		09/28/15 20:05	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	101	%	70-130	1		09/28/15 20:05	460-00-4	
Dibromofluoromethane (S)	91	%	70-130	1		09/28/15 20:05	1868-53-7	
Toluene-d8 (S)	112	%	70-130	1		09/28/15 20:05	2037-26-5	

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QUALITY CONTROL DATA

Project: BETA NIROP
Pace Project No.: 40121790

QC Batch: MSV/30331 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV
Associated Lab Samples: 40121790001, 40121790002, 40121790003

METHOD BLANK: 1228186 Matrix: Water
Associated Lab Samples: 40121790001, 40121790002, 40121790003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	09/28/15 17:48	
1,1,1-Trichloroethane	ug/L	ND	1.0	09/28/15 17:48	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	09/28/15 17:48	
1,1,2-Trichloroethane	ug/L	ND	1.0	09/28/15 17:48	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	5.0	09/28/15 17:48	
1,1-Dichloroethane	ug/L	ND	1.0	09/28/15 17:48	
1,1-Dichloroethene	ug/L	ND	1.0	09/28/15 17:48	
1,1-Dichloropropene	ug/L	ND	1.0	09/28/15 17:48	
1,2,3-Trichlorobenzene	ug/L	ND	5.0	09/28/15 17:48	
1,2,3-Trichloropropane	ug/L	ND	1.0	09/28/15 17:48	
1,2,4-Trichlorobenzene	ug/L	ND	5.0	09/28/15 17:48	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	09/28/15 17:48	
1,2-Dibromo-3-chloropropane	ug/L	ND	5.0	09/28/15 17:48	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	09/28/15 17:48	
1,2-Dichlorobenzene	ug/L	ND	1.0	09/28/15 17:48	
1,2-Dichloroethane	ug/L	ND	1.0	09/28/15 17:48	
1,2-Dichloropropane	ug/L	ND	1.0	09/28/15 17:48	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	09/28/15 17:48	
1,3-Dichlorobenzene	ug/L	ND	1.0	09/28/15 17:48	
1,3-Dichloropropane	ug/L	ND	1.0	09/28/15 17:48	
1,4-Dichlorobenzene	ug/L	ND	1.0	09/28/15 17:48	
2,2-Dichloropropane	ug/L	ND	1.0	09/28/15 17:48	
2-Butanone (MEK)	ug/L	ND	20.0	09/28/15 17:48	
2-Chlorotoluene	ug/L	ND	1.0	09/28/15 17:48	
4-Chlorotoluene	ug/L	ND	1.0	09/28/15 17:48	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	09/28/15 17:48	
Acetone	ug/L	ND	20.0	09/28/15 17:48	
Allyl chloride	ug/L	ND	5.0	09/28/15 17:48	
Benzene	ug/L	ND	1.0	09/28/15 17:48	
Bromobenzene	ug/L	ND	1.0	09/28/15 17:48	
Bromochloromethane	ug/L	ND	1.0	09/28/15 17:48	
Bromodichloromethane	ug/L	ND	1.0	09/28/15 17:48	
Bromoform	ug/L	ND	1.0	09/28/15 17:48	
Bromomethane	ug/L	ND	5.0	09/28/15 17:48	
Carbon tetrachloride	ug/L	ND	1.0	09/28/15 17:48	
Chlorobenzene	ug/L	ND	1.0	09/28/15 17:48	
Chloroethane	ug/L	ND	1.0	09/28/15 17:48	
Chloroform	ug/L	ND	5.0	09/28/15 17:48	
Chloromethane	ug/L	ND	1.0	09/28/15 17:48	
cis-1,2-Dichloroethene	ug/L	ND	1.0	09/28/15 17:48	
cis-1,3-Dichloropropene	ug/L	ND	1.0	09/28/15 17:48	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: BETA NIROP
Pace Project No.: 40121790

METHOD BLANK: 1228186 Matrix: Water
Associated Lab Samples: 40121790001, 40121790002, 40121790003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/L	ND	1.0	09/28/15 17:48	
Dibromomethane	ug/L	ND	1.0	09/28/15 17:48	
Dichlorodifluoromethane	ug/L	ND	1.0	09/28/15 17:48	
Dichlorofluoromethane	ug/L	ND	1.0	09/28/15 17:48	
Diethyl ether (Ethyl ether)	ug/L	ND	5.0	09/28/15 17:48	
Ethylbenzene	ug/L	ND	1.0	09/28/15 17:48	
Hexachloro-1,3-butadiene	ug/L	ND	5.0	09/28/15 17:48	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	09/28/15 17:48	
m&p-Xylene	ug/L	ND	2.0	09/28/15 17:48	
Methyl-tert-butyl ether	ug/L	ND	1.0	09/28/15 17:48	
Methylene Chloride	ug/L	ND	1.0	09/28/15 17:48	
n-Butylbenzene	ug/L	ND	1.0	09/28/15 17:48	
n-Propylbenzene	ug/L	ND	1.0	09/28/15 17:48	
Naphthalene	ug/L	ND	5.0	09/28/15 17:48	
o-Xylene	ug/L	ND	1.0	09/28/15 17:48	
p-Isopropyltoluene	ug/L	ND	1.0	09/28/15 17:48	
sec-Butylbenzene	ug/L	ND	5.0	09/28/15 17:48	
Styrene	ug/L	ND	1.0	09/28/15 17:48	
tert-Butylbenzene	ug/L	ND	1.0	09/28/15 17:48	
Tetrachloroethene	ug/L	ND	1.0	09/28/15 17:48	
Tetrahydrofuran	ug/L	ND	5.0	09/28/15 17:48	
Toluene	ug/L	ND	1.0	09/28/15 17:48	
trans-1,2-Dichloroethene	ug/L	ND	1.0	09/28/15 17:48	
trans-1,3-Dichloropropene	ug/L	ND	1.0	09/28/15 17:48	
Trichloroethene	ug/L	ND	1.0	09/28/15 17:48	
Trichlorofluoromethane	ug/L	ND	1.0	09/28/15 17:48	
Vinyl chloride	ug/L	ND	1.0	09/28/15 17:48	
4-Bromofluorobenzene (S)	%	105	70-130	09/28/15 17:48	
Dibromofluoromethane (S)	%	103	70-130	09/28/15 17:48	
Toluene-d8 (S)	%	100	70-130	09/28/15 17:48	

LABORATORY CONTROL SAMPLE: 1228187

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	50.6	101	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	53.1	106	70-130	
1,1,2-Trichloroethane	ug/L	50	53.4	107	70-130	
1,1,2-Trichlorotrifluoroethane	ug/L	50	50.3	101	50-150	
1,1-Dichloroethane	ug/L	50	47.9	96	70-130	
1,1-Dichloroethene	ug/L	50	50.0	100	70-130	
1,2,4-Trichlorobenzene	ug/L	50	52.4	105	70-130	
1,2-Dibromo-3-chloropropane	ug/L	50	50.5	101	50-150	
1,2-Dibromoethane (EDB)	ug/L	50	52.0	104	70-130	
1,2-Dichlorobenzene	ug/L	50	52.6	105	70-130	

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QUALITY CONTROL DATA

Project: BETA NIROP

Pace Project No.: 40121790

LABORATORY CONTROL SAMPLE: 1228187

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	49.6	99	70-131	
1,2-Dichloropropane	ug/L	50	49.5	99	70-130	
1,3-Dichlorobenzene	ug/L	50	53.8	108	70-130	
1,4-Dichlorobenzene	ug/L	50	53.7	107	70-130	
Benzene	ug/L	50	45.1	90	70-130	
Bromodichloromethane	ug/L	50	48.9	98	70-130	
Bromoform	ug/L	50	45.5	91	68-130	
Bromomethane	ug/L	50	38.1	76	38-137	
Carbon tetrachloride	ug/L	50	45.8	92	70-130	
Chlorobenzene	ug/L	50	50.5	101	70-130	
Chloroethane	ug/L	50	49.8	100	70-136	
Chloroform	ug/L	50	46.2	92	70-130	
Chloromethane	ug/L	50	47.6	95	48-144	
cis-1,2-Dichloroethene	ug/L	50	47.7	95	70-130	
cis-1,3-Dichloropropene	ug/L	50	45.4	91	70-130	
Dibromochloromethane	ug/L	50	47.6	95	70-130	
Dichlorodifluoromethane	ug/L	50	42.3	85	33-157	
Ethylbenzene	ug/L	50	54.0	108	70-132	
Isopropylbenzene (Cumene)	ug/L	50	53.3	107	70-130	
m&p-Xylene	ug/L	100	104	104	70-131	
Methyl-tert-butyl ether	ug/L	50	49.7	99	48-141	
Methylene Chloride	ug/L	50	47.5	95	70-130	
o-Xylene	ug/L	50	51.2	102	70-131	
Styrene	ug/L	50	51.8	104	70-130	
Tetrachloroethene	ug/L	50	46.5	93	70-130	
Toluene	ug/L	50	53.1	106	70-130	
trans-1,2-Dichloroethene	ug/L	50	47.4	95	70-130	
trans-1,3-Dichloropropene	ug/L	50	50.6	101	70-130	
Trichloroethene	ug/L	50	47.9	96	70-130	
Trichlorofluoromethane	ug/L	50	51.4	103	50-150	
Vinyl chloride	ug/L	50	49.4	99	65-142	
4-Bromofluorobenzene (S)	%			98	70-130	
Dibromofluoromethane (S)	%			93	70-130	
Toluene-d8 (S)	%			112	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1228188 1228189

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40121736006 Result	Spike Conc.	Spike Conc.	MS Result								
1,1,1-Trichloroethane	ug/L	3.0	50	50	60.3	52.1	115	98	70-130	15	20		
1,1,2,2-Tetrachloroethane	ug/L	<1.0	50	50	50.5	51.4	101	103	70-130	2	20		
1,1,2-Trichloroethane	ug/L	<1.0	50	50	51.8	50.9	104	102	70-130	2	20		
1,1,2-Trichlorotrifluoroethane	ug/L	<5.0	50	50	58.5	51.1	109	94	50-151	14	20		
1,1-Dichloroethane	ug/L	53.3	50	50	115	94.3	123	82	70-134	20	20		
1,1-Dichloroethene	ug/L	<1.0	50	50	56.6	48.6	113	97	70-139	15	20		

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QUALITY CONTROL DATA

Project: BETA NIROP

Pace Project No.: 40121790

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1228188		1228189		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		40121736006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
1,2,4-Trichlorobenzene	ug/L	<5.0	50	50	49.2	52.1	98	104	70-130	6	20		
1,2-Dibromo-3-chloropropane	ug/L	<5.0	50	50	51.8	47.5	104	95	50-150	9	20		
1,2-Dibromoethane (EDB)	ug/L	<1.0	50	50	52.9	50.6	106	101	70-130	5	20		
1,2-Dichlorobenzene	ug/L	1.4	50	50	51.3	52.1	100	101	70-130	1	20		
1,2-Dichloroethane	ug/L	<1.0	50	50	51.8	46.2	104	92	70-132	11	20		
1,2-Dichloropropane	ug/L	<1.0	50	50	54.0	47.1	108	94	70-130	14	20		
1,3-Dichlorobenzene	ug/L	<1.0	50	50	50.5	50.9	101	102	70-130	1	20		
1,4-Dichlorobenzene	ug/L	<1.0	50	50	48.6	49.0	97	98	70-130	1	20		
Benzene	ug/L	<1.0	50	50	49.5	43.5	99	87	70-130	13	20		
Bromodichloromethane	ug/L	<1.0	50	50	53.6	48.6	107	97	70-132	10	20		
Bromoform	ug/L	<1.0	50	50	46.2	44.9	92	90	68-130	3	20		
Bromomethane	ug/L	<5.0	50	50	41.3	36.0	83	72	38-141	14	20		
Carbon tetrachloride	ug/L	<1.0	50	50	52.7	47.6	105	95	70-130	10	20		
Chlorobenzene	ug/L	<1.0	50	50	49.2	48.3	98	97	70-130	2	20		
Chloroethane	ug/L	<1.0	50	50	57.7	48.7	115	97	66-152	17	20		
Chloroform	ug/L	<5.0	50	50	52.1	44.0	104	88	70-130	17	20		
Chloromethane	ug/L	<1.0	50	50	51.9	44.4	104	89	44-151	15	20		
cis-1,2-Dichloroethene	ug/L	6.0	50	50	59.6	52.0	107	92	70-130	13	20		
cis-1,3-Dichloropropene	ug/L	<1.0	50	50	49.4	44.4	99	89	70-130	11	20		
Dibromochloromethane	ug/L	<1.0	50	50	48.2	47.2	96	94	70-130	2	20		
Dichlorodifluoromethane	ug/L	<1.0	50	50	47.6	41.5	95	83	29-160	14	20		
Ethylbenzene	ug/L	<1.0	50	50	53.1	50.7	106	101	70-132	5	20		
Isopropylbenzene (Cumene)	ug/L	<1.0	50	50	52.6	50.7	105	101	70-130	4	20		
m&p-Xylene	ug/L	<2.0	100	100	105	101	105	101	70-131	4	20		
Methyl-tert-butyl ether	ug/L	<1.0	50	50	55.9	47.9	112	96	48-143	15	20		
Methylene Chloride	ug/L	<1.0	50	50	52.7	44.6	105	89	70-130	17	20		
o-Xylene	ug/L	<1.0	50	50	51.1	50.3	102	101	70-131	2	20		
Styrene	ug/L	<1.0	50	50	51.1	49.9	102	100	70-130	2	20		
Tetrachloroethene	ug/L	3.3	50	50	48.7	47.4	91	88	70-130	3	20		
Toluene	ug/L	<1.0	50	50	52.1	50.9	104	102	70-130	2	20		
trans-1,2-Dichloroethene	ug/L	<1.0	50	50	53.5	46.3	105	91	70-132	15	20		
trans-1,3-Dichloropropene	ug/L	<1.0	50	50	49.5	49.2	99	98	70-130	1	20		
Trichloroethene	ug/L	14.2	50	50	69.2	60.5	110	93	70-130	13	20		
Trichlorofluoromethane	ug/L	<1.0	50	50	58.2	49.8	116	100	50-153	16	20		
Vinyl chloride	ug/L	1.3	50	50	55.4	49.6	108	97	60-155	11	20		
4-Bromofluorobenzene (S)	%						106	103	70-130				
Dibromofluoromethane (S)	%						98	96	70-130				
Toluene-d8 (S)	%						104	110	70-130				

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: BETA NIROP
Pace Project No.: 40121790

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-G Pace Analytical Services - Green Bay

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: BETA NIROP

Pace Project No.: 40121790

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40121790001	PMW-02	EPA 8260	MSV/30331		
40121790002	PMW-01	EPA 8260	MSV/30331		
40121790003	TRIP BLANK	EPA 8260	MSV/30331		

REPORT OF LABORATORY ANALYSIS

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#24 HE TAT*

CHAIN-OF-CUSTODY / Analytical Request Document
The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

40121790

Section A
Required Client Information:

Company: **PEGENESIS**
Address: **1011 CALLE SIMONA SAN CLEMENTE CA 92073**
Email To: **RIMMOLD@PEGENESIS.COM**
Phone: **919-286-4838** Fax:
Requested Due Date/Time: **24 HE ***

Section B
Required Project Information:

Report To: **KYAN MOORE**
Purchase Order No.:
Project Name: **BETA NITROP**
Project Number:

Section C
Invoice Information:

Attention: **KYAN MOORE**
Company Name: **PEGENESIS**
Address:
Page Quote Reference:
Page Project Manager: **LAURE LIBERTEL**
Page Profile #:

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER
 UST RCRA OTHER

Page: **1** of **1**
1989240

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives							Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Face Project No./ Lab I.D.
					DATE	TIME			DATE	TIME	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH			
1	PMU-02	DD1	UT G	UT G	9/25/15	1320	3	3	3									3-40MVB
2	PMU-01	DD2	UT G	UT G	9/25/15	1420	3	3										2-40MVB
3	TRAP BANK	DD3	AT G	AT G	9/25/15	800	2	2										
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		

Section D
Required Client Information

Section B
Required Project Information

Section C
Invoice Information

REGULATORY AGENCY

Temp in °C
Received on Ice (Y/N)
Custody Sealed Cooler (Y/N)
Samples Intact (Y/N)

ORIGINAL

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



Sample Condition Upon Receipt

Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Client Name: Regenesis

Project #: **WO# : 40121790**

Courier: Fed Ex UPS Client Pace Other: _____

Tracking #: 8086 3295 8674



Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used: SR-61 Type of Ice: Wet Blue Dry None Samples on ice, cooling process has begun

Cooler Temperature: Uncorr: 3 / Corr: 3.5 Biological Tissue is Frozen: yes no

Temp Blank Present: yes no

Temp should be above freezing to 6°C for all sample except Biota.
Frozen Biota Samples should be received ≤ 0°C.

Person examining contents:
Date: 9-26-15
Initials: mm

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4 ≤2; NaOH+ZnAct ≥9, NaOH ≥12)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed
		Lab Std #ID of preservative
		Date/Time:
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): <u>081015-3BZA</u>		

Client Notification/ Resolution:

If checked, see attached form for additional comments

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: llw

Date: 9/28/15

November 03, 2015

Melinda Pham
Regenesis
1011 Calle Sombra
San Clemente, CA 92673

RE: Project: PS Beta - NIROP
Pace Project No.: 10327623

Dear Melinda Pham:

Enclosed are the analytical results for sample(s) received by the laboratory on October 26, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Jennifer Anderson
jennifer.anderson@pacelabs.com
Project Manager

Enclosures

cc: Ryan Moore, Regenesis



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PS Beta - NIROP

Pace Project No.: 10327623

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414

A2LA Certification #: 2926.01

Alaska Certification #: UST-078

Alaska Certification #MN00064

Alabama Certification #40770

Arizona Certification #: AZ-0014

Arkansas Certification #: 88-0680

California Certification #: 01155CA

Colorado Certification #Pace

Connecticut Certification #: PH-0256

EPA Region 8 Certification #: 8TMS-L

Florida/NELAP Certification #: E87605

Guam Certification #:14-008r

Georgia Certification #: 959

Georgia EPD #: Pace

Idaho Certification #: MN00064

Hawaii Certification #MN00064

Illinois Certification #: 200011

Indiana Certification#C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky Dept of Envi. Protection - DW #90062

Kentucky Dept of Envi. Protection - WW #:90062

Louisiana DEQ Certification #: 3086

Louisiana DHH #: LA140001

Maine Certification #: 2013011

Maryland Certification #: 322

Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: Pace

Montana Certification #: MT0092

Nevada Certification #: MN_00064

Nebraska Certification #: Pace

New Jersey Certification #: MN-002

New York Certification #: 11647

North Carolina Certification #: 530

North Carolina State Public Health #: 27700

North Dakota Certification #: R-036

Ohio EPA #: 4150

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Certification #: MN200001

Oregon Certification #: MN300001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification

Saipan (CNMI) #:MP0003

South Carolina #:74003001

Texas Certification #: T104704192

Tennessee Certification #: 02818

Utah Certification #: MN000642013-4

Virginia DGS Certification #: 251

Washington Certification #: C486

West Virginia Certification #: 382

West Virginia DHHR #:9952C

Wisconsin Certification #: 999407970

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: PS Beta - NIROP

Pace Project No.: 10327623

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10327623001	PMW-01	Water	10/26/15 14:40	10/26/15 18:12
10327623002	PMW-02	Water	10/26/15 13:20	10/26/15 18:12
10327623003	PMW-03	Water	10/26/15 17:10	10/26/15 18:12
10327623004	PMW-04	Water	10/26/15 16:05	10/26/15 18:12
10327623005	Trip Blank	Water	10/26/15 00:00	10/26/15 18:12

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SAMPLE ANALYTE COUNT

Project: PS Beta - NIROP

Pace Project No.: 10327623

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10327623001	PMW-01	EPA 8260B	LPM	70
10327623002	PMW-02	EPA 8260B	DR1, RTP	70
10327623003	PMW-03	EPA 8260B	LPM	70
10327623004	PMW-04	EPA 8260B	DJB	70
10327623005	Trip Blank	EPA 8260B	DR1	70

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ANALYTICAL RESULTS

Project: PS Beta - NIROP

Pace Project No.: 10327623

Sample: PMW-01	Lab ID: 10327623001	Collected: 10/26/15 14:40	Received: 10/26/15 18:12	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	200	10		10/29/15 13:16	67-64-1	
Allyl chloride	ND	ug/L	40.0	10		10/29/15 13:16	107-05-1	
Benzene	ND	ug/L	10.0	10		10/29/15 13:16	71-43-2	
Bromobenzene	ND	ug/L	10.0	10		10/29/15 13:16	108-86-1	
Bromochloromethane	ND	ug/L	10.0	10		10/29/15 13:16	74-97-5	
Bromodichloromethane	ND	ug/L	10.0	10		10/29/15 13:16	75-27-4	
Bromoform	ND	ug/L	40.0	10		10/29/15 13:16	75-25-2	
Bromomethane	ND	ug/L	40.0	10		10/29/15 13:16	74-83-9	CL
2-Butanone (MEK)	ND	ug/L	50.0	10		10/29/15 13:16	78-93-3	
n-Butylbenzene	ND	ug/L	10.0	10		10/29/15 13:16	104-51-8	
sec-Butylbenzene	ND	ug/L	10.0	10		10/29/15 13:16	135-98-8	
tert-Butylbenzene	ND	ug/L	10.0	10		10/29/15 13:16	98-06-6	
Carbon tetrachloride	ND	ug/L	10.0	10		10/29/15 13:16	56-23-5	
Chlorobenzene	ND	ug/L	10.0	10		10/29/15 13:16	108-90-7	
Chloroethane	ND	ug/L	10.0	10		10/29/15 13:16	75-00-3	
Chloroform	ND	ug/L	10.0	10		10/29/15 13:16	67-66-3	
Chloromethane	ND	ug/L	40.0	10		10/29/15 13:16	74-87-3	
2-Chlorotoluene	ND	ug/L	10.0	10		10/29/15 13:16	95-49-8	
4-Chlorotoluene	ND	ug/L	10.0	10		10/29/15 13:16	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	40.0	10		10/29/15 13:16	96-12-8	
Dibromochloromethane	ND	ug/L	10.0	10		10/29/15 13:16	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	10.0	10		10/29/15 13:16	106-93-4	
Dibromomethane	ND	ug/L	40.0	10		10/29/15 13:16	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	10.0	10		10/29/15 13:16	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	10.0	10		10/29/15 13:16	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	10.0	10		10/29/15 13:16	106-46-7	
Dichlorodifluoromethane	ND	ug/L	10.0	10		10/29/15 13:16	75-71-8	
1,1-Dichloroethane	ND	ug/L	10.0	10		10/29/15 13:16	75-34-3	
1,2-Dichloroethane	ND	ug/L	10.0	10		10/29/15 13:16	107-06-2	
1,1-Dichloroethene	ND	ug/L	10.0	10		10/29/15 13:16	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	10.0	10		10/29/15 13:16	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	10.0	10		10/29/15 13:16	156-60-5	
Dichlorofluoromethane	ND	ug/L	10.0	10		10/29/15 13:16	75-43-4	
1,2-Dichloropropane	ND	ug/L	40.0	10		10/29/15 13:16	78-87-5	
1,3-Dichloropropane	ND	ug/L	10.0	10		10/29/15 13:16	142-28-9	
2,2-Dichloropropane	ND	ug/L	40.0	10		10/29/15 13:16	594-20-7	
1,1-Dichloropropene	ND	ug/L	10.0	10		10/29/15 13:16	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	40.0	10		10/29/15 13:16	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	40.0	10		10/29/15 13:16	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	40.0	10		10/29/15 13:16	60-29-7	
Ethylbenzene	ND	ug/L	10.0	10		10/29/15 13:16	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	10.0	10		10/29/15 13:16	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	10.0	10		10/29/15 13:16	98-82-8	
p-Isopropyltoluene	ND	ug/L	10.0	10		10/29/15 13:16	99-87-6	
Methylene Chloride	ND	ug/L	40.0	10		10/29/15 13:16	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	50.0	10		10/29/15 13:16	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	10.0	10		10/29/15 13:16	1634-04-4	

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ANALYTICAL RESULTS

Project: PS Beta - NIROP

Pace Project No.: 10327623

Sample: PMW-01	Lab ID: 10327623001	Collected: 10/26/15 14:40		Received: 10/26/15 18:12		Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	40.0	10		10/29/15 13:16	91-20-3	
n-Propylbenzene	ND	ug/L	10.0	10		10/29/15 13:16	103-65-1	
Styrene	ND	ug/L	10.0	10		10/29/15 13:16	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	10.0	10		10/29/15 13:16	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	10.0	10		10/29/15 13:16	79-34-5	
Tetrachloroethene	ND	ug/L	10.0	10		10/29/15 13:16	127-18-4	
Tetrahydrofuran	ND	ug/L	100	10		10/29/15 13:16	109-99-9	
Toluene	ND	ug/L	10.0	10		10/29/15 13:16	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	10.0	10		10/29/15 13:16	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	10.0	10		10/29/15 13:16	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	10.0	10		10/29/15 13:16	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	10.0	10		10/29/15 13:16	79-00-5	
Trichloroethene	ND	ug/L	4.0	10		10/29/15 13:16	79-01-6	
Trichlorofluoromethane	ND	ug/L	10.0	10		10/29/15 13:16	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	40.0	10		10/29/15 13:16	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	10.0	10		10/29/15 13:16	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	10.0	10		10/29/15 13:16	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	10.0	10		10/29/15 13:16	108-67-8	
Vinyl chloride	ND	ug/L	4.0	10		10/29/15 13:16	75-01-4	
Xylene (Total)	ND	ug/L	30.0	10		10/29/15 13:16	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	1090	%.	75-125	10		10/29/15 13:16	17060-07-0	1M, S2
Toluene-d8 (S)	222	%.	75-125	10		10/29/15 13:16	2037-26-5	S2
4-Bromofluorobenzene (S)	121	%.	75-125	10		10/29/15 13:16	460-00-4	

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ANALYTICAL RESULTS

Project: PS Beta - NIROP

Pace Project No.: 10327623

Sample: PMW-02	Lab ID: 10327623002	Collected: 10/26/15 13:20	Received: 10/26/15 18:12	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		10/27/15 22:30	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		10/27/15 22:30	107-05-1	
Benzene	ND	ug/L	1.0	1		10/27/15 22:30	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		10/27/15 22:30	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		10/27/15 22:30	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		10/27/15 22:30	75-27-4	
Bromoform	ND	ug/L	4.0	1		10/27/15 22:30	75-25-2	
Bromomethane	ND	ug/L	4.0	1		10/27/15 22:30	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		10/27/15 22:30	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		10/27/15 22:30	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		10/27/15 22:30	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		10/27/15 22:30	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		10/27/15 22:30	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		10/27/15 22:30	108-90-7	
Chloroethane	ND	ug/L	1.0	1		10/27/15 22:30	75-00-3	
Chloroform	ND	ug/L	1.0	1		10/27/15 22:30	67-66-3	
Chloromethane	ND	ug/L	4.0	1		10/27/15 22:30	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		10/27/15 22:30	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		10/27/15 22:30	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		10/27/15 22:30	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		10/27/15 22:30	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		10/27/15 22:30	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		10/27/15 22:30	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		10/27/15 22:30	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		10/27/15 22:30	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		10/27/15 22:30	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		10/27/15 22:30	75-71-8	
1,1-Dichloroethane	46.5	ug/L	1.0	1		10/27/15 22:30	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		10/27/15 22:30	107-06-2	
1,1-Dichloroethene	32.1	ug/L	1.0	1		10/27/15 22:30	75-35-4	
cis-1,2-Dichloroethene	248	ug/L	10.0	10		10/29/15 12:47	156-59-2	
trans-1,2-Dichloroethene	303	ug/L	10.0	10		10/29/15 12:47	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		10/27/15 22:30	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		10/27/15 22:30	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		10/27/15 22:30	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		10/27/15 22:30	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		10/27/15 22:30	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		10/27/15 22:30	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		10/27/15 22:30	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		10/27/15 22:30	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		10/27/15 22:30	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		10/27/15 22:30	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		10/27/15 22:30	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		10/27/15 22:30	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		10/27/15 22:30	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		10/27/15 22:30	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		10/27/15 22:30	1634-04-4	

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ANALYTICAL RESULTS

Project: PS Beta - NIROP

Pace Project No.: 10327623

Sample: PMW-02		Lab ID: 10327623002	Collected: 10/26/15 13:20	Received: 10/26/15 18:12	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		10/27/15 22:30	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		10/27/15 22:30	103-65-1	
Styrene	ND	ug/L	1.0	1		10/27/15 22:30	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		10/27/15 22:30	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		10/27/15 22:30	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		10/27/15 22:30	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		10/27/15 22:30	109-99-9	
Toluene	ND	ug/L	1.0	1		10/27/15 22:30	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		10/27/15 22:30	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		10/27/15 22:30	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		10/27/15 22:30	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		10/27/15 22:30	79-00-5	
Trichloroethene	39.7	ug/L	0.40	1		10/27/15 22:30	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		10/27/15 22:30	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		10/27/15 22:30	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		10/27/15 22:30	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		10/27/15 22:30	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		10/27/15 22:30	108-67-8	
Vinyl chloride	4.5	ug/L	0.40	1		10/27/15 22:30	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		10/27/15 22:30	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	110	%.	75-125	1		10/27/15 22:30	17060-07-0	
Toluene-d8 (S)	103	%.	75-125	1		10/27/15 22:30	2037-26-5	
4-Bromofluorobenzene (S)	104	%.	75-125	1		10/27/15 22:30	460-00-4	

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ANALYTICAL RESULTS

Project: PS Beta - NIROP

Pace Project No.: 10327623

Sample: PMW-03	Lab ID: 10327623003	Collected: 10/26/15 17:10	Received: 10/26/15 18:12	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		10/29/15 13:59	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		10/29/15 13:59	107-05-1	
Benzene	ND	ug/L	1.0	1		10/29/15 13:59	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		10/29/15 13:59	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		10/29/15 13:59	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		10/29/15 13:59	75-27-4	
Bromoform	ND	ug/L	4.0	1		10/29/15 13:59	75-25-2	
Bromomethane	ND	ug/L	4.0	1		10/29/15 13:59	74-83-9	CL
2-Butanone (MEK)	ND	ug/L	5.0	1		10/29/15 13:59	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		10/29/15 13:59	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		10/29/15 13:59	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		10/29/15 13:59	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		10/29/15 13:59	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		10/29/15 13:59	108-90-7	
Chloroethane	ND	ug/L	1.0	1		10/29/15 13:59	75-00-3	
Chloroform	ND	ug/L	1.0	1		10/29/15 13:59	67-66-3	
Chloromethane	ND	ug/L	4.0	1		10/29/15 13:59	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		10/29/15 13:59	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		10/29/15 13:59	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		10/29/15 13:59	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		10/29/15 13:59	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		10/29/15 13:59	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		10/29/15 13:59	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		10/29/15 13:59	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		10/29/15 13:59	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		10/29/15 13:59	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		10/29/15 13:59	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		10/29/15 13:59	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		10/29/15 13:59	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		10/29/15 13:59	75-35-4	
cis-1,2-Dichloroethene	15.6	ug/L	1.0	1		10/29/15 13:59	156-59-2	
trans-1,2-Dichloroethene	35.3	ug/L	1.0	1		10/29/15 13:59	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		10/29/15 13:59	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		10/29/15 13:59	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		10/29/15 13:59	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		10/29/15 13:59	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		10/29/15 13:59	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		10/29/15 13:59	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		10/29/15 13:59	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		10/29/15 13:59	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		10/29/15 13:59	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		10/29/15 13:59	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		10/29/15 13:59	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		10/29/15 13:59	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		10/29/15 13:59	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		10/29/15 13:59	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		10/29/15 13:59	1634-04-4	

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ANALYTICAL RESULTS

Project: PS Beta - NIROP

Pace Project No.: 10327623

Sample: PMW-03		Lab ID: 10327623003		Collected: 10/26/15 17:10	Received: 10/26/15 18:12	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		10/29/15 13:59	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		10/29/15 13:59	103-65-1	
Styrene	ND	ug/L	1.0	1		10/29/15 13:59	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		10/29/15 13:59	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		10/29/15 13:59	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		10/29/15 13:59	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		10/29/15 13:59	109-99-9	
Toluene	ND	ug/L	1.0	1		10/29/15 13:59	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		10/29/15 13:59	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		10/29/15 13:59	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		10/29/15 13:59	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		10/29/15 13:59	79-00-5	
Trichloroethene	20.8	ug/L	0.40	1		10/29/15 13:59	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		10/29/15 13:59	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		10/29/15 13:59	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		10/29/15 13:59	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		10/29/15 13:59	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		10/29/15 13:59	108-67-8	
Vinyl chloride	0.92	ug/L	0.40	1		10/29/15 13:59	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		10/29/15 13:59	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	111	%.	75-125	1		10/29/15 13:59	17060-07-0	
Toluene-d8 (S)	109	%.	75-125	1		10/29/15 13:59	2037-26-5	
4-Bromofluorobenzene (S)	116	%.	75-125	1		10/29/15 13:59	460-00-4	

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ANALYTICAL RESULTS

Project: PS Beta - NIROP

Pace Project No.: 10327623

Sample: PMW-04	Lab ID: 10327623004	Collected: 10/26/15 16:05	Received: 10/26/15 18:12	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		10/31/15 00:45	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		10/31/15 00:45	107-05-1	
Benzene	ND	ug/L	1.0	1		10/31/15 00:45	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		10/31/15 00:45	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		10/31/15 00:45	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		10/31/15 00:45	75-27-4	
Bromoform	ND	ug/L	4.0	1		10/31/15 00:45	75-25-2	
Bromomethane	ND	ug/L	4.0	1		10/31/15 00:45	74-83-9	CL
2-Butanone (MEK)	ND	ug/L	5.0	1		10/31/15 00:45	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		10/31/15 00:45	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		10/31/15 00:45	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		10/31/15 00:45	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		10/31/15 00:45	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		10/31/15 00:45	108-90-7	
Chloroethane	ND	ug/L	1.0	1		10/31/15 00:45	75-00-3	
Chloroform	ND	ug/L	1.0	1		10/31/15 00:45	67-66-3	
Chloromethane	ND	ug/L	4.0	1		10/31/15 00:45	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		10/31/15 00:45	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		10/31/15 00:45	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		10/31/15 00:45	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		10/31/15 00:45	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		10/31/15 00:45	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		10/31/15 00:45	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		10/31/15 00:45	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		10/31/15 00:45	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		10/31/15 00:45	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		10/31/15 00:45	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		10/31/15 00:45	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		10/31/15 00:45	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		10/31/15 00:45	75-35-4	
cis-1,2-Dichloroethene	19.9	ug/L	1.0	1		10/31/15 00:45	156-59-2	
trans-1,2-Dichloroethene	55.3	ug/L	1.0	1		10/31/15 00:45	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		10/31/15 00:45	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		10/31/15 00:45	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		10/31/15 00:45	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		10/31/15 00:45	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		10/31/15 00:45	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		10/31/15 00:45	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		10/31/15 00:45	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		10/31/15 00:45	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		10/31/15 00:45	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		10/31/15 00:45	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		10/31/15 00:45	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		10/31/15 00:45	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		10/31/15 00:45	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		10/31/15 00:45	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		10/31/15 00:45	1634-04-4	

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ANALYTICAL RESULTS

Project: PS Beta - NIROP

Pace Project No.: 10327623

Sample: PMW-04		Lab ID: 10327623004	Collected: 10/26/15 16:05	Received: 10/26/15 18:12	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260B VOC		Analytical Method: EPA 8260B							
Naphthalene	ND	ug/L	4.0	1		10/31/15 00:45	91-20-3		
n-Propylbenzene	ND	ug/L	1.0	1		10/31/15 00:45	103-65-1		
Styrene	ND	ug/L	1.0	1		10/31/15 00:45	100-42-5		
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		10/31/15 00:45	630-20-6		
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		10/31/15 00:45	79-34-5		
Tetrachloroethene	ND	ug/L	1.0	1		10/31/15 00:45	127-18-4		
Tetrahydrofuran	ND	ug/L	10.0	1		10/31/15 00:45	109-99-9		
Toluene	ND	ug/L	1.0	1		10/31/15 00:45	108-88-3		
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		10/31/15 00:45	87-61-6		
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		10/31/15 00:45	120-82-1		
1,1,1-Trichloroethane	ND	ug/L	1.0	1		10/31/15 00:45	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	1.0	1		10/31/15 00:45	79-00-5		
Trichloroethene	17.8	ug/L	0.40	1		10/31/15 00:45	79-01-6		
Trichlorofluoromethane	ND	ug/L	1.0	1		10/31/15 00:45	75-69-4		
1,2,3-Trichloropropane	ND	ug/L	4.0	1		10/31/15 00:45	96-18-4		
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		10/31/15 00:45	76-13-1		
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		10/31/15 00:45	95-63-6		
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		10/31/15 00:45	108-67-8		
Vinyl chloride	ND	ug/L	0.40	1		10/31/15 00:45	75-01-4		
Xylene (Total)	ND	ug/L	3.0	1		10/31/15 00:45	1330-20-7		
Surrogates									
1,2-Dichloroethane-d4 (S)	109	%.	75-125	1		10/31/15 00:45	17060-07-0		
Toluene-d8 (S)	109	%.	75-125	1		10/31/15 00:45	2037-26-5		
4-Bromofluorobenzene (S)	110	%.	75-125	1		10/31/15 00:45	460-00-4		

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ANALYTICAL RESULTS

Project: PS Beta - NIROP

Pace Project No.: 10327623

Sample: Trip Blank		Lab ID: 10327623005	Collected: 10/26/15 00:00	Received: 10/26/15 18:12	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		10/27/15 20:22	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		10/27/15 20:22	107-05-1	
Benzene	ND	ug/L	1.0	1		10/27/15 20:22	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		10/27/15 20:22	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		10/27/15 20:22	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		10/27/15 20:22	75-27-4	
Bromoform	ND	ug/L	4.0	1		10/27/15 20:22	75-25-2	
Bromomethane	ND	ug/L	4.0	1		10/27/15 20:22	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		10/27/15 20:22	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		10/27/15 20:22	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		10/27/15 20:22	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		10/27/15 20:22	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		10/27/15 20:22	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		10/27/15 20:22	108-90-7	
Chloroethane	ND	ug/L	1.0	1		10/27/15 20:22	75-00-3	
Chloroform	ND	ug/L	1.0	1		10/27/15 20:22	67-66-3	
Chloromethane	ND	ug/L	4.0	1		10/27/15 20:22	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		10/27/15 20:22	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		10/27/15 20:22	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		10/27/15 20:22	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		10/27/15 20:22	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		10/27/15 20:22	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		10/27/15 20:22	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		10/27/15 20:22	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		10/27/15 20:22	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		10/27/15 20:22	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		10/27/15 20:22	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		10/27/15 20:22	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		10/27/15 20:22	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		10/27/15 20:22	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		10/27/15 20:22	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		10/27/15 20:22	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		10/27/15 20:22	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		10/27/15 20:22	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		10/27/15 20:22	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		10/27/15 20:22	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		10/27/15 20:22	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		10/27/15 20:22	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		10/27/15 20:22	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		10/27/15 20:22	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		10/27/15 20:22	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		10/27/15 20:22	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		10/27/15 20:22	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		10/27/15 20:22	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		10/27/15 20:22	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		10/27/15 20:22	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		10/27/15 20:22	1634-04-4	

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ANALYTICAL RESULTS

Project: PS Beta - NIROP

Pace Project No.: 10327623

Sample: Trip Blank		Lab ID: 10327623005	Collected: 10/26/15 00:00	Received: 10/26/15 18:12	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		10/27/15 20:22	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		10/27/15 20:22	103-65-1	
Styrene	ND	ug/L	1.0	1		10/27/15 20:22	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		10/27/15 20:22	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		10/27/15 20:22	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		10/27/15 20:22	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		10/27/15 20:22	109-99-9	
Toluene	ND	ug/L	1.0	1		10/27/15 20:22	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		10/27/15 20:22	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		10/27/15 20:22	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		10/27/15 20:22	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		10/27/15 20:22	79-00-5	
Trichloroethene	ND	ug/L	0.40	1		10/27/15 20:22	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		10/27/15 20:22	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		10/27/15 20:22	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		10/27/15 20:22	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		10/27/15 20:22	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		10/27/15 20:22	108-67-8	
Vinyl chloride	ND	ug/L	0.40	1		10/27/15 20:22	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		10/27/15 20:22	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	113	%.	75-125	1		10/27/15 20:22	17060-07-0	
Toluene-d8 (S)	104	%.	75-125	1		10/27/15 20:22	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1		10/27/15 20:22	460-00-4	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327623

QC Batch: MSV/33557

Analysis Method: EPA 8260B

QC Batch Method: EPA 8260B

Analysis Description: 8260B MSV 465 W

Associated Lab Samples: 10327623002, 10327623005

METHOD BLANK: 2118576

Matrix: Water

Associated Lab Samples: 10327623002, 10327623005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	10/27/15 19:50	
1,1,1-Trichloroethane	ug/L	ND	1.0	10/27/15 19:50	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	10/27/15 19:50	
1,1,2-Trichloroethane	ug/L	ND	1.0	10/27/15 19:50	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	1.0	10/27/15 19:50	
1,1-Dichloroethane	ug/L	ND	1.0	10/27/15 19:50	
1,1-Dichloroethene	ug/L	ND	1.0	10/27/15 19:50	
1,1-Dichloropropene	ug/L	ND	1.0	10/27/15 19:50	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	10/27/15 19:50	
1,2,3-Trichloropropane	ug/L	ND	4.0	10/27/15 19:50	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	10/27/15 19:50	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	10/27/15 19:50	
1,2-Dibromo-3-chloropropane	ug/L	ND	4.0	10/27/15 19:50	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	10/27/15 19:50	
1,2-Dichlorobenzene	ug/L	ND	1.0	10/27/15 19:50	
1,2-Dichloroethane	ug/L	ND	1.0	10/27/15 19:50	
1,2-Dichloropropane	ug/L	ND	4.0	10/27/15 19:50	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	10/27/15 19:50	
1,3-Dichlorobenzene	ug/L	ND	1.0	10/27/15 19:50	
1,3-Dichloropropane	ug/L	ND	1.0	10/27/15 19:50	
1,4-Dichlorobenzene	ug/L	ND	1.0	10/27/15 19:50	
2,2-Dichloropropane	ug/L	ND	4.0	10/27/15 19:50	
2-Butanone (MEK)	ug/L	ND	5.0	10/27/15 19:50	
2-Chlorotoluene	ug/L	ND	1.0	10/27/15 19:50	
4-Chlorotoluene	ug/L	ND	1.0	10/27/15 19:50	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	10/27/15 19:50	
Acetone	ug/L	ND	20.0	10/27/15 19:50	
Allyl chloride	ug/L	ND	4.0	10/27/15 19:50	
Benzene	ug/L	ND	1.0	10/27/15 19:50	
Bromobenzene	ug/L	ND	1.0	10/27/15 19:50	
Bromochloromethane	ug/L	ND	1.0	10/27/15 19:50	
Bromodichloromethane	ug/L	ND	1.0	10/27/15 19:50	
Bromoform	ug/L	ND	4.0	10/27/15 19:50	
Bromomethane	ug/L	ND	4.0	10/27/15 19:50	
Carbon tetrachloride	ug/L	ND	1.0	10/27/15 19:50	
Chlorobenzene	ug/L	ND	1.0	10/27/15 19:50	
Chloroethane	ug/L	ND	1.0	10/27/15 19:50	
Chloroform	ug/L	ND	1.0	10/27/15 19:50	
Chloromethane	ug/L	ND	4.0	10/27/15 19:50	
cis-1,2-Dichloroethene	ug/L	ND	1.0	10/27/15 19:50	
cis-1,3-Dichloropropene	ug/L	ND	4.0	10/27/15 19:50	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327623

METHOD BLANK: 2118576

Matrix: Water

Associated Lab Samples: 10327623002, 10327623005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/L	ND	1.0	10/27/15 19:50	
Dibromomethane	ug/L	ND	4.0	10/27/15 19:50	
Dichlorodifluoromethane	ug/L	ND	1.0	10/27/15 19:50	
Dichlorofluoromethane	ug/L	ND	1.0	10/27/15 19:50	
Diethyl ether (Ethyl ether)	ug/L	ND	4.0	10/27/15 19:50	
Ethylbenzene	ug/L	ND	1.0	10/27/15 19:50	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	10/27/15 19:50	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	10/27/15 19:50	
Methyl-tert-butyl ether	ug/L	ND	1.0	10/27/15 19:50	
Methylene Chloride	ug/L	ND	4.0	10/27/15 19:50	
n-Butylbenzene	ug/L	ND	1.0	10/27/15 19:50	
n-Propylbenzene	ug/L	ND	1.0	10/27/15 19:50	
Naphthalene	ug/L	ND	4.0	10/27/15 19:50	
p-Isopropyltoluene	ug/L	ND	1.0	10/27/15 19:50	
sec-Butylbenzene	ug/L	ND	1.0	10/27/15 19:50	
Styrene	ug/L	ND	1.0	10/27/15 19:50	
tert-Butylbenzene	ug/L	ND	1.0	10/27/15 19:50	
Tetrachloroethene	ug/L	ND	1.0	10/27/15 19:50	
Tetrahydrofuran	ug/L	ND	10.0	10/27/15 19:50	
Toluene	ug/L	ND	1.0	10/27/15 19:50	
trans-1,2-Dichloroethene	ug/L	ND	1.0	10/27/15 19:50	
trans-1,3-Dichloropropene	ug/L	ND	4.0	10/27/15 19:50	
Trichloroethene	ug/L	ND	0.40	10/27/15 19:50	
Trichlorofluoromethane	ug/L	ND	1.0	10/27/15 19:50	
Vinyl chloride	ug/L	ND	0.40	10/27/15 19:50	
Xylene (Total)	ug/L	ND	3.0	10/27/15 19:50	
1,2-Dichloroethane-d4 (S)	%	110	75-125	10/27/15 19:50	
4-Bromofluorobenzene (S)	%	101	75-125	10/27/15 19:50	
Toluene-d8 (S)	%	104	75-125	10/27/15 19:50	

LABORATORY CONTROL SAMPLE: 2118577

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	20	19.9	99	75-125	
1,1,1-Trichloroethane	ug/L	20	18.8	94	75-125	
1,1,2,2-Tetrachloroethane	ug/L	20	22.6	113	75-125	
1,1,2-Trichloroethane	ug/L	20	20.9	104	75-125	
1,1,2-Trichlorotrifluoroethane	ug/L	20	18.7	93	60-135	
1,1-Dichloroethane	ug/L	20	20.9	104	69-125	
1,1-Dichloroethene	ug/L	20	21.6	108	68-125	
1,1-Dichloropropene	ug/L	20	19.1	96	74-125	
1,2,3-Trichlorobenzene	ug/L	20	19.6	98	69-136	
1,2,3-Trichloropropane	ug/L	20	20.5	102	75-125	
1,2,4-Trichlorobenzene	ug/L	20	18.7	93	73-127	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP
Pace Project No.: 10327623

LABORATORY CONTROL SAMPLE: 2118577

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	22.6	113	75-125	
1,2-Dibromo-3-chloropropane	ug/L	50	47.0	94	65-145	
1,2-Dibromoethane (EDB)	ug/L	20	19.5	97	75-125	
1,2-Dichlorobenzene	ug/L	20	20.8	104	75-125	
1,2-Dichloroethane	ug/L	20	18.8	94	73-125	
1,2-Dichloropropane	ug/L	20	18.8	94	75-125	
1,3,5-Trimethylbenzene	ug/L	20	21.7	109	75-125	
1,3-Dichlorobenzene	ug/L	20	21.4	107	74-125	
1,3-Dichloropropane	ug/L	20	19.0	95	75-125	
1,4-Dichlorobenzene	ug/L	20	19.9	100	75-125	
2,2-Dichloropropane	ug/L	20	20.6	103	59-139	
2-Butanone (MEK)	ug/L	100	109	109	63-130	
2-Chlorotoluene	ug/L	20	21.1	105	72-125	
4-Chlorotoluene	ug/L	20	21.7	109	73-125	
4-Methyl-2-pentanone (MIBK)	ug/L	100	99.0	99	71-126	
Acetone	ug/L	100	107	107	69-131	
Allyl chloride	ug/L	20	20.1	100	67-125	
Benzene	ug/L	20	20.5	103	71-125	
Bromobenzene	ug/L	20	20.6	103	75-125	
Bromochloromethane	ug/L	20	21.2	106	75-125	
Bromodichloromethane	ug/L	20	19.0	95	75-125	
Bromoform	ug/L	20	17.8	89	70-125	
Bromomethane	ug/L	20	15.4	77	30-150	
Carbon tetrachloride	ug/L	20	20.1	100	75-126	
Chlorobenzene	ug/L	20	20.0	100	75-125	
Chloroethane	ug/L	20	21.6	108	65-134	
Chloroform	ug/L	20	19.9	100	75-125	
Chloromethane	ug/L	20	21.5	108	39-150	
cis-1,2-Dichloroethene	ug/L	20	20.4	102	72-125	
cis-1,3-Dichloropropene	ug/L	20	21.5	107	75-125	
Dibromochloromethane	ug/L	20	18.7	93	75-125	
Dibromomethane	ug/L	20	17.5	88	75-125	
Dichlorodifluoromethane	ug/L	20	18.0	90	50-134	
Dichlorofluoromethane	ug/L	20	21.2	106	69-125	
Diethyl ether (Ethyl ether)	ug/L	20	22.2	111	72-125	
Ethylbenzene	ug/L	20	20.9	105	75-125	
Hexachloro-1,3-butadiene	ug/L	20	19.9	100	70-138	
Isopropylbenzene (Cumene)	ug/L	20	23.8	119	75-125	
Methyl-tert-butyl ether	ug/L	20	21.3	107	73-125	
Methylene Chloride	ug/L	20	24.6	123	73-125	
n-Butylbenzene	ug/L	20	20.8	104	72-133	
n-Propylbenzene	ug/L	20	23.1	116	72-126	
Naphthalene	ug/L	20	17.8	89	70-127	
p-Isopropyltoluene	ug/L	20	21.0	105	72-132	
sec-Butylbenzene	ug/L	20	23.9	120	73-132	
Styrene	ug/L	20	21.9	109	75-125	
tert-Butylbenzene	ug/L	20	21.8	109	73-128	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327623

LABORATORY CONTROL SAMPLE: 2118577

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	ug/L	20	18.7	94	74-125	
Tetrahydrofuran	ug/L	200	204	102	62-133	
Toluene	ug/L	20	19.2	96	74-125	
trans-1,2-Dichloroethene	ug/L	20	22.1	111	69-125	
trans-1,3-Dichloropropene	ug/L	20	18.8	94	75-125	
Trichloroethene	ug/L	20	18.9	95	75-125	
Trichlorofluoromethane	ug/L	20	18.3	92	74-127	
Vinyl chloride	ug/L	20	20.6	103	66-132	
Xylene (Total)	ug/L	60	64.9	108	75-125	
1,2-Dichloroethane-d4 (S)	%			108	75-125	
4-Bromofluorobenzene (S)	%			97	75-125	
Toluene-d8 (S)	%			101	75-125	

MATRIX SPIKE SAMPLE: 2119963

Parameter	Units	10326993001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	21.2	106	70-138	
1,1,1-Trichloroethane	ug/L	ND	20	20.3	101	55-150	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	21.9	109	64-140	
1,1,2-Trichloroethane	ug/L	ND	20	21.4	107	67-137	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	20	28.1	141	51-150	
1,1-Dichloroethane	ug/L	ND	20	22.7	114	49-150	
1,1-Dichloroethene	ug/L	ND	20	22.2	111	40-150	
1,1-Dichloropropene	ug/L	ND	20	21.2	106	50-150	
1,2,3-Trichlorobenzene	ug/L	ND	20	18.5	93	59-148	
1,2,3-Trichloropropane	ug/L	ND	20	19.7	99	65-141	
1,2,4-Trichlorobenzene	ug/L	ND	20	17.3	86	61-140	
1,2,4-Trimethylbenzene	ug/L	ND	20	22.1	111	58-141	
1,2-Dibromo-3-chloropropane	ug/L	ND	50	44.1	88	53-150	
1,2-Dibromoethane (EDB)	ug/L	ND	20	19.7	99	65-137	
1,2-Dichlorobenzene	ug/L	ND	20	20.4	102	66-133	
1,2-Dichloroethane	ug/L	ND	20	19.4	97	54-138	
1,2-Dichloropropane	ug/L	ND	20	19.7	98	62-138	
1,3,5-Trimethylbenzene	ug/L	ND	20	21.4	107	58-140	
1,3-Dichlorobenzene	ug/L	ND	20	20.9	104	66-132	
1,3-Dichloropropane	ug/L	ND	20	19.6	98	66-134	
1,4-Dichlorobenzene	ug/L	ND	20	19.8	99	65-129	
2,2-Dichloropropane	ug/L	ND	20	19.1	95	40-150	
2-Butanone (MEK)	ug/L	ND	100	108	108	51-147	
2-Chlorotoluene	ug/L	ND	20	21.2	106	58-147	
4-Chlorotoluene	ug/L	ND	20	21.7	108	64-138	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	100	104	104	59-143	
Acetone	ug/L	ND	100	109	109	63-147	
Allyl chloride	ug/L	ND	20	20.4	102	45-150	
Benzene	ug/L	ND	20	21.5	107	53-139	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327623

MATRIX SPIKE SAMPLE: 2119963		10326993001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Bromobenzene	ug/L	ND	20	21.1	105	66-136	
Bromochloromethane	ug/L	ND	20	21.3	106	64-136	
Bromodichloromethane	ug/L	ND	20	17.8	89	66-138	
Bromoform	ug/L	ND	20	19.6	98	59-136	
Bromomethane	ug/L	ND	20	19.5	98	30-150	
Carbon tetrachloride	ug/L	ND	20	21.8	109	56-150	
Chlorobenzene	ug/L	ND	20	21.6	108	65-133	
Chloroethane	ug/L	ND	20	24.1	121	48-150	
Chloroform	ug/L	ND	20	21.0	105	57-145	
Chloromethane	ug/L	ND	20	23.1	115	30-150	
cis-1,2-Dichloroethene	ug/L	ND	20	21.4	107	49-150	
cis-1,3-Dichloropropene	ug/L	ND	20	21.6	108	64-130	
Dibromochloromethane	ug/L	ND	20	19.4	97	68-138	
Dibromomethane	ug/L	ND	20	17.1	86	67-134	
Dichlorodifluoromethane	ug/L	ND	20	28.7	143	45-150	
Dichlorofluoromethane	ug/L	ND	20	23.8	119	54-150	
Diethyl ether (Ethyl ether)	ug/L	ND	20	20.9	104	50-145	
Ethylbenzene	ug/L	ND	20	22.7	113	55-139	
Hexachloro-1,3-butadiene	ug/L	ND	20	19.9	100	49-150	
Isopropylbenzene (Cumene)	ug/L	ND	20	25.6	128	64-142	
Methyl-tert-butyl ether	ug/L	ND	20	22.3	112	62-129	
Methylene Chloride	ug/L	ND	20	25.7	129	57-132	
n-Butylbenzene	ug/L	ND	20	21.1	105	55-150	
n-Propylbenzene	ug/L	ND	20	23.6	118	59-142	
Naphthalene	ug/L	ND	20	17.0	85	51-150	
p-Isopropyltoluene	ug/L	ND	20	21.0	105	60-149	
sec-Butylbenzene	ug/L	ND	20	24.3	122	60-150	
Styrene	ug/L	ND	20	22.3	112	68-134	
tert-Butylbenzene	ug/L	ND	20	22.3	112	62-146	
Tetrachloroethene	ug/L	ND	20	20.1	100	50-150	
Tetrahydrofuran	ug/L	ND	200	208	104	59-145	
Toluene	ug/L	ND	20	20.6	103	52-148	
trans-1,2-Dichloroethene	ug/L	ND	20	23.6	118	45-150	
trans-1,3-Dichloropropene	ug/L	ND	20	19.8	99	68-132	
Trichloroethene	ug/L	ND	20	20.1	101	52-150	
Trichlorofluoromethane	ug/L	ND	20	26.4	132	55-150	
Vinyl chloride	ug/L	ND	20	24.7	124	43-150	
Xylene (Total)	ug/L	ND	60	69.2	115	54-144	
1,2-Dichloroethane-d4 (S)	%				109	75-125	
4-Bromofluorobenzene (S)	%				95	75-125	
Toluene-d8 (S)	%				105	75-125	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327623

SAMPLE DUPLICATE: 2119968

Parameter	Units	10326993002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,1-Trichloroethane	ug/L	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,2-Trichloroethane	ug/L	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	ND		30	
1,1-Dichloroethane	ug/L	ND	ND		30	
1,1-Dichloroethene	ug/L	ND	ND		30	
1,1-Dichloropropene	ug/L	ND	ND		30	
1,2,3-Trichlorobenzene	ug/L	ND	ND		30	
1,2,3-Trichloropropane	ug/L	ND	ND		30	
1,2,4-Trichlorobenzene	ug/L	ND	ND		30	
1,2,4-Trimethylbenzene	ug/L	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/L	ND	ND		30	
1,2-Dichlorobenzene	ug/L	ND	ND		30	
1,2-Dichloroethane	ug/L	ND	ND		30	
1,2-Dichloropropane	ug/L	ND	ND		30	
1,3,5-Trimethylbenzene	ug/L	ND	ND		30	
1,3-Dichlorobenzene	ug/L	ND	ND		30	
1,3-Dichloropropane	ug/L	ND	ND		30	
1,4-Dichlorobenzene	ug/L	ND	ND		30	
2,2-Dichloropropane	ug/L	ND	ND		30	
2-Butanone (MEK)	ug/L	ND	ND		30	
2-Chlorotoluene	ug/L	ND	ND		30	
4-Chlorotoluene	ug/L	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		30	
Acetone	ug/L	ND	ND		30	
Allyl chloride	ug/L	ND	ND		30	
Benzene	ug/L	ND	ND		30	
Bromobenzene	ug/L	ND	ND		30	
Bromochloromethane	ug/L	ND	ND		30	
Bromodichloromethane	ug/L	ND	ND		30	
Bromoform	ug/L	ND	ND		30	
Bromomethane	ug/L	ND	ND		30	
Carbon tetrachloride	ug/L	ND	ND		30	
Chlorobenzene	ug/L	ND	ND		30	
Chloroethane	ug/L	ND	ND		30	
Chloroform	ug/L	ND	ND		30	
Chloromethane	ug/L	ND	ND		30	
cis-1,2-Dichloroethene	ug/L	ND	ND		30	
cis-1,3-Dichloropropene	ug/L	ND	ND		30	
Dibromochloromethane	ug/L	ND	ND		30	
Dibromomethane	ug/L	ND	ND		30	
Dichlorodifluoromethane	ug/L	ND	ND		30	
Dichlorofluoromethane	ug/L	ND	ND		30	
Diethyl ether (Ethyl ether)	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327623

SAMPLE DUPLICATE: 2119968

Parameter	Units	10326993002 Result	Dup Result	RPD	Max RPD	Qualifiers
Hexachloro-1,3-butadiene	ug/L	ND	ND		30	
Isopropylbenzene (Cumene)	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Methylene Chloride	ug/L	ND	ND		30	
n-Butylbenzene	ug/L	ND	ND		30	
n-Propylbenzene	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
p-Isopropyltoluene	ug/L	ND	ND		30	
sec-Butylbenzene	ug/L	ND	ND		30	
Styrene	ug/L	ND	ND		30	
tert-Butylbenzene	ug/L	ND	ND		30	
Tetrachloroethene	ug/L	ND	ND		30	
Tetrahydrofuran	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
trans-1,2-Dichloroethene	ug/L	ND	ND		30	
trans-1,3-Dichloropropene	ug/L	ND	ND		30	
Trichloroethene	ug/L	ND	ND		30	
Trichlorofluoromethane	ug/L	ND	ND		30	
Vinyl chloride	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	112	113	1		
4-Bromofluorobenzene (S)	%	104	104	0		
Toluene-d8 (S)	%	104	103	1		

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327623

QC Batch: MSV/33585 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV 465 W
Associated Lab Samples: 10327623001, 10327623003

METHOD BLANK: 2121197 Matrix: Water

Associated Lab Samples: 10327623001, 10327623003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	10/29/15 11:50	
1,1,1-Trichloroethane	ug/L	ND	1.0	10/29/15 11:50	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	10/29/15 11:50	
1,1,2-Trichloroethane	ug/L	ND	1.0	10/29/15 11:50	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	1.0	10/29/15 11:50	
1,1-Dichloroethane	ug/L	ND	1.0	10/29/15 11:50	
1,1-Dichloroethene	ug/L	ND	1.0	10/29/15 11:50	
1,1-Dichloropropene	ug/L	ND	1.0	10/29/15 11:50	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	10/29/15 11:50	
1,2,3-Trichloropropane	ug/L	ND	4.0	10/29/15 11:50	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	10/29/15 11:50	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	10/29/15 11:50	
1,2-Dibromo-3-chloropropane	ug/L	ND	4.0	10/29/15 11:50	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	10/29/15 11:50	
1,2-Dichlorobenzene	ug/L	ND	1.0	10/29/15 11:50	
1,2-Dichloroethane	ug/L	ND	1.0	10/29/15 11:50	
1,2-Dichloropropane	ug/L	ND	4.0	10/29/15 11:50	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	10/29/15 11:50	
1,3-Dichlorobenzene	ug/L	ND	1.0	10/29/15 11:50	
1,3-Dichloropropane	ug/L	ND	1.0	10/29/15 11:50	
1,4-Dichlorobenzene	ug/L	ND	1.0	10/29/15 11:50	
2,2-Dichloropropane	ug/L	ND	4.0	10/29/15 11:50	
2-Butanone (MEK)	ug/L	ND	5.0	10/29/15 11:50	
2-Chlorotoluene	ug/L	ND	1.0	10/29/15 11:50	
4-Chlorotoluene	ug/L	ND	1.0	10/29/15 11:50	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	10/29/15 11:50	
Acetone	ug/L	ND	20.0	10/29/15 11:50	
Allyl chloride	ug/L	ND	4.0	10/29/15 11:50	
Benzene	ug/L	ND	1.0	10/29/15 11:50	
Bromobenzene	ug/L	ND	1.0	10/29/15 11:50	
Bromochloromethane	ug/L	ND	1.0	10/29/15 11:50	
Bromodichloromethane	ug/L	ND	1.0	10/29/15 11:50	
Bromoform	ug/L	ND	4.0	10/29/15 11:50	
Bromomethane	ug/L	ND	4.0	10/29/15 11:50	CL
Carbon tetrachloride	ug/L	ND	1.0	10/29/15 11:50	
Chlorobenzene	ug/L	ND	1.0	10/29/15 11:50	
Chloroethane	ug/L	ND	1.0	10/29/15 11:50	
Chloroform	ug/L	ND	1.0	10/29/15 11:50	
Chloromethane	ug/L	ND	4.0	10/29/15 11:50	
cis-1,2-Dichloroethene	ug/L	ND	1.0	10/29/15 11:50	
cis-1,3-Dichloropropene	ug/L	ND	4.0	10/29/15 11:50	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327623

METHOD BLANK: 2121197

Matrix: Water

Associated Lab Samples: 10327623001, 10327623003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/L	ND	1.0	10/29/15 11:50	
Dibromomethane	ug/L	ND	4.0	10/29/15 11:50	
Dichlorodifluoromethane	ug/L	ND	1.0	10/29/15 11:50	
Dichlorofluoromethane	ug/L	ND	1.0	10/29/15 11:50	
Diethyl ether (Ethyl ether)	ug/L	ND	4.0	10/29/15 11:50	
Ethylbenzene	ug/L	ND	1.0	10/29/15 11:50	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	10/29/15 11:50	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	10/29/15 11:50	
Methyl-tert-butyl ether	ug/L	ND	1.0	10/29/15 11:50	
Methylene Chloride	ug/L	ND	4.0	10/29/15 11:50	
n-Butylbenzene	ug/L	ND	1.0	10/29/15 11:50	
n-Propylbenzene	ug/L	ND	1.0	10/29/15 11:50	
Naphthalene	ug/L	ND	4.0	10/29/15 11:50	
p-Isopropyltoluene	ug/L	ND	1.0	10/29/15 11:50	
sec-Butylbenzene	ug/L	ND	1.0	10/29/15 11:50	
Styrene	ug/L	ND	1.0	10/29/15 11:50	
tert-Butylbenzene	ug/L	ND	1.0	10/29/15 11:50	
Tetrachloroethene	ug/L	ND	1.0	10/29/15 11:50	
Tetrahydrofuran	ug/L	ND	10.0	10/29/15 11:50	
Toluene	ug/L	ND	1.0	10/29/15 11:50	
trans-1,2-Dichloroethene	ug/L	ND	1.0	10/29/15 11:50	
trans-1,3-Dichloropropene	ug/L	ND	4.0	10/29/15 11:50	
Trichloroethene	ug/L	ND	0.40	10/29/15 11:50	
Trichlorofluoromethane	ug/L	ND	1.0	10/29/15 11:50	
Vinyl chloride	ug/L	ND	0.40	10/29/15 11:50	
Xylene (Total)	ug/L	ND	3.0	10/29/15 11:50	
1,2-Dichloroethane-d4 (S)	%	106	75-125	10/29/15 11:50	
4-Bromofluorobenzene (S)	%	109	75-125	10/29/15 11:50	
Toluene-d8 (S)	%	108	75-125	10/29/15 11:50	

LABORATORY CONTROL SAMPLE: 2121199

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	20	20.3	101	75-125	
1,1,1-Trichloroethane	ug/L	20	20.9	105	75-125	
1,1,2,2-Tetrachloroethane	ug/L	20	21.6	108	75-125	
1,1,2-Trichloroethane	ug/L	20	20.5	103	75-125	
1,1,2-Trichlorotrifluoroethane	ug/L	20	14.8	74	60-135	
1,1-Dichloroethane	ug/L	20	21.3	106	69-125	
1,1-Dichloroethene	ug/L	20	19.0	95	68-125	
1,1-Dichloropropene	ug/L	20	20.2	101	74-125	
1,2,3-Trichlorobenzene	ug/L	20	20.2	101	69-136	
1,2,3-Trichloropropane	ug/L	20	22.2	111	75-125	
1,2,4-Trichlorobenzene	ug/L	20	20.5	103	73-127	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327623

LABORATORY CONTROL SAMPLE: 2121199

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	21.4	107	75-125	
1,2-Dibromo-3-chloropropane	ug/L	50	51.1	102	65-145	
1,2-Dibromoethane (EDB)	ug/L	20	21.7	108	75-125	
1,2-Dichlorobenzene	ug/L	20	20.2	101	75-125	
1,2-Dichloroethane	ug/L	20	20.4	102	73-125	
1,2-Dichloropropane	ug/L	20	21.1	106	75-125	
1,3,5-Trimethylbenzene	ug/L	20	20.9	105	75-125	
1,3-Dichlorobenzene	ug/L	20	20.5	103	74-125	
1,3-Dichloropropane	ug/L	20	22.2	111	75-125	
1,4-Dichlorobenzene	ug/L	20	19.9	99	75-125	
2,2-Dichloropropane	ug/L	20	21.7	108	59-139	
2-Butanone (MEK)	ug/L	100	118	118	63-130	
2-Chlorotoluene	ug/L	20	20.8	104	72-125	
4-Chlorotoluene	ug/L	20	21.3	106	73-125	
4-Methyl-2-pentanone (MIBK)	ug/L	100	112	112	71-126	
Acetone	ug/L	100	87.6	88	69-131	
Allyl chloride	ug/L	20	22.2	111	67-125	
Benzene	ug/L	20	19.8	99	71-125	
Bromobenzene	ug/L	20	20.1	101	75-125	
Bromochloromethane	ug/L	20	18.9	95	75-125	
Bromodichloromethane	ug/L	20	20.4	102	75-125	
Bromoform	ug/L	20	18.8	94	70-125	
Bromomethane	ug/L	20	8.7	43	30-150	CL
Carbon tetrachloride	ug/L	20	20.4	102	75-126	
Chlorobenzene	ug/L	20	20.2	101	75-125	
Chloroethane	ug/L	20	21.6	108	65-134	
Chloroform	ug/L	20	19.7	99	75-125	
Chloromethane	ug/L	20	21.1	105	39-150	
cis-1,2-Dichloroethene	ug/L	20	19.4	97	72-125	
cis-1,3-Dichloropropene	ug/L	20	20.7	103	75-125	
Dibromochloromethane	ug/L	20	20.3	102	75-125	
Dibromomethane	ug/L	20	18.3	92	75-125	
Dichlorodifluoromethane	ug/L	20	17.4	87	50-134	
Dichlorofluoromethane	ug/L	20	20.4	102	69-125	
Diethyl ether (Ethyl ether)	ug/L	20	20.8	104	72-125	
Ethylbenzene	ug/L	20	21.5	108	75-125	
Hexachloro-1,3-butadiene	ug/L	20	18.9	95	70-138	
Isopropylbenzene (Cumene)	ug/L	20	21.2	106	75-125	
Methyl-tert-butyl ether	ug/L	20	21.4	107	73-125	
Methylene Chloride	ug/L	20	20.1	100	73-125	
n-Butylbenzene	ug/L	20	22.5	112	72-133	
n-Propylbenzene	ug/L	20	21.5	107	72-126	
Naphthalene	ug/L	20	21.7	108	70-127	
p-Isopropyltoluene	ug/L	20	20.9	104	72-132	
sec-Butylbenzene	ug/L	20	21.1	105	73-132	
Styrene	ug/L	20	21.0	105	75-125	
tert-Butylbenzene	ug/L	20	20.5	102	73-128	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327623

LABORATORY CONTROL SAMPLE: 2121199

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	ug/L	20	19.7	99	74-125	
Tetrahydrofuran	ug/L	200	185	92	62-133	
Toluene	ug/L	20	21.3	107	74-125	
trans-1,2-Dichloroethene	ug/L	20	20.4	102	69-125	
trans-1,3-Dichloropropene	ug/L	20	22.8	114	75-125	
Trichloroethene	ug/L	20	20.2	101	75-125	
Trichlorofluoromethane	ug/L	20	20.9	105	74-127	
Vinyl chloride	ug/L	20	21.2	106	66-132	
Xylene (Total)	ug/L	60	62.5	104	75-125	
1,2-Dichloroethane-d4 (S)	%			113	75-125	
4-Bromofluorobenzene (S)	%			103	75-125	
Toluene-d8 (S)	%			108	75-125	

MATRIX SPIKE SAMPLE: 2121241

Parameter	Units	10327916001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	21.1	105	70-138	
1,1,1-Trichloroethane	ug/L	ND	20	22.3	112	55-150	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	22.5	113	64-140	
1,1,2-Trichloroethane	ug/L	ND	20	20.8	104	67-137	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	20	23.1	115	51-150	
1,1-Dichloroethane	ug/L	ND	20	21.2	106	49-150	
1,1-Dichloroethene	ug/L	ND	20	22.1	110	40-150	
1,1-Dichloropropene	ug/L	ND	20	22.3	111	50-150	
1,2,3-Trichlorobenzene	ug/L	ND	20	17.7	89	59-148	
1,2,3-Trichloropropane	ug/L	ND	20	24.2	121	65-141	
1,2,4-Trichlorobenzene	ug/L	ND	20	17.1	85	61-140	
1,2,4-Trimethylbenzene	ug/L	ND	20	21.6	108	58-141	
1,2-Dibromo-3-chloropropane	ug/L	ND	50	49.9	100	53-150	
1,2-Dibromoethane (EDB)	ug/L	ND	20	21.3	107	65-137	
1,2-Dichlorobenzene	ug/L	ND	20	19.4	97	66-133	
1,2-Dichloroethane	ug/L	ND	20	21.3	107	54-138	
1,2-Dichloropropane	ug/L	ND	20	21.3	107	62-138	
1,3,5-Trimethylbenzene	ug/L	ND	20	23.1	116	58-140	
1,3-Dichlorobenzene	ug/L	ND	20	19.2	96	66-132	
1,3-Dichloropropane	ug/L	ND	20	22.1	111	66-134	
1,4-Dichlorobenzene	ug/L	ND	20	18.7	94	65-129	
2,2-Dichloropropane	ug/L	ND	20	22.5	112	40-150	
2-Butanone (MEK)	ug/L	ND	100	101	101	51-147	
2-Chlorotoluene	ug/L	ND	20	21.7	108	58-147	
4-Chlorotoluene	ug/L	ND	20	20.7	103	64-138	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	100	110	110	59-143	
Acetone	ug/L	ND	100	88.7	89	63-147	
Allyl chloride	ug/L	ND	20	21.7	109	45-150	
Benzene	ug/L	ND	20	20.4	102	53-139	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327623

MATRIX SPIKE SAMPLE: 2121241		10327916001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Bromobenzene	ug/L	ND	20	20.2	101	66-136	
Bromochloromethane	ug/L	ND	20	18.2	91	64-136	
Bromodichloromethane	ug/L	ND	20	20.5	103	66-138	
Bromoform	ug/L	ND	20	18.4	92	59-136	
Bromomethane	ug/L	ND	20	10.2	51	30-150	CL
Carbon tetrachloride	ug/L	ND	20	22.2	111	56-150	
Chlorobenzene	ug/L	ND	20	20.1	101	65-133	
Chloroethane	ug/L	ND	20	20.1	101	48-150	
Chloroform	ug/L	ND	20	20.7	103	57-145	
Chloromethane	ug/L	ND	20	19.8	99	30-150	
cis-1,2-Dichloroethene	ug/L	ND	20	21.0	105	49-150	
cis-1,3-Dichloropropene	ug/L	ND	20	20.3	101	64-130	
Dibromochloromethane	ug/L	ND	20	20.3	102	68-138	
Dibromomethane	ug/L	ND	20	18.2	91	67-134	
Dichlorodifluoromethane	ug/L	ND	20	26.0	130	45-150	
Dichlorofluoromethane	ug/L	ND	20	18.5	92	54-150	
Diethyl ether (Ethyl ether)	ug/L	ND	20	20.2	101	50-145	
Ethylbenzene	ug/L	ND	20	21.7	108	55-139	
Hexachloro-1,3-butadiene	ug/L	ND	20	22.4	112	49-150	
Isopropylbenzene (Cumene)	ug/L	ND	20	22.0	110	64-142	
Methyl-tert-butyl ether	ug/L	ND	20	19.8	99	62-129	
Methylene Chloride	ug/L	ND	20	19.6	98	57-132	
n-Butylbenzene	ug/L	ND	20	22.4	112	55-150	
n-Propylbenzene	ug/L	ND	20	23.0	115	59-142	
Naphthalene	ug/L	ND	20	15.9	80	51-150	
p-Isopropyltoluene	ug/L	ND	20	22.8	114	60-149	
sec-Butylbenzene	ug/L	ND	20	23.9	120	60-150	
Styrene	ug/L	ND	20	19.4	97	68-134	
tert-Butylbenzene	ug/L	ND	20	23.2	116	62-146	
Tetrachloroethene	ug/L	ND	20	19.9	99	50-150	
Tetrahydrofuran	ug/L	ND	200	184	92	59-145	
Toluene	ug/L	ND	20	21.9	109	52-148	
trans-1,2-Dichloroethene	ug/L	ND	20	21.0	105	45-150	
trans-1,3-Dichloropropene	ug/L	ND	20	21.8	109	68-132	
Trichloroethene	ug/L	ND	20	21.4	107	52-150	
Trichlorofluoromethane	ug/L	ND	20	23.2	116	55-150	
Vinyl chloride	ug/L	ND	20	21.7	108	43-150	
Xylene (Total)	ug/L	ND	60	62.5	104	54-144	
1,2-Dichloroethane-d4 (S)	%				112	75-125	
4-Bromofluorobenzene (S)	%				110	75-125	
Toluene-d8 (S)	%				108	75-125	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327623

SAMPLE DUPLICATE: 2121242

Parameter	Units	10327928002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,1-Trichloroethane	ug/L	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,2-Trichloroethane	ug/L	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	ND		30	
1,1-Dichloroethane	ug/L	ND	ND		30	
1,1-Dichloroethene	ug/L	ND	ND		30	
1,1-Dichloropropene	ug/L	ND	ND		30	
1,2,3-Trichlorobenzene	ug/L	ND	ND		30	
1,2,3-Trichloropropane	ug/L	ND	ND		30	
1,2,4-Trichlorobenzene	ug/L	ND	ND		30	
1,2,4-Trimethylbenzene	ug/L	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/L	ND	ND		30	
1,2-Dichlorobenzene	ug/L	ND	ND		30	
1,2-Dichloroethane	ug/L	ND	ND		30	
1,2-Dichloropropane	ug/L	ND	ND		30	
1,3,5-Trimethylbenzene	ug/L	ND	ND		30	
1,3-Dichlorobenzene	ug/L	ND	ND		30	
1,3-Dichloropropane	ug/L	ND	ND		30	
1,4-Dichlorobenzene	ug/L	ND	ND		30	
2,2-Dichloropropane	ug/L	ND	ND		30	
2-Butanone (MEK)	ug/L	ND	ND		30	
2-Chlorotoluene	ug/L	ND	ND		30	
4-Chlorotoluene	ug/L	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		30	
Acetone	ug/L	ND	ND		30	
Allyl chloride	ug/L	ND	ND		30	
Benzene	ug/L	ND	ND		30	
Bromobenzene	ug/L	ND	ND		30	
Bromochloromethane	ug/L	ND	ND		30	
Bromodichloromethane	ug/L	ND	ND		30	
Bromoform	ug/L	ND	ND		30	
Bromomethane	ug/L	ND	ND		30	CL
Carbon tetrachloride	ug/L	ND	ND		30	
Chlorobenzene	ug/L	ND	ND		30	
Chloroethane	ug/L	ND	ND		30	
Chloroform	ug/L	ND	ND		30	
Chloromethane	ug/L	ND	ND		30	
cis-1,2-Dichloroethene	ug/L	ND	ND		30	
cis-1,3-Dichloropropene	ug/L	ND	ND		30	
Dibromochloromethane	ug/L	ND	ND		30	
Dibromomethane	ug/L	ND	ND		30	
Dichlorodifluoromethane	ug/L	ND	ND		30	
Dichlorofluoromethane	ug/L	ND	ND		30	
Diethyl ether (Ethyl ether)	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327623

SAMPLE DUPLICATE: 2121242

Parameter	Units	10327928002 Result	Dup Result	RPD	Max RPD	Qualifiers
Hexachloro-1,3-butadiene	ug/L	ND	ND		30	
Isopropylbenzene (Cumene)	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Methylene Chloride	ug/L	ND	ND		30	
n-Butylbenzene	ug/L	ND	ND		30	
n-Propylbenzene	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
p-Isopropyltoluene	ug/L	ND	ND		30	
sec-Butylbenzene	ug/L	ND	ND		30	
Styrene	ug/L	ND	ND		30	
tert-Butylbenzene	ug/L	ND	ND		30	
Tetrachloroethene	ug/L	ND	ND		30	
Tetrahydrofuran	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
trans-1,2-Dichloroethene	ug/L	ND	ND		30	
trans-1,3-Dichloropropene	ug/L	ND	ND		30	
Trichloroethene	ug/L	ND	ND		30	
Trichlorofluoromethane	ug/L	ND	ND		30	
Vinyl chloride	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	111	111	0		
4-Bromofluorobenzene (S)	%	110	111	1		
Toluene-d8 (S)	%	109	108	1		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327623

QC Batch: MSV/33596

Analysis Method: EPA 8260B

QC Batch Method: EPA 8260B

Analysis Description: 8260B MSV 465 W

Associated Lab Samples: 10327623004

METHOD BLANK: 2122825

Matrix: Water

Associated Lab Samples: 10327623004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	10/30/15 22:50	
1,1,1-Trichloroethane	ug/L	ND	1.0	10/30/15 22:50	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	10/30/15 22:50	
1,1,2-Trichloroethane	ug/L	ND	1.0	10/30/15 22:50	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	1.0	10/30/15 22:50	
1,1-Dichloroethane	ug/L	ND	1.0	10/30/15 22:50	
1,1-Dichloroethene	ug/L	ND	1.0	10/30/15 22:50	
1,1-Dichloropropene	ug/L	ND	1.0	10/30/15 22:50	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	10/30/15 22:50	
1,2,3-Trichloropropane	ug/L	ND	4.0	10/30/15 22:50	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	10/30/15 22:50	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	10/30/15 22:50	
1,2-Dibromo-3-chloropropane	ug/L	ND	4.0	10/30/15 22:50	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	10/30/15 22:50	
1,2-Dichlorobenzene	ug/L	ND	1.0	10/30/15 22:50	
1,2-Dichloroethane	ug/L	ND	1.0	10/30/15 22:50	
1,2-Dichloropropane	ug/L	ND	4.0	10/30/15 22:50	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	10/30/15 22:50	
1,3-Dichlorobenzene	ug/L	ND	1.0	10/30/15 22:50	
1,3-Dichloropropane	ug/L	ND	1.0	10/30/15 22:50	
1,4-Dichlorobenzene	ug/L	ND	1.0	10/30/15 22:50	
2,2-Dichloropropane	ug/L	ND	4.0	10/30/15 22:50	
2-Butanone (MEK)	ug/L	ND	5.0	10/30/15 22:50	
2-Chlorotoluene	ug/L	ND	1.0	10/30/15 22:50	
4-Chlorotoluene	ug/L	ND	1.0	10/30/15 22:50	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	10/30/15 22:50	
Acetone	ug/L	ND	20.0	10/30/15 22:50	
Allyl chloride	ug/L	ND	4.0	10/30/15 22:50	
Benzene	ug/L	ND	1.0	10/30/15 22:50	
Bromobenzene	ug/L	ND	1.0	10/30/15 22:50	
Bromochloromethane	ug/L	ND	1.0	10/30/15 22:50	
Bromodichloromethane	ug/L	ND	1.0	10/30/15 22:50	
Bromoform	ug/L	ND	4.0	10/30/15 22:50	
Bromomethane	ug/L	ND	4.0	10/30/15 22:50	CL
Carbon tetrachloride	ug/L	ND	1.0	10/30/15 22:50	
Chlorobenzene	ug/L	ND	1.0	10/30/15 22:50	
Chloroethane	ug/L	ND	1.0	10/30/15 22:50	
Chloroform	ug/L	ND	1.0	10/30/15 22:50	
Chloromethane	ug/L	ND	4.0	10/30/15 22:50	
cis-1,2-Dichloroethene	ug/L	ND	1.0	10/30/15 22:50	
cis-1,3-Dichloropropene	ug/L	ND	4.0	10/30/15 22:50	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327623

METHOD BLANK: 2122825

Matrix: Water

Associated Lab Samples: 10327623004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/L	ND	1.0	10/30/15 22:50	
Dibromomethane	ug/L	ND	4.0	10/30/15 22:50	
Dichlorodifluoromethane	ug/L	ND	1.0	10/30/15 22:50	
Dichlorofluoromethane	ug/L	ND	1.0	10/30/15 22:50	
Diethyl ether (Ethyl ether)	ug/L	ND	4.0	10/30/15 22:50	
Ethylbenzene	ug/L	ND	1.0	10/30/15 22:50	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	10/30/15 22:50	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	10/30/15 22:50	
Methyl-tert-butyl ether	ug/L	ND	1.0	10/30/15 22:50	
Methylene Chloride	ug/L	ND	4.0	10/30/15 22:50	
n-Butylbenzene	ug/L	ND	1.0	10/30/15 22:50	
n-Propylbenzene	ug/L	ND	1.0	10/30/15 22:50	
Naphthalene	ug/L	ND	4.0	10/30/15 22:50	
p-Isopropyltoluene	ug/L	ND	1.0	10/30/15 22:50	
sec-Butylbenzene	ug/L	ND	1.0	10/30/15 22:50	
Styrene	ug/L	ND	1.0	10/30/15 22:50	
tert-Butylbenzene	ug/L	ND	1.0	10/30/15 22:50	
Tetrachloroethene	ug/L	ND	1.0	10/30/15 22:50	
Tetrahydrofuran	ug/L	ND	10.0	10/30/15 22:50	
Toluene	ug/L	ND	1.0	10/30/15 22:50	
trans-1,2-Dichloroethene	ug/L	ND	1.0	10/30/15 22:50	
trans-1,3-Dichloropropene	ug/L	ND	4.0	10/30/15 22:50	
Trichloroethene	ug/L	ND	0.40	10/30/15 22:50	
Trichlorofluoromethane	ug/L	ND	1.0	10/30/15 22:50	
Vinyl chloride	ug/L	ND	0.40	10/30/15 22:50	
Xylene (Total)	ug/L	ND	3.0	10/30/15 22:50	
1,2-Dichloroethane-d4 (S)	%	106	75-125	10/30/15 22:50	
4-Bromofluorobenzene (S)	%	108	75-125	10/30/15 22:50	
Toluene-d8 (S)	%	108	75-125	10/30/15 22:50	

LABORATORY CONTROL SAMPLE: 2122826

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	20	21.1	106	75-125	
1,1,1-Trichloroethane	ug/L	20	22.2	111	75-125	
1,1,2,2-Tetrachloroethane	ug/L	20	22.0	110	75-125	
1,1,2-Trichloroethane	ug/L	20	20.3	101	75-125	
1,1,2-Trichlorotrifluoroethane	ug/L	20	16.2	81	60-135	
1,1-Dichloroethane	ug/L	20	22.0	110	69-125	
1,1-Dichloroethene	ug/L	20	19.2	96	68-125	
1,1-Dichloropropene	ug/L	20	20.8	104	74-125	
1,2,3-Trichlorobenzene	ug/L	20	20.3	101	69-136	
1,2,3-Trichloropropane	ug/L	20	21.2	106	75-125	
1,2,4-Trichlorobenzene	ug/L	20	20.2	101	73-127	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327623

LABORATORY CONTROL SAMPLE: 2122826

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	21.7	109	75-125	
1,2-Dibromo-3-chloropropane	ug/L	50	49.9	100	65-145	
1,2-Dibromoethane (EDB)	ug/L	20	21.6	108	75-125	
1,2-Dichlorobenzene	ug/L	20	20.9	105	75-125	
1,2-Dichloroethane	ug/L	20	21.0	105	73-125	
1,2-Dichloropropane	ug/L	20	21.7	109	75-125	
1,3,5-Trimethylbenzene	ug/L	20	21.8	109	75-125	
1,3-Dichlorobenzene	ug/L	20	20.2	101	74-125	
1,3-Dichloropropane	ug/L	20	21.8	109	75-125	
1,4-Dichlorobenzene	ug/L	20	20.1	101	75-125	
2,2-Dichloropropane	ug/L	20	21.0	105	59-139	
2-Butanone (MEK)	ug/L	100	110	110	63-130	
2-Chlorotoluene	ug/L	20	21.6	108	72-125	
4-Chlorotoluene	ug/L	20	22.5	112	73-125	
4-Methyl-2-pentanone (MIBK)	ug/L	100	123	123	71-126	
Acetone	ug/L	100	77.2	77	69-131	
Allyl chloride	ug/L	20	21.2	106	67-125	
Benzene	ug/L	20	20.4	102	71-125	
Bromobenzene	ug/L	20	20.9	104	75-125	
Bromochloromethane	ug/L	20	18.8	94	75-125	
Bromodichloromethane	ug/L	20	20.7	104	75-125	
Bromoform	ug/L	20	17.7	88	70-125	
Bromomethane	ug/L	20	9.2	46	30-150	CL
Carbon tetrachloride	ug/L	20	20.5	102	75-126	
Chlorobenzene	ug/L	20	20.7	103	75-125	
Chloroethane	ug/L	20	22.8	114	65-134	
Chloroform	ug/L	20	20.5	103	75-125	
Chloromethane	ug/L	20	20.8	104	39-150	
cis-1,2-Dichloroethene	ug/L	20	21.3	107	72-125	
cis-1,3-Dichloropropene	ug/L	20	20.7	103	75-125	
Dibromochloromethane	ug/L	20	20.1	101	75-125	
Dibromomethane	ug/L	20	18.7	93	75-125	
Dichlorodifluoromethane	ug/L	20	22.0	110	50-134	
Dichlorofluoromethane	ug/L	20	20.2	101	69-125	
Diethyl ether (Ethyl ether)	ug/L	20	19.4	97	72-125	
Ethylbenzene	ug/L	20	22.6	113	75-125	
Hexachloro-1,3-butadiene	ug/L	20	22.2	111	70-138	
Isopropylbenzene (Cumene)	ug/L	20	21.9	110	75-125	
Methyl-tert-butyl ether	ug/L	20	20.1	101	73-125	
Methylene Chloride	ug/L	20	20.5	103	73-125	
n-Butylbenzene	ug/L	20	22.6	113	72-133	
n-Propylbenzene	ug/L	20	22.3	111	72-126	
Naphthalene	ug/L	20	20.2	101	70-127	
p-Isopropyltoluene	ug/L	20	21.5	108	72-132	
sec-Butylbenzene	ug/L	20	22.3	111	73-132	
Styrene	ug/L	20	21.5	107	75-125	
tert-Butylbenzene	ug/L	20	21.2	106	73-128	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327623

LABORATORY CONTROL SAMPLE: 2122826

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	ug/L	20	18.5	92	74-125	
Tetrahydrofuran	ug/L	200	166	83	62-133	
Toluene	ug/L	20	22.2	111	74-125	
trans-1,2-Dichloroethene	ug/L	20	19.5	98	69-125	
trans-1,3-Dichloropropene	ug/L	20	22.2	111	75-125	
Trichloroethene	ug/L	20	21.3	106	75-125	
Trichlorofluoromethane	ug/L	20	21.0	105	74-127	
Vinyl chloride	ug/L	20	22.2	111	66-132	
Xylene (Total)	ug/L	60	64.1	107	75-125	
1,2-Dichloroethane-d4 (S)	%			115	75-125	
4-Bromofluorobenzene (S)	%			105	75-125	
Toluene-d8 (S)	%			108	75-125	

MATRIX SPIKE SAMPLE: 2123049

Parameter	Units	10328072004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	17.4	87	70-138	
1,1,1-Trichloroethane	ug/L	ND	20	17.8	89	55-150	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	19.9	99	64-140	
1,1,2-Trichloroethane	ug/L	ND	20	18.3	92	67-137	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	20	16.3	81	51-150	
1,1-Dichloroethane	ug/L	ND	20	17.1	85	49-150	
1,1-Dichloroethene	ug/L	ND	20	13.7	69	40-150	
1,1-Dichloropropene	ug/L	ND	20	15.1	76	50-150	
1,2,3-Trichlorobenzene	ug/L	ND	20	14.7	73	59-148	
1,2,3-Trichloropropane	ug/L	ND	20	20.1	100	65-141	
1,2,4-Trichlorobenzene	ug/L	ND	20	15.2	76	61-140	
1,2,4-Trimethylbenzene	ug/L	ND	20	17.3	86	58-141	
1,2-Dibromo-3-chloropropane	ug/L	ND	50	46.6	93	53-150	
1,2-Dibromoethane (EDB)	ug/L	ND	20	16.9	84	65-137	
1,2-Dichlorobenzene	ug/L	ND	20	17.3	87	66-133	
1,2-Dichloroethane	ug/L	ND	20	17.1	85	54-138	
1,2-Dichloropropane	ug/L	ND	20	17.6	88	62-138	
1,3,5-Trimethylbenzene	ug/L	ND	20	17.1	85	58-140	
1,3-Dichlorobenzene	ug/L	ND	20	16.9	85	66-132	
1,3-Dichloropropane	ug/L	ND	20	18.4	92	66-134	
1,4-Dichlorobenzene	ug/L	ND	20	16.4	82	65-129	
2,2-Dichloropropane	ug/L	ND	20	16.3	82	40-150	
2-Butanone (MEK)	ug/L	ND	100	87.6	88	51-147	
2-Chlorotoluene	ug/L	ND	20	17.7	89	58-147	
4-Chlorotoluene	ug/L	ND	20	18.3	91	64-138	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	100	109	109	59-143	
Acetone	ug/L	ND	100	72.4	72	63-147	
Allyl chloride	ug/L	ND	20	16.1	81	45-150	
Benzene	ug/L	ND	20	15.3	76	53-139	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327623

MATRIX SPIKE SAMPLE:		2123049		10328072004		Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Result	% Rec	Limits	Qualifiers	
Bromobenzene	ug/L	ND	20	17.6	88	66-136				
Bromochloromethane	ug/L	ND	20	14.5	73	64-136				
Bromodichloromethane	ug/L	ND	20	17.5	87	66-138				
Bromoform	ug/L	ND	20	15.9	80	59-136				
Bromomethane	ug/L	ND	20	7.6	38	30-150	CL			
Carbon tetrachloride	ug/L	ND	20	17.4	87	56-150				
Chlorobenzene	ug/L	ND	20	16.7	84	65-133				
Chloroethane	ug/L	ND	20	26.0	130	48-150				
Chloroform	ug/L	ND	20	17.5	88	57-145				
Chloromethane	ug/L	ND	20	21.3	107	30-150				
cis-1,2-Dichloroethene	ug/L	ND	20	15.6	78	49-150				
cis-1,3-Dichloropropene	ug/L	ND	20	16.8	84	64-130				
Dibromochloromethane	ug/L	ND	20	15.9	80	68-138				
Dibromomethane	ug/L	ND	20	14.9	74	67-134				
Dichlorodifluoromethane	ug/L	ND	20	27.4	137	45-150				
Dichlorofluoromethane	ug/L	3.0	20	23.1	100	54-150				
Diethyl ether (Ethyl ether)	ug/L	ND	20	15.2	76	50-145				
Ethylbenzene	ug/L	ND	20	17.4	87	55-139				
Hexachloro-1,3-butadiene	ug/L	ND	20	16.0	80	49-150				
Isopropylbenzene (Cumene)	ug/L	ND	20	17.8	89	64-142				
Methyl-tert-butyl ether	ug/L	ND	20	16.8	84	62-129				
Methylene Chloride	ug/L	ND	20	14.6	73	57-132				
n-Butylbenzene	ug/L	ND	20	17.5	88	55-150				
n-Propylbenzene	ug/L	ND	20	18.0	90	59-142				
Naphthalene	ug/L	ND	20	16.4	82	51-150				
p-Isopropyltoluene	ug/L	ND	20	17.5	87	60-149				
sec-Butylbenzene	ug/L	ND	20	18.3	91	60-150				
Styrene	ug/L	ND	20	17.3	86	68-134				
tert-Butylbenzene	ug/L	ND	20	17.7	88	62-146				
Tetrachloroethene	ug/L	ND	20	14.0	70	50-150				
Tetrahydrofuran	ug/L	ND	200	153	76	59-145				
Toluene	ug/L	ND	20	16.3	81	52-148				
trans-1,2-Dichloroethene	ug/L	ND	20	12.4	62	45-150				
trans-1,3-Dichloropropene	ug/L	ND	20	18.0	90	68-132				
Trichloroethene	ug/L	ND	20	14.6	73	52-150				
Trichlorofluoromethane	ug/L	ND	20	24.4	121	55-150				
Vinyl chloride	ug/L	ND	20	23.7	118	43-150				
Xylene (Total)	ug/L	ND	60	50.1	83	54-144				
1,2-Dichloroethane-d4 (S)	%				114	75-125				
4-Bromofluorobenzene (S)	%				105	75-125				
Toluene-d8 (S)	%				105	75-125				

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327623

SAMPLE DUPLICATE: 2123050

Parameter	Units	10328072005 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,1-Trichloroethane	ug/L	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,2-Trichloroethane	ug/L	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	ND		30	
1,1-Dichloroethane	ug/L	ND	ND		30	
1,1-Dichloroethene	ug/L	ND	ND		30	
1,1-Dichloropropene	ug/L	ND	ND		30	
1,2,3-Trichlorobenzene	ug/L	ND	ND		30	
1,2,3-Trichloropropane	ug/L	ND	ND		30	
1,2,4-Trichlorobenzene	ug/L	ND	ND		30	
1,2,4-Trimethylbenzene	ug/L	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/L	ND	ND		30	
1,2-Dichlorobenzene	ug/L	ND	ND		30	
1,2-Dichloroethane	ug/L	ND	ND		30	
1,2-Dichloropropane	ug/L	ND	ND		30	
1,3,5-Trimethylbenzene	ug/L	ND	ND		30	
1,3-Dichlorobenzene	ug/L	ND	ND		30	
1,3-Dichloropropane	ug/L	ND	ND		30	
1,4-Dichlorobenzene	ug/L	ND	ND		30	
2,2-Dichloropropane	ug/L	ND	ND		30	
2-Butanone (MEK)	ug/L	ND	ND		30	
2-Chlorotoluene	ug/L	ND	ND		30	
4-Chlorotoluene	ug/L	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		30	
Acetone	ug/L	ND	ND		30	
Allyl chloride	ug/L	ND	ND		30	
Benzene	ug/L	ND	ND		30	
Bromobenzene	ug/L	ND	ND		30	
Bromochloromethane	ug/L	ND	ND		30	
Bromodichloromethane	ug/L	ND	ND		30	
Bromoform	ug/L	ND	ND		30	
Bromomethane	ug/L	ND	ND		30	CL
Carbon tetrachloride	ug/L	ND	ND		30	
Chlorobenzene	ug/L	ND	ND		30	
Chloroethane	ug/L	ND	ND		30	
Chloroform	ug/L	ND	ND		30	
Chloromethane	ug/L	ND	ND		30	
cis-1,2-Dichloroethene	ug/L	ND	ND		30	
cis-1,3-Dichloropropene	ug/L	ND	ND		30	
Dibromochloromethane	ug/L	ND	ND		30	
Dibromomethane	ug/L	ND	ND		30	
Dichlorodifluoromethane	ug/L	ND	ND		30	
Dichlorofluoromethane	ug/L	ND	ND		30	
Diethyl ether (Ethyl ether)	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327623

SAMPLE DUPLICATE: 2123050

Parameter	Units	10328072005 Result	Dup Result	RPD	Max RPD	Qualifiers
Hexachloro-1,3-butadiene	ug/L	ND	ND		30	
Isopropylbenzene (Cumene)	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Methylene Chloride	ug/L	ND	ND		30	
n-Butylbenzene	ug/L	ND	ND		30	
n-Propylbenzene	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
p-Isopropyltoluene	ug/L	ND	ND		30	
sec-Butylbenzene	ug/L	ND	ND		30	
Styrene	ug/L	ND	ND		30	
tert-Butylbenzene	ug/L	ND	ND		30	
Tetrachloroethene	ug/L	ND	ND		30	
Tetrahydrofuran	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
trans-1,2-Dichloroethene	ug/L	ND	ND		30	
trans-1,3-Dichloropropene	ug/L	ND	ND		30	
Trichloroethene	ug/L	ND	ND		30	
Trichlorofluoromethane	ug/L	ND	ND		30	
Vinyl chloride	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	110	107	3		
4-Bromofluorobenzene (S)	%	108	109	1		
Toluene-d8 (S)	%	106	108	2		

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: PS Beta - NIROP

Pace Project No.: 10327623

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

1M The internal standard recovery associated with this result exceeds the lower control limit. Results unaffected by a high bias. Confirmed by a second analysis.

CL The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased low.

S2 Surrogate recovery outside laboratory control limits due to matrix interferences (confirmed by similar results from sample re-analysis).

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PS Beta - NIROP

Pace Project No.: 10327623

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10327623001	PMW-01	EPA 8260B	MSV/33585		
10327623002	PMW-02	EPA 8260B	MSV/33557		
10327623003	PMW-03	EPA 8260B	MSV/33585		
10327623004	PMW-04	EPA 8260B	MSV/33596		
10327623005	Trip Blank	EPA 8260B	MSV/33557		

REPORT OF LABORATORY ANALYSIS

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K2-DAY TAT

CHAIN-OF-CUSTODY / Analytical Request Document
The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

RUSH

Page 1 of 2

Section A
Required Client Information:
Company: Regenesis
Address: 1011 Calle Sombira
San Clemente, CA 92673
Email To: Mplham@regenesis.com
Phone: 949-366-8000 Fax: 343-366-8090
Requested Due Date/TAT: 2 days

Section B
Required Project Information:
Report To: Melinda Pham
Copy To:
Purchase Order No.:
Project Name: PS Beta - NIROP
Project Number: PS Beta - NIROP

Section C
Invoice Information:
Attention: Bahar Naderi
Company Name: Regenesis
Address: 1011 Calle Sombira
Pace Quote: 21466
Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY
 NPDES GROUND WATER DRINKING WATER
 UST RCRA OTHER

Site Location STATE: NJ

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information	Valid Matrix Codes CODE	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives						[Analysis Test]	Residual Chlorine (Y/N)	Pace Project No./Lab I.D.
			DATE	TIME			DATE	TIME	Unpreserved	H ₂ SO ₄	HNO ₃	HCl			
1	PMU-01	(A-Z, 0-9 / -)													001
2	PMU-02														007
3	PMU-03														003
4	PMU-04														004
5	TRIP BANK														005
6															
7															
8															
9															
10															
11															
12															

ADDITIONAL COMMENTS
K2-DAY TAT

PREPARED BY/AFFILIATION
ACEON

DATE
10/24/15

TIME
1812

SIGNATURE OF SAMPLER:
[Signature]

DATE SIGNED (MM/DD/YY):
10/26/15


TEMPERATURE
Temp in °C

RECEIVED ON ICE
Received on Ice (Y/N)

CUSTODY SEALED COOLER
Custody Sealed Cooler (Y/N)

SAMPLES INTACT
Samples Intact (Y/N)

Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.
F-ALL-Q-020rev.08, 12-Oct-2007

Sample Condition Upon Receipt	Client Name: <u>Regenesis</u>	Project #: WO# : 10327623
	Courier: <input type="checkbox"/> Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> USPS <input checked="" type="checkbox"/> Client <input type="checkbox"/> Commercial <input type="checkbox"/> Pace <input type="checkbox"/> SpeedDee <input type="checkbox"/> Other: _____ Tracking Number: _____	 10327623

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No **Optional:** Proj. Due Date: _____ Proj. Name: _____
 Packing Material: Bubble Wrap Bubble Bags None Other: _____ Temp Blank? Yes No
 Thermometer Used: B88A9130516413 B88A912167504 B88A0143310098 Type of Ice: Wet Blue None Samples on ice, cooling process has begun
 Cooler Temp Read (°C): 4.2, 0.3 Cooler Temp Corrected (°C): 4.2, 0.3 Biological Tissue Frozen? Yes No N/A
 Temp should be above freezing to 6°C Correction Factor: 0.3 Date and Initials of Person Examining Contents: 10/26/15 DN
 USDA Regulated Soil (N/A, water sample)
 Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or WA (check maps)? Yes No Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No
 If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7. <u>7 day</u>
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>wt</u>	
All containers needing acid/base preservation have been checked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> HNO ₃ <input type="checkbox"/> H ₂ SO ₄ <input type="checkbox"/> NaOH <input type="checkbox"/> HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH >12 Cyanide) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Sample #
Exceptions: <u>VOA</u> Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): <u>W0815-1</u>	

CLIENT NOTIFICATION/RESOLUTION Field Data Required? Yes No
 Person Contacted: _____ Date/Time: _____
 Comments/Resolution: _____

Project Manager Review: [Signature] Date: 10/27/15
 Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

November 10, 2015

Melinda Pham
Regenesis
1011 Calle Sombra
San Clemente, CA 92673

RE: Project: PS Beta - NIROP
Pace Project No.: 10327624

Dear Melinda Pham:

Enclosed are the analytical results for sample(s) received by the laboratory on October 26, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,



Jennifer Anderson
jennifer.anderson@pacelabs.com
Project Manager

Enclosures

cc: Ryan Moore, Regenesis



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PS Beta - NIROP
Pace Project No.: 10327624

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

Montana Certification IDs

150 N. 9th Street, Billings, MT 59101
Colorado Asbestos #: 17119
A2LA Certification #: 3590.01
EPA Region 8 Certification #: 8TMS-L
Idaho Certification #: MT00012

Minnesota Dept of Health Certification #: 030-999-442
Montana Certification #: MT CERT0040
North Dakota Dept. Of Health #: R-209
NVLAP Certification #: 101292-0
Washington Department of Ecology #: C993

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification #MN01084
Arizona Department of Health Certification #AZ0785
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203

Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007
Nevada DNR #MN010842015-1
Oklahoma Department of Environmental Quality

Ormond Beach Certification IDs

8 East Tower Circle, Ormond Beach, FL 32174
Alabama Certification #: 41320
Connecticut Certification #: PH-0216
Delaware Certification: FL NELAC Reciprocity
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Illinois Certification #: 200068
Indiana Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Kentucky Certification #: 90050
Louisiana Certification #: FL NELAC Reciprocity
Louisiana Environmental Certificate #: 05007
Maryland Certification: #346
Michigan Certification #: 9911
Mississippi Certification: FL NELAC Reciprocity

Missouri Certification #: 236
Montana Certification #: Cert 0074
Nebraska Certification: NE-OS-28-14
Nevada Certification: FL NELAC Reciprocity
New Hampshire Certification #: 2958
New York Certification #: 11608
North Carolina Environmental Certificate #: 667
North Carolina Certification #: 12710
North Dakota Certification #: R-216
Oklahoma Certification #: D9947
Pennsylvania Certification #: 68-00547
Puerto Rico Certification #: FL01264
South Carolina Certification: #96042001
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity
US Virgin Islands Certification: FL NELAC Reciprocity
Virginia Environmental Certification #: 460165

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PS Beta - NIROP

Pace Project No.: 10327624

Ormond Beach Certification IDs

West Virginia Certification #: 9962C

Wisconsin Certification #: 399079670

Wyoming (EPA Region 8): FL NELAC Reciprocity

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: PS Beta - NIROP

Pace Project No.: 10327624

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10327624001	PMW-01	Water	10/26/15 14:40	10/26/15 18:12
10327624002	PMW-02	Water	10/26/15 13:20	10/26/15 18:12
10327624003	PMW-03	Water	10/26/15 17:10	10/26/15 18:12
10327624004	PMW-04	Water	10/26/15 16:05	10/26/15 18:12

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SAMPLE ANALYTE COUNT

Project: PS Beta - NIROP

Pace Project No.: 10327624

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10327624001	PMW-01	RSK 175	JRB	3	PASI-M
		EPA 6010C	IP	1	PASI-M
		6010C Met	IP	1	PASI-M
		SM 4500-S2-D	JME	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	KAM	2	PASI-O
		EPA 300.0	KEO	1	PASI-M
		EPA 353.2	PH1	1	PASI-M
		SM 5220D	KEO	1	PASI-M
		SM 5310C	KRV	1	PASI-V
10327624002	PMW-02	RSK 175	JRB	3	PASI-M
		EPA 6010C	IP	1	PASI-M
		6010C Met	IP	1	PASI-M
		SM 4500-S2-D	JME	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	KAM	2	PASI-O
		EPA 300.0	KEO	1	PASI-M
		EPA 353.2	PH1	1	PASI-M
		SM 5220D	KEO	1	PASI-M
		SM 5310C	KRV	1	PASI-V
10327624003	PMW-03	RSK 175	JRB	3	PASI-M
		EPA 6010C	IP	1	PASI-M
		6010C Met	IP	1	PASI-M
		SM 4500-S2-D	JME	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	KAM	2	PASI-O
		EPA 300.0	KEO	1	PASI-M
		EPA 353.2	PH1	1	PASI-M
		SM 5220D	KEO	1	PASI-M
		SM 5310C	KRV	1	PASI-V
10327624004	PMW-04	RSK 175	JRB	3	PASI-M
		EPA 6010C	IP	1	PASI-M
		6010C Met	IP	1	PASI-M
		SM 4500-S2-D	JME	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	KAM	2	PASI-O
		EPA 300.0	KEO	1	PASI-M

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SAMPLE ANALYTE COUNT

Project: PS Beta - NIROP

Pace Project No.: 10327624

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 353.2	PH1	1	PASI-M
		SM 5220D	KEO	1	PASI-M
		SM 5310C	KRV	1	PASI-V

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta - NIROP

Pace Project No.: 10327624

Sample: PMW-01		Lab ID: 10327624001		Collected: 10/26/15 14:40	Received: 10/26/15 18:12	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace		Analytical Method: RSK 175						
Ethane	ND	ug/L	10.0	1		10/27/15 13:03	74-84-0	
Ethene	ND	ug/L	10.0	1		10/27/15 13:03	74-85-1	
Methane	ND	ug/L	10.0	1		10/27/15 13:03	74-82-8	
6010C MET ICP		Analytical Method: EPA 6010C Preparation Method: EPA 3010						
Iron	21400	ug/L	250	1	10/30/15 11:55	11/02/15 08:43	7439-89-6	
6010C MET ICP, Dissolved		Analytical Method: 6010C Met Preparation Method: EPA 3010						
Iron, Dissolved	2580	ug/L	50.0	1	11/03/15 09:02	11/03/15 13:26	7439-89-6	
4500S2D Sulfide Water		Analytical Method: SM 4500-S2-D						
Sulfide	ND	mg/L	50.0	500		10/28/15 17:24		D3
2320B Alkalinity		Analytical Method: SM 2320B						
Alkalinity, Total as CaCO3	603	mg/L	100	20		10/30/15 12:48		
Alkalinity, Total as CaCO3	599	mg/L	5.0	1		11/06/15 13:27		
Carbon Dioxide (SM4500CO2D)	ND	mg/L	100	20		10/30/15 12:48	124-38-9	
Alkalinity,Bicarbonate (CaCO3)	595	mg/L	5.0	1		11/06/15 13:27		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	5.0	1		11/06/15 13:27		
300.0 IC Anions		Analytical Method: EPA 300.0						
Sulfate	172	mg/L	120	100		11/04/15 14:30	14808-79-8	
353.2 Nitrate + Nitrite		Analytical Method: EPA 353.2						
Nitrogen, NO2 plus NO3	ND	mg/L	0.020	1		11/02/15 16:55		
5220D COD		Analytical Method: SM 5220D Preparation Method: SM 5220D						
Chemical Oxygen Demand	1240	mg/L	500	1	11/04/15 11:21	11/04/15 15:47		
5310C TOC		Analytical Method: SM 5310C						
Total Organic Carbon	35.1	mg/L	10.0	10		11/02/15 18:41	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta - NIROP

Pace Project No.: 10327624

Sample: PMW-02	Lab ID: 10327624002	Collected: 10/26/15 13:20	Received: 10/26/15 18:12	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace								
Analytical Method: RSK 175								
Ethane	ND	ug/L	10.0	1		10/27/15 13:12	74-84-0	
Ethene	ND	ug/L	10.0	1		10/27/15 13:12	74-85-1	
Methane	14.4	ug/L	10.0	1		10/27/15 13:12	74-82-8	
6010C MET ICP								
Analytical Method: EPA 6010C Preparation Method: EPA 3010								
Iron	3430	ug/L	50.0	1	10/30/15 11:55	10/30/15 17:13	7439-89-6	
6010C MET ICP, Dissolved								
Analytical Method: 6010C Met Preparation Method: EPA 3010								
Iron, Dissolved	2600	ug/L	50.0	1	11/03/15 09:02	11/03/15 13:31	7439-89-6	
4500S2D Sulfide Water								
Analytical Method: SM 4500-S2-D								
Sulfide	ND	mg/L	0.10	1		10/28/15 17:25		
2320B Alkalinity								
Analytical Method: SM 2320B								
Alkalinity, Total as CaCO ₃	409	mg/L	5.0	1		10/30/15 13:03		
Alkalinity, Total as CaCO ₃	427	mg/L	5.0	1		11/06/15 13:32		
Carbon Dioxide (SM4500CO ₂ D)	63.6	mg/L	5.0	1		10/30/15 13:03	124-38-9	
Alkalinity,Bicarbonate (CaCO ₃)	427	mg/L	5.0	1		11/06/15 13:32		
Alkalinity,Carbonate (CaCO ₃)	ND	mg/L	5.0	1		11/06/15 13:32		
300.0 IC Anions								
Analytical Method: EPA 300.0								
Sulfate	156	mg/L	2.4	2		11/04/15 21:22	14808-79-8	
353.2 Nitrate + Nitrite								
Analytical Method: EPA 353.2								
Nitrogen, NO ₂ plus NO ₃	ND	mg/L	0.020	1		11/02/15 16:56		
5220D COD								
Analytical Method: SM 5220D Preparation Method: SM 5220D								
Chemical Oxygen Demand	ND	mg/L	50.0	1	11/04/15 11:21	11/04/15 15:47		
5310C TOC								
Analytical Method: SM 5310C								
Total Organic Carbon	2.3	mg/L	1.0	1		11/03/15 10:02	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta - NIROP

Pace Project No.: 10327624

Sample: PMW-03	Lab ID: 10327624003	Collected: 10/26/15 17:10	Received: 10/26/15 18:12	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace								
Analytical Method: RSK 175								
Ethane	ND	ug/L	10.0	1		10/27/15 13:20	74-84-0	
Ethene	ND	ug/L	10.0	1		10/27/15 13:20	74-85-1	
Methane	26.7	ug/L	10.0	1		10/27/15 13:20	74-82-8	
6010C MET ICP								
Analytical Method: EPA 6010C Preparation Method: EPA 3010								
Iron	10500	ug/L	50.0	1	10/30/15 11:55	10/30/15 17:17	7439-89-6	
6010C MET ICP, Dissolved								
Analytical Method: 6010C Met Preparation Method: EPA 3010								
Iron, Dissolved	4540	ug/L	50.0	1	11/03/15 09:02	11/03/15 14:05	7439-89-6	
4500S2D Sulfide Water								
Analytical Method: SM 4500-S2-D								
Sulfide	ND	mg/L	0.10	1		10/28/15 17:26		
2320B Alkalinity								
Analytical Method: SM 2320B								
Alkalinity, Total as CaCO ₃	300	mg/L	5.0	1		11/06/15 13:37		
Alkalinity, Total as CaCO ₃	285	mg/L	5.0	1		10/30/15 13:10		
Carbon Dioxide (SM4500CO ₂ D)	36.1	mg/L	5.0	1		10/30/15 13:10	124-38-9	
Alkalinity,Bicarbonate (CaCO ₃)	300	mg/L	5.0	1		11/06/15 13:37		
Alkalinity,Carbonate (CaCO ₃)	ND	mg/L	5.0	1		11/06/15 13:37		
300.0 IC Anions								
Analytical Method: EPA 300.0								
Sulfate	152	mg/L	2.4	2		11/04/15 21:40	14808-79-8	
353.2 Nitrate + Nitrite								
Analytical Method: EPA 353.2								
Nitrogen, NO ₂ plus NO ₃	ND	mg/L	0.020	1		11/02/15 16:58		
5220D COD								
Analytical Method: SM 5220D Preparation Method: SM 5220D								
Chemical Oxygen Demand	ND	mg/L	50.0	1	11/04/15 11:21	11/04/15 15:47		
5310C TOC								
Analytical Method: SM 5310C								
Total Organic Carbon	2.5	mg/L	1.0	1		11/02/15 19:09	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta - NIROP

Pace Project No.: 10327624

Sample: PMW-04		Lab ID: 10327624004	Collected: 10/26/15 16:05	Received: 10/26/15 18:12	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace		Analytical Method: RSK 175						
Ethane	ND	ug/L	10.0	1		10/27/15 13:28	74-84-0	
Ethene	ND	ug/L	10.0	1		10/27/15 13:28	74-85-1	
Methane	17.7	ug/L	10.0	1		10/27/15 13:28	74-82-8	
6010C MET ICP		Analytical Method: EPA 6010C Preparation Method: EPA 3010						
Iron	3880	ug/L	50.0	1	10/30/15 11:55	10/30/15 17:21	7439-89-6	
6010C MET ICP, Dissolved		Analytical Method: 6010C Met Preparation Method: EPA 3010						
Iron, Dissolved	2580	ug/L	50.0	1	11/03/15 09:02	11/03/15 14:09	7439-89-6	
4500S2D Sulfide Water		Analytical Method: SM 4500-S2-D						
Sulfide	ND	mg/L	0.10	1		10/28/15 17:27		
2320B Alkalinity		Analytical Method: SM 2320B						
Alkalinity, Total as CaCO ₃	274	mg/L	5.0	1		11/06/15 13:42		
Alkalinity, Total as CaCO ₃	266	mg/L	5.0	1		10/30/15 13:17		
Alkalinity, Bicarbonate (CaCO ₃)	274	mg/L	5.0	1		11/06/15 13:42		
Carbon Dioxide (SM4500CO ₂ D)	32.6	mg/L	5.0	1		10/30/15 13:17	124-38-9	
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	5.0	1		11/06/15 13:42		
300.0 IC Anions		Analytical Method: EPA 300.0						
Sulfate	118	mg/L	2.4	2		11/04/15 21:59	14808-79-8	
353.2 Nitrate + Nitrite		Analytical Method: EPA 353.2						
Nitrogen, NO ₂ plus NO ₃	ND	mg/L	0.020	1		11/02/15 16:59		
5220D COD		Analytical Method: SM 5220D Preparation Method: SM 5220D						
Chemical Oxygen Demand	ND	mg/L	50.0	1	11/04/15 11:21	11/04/15 15:48		
5310C TOC		Analytical Method: SM 5310C						
Total Organic Carbon	2.3	mg/L	1.0	1		11/02/15 19:22	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327624

QC Batch: AIR/24503

Analysis Method: RSK 175

QC Batch Method: RSK 175

Analysis Description: RSK 175 AIR HEADSPACE

Associated Lab Samples: 10327624001, 10327624002, 10327624003, 10327624004

METHOD BLANK: 2118653

Matrix: Water

Associated Lab Samples: 10327624001, 10327624002, 10327624003, 10327624004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	10.0	10/27/15 10:43	
Ethene	ug/L	ND	10.0	10/27/15 10:43	
Methane	ug/L	ND	10.0	10/27/15 10:43	

LABORATORY CONTROL SAMPLE & LCSD: 2118654

2118655

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Ethane	ug/L	114	116	125	102	110	85-115	7	20	
Ethene	ug/L	106	109	117	102	110	85-115	7	20	
Methane	ug/L	60.7	61.7	66.2	102	109	85-115	7	20	

SAMPLE DUPLICATE: 2118656

Parameter	Units	92272855010 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	58.4	54.5	7	20	

SAMPLE DUPLICATE: 2118657

Parameter	Units	60205525003 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	1370	1770	26	20 R1	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327624

QC Batch: MPRP/59250 Analysis Method: EPA 6010C
QC Batch Method: EPA 3010 Analysis Description: 6010C Water
Associated Lab Samples: 10327624001, 10327624002, 10327624003, 10327624004

METHOD BLANK: 2122493 Matrix: Water
Associated Lab Samples: 10327624001, 10327624002, 10327624003, 10327624004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron	ug/L	ND	50.0	10/30/15 15:56	

LABORATORY CONTROL SAMPLE: 2122494

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	10000	9740	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2122495 2122496

Parameter	Units	10327845001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Iron	ug/L	1610	10000	10000	11300	11500	97	99	75-125	1	20	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327624

QC Batch: MPRP/59274

Analysis Method: 6010C Met

QC Batch Method: EPA 3010

Analysis Description: 6010C Water Dissolved

Associated Lab Samples: 10327624001, 10327624002, 10327624003, 10327624004

METHOD BLANK: 2122867

Matrix: Water

Associated Lab Samples: 10327624001, 10327624002, 10327624003, 10327624004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron, Dissolved	ug/L	ND	50.0	11/03/15 12:50	

LABORATORY CONTROL SAMPLE: 2122868

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron, Dissolved	ug/L	10000	10500	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2124974 2124975

Parameter	Units	10327624002		2124974		2124975		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MS Spike Conc.	MS Result	MS Spike Conc.	MS Result	MS Spike Conc.					
Iron, Dissolved	ug/L	2600	10000	10000	10000	13500	13200	109	106	75-125	2	20

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327624

QC Batch: MT/21205

Analysis Method: SM 4500-S2-D

QC Batch Method: SM 4500-S2-D

Analysis Description: 4500S2D Sulfide Water

Associated Lab Samples: 10327624001, 10327624002, 10327624003, 10327624004

METHOD BLANK: 2120158

Matrix: Water

Associated Lab Samples: 10327624001, 10327624002, 10327624003, 10327624004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfide	mg/L	ND	0.10	10/28/15 16:48	

LABORATORY CONTROL SAMPLE: 2120159

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide	mg/L	.92	0.90	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2120261 2120262

Parameter	Units	10327242001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfide	mg/L	ND	.92	.92	0.79	0.81	86	89	80-120	2	20	

SAMPLE DUPLICATE: 2120162

Parameter	Units	10327242002 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide	mg/L	ND	ND		20	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327624

QC Batch: WET/33881 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 10327624001, 10327624002, 10327624003, 10327624004

METHOD BLANK: 1377651 Matrix: Water

Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	ND	5.0	10/30/15 12:36	
Carbon Dioxide (SM4500CO2D)	mg/L	ND	5.0	10/30/15 12:36	

LABORATORY CONTROL SAMPLE: 1377652

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	250	242	97	90-110	

SAMPLE DUPLICATE: 1377653

Parameter	Units	10327624001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	603	601	0	20	
Carbon Dioxide (SM4500CO2D)	mg/L	ND	ND			

SAMPLE DUPLICATE: 1377654

Parameter	Units	35213841004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	110	110	0	20	
Carbon Dioxide (SM4500CO2D)	mg/L	8.6	8.5	2		

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327624

QC Batch: WET/45109 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 10327624001, 10327624002, 10327624003, 10327624004

METHOD BLANK: 2128765 Matrix: Water
Associated Lab Samples: 10327624001, 10327624002, 10327624003, 10327624004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	ND	5.0	11/06/15 11:43	
Alkalinity,Bicarbonate (CaCO3)	mg/L	ND	5.0	11/06/15 11:43	
Alkalinity,Carbonate (CaCO3)	mg/L	ND	5.0	11/06/15 11:43	

LABORATORY CONTROL SAMPLE & LCSD: 2128766 2128767

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	40	43.5	43.4	109	108	90-110	0	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2128768 2128769

Parameter	Units	10328172005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	194	40	40	241	240	117	115	80-120	0	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2128770 2128771

Parameter	Units	10327629001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	303	40	40	350	348	118	114	80-120	1	30	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327624

QC Batch: WETA/25415 Analysis Method: EPA 300.0
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
 Associated Lab Samples: 10327624001, 10327624002, 10327624003, 10327624004

METHOD BLANK: 2126156 Matrix: Water
 Associated Lab Samples: 10327624001, 10327624002, 10327624003, 10327624004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.2	11/04/15 13:44	

LABORATORY CONTROL SAMPLE: 2126157

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	12.5	11.9	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2126158 2126159

Parameter	Units	10328124001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	29.3	12.5	12.5	38.8	38.8	76	76	90-110	0	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2126160 2126161

Parameter	Units	10328124002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	260	125	125	359	358	79	79	90-110	0	20	M6

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327624

QC Batch: WETA/25361 Analysis Method: EPA 353.2
 QC Batch Method: EPA 353.2 Analysis Description: 353.2 Nitrate + Nitrite, preserved
 Associated Lab Samples: 10327624001, 10327624002, 10327624003, 10327624004

METHOD BLANK: 2123086 Matrix: Water
 Associated Lab Samples: 10327624001, 10327624002, 10327624003, 10327624004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	ND	0.020	11/02/15 17:16	

LABORATORY CONTROL SAMPLE: 2123087

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	1	1.0	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2123088 2123089

Parameter	Units	10327537001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	2.2	1	1	3.1	3.1	92	88	90-110	1	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2123090 2123091

Parameter	Units	10328085002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	31.8	20	20	37.2	36.4	27	23	90-110	2	20	M6

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327624

QC Batch: WETA/25403 Analysis Method: SM 5220D
 QC Batch Method: SM 5220D Analysis Description: 5220D COD
 Associated Lab Samples: 10327624001, 10327624002, 10327624003, 10327624004

METHOD BLANK: 2125211 Matrix: Water
 Associated Lab Samples: 10327624001, 10327624002, 10327624003, 10327624004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50.0	11/04/15 15:40	

LABORATORY CONTROL SAMPLE: 2125212

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	300	299	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2125213 2125214

Parameter	Units	10327492001		2125213		2125214		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec				
Chemical Oxygen Demand	mg/L	65.6	250	250	328	296	105	92	80-120	11	20

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2125215 2125216

Parameter	Units	10327765001		2125215		2125216		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec				
Chemical Oxygen Demand	mg/L	ND	250	250	266	269	91	92	80-120	1	20

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10327624

QC Batch: WETA/14477 Analysis Method: SM 5310C
 QC Batch Method: SM 5310C Analysis Description: 5310C TOC
 Associated Lab Samples: 10327624001, 10327624002, 10327624003, 10327624004

METHOD BLANK: 263970 Matrix: Water

Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	11/02/15 15:17	

LABORATORY CONTROL SAMPLE: 263971

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	25	25.7	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 263972 263973

Parameter	Units	10327707004 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	Max	Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD	
Total Organic Carbon	mg/L	ND	25	25	26.9	26.9	104	104	80-120	0	20

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 263974 263975

Parameter	Units	10327854001 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	Max	Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD	
Total Organic Carbon	mg/L	1.3	25	25	27.4	27.7	104	106	80-120	1	20

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QUALIFIERS

Project: PS Beta - NIROP

Pace Project No.: 10327624

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

PASI-MT Pace Analytical Services - Montana

PASI-O Pace Analytical Services - Ormond Beach

PASI-V Pace Analytical Services - Virginia

ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

R1 RPD value was outside control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PS Beta - NIROP
Pace Project No.: 10327624

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10327624001	PMW-01	RSK 175	AIR/24503		
10327624002	PMW-02	RSK 175	AIR/24503		
10327624003	PMW-03	RSK 175	AIR/24503		
10327624004	PMW-04	RSK 175	AIR/24503		
10327624001	PMW-01	EPA 3010	MPRP/59250	EPA 6010C	ICP/25804
10327624002	PMW-02	EPA 3010	MPRP/59250	EPA 6010C	ICP/25804
10327624003	PMW-03	EPA 3010	MPRP/59250	EPA 6010C	ICP/25804
10327624004	PMW-04	EPA 3010	MPRP/59250	EPA 6010C	ICP/25804
10327624001	PMW-01	EPA 3010	MPRP/59274	6010C Met	ICP/25834
10327624002	PMW-02	EPA 3010	MPRP/59274	6010C Met	ICP/25834
10327624003	PMW-03	EPA 3010	MPRP/59274	6010C Met	ICP/25834
10327624004	PMW-04	EPA 3010	MPRP/59274	6010C Met	ICP/25834
10327624001	PMW-01	SM 4500-S2-D	MT/21205		
10327624002	PMW-02	SM 4500-S2-D	MT/21205		
10327624003	PMW-03	SM 4500-S2-D	MT/21205		
10327624004	PMW-04	SM 4500-S2-D	MT/21205		
10327624001	PMW-01	SM 2320B	WET/33881		
10327624001	PMW-01	SM 2320B	WET/45109		
10327624002	PMW-02	SM 2320B	WET/33881		
10327624002	PMW-02	SM 2320B	WET/45109		
10327624003	PMW-03	SM 2320B	WET/33881		
10327624003	PMW-03	SM 2320B	WET/45109		
10327624004	PMW-04	SM 2320B	WET/33881		
10327624004	PMW-04	SM 2320B	WET/45109		
10327624001	PMW-01	EPA 300.0	WETA/25415		
10327624002	PMW-02	EPA 300.0	WETA/25415		
10327624003	PMW-03	EPA 300.0	WETA/25415		
10327624004	PMW-04	EPA 300.0	WETA/25415		
10327624001	PMW-01	EPA 353.2	WETA/25361		
10327624002	PMW-02	EPA 353.2	WETA/25361		
10327624003	PMW-03	EPA 353.2	WETA/25361		
10327624004	PMW-04	EPA 353.2	WETA/25361		
10327624001	PMW-01	SM 5220D	WETA/25403	SM 5220D	WETA/25424
10327624002	PMW-02	SM 5220D	WETA/25403	SM 5220D	WETA/25424
10327624003	PMW-03	SM 5220D	WETA/25403	SM 5220D	WETA/25424
10327624004	PMW-04	SM 5220D	WETA/25403	SM 5220D	WETA/25424
10327624001	PMW-01	SM 5310C	WETA/14477		
10327624002	PMW-02	SM 5310C	WETA/14477		
10327624003	PMW-03	SM 5310C	WETA/14477		
10327624004	PMW-04	SM 5310C	WETA/14477		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..



CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Regenesis	Report To:	Melinda Pham	Attention:	Bahar Naderi
Address:	1011 Calle Sombra	Copy To:		Company Name:	Regenesis
	San Clemente, CA 92673	Purchase Order No.:		Address:	1011 Calle Sombra
Email To:	Mpham@regenesis.com			Pace Quote	21466
Phone:	949-366-8000	Fax:	343-366-8090	Reference:	
		Project Name:	PS Beta - NIROP	Pace Project Manager:	
Requested Due Date/ATI:	10 days	Project Number:	PS Beta - NIROP	Pace Profile #:	

ITEM #	Section D Required Client Information	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WATER WT WASTE WATER WW PRODUCT P LIQUID L SOLID S OIL O WIFE WF AIR AR OTHER OT TISSUE TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives	Analysis Test	Requested Analysis Filtered (Y/N)	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
					DATE	TIME									
1	PMU-01		WT		10/24/15	1440	8	3	2	1	1	4.2	Y	Y	Y
2	PMU-02		WT		10/24/15	1300	8	3	2	1	1	4.2	Y	Y	Y
3	PMU-03		WT		10/24/15	1740	8	3	2	1	1	4.2	Y	Y	Y
4	PMU-04		WT		10/24/15	1605	8	3	2	1	1	4.2	Y	Y	Y
5	TRIP SAMPLE		WT												

REQUISITIONED BY/AFFILIATION		DATE	TIME	ACCEPTED BY/AFFILIATION		DATE	TIME
ALLIANCE HEALTH		10/24/15	1812	Pace		10/26/15	03

SAMPLER NAME AND SIGNATURE	
PRINT Name of SAMPLER:	NEUSSA NEUSSA
SIGNATURE of SAMPLER:	<i>[Signature]</i>
DATE Signed (MM/DD/YY):	10/26/15

Page: 2 of 2

0327624



Document Name:
Sample Condition Upon Receipt Form
 Document No.:
F-MN-L-213-rev.13

Document Revised: 23Feb2015
 Page 1 of 1
 Issuing Authority:
 Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name:

Project #:

WO#: 10327624



Courier: Fed Ex UPS USPS Client
 Commercial Pace Speedee Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No

Optional: Proj. Due Date: _____ Proj. Name: _____

Packing Material: Bubble Wrap Bubble Bags None Other: _____

Temp Blank? Yes No

Thermometer Used: B88A9130516413 B88A912167504 B88A0143310098
 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temp Read (°C): 4.2, 0.3 Cooler Temp Corrected (°C): 4.2, 0.3 Biological Tissue Frozen? Yes No N/A
 Temp should be above freezing to 6°C Correction Factor: 0.0 Date and Initials of Person Examining Contents: 10/26/15 DN

USDA Regulated Soil (N/A, water sample)
 Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or WA (check maps)? Yes No
 Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

		COMMENTS:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>		
All containers needing acid/base preservation have been checked?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13. <input checked="" type="checkbox"/> HNO ₃ <input checked="" type="checkbox"/> H ₂ SO ₄ <input type="checkbox"/> NaOH <input type="checkbox"/> HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide). Exceptions: VOA, Coliform, <u>TOC</u> , Oil and Grease, DRO/8015 (water) DOC	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Sample # <u>1-4</u> <u>3/4</u> Sample one: <u>could not tell pH, sample too dark</u>
DRO/8015 (water) DOC	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? Yes No

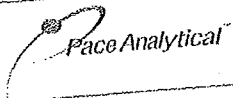
Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: [Signature]

Date: 10/27/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

	Document Name: MN to MT Sample Transfer Form	Revised Date: 14Jul2014 Page: 1 of 1
	Document Number: F-MN-C-043-rev.11	Issuing Authority: Pace Minnesota Quality Office

Shipping (circle): UPS ~~Fed Ex~~ 6784 8693 05 20

Tracking #: _____

Client: Regensis

Due Date: 10-Nov-2015

Pace WO: 10327624

Project Manager: JMA

MN to MT Sample Transfer Condition Upon Receipt Form

Method Number & Description	Container Type	ANALYSIS REQUESTED		Preservative Yes or No	Verify Arrival Date & Initials
		# of Bottles	Lab ID's		
Tests 4500S2D Sulfide Water	BP2Z	4	001-004	✓	10/28/15

REPORTING REQUIREMENTS/ADDITIONAL COMMENTS

MONTANA SAMPLE RECEIPT INFORMATION

IR Gun: B88A0140728348, Correction Factor: <u>-0.1</u>	Sample Matrix: <u>WT</u>
Cooler Temp Read (°C): <u>2.4</u> Cooler Temp Corrected (°C): <u>2.3</u>	Filtred volume rec'd for dissolved tests: Yes ___ No <u>✓</u> NA ___
Arrived on Ice: Yes <u>✓</u> No ___	Samples pH have been checked: Yes <u>✓</u> No ___ NA ___
Custody Seal Present: Yes <u>✓</u> No ___	Trip Blank Present: Yes ___ No ___ NA <u>✓</u>
Short Hold Time Requested < 72 Hours: Yes ___ No <u>✓</u>	Trip Blank Custody Seals Present: Yes ___ No ___ NA <u>✓</u>
Rush TAT Requested: <u>10/28/15</u> Yes <u>✓</u> No ___	Pace Trip Blank Lot #: <u>N/A</u>
Sufficient Sample Volume: <u>10/28/15</u> Yes <u>✓</u> No ___	Sample Composites Required: Yes ___ No ___ NA <u>✓</u>
Samples Arrived within Hold Time: Yes <u>✓</u> No ___	Report Samples: Wet Wt. ___ Dry Wt. ___
Containers Intact: Yes <u>✓</u> No ___	Reporting Units: _____

CUSTODY TRANSFER

Relinquished by/Affiliation	Date	Time	Accepted By/Affiliation	Date	Time
<u>Ad Pace</u> <u>sedex</u>	<u>10/27/15</u>	<u>0920</u>	<u>N. Hansen / Pac</u>	<u>10/28/15</u>	<u>0945</u>

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: _____ Date: _____

Comments/Resolution: _____

Project Manager Review: [Signature] Date: 10/28/15

Chain of Custody

Workorder: 10327624 Workorder Name: PS Beta - NROP Owner Rec: [Signature]

Jennifer Anderson
 Pace Analytical Services, Inc.
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone (612)607-1700
 Fax (612)607-6444

Pace Analytical Virginia MN
 315 Chestnut Street
 Virginia, MN 55792
 Phone (218)742-1042

MO# 1256142

PM - HRZ Due Date: 11/10/15
 CLIENT: PAGE MPLES

ce Analytical
 www.pacelabs.com

1256142

Item	Sample ID	Sample Type	Collect Date/Time	Field ID	Matrix	Preserved Containers	Requester/Analysis	Results Requested By:
1	PMW-01	PS	10/26/2015 14:40	10327624001	Water	1	TIC	11/10/2015
2	PMW-02	PS	10/26/2015 13:20	10327624002	Water	1	X	
3	PMW-03	PS	10/26/2015 17:10	10327624003	Water	1	X	
4	PMW-04	PS	10/26/2015 16:05	10327624004	Water	1	X	
5								

Transfers	Released By	Date/Time	Received By	Date/Time	Cooler Temperature on Receipt	°C	Custody Seal	Y or N	Received on Ice	Y or N	Samples Intact	Y or N	Comments
1	[Signature]	10/27/15 09:15	[Signature]	10/27/15 18:22	25		Y						
2	[Signature]	10/27/15 21:00	[Signature]	10/28/15 8:00									
3													

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
 This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Condition Upon Receipt

Client Name: Pace - MLV Project #: _____

WO#: 1256142



1256142

Courier: Fed Ex UPS USPS Client
 Commercial Pace Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No
 Optional: Proj. Due Date: _____ Proj. Name: _____

Packing Material: Bubble Wrap Bubble Bags None Other: _____ Temp Blank? Yes No

Thermometer Used: 140792808 Type of Ice: Wet Blue None Samples on Ice, cooling process has begun

Cooler Temp Read °C: 2.5 Cooler Temp Corrected °C: 2.8 Biological Tissue Frozen? Yes No NA
 Temp should be above freezing to 6°C Correction Factor: +0.3 Date and Initials of Person Examining Contents: JPK (10/27/15)

Comments: _____

Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and Signature on COC?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>wt</u>		
All containers needing acid/base preservation will be checked and documented in the pH logbook.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

CLIENT NOTIFICATION/RESOLUTION Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____
 Comments/Resolution: _____

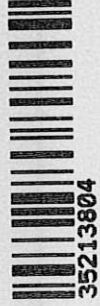
FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: [Signature] Date: 10/28/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

WO#: 35213804



35213804



Pace Analytical
www.pacelabs.com

Workorder: 10327624 Workorder Name: PS Beta - NIROP Owner Received Date: 10/26/2015 Results Requested By: 11/10/2015

Report To		Subcontract To			Requested Analysis					
Jennifer Anderson Pace Analytical Services, Inc. 1700 Elm Street, Suite 200 Minneapolis, MN 55414 Phone (612)607-1700 Fax (612)607-6444		Pace Analytical Ormond Beach 8 East Tower Circle Ormond Beach, FL 32174 Phone (386)672-5668			Carbon Dioxide Inverte					
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers		LAB USE ONLY		
1	PMW-01	PS	10/26/2015 14:40	10327624001	Water	Unpreserved	1			
2	PMW-02	PS	10/26/2015 13:20	10327624002	Water		1			
3	PMW-03	PS	10/26/2015 17:10	10327624003	Water		1			
4	PMW-04	PS	10/26/2015 16:05	10327624004	Water		1			
5										
Comments										
Transfers	Released By	Date/Time	Received By	Date/Time	Received on Ice	Y or N	Samples Intact	Y or N		
1	J.P. Paa	10/27/15 09:11	T.A.	10/28/15 11:53						
2										
3										
Cooler Temperature on Receipt 2.8 °C Custody Seal Y or N Received on Ice Y or N Samples Intact Y or N										

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.



Document Name:
Sample Condition Upon Receipt Form
Document No.:
F-FL-C-007 rev. 06

Document Revised:
August 11, 2014
Issuing Authority:
Pace Florida Quality Office

Sample Condition Upon Receipt Form (SCUR)

Table Number: _____

Client Name: Pace-MN Project # 35213804

Courier: Fed Ex UPS USPS Client Commercial Pace

Other _____

Tracking # 6484 8693 0494

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Date and Initials of person examining contents: 10/28/15 TH
1153

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used Tala Type of Ice: Wet Blue None

Cooler Temperature °C 2.8 (Visual) Φ (Correction Factor) 2.8 (Actual)

(Temp should be above freezing to 6°C). If below 0°C, then was sample frozen?

Yes No

Receipt of samples satisfactory: Yes No

Rush TAT requested on COC: _____

If yes, then all conditions below were met:

If no, then mark box & describe issue (use comments area if necessary):

Chain of Custody Present	<input type="checkbox"/>
Chain of Custody Filled Out	<input type="checkbox"/>
Relinquished Signature & Sampler Name COC	<input type="checkbox"/>
Samples Arrived within Hold Time	<input type="checkbox"/>
Sufficient Volume	<input type="checkbox"/>
Correct Containers Used	<input type="checkbox"/>
Containers Intact	<input type="checkbox"/>
Sample Labels match COC (sample IDs & date/time of collection)	<input type="checkbox"/>
	No Labels: <input type="checkbox"/> No Time/Date on Labels: <input type="checkbox"/>
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/>
No Headspace in VOA Vials (>6mm):	<input type="checkbox"/>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____

Comments/ Resolution (use back for additional comments): _____

Project Manager Review: _____

Date: 11/10

Finished Product Information Only	
F.P. Sample ID: _____	Size & Qty of Bottles Received
Production Code: _____	_____ x 5 Gal
Date/Time Opened: _____	_____ x 2.5 Gal
Number of Unopened Bottles Remaining: _____	_____ x 1 Gal
	_____ x 1 Liter
	_____ x 500 mL
	_____ x 250 mL
	_____ x Other: _____
Extra Sample in Shed: Yes No	



Pace Analytical Energy Services, LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

November 10, 2015

Jennifer Anderson
Pace Analytical Services, Inc.
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: **PS BETA - NIROP / 10327624**

Pace Workorder: 17185

Dear Jennifer Anderson:

Enclosed are the analytical results for sample(s) received by the laboratory on Wednesday, October 28, 2015. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

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

Sincerely,

Ruth Welsh 11/10/2015 *TM*

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email info@microseeps.com.

Total Number of Pages 15

Report ID: 17185 - 728223

Page 1 of 13



CERTIFICATE OF ANALYSIS

This report shall not be reproduced, except in full,
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LABORATORY ACCREDITATIONS & CERTIFICATIONS

Accreditor:	Pennsylvania Department of Environmental Protection, Bureau of Laboratories
Accreditation ID:	02-00538
Scope:	NELAP Non-Potable Water and Solid & Hazardous Waste
Accreditor:	South Carolina Department of Health and Environmental Control, Office of Environmental Laboratory Certification
Accreditation ID:	89009003
Scope:	Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: New Jersey, Department of Environmental Protection
Accreditation ID:	PA026
Scope:	Non-Potable Water; Solid and Chemical Materials
Accreditor:	NELAP: New York, Department of Health Wadsworth Center
Accreditation ID:	11815
Scope:	Non-Potable Water; Solid and Hazardous Waste
Accreditor:	State of Connecticut, Department of Public Health, Division of Environmental Health
Accreditation ID:	PH-0263
Scope:	Clean Water Act (CWA) Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: Texas, Commission on Environmental Quality
Accreditation ID:	T104704453-09-TX
Scope:	Non-Potable Water
Accreditor:	State of New Hampshire
Accreditation ID:	299409
Scope:	Non-potable water
Accreditor:	State of Georgia
Accreditation ID:	Chapter 391-3-26
Scope:	As per the Georgia EPD Rules and Regulations for Commercial Laboratories, PAES is accredited by the Pennsylvania Department of Environmental Protection Bureau of Laboratories under the National Environmental Laboratory Approval Program (NELAC).



CERTIFICATE OF ANALYSIS

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Pace Analytical Energy Services, LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

SAMPLE SUMMARY

Workorder: 17185 PS BETA - NIROP / 10327624

Lab ID	Sample ID	Matrix	Date Collected	Date Received
171850001	PMW-01	Water	10/26/2015 14:40	10/28/2015 12:00
171850002	PMW-02	Water	10/26/2015 13:20	10/28/2015 12:00
171850003	PMW-03	Water	10/26/2015 17:10	10/28/2015 12:00
171850004	PMW-04	Water	10/26/2015 16:05	10/28/2015 12:00



CERTIFICATE OF ANALYSIS

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Pace Analytical Energy Services, LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

PROJECT SUMMARY

Workorder: 17185 PS BETA - NIROP / 10327624

Workorder Comments

The analysis for volatile fatty acids, method AM23G, was reported at dilution for samples 17185 (0001-0004) due to the measured chloride concentration within the sample. This interfering compound will affect the instruments ability to accurately resolve target analytes within the sample.



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ANALYTICAL RESULTS

Workorder: 17185 PS BETA - NIROP / 10327624

Lab ID: 171850001 Date Received: 10/28/2015 12:00 Matrix: Water
 Sample ID: PMW-01 Date Collected: 10/26/2015 14:40

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM23G			Analytical Method: AM23G					
Lactic Acid	<2.0	mg/l	2.0	0.030	10	11/5/2015 19:24	KB	d
Acetic Acid	<1.0	mg/l	1.0	0.060	10	11/5/2015 19:24	KB	d,B
Propionic Acid	1.5	mg/l	1.0	0.010	10	11/5/2015 19:24	KB	d,B
Formic Acid	<1.0	mg/l	1.0	0.040	10	11/5/2015 19:24	KB	d,B
Butyric Acid	<1.0	mg/l	1.0	0.050	10	11/5/2015 19:24	KB	d,B
Pyruvic Acid	<1.0	mg/l	1.0	0.12	10	11/5/2015 19:24	KB	d
i-Pentanoic Acid	<1.0	mg/l	1.0	0.12	10	11/5/2015 19:24	KB	d
Pentanoic Acid	<1.0	mg/l	1.0	0.060	10	11/5/2015 19:24	KB	d
i-Hexanoic Acid	<2.0	mg/l	2.0	0.10	10	11/5/2015 19:24	KB	d
Hexanoic Acid	<2.0	mg/l	2.0	0.10	10	11/5/2015 19:24	KB	d



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ANALYTICAL RESULTS

Workorder: 17185 PS BETA - NIROP / 10327624

Lab ID: 171850002 Date Received: 10/28/2015 12:00 Matrix: Water
 Sample ID: PMW-02 Date Collected: 10/26/2015 13:20

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM23G			Analytical Method: AM23G					
Lactic Acid	<2.0	mg/l	2.0	0.030	10	11/5/2015 20:17	KB	d
Acetic Acid	<1.0	mg/l	1.0	0.060	10	11/5/2015 20:17	KB	d,B
Propionic Acid	<1.0	mg/l	1.0	0.010	10	11/5/2015 20:17	KB	d,B
Formic Acid	<1.0	mg/l	1.0	0.040	10	11/5/2015 20:17	KB	d,B
Butyric Acid	<1.0	mg/l	1.0	0.050	10	11/5/2015 20:17	KB	d,B
Pyruvic Acid	<1.0	mg/l	1.0	0.12	10	11/5/2015 20:17	KB	d
i-Pentanoic Acid	<1.0	mg/l	1.0	0.12	10	11/5/2015 20:17	KB	d
Pentanoic Acid	<1.0	mg/l	1.0	0.060	10	11/5/2015 20:17	KB	d
i-Hexanoic Acid	<2.0	mg/l	2.0	0.10	10	11/5/2015 20:17	KB	d
Hexanoic Acid	<2.0	mg/l	2.0	0.10	10	11/5/2015 20:17	KB	d



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ANALYTICAL RESULTS

Workorder: 17185 PS BETA - NIROP / 10327624

Lab ID: 171850003 Date Received: 10/28/2015 12:00 Matrix: Water
 Sample ID: PMW-03 Date Collected: 10/26/2015 17:10

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM23G			Analytical Method: AM23G					
Lactic Acid	<2.0	mg/l	2.0	0.030	10	11/5/2015 21:11	KB	d
Acetic Acid	<1.0	mg/l	1.0	0.060	10	11/5/2015 21:11	KB	d,B
Propionic Acid	<1.0	mg/l	1.0	0.010	10	11/5/2015 21:11	KB	d,B
Formic Acid	<1.0	mg/l	1.0	0.040	10	11/5/2015 21:11	KB	d,B
Butyric Acid	<1.0	mg/l	1.0	0.050	10	11/5/2015 21:11	KB	d,B
Pyruvic Acid	<1.0	mg/l	1.0	0.12	10	11/5/2015 21:11	KB	d
i-Pentanoic Acid	<1.0	mg/l	1.0	0.12	10	11/5/2015 21:11	KB	d
Pentanoic Acid	<1.0	mg/l	1.0	0.060	10	11/5/2015 21:11	KB	d
i-Hexanoic Acid	<2.0	mg/l	2.0	0.10	10	11/5/2015 21:11	KB	d
Hexanoic Acid	<2.0	mg/l	2.0	0.10	10	11/5/2015 21:11	KB	d



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ANALYTICAL RESULTS

Workorder: 17185 PS BETA - NIROP / 10327624

Lab ID: 171850004 Date Received: 10/28/2015 12:00 Matrix: Water
 Sample ID: PMW-04 Date Collected: 10/26/2015 16:05

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM23G			Analytical Method: AM23G					
Lactic Acid	<2.0	mg/l	2.0	0.030	10	11/5/2015 22:04	KB	d
Acetic Acid	<1.0	mg/l	1.0	0.060	10	11/5/2015 22:04	KB	d,B
Propionic Acid	<1.0	mg/l	1.0	0.010	10	11/5/2015 22:04	KB	d,B
Formic Acid	<1.0	mg/l	1.0	0.040	10	11/5/2015 22:04	KB	d,B
Butyric Acid	<1.0	mg/l	1.0	0.050	10	11/5/2015 22:04	KB	d,B
Pyruvic Acid	<1.0	mg/l	1.0	0.12	10	11/5/2015 22:04	KB	d
i-Pentanoic Acid	<1.0	mg/l	1.0	0.12	10	11/5/2015 22:04	KB	d
Pentanoic Acid	<1.0	mg/l	1.0	0.060	10	11/5/2015 22:04	KB	d
i-Hexanoic Acid	<2.0	mg/l	2.0	0.10	10	11/5/2015 22:04	KB	d
Hexanoic Acid	<2.0	mg/l	2.0	0.10	10	11/5/2015 22:04	KB	d



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ANALYTICAL RESULTS QUALIFIERS

Workorder: 17185 PS BETA - NIROP / 10327624

DEFINITIONS/QUALIFIERS

Disclaimer : The Pennsylvania Department of Environmental Protection (PADEP) has decided to no longer recognize analyses that do not produce data for primary compliance, for NELAP accreditation. The methods affected by this decision are AM20Gax, AM21G, SW846 7199 and AM4.02. The laboratory shall continue to administer the NELAP/TNI standard requirements in the performance of these methods.

- MDL Method Detection Limit. Can be used synonymously with LOD; Limit Of Detection.
- PQL Practical Quantitation Limit. Can be used synonymously with LOQ; Limit Of Quantitation.
- ND Not detected at or above reporting limit.
- DF Dilution Factor.
- S Surrogate.
- RPD Relative Percent Difference.
- % Rec Percent Recovery.
- U Indicates the compound was analyzed for, but not detected at or above the noted concentration.
- J Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).

- B The analyte was detected in the associated blank.
- d The analyte concentration was determined from a dilution.



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QUALITY CONTROL DATA

Workorder: 17185 PS BETA - NIROP / 10327624

QC Batch: EDON/2697 Analysis Method: AM23G
 QC Batch Method: AM23G
 Associated Lab Samples: 171850001, 171850002, 171850003, 171850004

METHOD BLANK: 38269

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
EDonors				
Lactic Acid	mg/l	<0.20	0.20	
Acetic Acid	mg/l	<0.10	0.10	B
Propionic Acid	mg/l	<0.10	0.10	B
Formic Acid	mg/l	<0.10	0.10	B
Butyric Acid	mg/l	<0.10	0.10	B
Pyruvic Acid	mg/l	<0.10	0.10	
i-Pentanoic Acid	mg/l	<0.10	0.10	
Pentanoic Acid	mg/l	<0.10	0.10	
i-Hexanoic Acid	mg/l	<0.20	0.20	
Hexanoic Acid	mg/l	<0.20	0.20	

LABORATORY CONTROL SAMPLE: 38270

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
EDonors						
Lactic Acid	mg/l	2	2.2	109	70-130	
Acetic Acid	mg/l	2	2.1	104	70-130	B
Propionic Acid	mg/l	2	2.1	106	70-130	B
Formic Acid	mg/l	2	1.9	96	70-130	B
Butyric Acid	mg/l	2	2.1	106	70-130	B
Pyruvic Acid	mg/l	2	2.0	100	70-130	
i-Pentanoic Acid	mg/l	2	2.1	105	70-130	
Pentanoic Acid	mg/l	2	2.0	102	70-130	
i-Hexanoic Acid	mg/l	2	2.1	104	70-130	
Hexanoic Acid	mg/l	2	2.0	102	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 38271 38272 Original: 171960001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	Max RPD	RPD	Qualifiers
EDonors											
Lactic Acid	mg/l	0.16	20	20	20	97	99	70-130	2	30	d

Report ID: 17185 - 728223

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QUALITY CONTROL DATA

Workorder: 17185 PS BETA - NIROP / 10327624

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 38271 38272 Original: 171960001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	Max RPD	RPD	Qualifiers
Acetic Acid	mg/l	0.27	20	20	20	101	101	70-130	0	30	d,B
Propionic Acid	mg/l	0.041	20	20	21	103	103	70-130	0	30	d,B
Formic Acid	mg/l	0.2	20	19	19	93	94	70-130	1.1	30	d,B
Butyric Acid	mg/l	0.12	20	20	21	102	103	70-130	0.98	30	d,B
Pyruvic Acid	mg/l	0	20	18	18	91	93	70-130	2.2	30	d
i-Pentanoic Acid	mg/l	0	20	20	20	98	100	70-130	2	30	d
Pentanoic Acid	mg/l	0	20	19	20	97	100	70-130	3	30	d
i-Hexanoic Acid	mg/l	0	20	19	19	95	97	70-130	2.1	30	d
Hexanoic Acid	mg/l	0.027	20	18	19	91	94	70-130	3.2	30	d



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QUALITY CONTROL DATA QUALIFIERS

Workorder: 17185 PS BETA - NIROP / 10327624

QUALITY CONTROL PARAMETER QUALIFIERS

- B The analyte was detected in the associated blank.
- d The analyte concentration was determined from a dilution.



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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 17185 PS BETA - NIROP / 10327624

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
171850001	PMW-01			AM23G	EDON/2697
171850002	PMW-02			AM23G	EDON/2697
171850003	PMW-03			AM23G	EDON/2697
171850004	PMW-04			AM23G	EDON/2697



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Chain of Custody

17185



Workorder: 10327624 Workorder Name: PS Beta - NIROP Results Requested 11/10/2015

Report/Invoice To: Jennifer Anderson
 Pace Analytical Minnesota
 1700 Elm Street
 Suite 200
 Minneapolis, MN 55414
 Phone (612)607-1700
 Email: jennifer.anderson@pacelabs.com

Subcontract To: Pace Energy/Minners P.O. 10327624

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers		Requested Analysis	Comments
					Unpreserved	Preserved		
1	PMW-01	10/26/2015 14:40	10327624001	Water	3	2		
2	PMW-02	10/26/2015 13:20	10327624002	Water	3	2		
3	PMW-03	10/26/2015 17:10	10327624003	Water	3	2		
4	PMW-04	10/26/2015 16:05	10327624004	Water	3	2		
5					16	17		

Transfers	Released By	Date/Time	Received By	Date/Time	Cooler Temperature on Receipt & °C	Custody Seal Y or N	Received on Ice Y or N	Samples Intact Y or N
1	JAC Pace	10/27/15	KEON	10/28/15		Y		
2								
3								

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
 This chain of custody is considered complete as is since this information is available in the owner laboratory.

Cooler Receipt Form

Client Name: Pace MN Project: 10327624 Lab Work Order: 17185

A. Shipping/Container Information (circle appropriate response)

Courier: FedEx UPS USPS Client Other: _____ Air bill Present: Yes No

Tracking Number: 6484 8693 0483

Custody Seal on Cooler/Box Present: Yes No Seals Intact: Yes No

Cooler/Box Packing Material: Bubble Wrap Absorbent Foam Other: _____

Type of Ice: Wet Blue None Ice Intact: Yes Melted

Cooler Temperature: 2.4°C Radiation Screened: Yes No Chain of Custody Present: Yes No

Comments: _____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non-Conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished	✓			
Sampler Name & Signature on COC		✓		
Containers intact	✓			
Were samples in separate bags	✓			
Sample container labels match COC	✓			
Sample name/date and time collected	✓			
Sufficient volume provided	✓			
PAES containers used	✓			
Are containers properly preserved for the requested testing? (as labeled)	✓			
If an unknown preservation state, were containers checked? Exception: VOA's coliform			✓	If yes, see pH form.
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			✓	

Comments: _____

Cooler contents examined/received by: LT Date: 10.28.15

Project Manager Review: PW Date: 10.30.15

December 18, 2015

Melinda Pham
Regenesis
1011 Calle Sombra
San Clemente, CA 92673

RE: Project: PS BETA-NIROP
Pace Project No.: 10329197

Dear Melinda Pham:

Enclosed are the analytical results for sample(s) received by the laboratory on November 06, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,



Jennifer Anderson
jennifer.anderson@pacelabs.com
Project Manager

Enclosures

cc: Ryan Moore, Regenesis



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PS BETA-NIROP

Pace Project No.: 10329197

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414

A2LA Certification #: 2926.01

Alaska Certification #: UST-078

Alaska Certification #MN00064

Alabama Certification #40770

Arizona Certification #: AZ-0014

Arkansas Certification #: 88-0680

California Certification #: 01155CA

Colorado Certification #Pace

Connecticut Certification #: PH-0256

EPA Region 8 Certification #: 8TMS-L

Florida/NELAP Certification #: E87605

Guam Certification #:14-008r

Georgia Certification #: 959

Georgia EPD #: Pace

Idaho Certification #: MN00064

Hawaii Certification #MN00064

Illinois Certification #: 200011

Indiana Certification#C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky Dept of Envi. Protection - DW #90062

Kentucky Dept of Envi. Protection - WW #:90062

Louisiana DEQ Certification #: 3086

Louisiana DHH #: LA140001

Maine Certification #: 2013011

Maryland Certification #: 322

Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: Pace

Montana Certification #: MT0092

Nevada Certification #: MN_00064

Nebraska Certification #: Pace

New Jersey Certification #: MN-002

New York Certification #: 11647

North Carolina Certification #: 530

North Carolina State Public Health #: 27700

North Dakota Certification #: R-036

Ohio EPA #: 4150

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Certification #: MN200001

Oregon Certification #: MN300001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification

Saipan (CNMI) #:MP0003

South Carolina #:74003001

Texas Certification #: T104704192

Tennessee Certification #: 02818

Utah Certification #: MN000642013-4

Virginia DGS Certification #: 251

Washington Certification #: C486

West Virginia Certification #: 382

West Virginia DHHR #:9952C

Wisconsin Certification #: 999407970

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: PS BETA-NIROP

Pace Project No.: 10329197

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10329197001	PMW-04	Water	11/06/15 10:25	11/06/15 15:53
10329197002	PMW-03	Water	11/06/15 12:00	11/06/15 15:53
10329197003	PMW-02	Water	11/06/15 13:30	11/06/15 15:53
10329197004	PMW-01	Water	11/06/15 14:45	11/06/15 15:53

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: PS BETA-NIROP

Pace Project No.: 10329197

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10329197001	PMW-04	EPA 8260B	LPM	70
10329197002	PMW-03	EPA 8260B	LPM	70
10329197003	PMW-02	EPA 8260B	LPM	70
10329197004	PMW-01	EPA 8260B	DJB	70

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS BETA-NIROP

Pace Project No.: 10329197

Sample: PMW-04	Lab ID: 10329197001	Collected: 11/06/15 10:25	Received: 11/06/15 15:53	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC								
Analytical Method: EPA 8260B								
Acetone	ND	ug/L	20.0	1		11/09/15 17:40	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		11/09/15 17:40	107-05-1	
Benzene	ND	ug/L	1.0	1		11/09/15 17:40	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		11/09/15 17:40	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		11/09/15 17:40	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		11/09/15 17:40	75-27-4	
Bromoform	ND	ug/L	4.0	1		11/09/15 17:40	75-25-2	
Bromomethane	ND	ug/L	4.0	1		11/09/15 17:40	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		11/09/15 17:40	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		11/09/15 17:40	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		11/09/15 17:40	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		11/09/15 17:40	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		11/09/15 17:40	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		11/09/15 17:40	108-90-7	
Chloroethane	ND	ug/L	1.0	1		11/09/15 17:40	75-00-3	
Chloroform	ND	ug/L	1.0	1		11/09/15 17:40	67-66-3	
Chloromethane	ND	ug/L	4.0	1		11/09/15 17:40	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		11/09/15 17:40	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		11/09/15 17:40	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		11/09/15 17:40	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		11/09/15 17:40	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		11/09/15 17:40	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		11/09/15 17:40	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		11/09/15 17:40	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		11/09/15 17:40	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		11/09/15 17:40	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		11/09/15 17:40	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		11/09/15 17:40	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		11/09/15 17:40	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		11/09/15 17:40	75-35-4	
cis-1,2-Dichloroethene	18.2	ug/L	1.0	1		11/09/15 17:40	156-59-2	
trans-1,2-Dichloroethene	50.5	ug/L	1.0	1		11/09/15 17:40	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		11/09/15 17:40	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		11/09/15 17:40	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		11/09/15 17:40	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		11/09/15 17:40	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		11/09/15 17:40	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		11/09/15 17:40	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		11/09/15 17:40	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		11/09/15 17:40	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		11/09/15 17:40	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		11/09/15 17:40	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		11/09/15 17:40	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		11/09/15 17:40	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		11/09/15 17:40	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		11/09/15 17:40	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		11/09/15 17:40	1634-04-4	

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ANALYTICAL RESULTS

Project: PS BETA-NIROP

Pace Project No.: 10329197

Sample: PMW-04	Lab ID: 10329197001	Collected: 11/06/15 10:25	Received: 11/06/15 15:53	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		11/09/15 17:40	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		11/09/15 17:40	103-65-1	
Styrene	ND	ug/L	1.0	1		11/09/15 17:40	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		11/09/15 17:40	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		11/09/15 17:40	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		11/09/15 17:40	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		11/09/15 17:40	109-99-9	
Toluene	ND	ug/L	1.0	1		11/09/15 17:40	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		11/09/15 17:40	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		11/09/15 17:40	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		11/09/15 17:40	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		11/09/15 17:40	79-00-5	
Trichloroethene	15.4	ug/L	0.40	1		11/09/15 17:40	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		11/09/15 17:40	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		11/09/15 17:40	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		11/09/15 17:40	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		11/09/15 17:40	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		11/09/15 17:40	108-67-8	
Vinyl chloride	ND	ug/L	0.40	1		11/09/15 17:40	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		11/09/15 17:40	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	94	%.	75-125	1		11/09/15 17:40	17060-07-0	
Toluene-d8 (S)	103	%.	75-125	1		11/09/15 17:40	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125	1		11/09/15 17:40	460-00-4	

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ANALYTICAL RESULTS

Project: PS BETA-NIROP

Pace Project No.: 10329197

Sample: PMW-03	Lab ID: 10329197002	Collected: 11/06/15 12:00	Received: 11/06/15 15:53	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		11/09/15 17:25	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		11/09/15 17:25	107-05-1	
Benzene	ND	ug/L	1.0	1		11/09/15 17:25	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		11/09/15 17:25	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		11/09/15 17:25	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		11/09/15 17:25	75-27-4	
Bromoform	ND	ug/L	4.0	1		11/09/15 17:25	75-25-2	
Bromomethane	ND	ug/L	4.0	1		11/09/15 17:25	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		11/09/15 17:25	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		11/09/15 17:25	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		11/09/15 17:25	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		11/09/15 17:25	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		11/09/15 17:25	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		11/09/15 17:25	108-90-7	
Chloroethane	ND	ug/L	1.0	1		11/09/15 17:25	75-00-3	
Chloroform	ND	ug/L	1.0	1		11/09/15 17:25	67-66-3	
Chloromethane	ND	ug/L	4.0	1		11/09/15 17:25	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		11/09/15 17:25	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		11/09/15 17:25	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		11/09/15 17:25	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		11/09/15 17:25	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		11/09/15 17:25	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		11/09/15 17:25	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		11/09/15 17:25	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		11/09/15 17:25	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		11/09/15 17:25	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		11/09/15 17:25	75-71-8	
1,1-Dichloroethane	1.4	ug/L	1.0	1		11/09/15 17:25	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		11/09/15 17:25	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		11/09/15 17:25	75-35-4	
cis-1,2-Dichloroethene	19.4	ug/L	1.0	1		11/09/15 17:25	156-59-2	
trans-1,2-Dichloroethene	45.0	ug/L	1.0	1		11/09/15 17:25	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		11/09/15 17:25	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		11/09/15 17:25	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		11/09/15 17:25	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		11/09/15 17:25	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		11/09/15 17:25	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		11/09/15 17:25	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		11/09/15 17:25	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		11/09/15 17:25	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		11/09/15 17:25	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		11/09/15 17:25	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		11/09/15 17:25	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		11/09/15 17:25	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		11/09/15 17:25	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		11/09/15 17:25	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		11/09/15 17:25	1634-04-4	

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ANALYTICAL RESULTS

Project: PS BETA-NIROP

Pace Project No.: 10329197

Sample: PMW-03	Lab ID: 10329197002	Collected: 11/06/15 12:00	Received: 11/06/15 15:53	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		11/09/15 17:25	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		11/09/15 17:25	103-65-1	
Styrene	ND	ug/L	1.0	1		11/09/15 17:25	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		11/09/15 17:25	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		11/09/15 17:25	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		11/09/15 17:25	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		11/09/15 17:25	109-99-9	
Toluene	ND	ug/L	1.0	1		11/09/15 17:25	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		11/09/15 17:25	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		11/09/15 17:25	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		11/09/15 17:25	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		11/09/15 17:25	79-00-5	
Trichloroethene	21.0	ug/L	0.40	1		11/09/15 17:25	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		11/09/15 17:25	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		11/09/15 17:25	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		11/09/15 17:25	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		11/09/15 17:25	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		11/09/15 17:25	108-67-8	
Vinyl chloride	2.4	ug/L	0.40	1		11/09/15 17:25	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		11/09/15 17:25	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	99	%.	75-125	1		11/09/15 17:25	17060-07-0	
Toluene-d8 (S)	102	%.	75-125	1		11/09/15 17:25	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1		11/09/15 17:25	460-00-4	

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ANALYTICAL RESULTS

Project: PS BETA-NIROP
Pace Project No.: 10329197

Sample: PMW-02	Lab ID: 10329197003	Collected: 11/06/15 13:30	Received: 11/06/15 15:53	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	200	10		11/09/15 17:55	67-64-1	
Allyl chloride	ND	ug/L	40.0	10		11/09/15 17:55	107-05-1	
Benzene	ND	ug/L	10.0	10		11/09/15 17:55	71-43-2	
Bromobenzene	ND	ug/L	10.0	10		11/09/15 17:55	108-86-1	
Bromochloromethane	ND	ug/L	10.0	10		11/09/15 17:55	74-97-5	
Bromodichloromethane	ND	ug/L	10.0	10		11/09/15 17:55	75-27-4	
Bromoform	ND	ug/L	40.0	10		11/09/15 17:55	75-25-2	
Bromomethane	ND	ug/L	40.0	10		11/09/15 17:55	74-83-9	
2-Butanone (MEK)	ND	ug/L	50.0	10		11/09/15 17:55	78-93-3	
n-Butylbenzene	ND	ug/L	10.0	10		11/09/15 17:55	104-51-8	
sec-Butylbenzene	ND	ug/L	10.0	10		11/09/15 17:55	135-98-8	
tert-Butylbenzene	ND	ug/L	10.0	10		11/09/15 17:55	98-06-6	
Carbon tetrachloride	ND	ug/L	10.0	10		11/09/15 17:55	56-23-5	
Chlorobenzene	ND	ug/L	10.0	10		11/09/15 17:55	108-90-7	
Chloroethane	ND	ug/L	10.0	10		11/09/15 17:55	75-00-3	
Chloroform	ND	ug/L	10.0	10		11/09/15 17:55	67-66-3	
Chloromethane	ND	ug/L	40.0	10		11/09/15 17:55	74-87-3	
2-Chlorotoluene	ND	ug/L	10.0	10		11/09/15 17:55	95-49-8	
4-Chlorotoluene	ND	ug/L	10.0	10		11/09/15 17:55	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	40.0	10		11/09/15 17:55	96-12-8	
Dibromochloromethane	ND	ug/L	10.0	10		11/09/15 17:55	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	10.0	10		11/09/15 17:55	106-93-4	
Dibromomethane	ND	ug/L	40.0	10		11/09/15 17:55	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	10.0	10		11/09/15 17:55	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	10.0	10		11/09/15 17:55	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	10.0	10		11/09/15 17:55	106-46-7	
Dichlorodifluoromethane	ND	ug/L	10.0	10		11/09/15 17:55	75-71-8	
1,1-Dichloroethane	34.3	ug/L	10.0	10		11/09/15 17:55	75-34-3	
1,2-Dichloroethane	ND	ug/L	10.0	10		11/09/15 17:55	107-06-2	
1,1-Dichloroethene	20.5	ug/L	10.0	10		11/09/15 17:55	75-35-4	
cis-1,2-Dichloroethene	264	ug/L	10.0	10		11/09/15 17:55	156-59-2	
trans-1,2-Dichloroethene	318	ug/L	10.0	10		11/09/15 17:55	156-60-5	
Dichlorofluoromethane	ND	ug/L	10.0	10		11/09/15 17:55	75-43-4	
1,2-Dichloropropane	ND	ug/L	40.0	10		11/09/15 17:55	78-87-5	
1,3-Dichloropropane	ND	ug/L	10.0	10		11/09/15 17:55	142-28-9	
2,2-Dichloropropane	ND	ug/L	40.0	10		11/09/15 17:55	594-20-7	
1,1-Dichloropropene	ND	ug/L	10.0	10		11/09/15 17:55	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	40.0	10		11/09/15 17:55	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	40.0	10		11/09/15 17:55	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	40.0	10		11/09/15 17:55	60-29-7	
Ethylbenzene	ND	ug/L	10.0	10		11/09/15 17:55	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	10.0	10		11/09/15 17:55	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	10.0	10		11/09/15 17:55	98-82-8	
p-Isopropyltoluene	ND	ug/L	10.0	10		11/09/15 17:55	99-87-6	
Methylene Chloride	ND	ug/L	40.0	10		11/09/15 17:55	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	50.0	10		11/09/15 17:55	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	10.0	10		11/09/15 17:55	1634-04-4	

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ANALYTICAL RESULTS

Project: PS BETA-NIROP

Pace Project No.: 10329197

Sample: PMW-02		Lab ID: 10329197003	Collected: 11/06/15 13:30	Received: 11/06/15 15:53	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	40.0	10		11/09/15 17:55	91-20-3	
n-Propylbenzene	ND	ug/L	10.0	10		11/09/15 17:55	103-65-1	
Styrene	ND	ug/L	10.0	10		11/09/15 17:55	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	10.0	10		11/09/15 17:55	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	10.0	10		11/09/15 17:55	79-34-5	
Tetrachloroethene	ND	ug/L	10.0	10		11/09/15 17:55	127-18-4	
Tetrahydrofuran	ND	ug/L	100	10		11/09/15 17:55	109-99-9	
Toluene	ND	ug/L	10.0	10		11/09/15 17:55	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	10.0	10		11/09/15 17:55	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	10.0	10		11/09/15 17:55	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	10.0	10		11/09/15 17:55	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	10.0	10		11/09/15 17:55	79-00-5	
Trichloroethene	36.6	ug/L	4.0	10		11/09/15 17:55	79-01-6	
Trichlorofluoromethane	ND	ug/L	10.0	10		11/09/15 17:55	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	40.0	10		11/09/15 17:55	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	10.0	10		11/09/15 17:55	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	10.0	10		11/09/15 17:55	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	10.0	10		11/09/15 17:55	108-67-8	
Vinyl chloride	4.8	ug/L	4.0	10		11/09/15 17:55	75-01-4	
Xylene (Total)	ND	ug/L	30.0	10		11/09/15 17:55	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	98	%.	75-125	10		11/09/15 17:55	17060-07-0	
Toluene-d8 (S)	100	%.	75-125	10		11/09/15 17:55	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	75-125	10		11/09/15 17:55	460-00-4	

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ANALYTICAL RESULTS

Project: PS BETA-NIROP

Pace Project No.: 10329197

Sample: PMW-01	Lab ID: 10329197004	Collected: 11/06/15 14:45	Received: 11/06/15 15:53	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		11/11/15 16:45	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		11/11/15 16:45	107-05-1	
Benzene	ND	ug/L	1.0	1		11/11/15 16:45	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		11/11/15 16:45	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		11/11/15 16:45	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		11/11/15 16:45	75-27-4	
Bromoform	ND	ug/L	4.0	1		11/11/15 16:45	75-25-2	
Bromomethane	ND	ug/L	4.0	1		11/11/15 16:45	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		11/11/15 16:45	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		11/11/15 16:45	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		11/11/15 16:45	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		11/11/15 16:45	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		11/11/15 16:45	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		11/11/15 16:45	108-90-7	
Chloroethane	ND	ug/L	1.0	1		11/11/15 16:45	75-00-3	
Chloroform	ND	ug/L	1.0	1		11/11/15 16:45	67-66-3	
Chloromethane	ND	ug/L	4.0	1		11/11/15 16:45	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		11/11/15 16:45	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		11/11/15 16:45	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		11/11/15 16:45	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		11/11/15 16:45	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		11/11/15 16:45	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		11/11/15 16:45	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		11/11/15 16:45	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		11/11/15 16:45	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		11/11/15 16:45	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		11/11/15 16:45	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		11/11/15 16:45	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		11/11/15 16:45	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		11/11/15 16:45	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		11/11/15 16:45	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		11/11/15 16:45	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		11/11/15 16:45	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		11/11/15 16:45	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		11/11/15 16:45	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		11/11/15 16:45	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		11/11/15 16:45	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		11/11/15 16:45	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		11/11/15 16:45	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		11/11/15 16:45	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		11/11/15 16:45	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		11/11/15 16:45	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		11/11/15 16:45	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		11/11/15 16:45	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		11/11/15 16:45	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		11/11/15 16:45	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		11/11/15 16:45	1634-04-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS BETA-NIROP

Pace Project No.: 10329197

Sample: PMW-01		Lab ID: 10329197004		Collected: 11/06/15 14:45	Received: 11/06/15 15:53	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		11/11/15 16:45	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		11/11/15 16:45	103-65-1	
Styrene	ND	ug/L	1.0	1		11/11/15 16:45	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		11/11/15 16:45	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		11/11/15 16:45	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		11/11/15 16:45	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		11/11/15 16:45	109-99-9	
Toluene	ND	ug/L	1.0	1		11/11/15 16:45	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		11/11/15 16:45	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		11/11/15 16:45	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		11/11/15 16:45	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		11/11/15 16:45	79-00-5	
Trichloroethene	ND	ug/L	0.40	1		11/11/15 16:45	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		11/11/15 16:45	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		11/11/15 16:45	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		11/11/15 16:45	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		11/11/15 16:45	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		11/11/15 16:45	108-67-8	
Vinyl chloride	ND	ug/L	0.40	1		11/11/15 16:45	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		11/11/15 16:45	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	2460	%.	75-125	1		11/11/15 16:45	17060-07-0	S2
Toluene-d8 (S)	132	%.	75-125	1		11/11/15 16:45	2037-26-5	S2
4-Bromofluorobenzene (S)	49	%.	75-125	1		11/11/15 16:45	460-00-4	S2

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10329197

QC Batch: MSV/33694

Analysis Method: EPA 8260B

QC Batch Method: EPA 8260B

Analysis Description: 8260B MSV 465 W

Associated Lab Samples: 10329197001, 10329197002, 10329197003

METHOD BLANK: 2130204

Matrix: Water

Associated Lab Samples: 10329197001, 10329197002, 10329197003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	11/09/15 12:08	
1,1,1-Trichloroethane	ug/L	ND	1.0	11/09/15 12:08	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	11/09/15 12:08	
1,1,2-Trichloroethane	ug/L	ND	1.0	11/09/15 12:08	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	1.0	11/09/15 12:08	
1,1-Dichloroethane	ug/L	ND	1.0	11/09/15 12:08	
1,1-Dichloroethene	ug/L	ND	1.0	11/09/15 12:08	
1,1-Dichloropropene	ug/L	ND	1.0	11/09/15 12:08	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	11/09/15 12:08	
1,2,3-Trichloropropane	ug/L	ND	4.0	11/09/15 12:08	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	11/09/15 12:08	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	11/09/15 12:08	
1,2-Dibromo-3-chloropropane	ug/L	ND	4.0	11/09/15 12:08	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	11/09/15 12:08	
1,2-Dichlorobenzene	ug/L	ND	1.0	11/09/15 12:08	
1,2-Dichloroethane	ug/L	ND	1.0	11/09/15 12:08	
1,2-Dichloropropane	ug/L	ND	4.0	11/09/15 12:08	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	11/09/15 12:08	
1,3-Dichlorobenzene	ug/L	ND	1.0	11/09/15 12:08	
1,3-Dichloropropane	ug/L	ND	1.0	11/09/15 12:08	
1,4-Dichlorobenzene	ug/L	ND	1.0	11/09/15 12:08	
2,2-Dichloropropane	ug/L	ND	4.0	11/09/15 12:08	
2-Butanone (MEK)	ug/L	ND	5.0	11/09/15 12:08	
2-Chlorotoluene	ug/L	ND	1.0	11/09/15 12:08	
4-Chlorotoluene	ug/L	ND	1.0	11/09/15 12:08	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	11/09/15 12:08	
Acetone	ug/L	ND	20.0	11/09/15 12:08	
Allyl chloride	ug/L	ND	4.0	11/09/15 12:08	
Benzene	ug/L	ND	1.0	11/09/15 12:08	
Bromobenzene	ug/L	ND	1.0	11/09/15 12:08	
Bromochloromethane	ug/L	ND	1.0	11/09/15 12:08	
Bromodichloromethane	ug/L	ND	1.0	11/09/15 12:08	
Bromoform	ug/L	ND	4.0	11/09/15 12:08	
Bromomethane	ug/L	ND	4.0	11/09/15 12:08	
Carbon tetrachloride	ug/L	ND	1.0	11/09/15 12:08	
Chlorobenzene	ug/L	ND	1.0	11/09/15 12:08	
Chloroethane	ug/L	ND	1.0	11/09/15 12:08	
Chloroform	ug/L	ND	1.0	11/09/15 12:08	
Chloromethane	ug/L	ND	4.0	11/09/15 12:08	
cis-1,2-Dichloroethene	ug/L	ND	1.0	11/09/15 12:08	
cis-1,3-Dichloropropene	ug/L	ND	4.0	11/09/15 12:08	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10329197

METHOD BLANK: 2130204

Matrix: Water

Associated Lab Samples: 10329197001, 10329197002, 10329197003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/L	ND	1.0	11/09/15 12:08	
Dibromomethane	ug/L	ND	4.0	11/09/15 12:08	
Dichlorodifluoromethane	ug/L	ND	1.0	11/09/15 12:08	
Dichlorofluoromethane	ug/L	ND	1.0	11/09/15 12:08	
Diethyl ether (Ethyl ether)	ug/L	ND	4.0	11/09/15 12:08	
Ethylbenzene	ug/L	ND	1.0	11/09/15 12:08	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	11/09/15 12:08	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	11/09/15 12:08	
Methyl-tert-butyl ether	ug/L	ND	1.0	11/09/15 12:08	
Methylene Chloride	ug/L	ND	4.0	11/09/15 12:08	
n-Butylbenzene	ug/L	ND	1.0	11/09/15 12:08	
n-Propylbenzene	ug/L	ND	1.0	11/09/15 12:08	
Naphthalene	ug/L	ND	4.0	11/09/15 12:08	
p-Isopropyltoluene	ug/L	ND	1.0	11/09/15 12:08	
sec-Butylbenzene	ug/L	ND	1.0	11/09/15 12:08	
Styrene	ug/L	ND	1.0	11/09/15 12:08	
tert-Butylbenzene	ug/L	ND	1.0	11/09/15 12:08	
Tetrachloroethene	ug/L	ND	1.0	11/09/15 12:08	
Tetrahydrofuran	ug/L	ND	10.0	11/09/15 12:08	
Toluene	ug/L	ND	1.0	11/09/15 12:08	
trans-1,2-Dichloroethene	ug/L	ND	1.0	11/09/15 12:08	
trans-1,3-Dichloropropene	ug/L	ND	4.0	11/09/15 12:08	
Trichloroethene	ug/L	ND	0.40	11/09/15 12:08	
Trichlorofluoromethane	ug/L	ND	1.0	11/09/15 12:08	
Vinyl chloride	ug/L	ND	0.40	11/09/15 12:08	
Xylene (Total)	ug/L	ND	3.0	11/09/15 12:08	
1,2-Dichloroethane-d4 (S)	%	97	75-125	11/09/15 12:08	
4-Bromofluorobenzene (S)	%	103	75-125	11/09/15 12:08	
Toluene-d8 (S)	%	102	75-125	11/09/15 12:08	

LABORATORY CONTROL SAMPLE: 2130205

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	20	20.5	102	75-125	
1,1,1-Trichloroethane	ug/L	20	20.2	101	75-125	
1,1,2,2-Tetrachloroethane	ug/L	20	20.2	101	75-125	
1,1,2-Trichloroethane	ug/L	20	20.4	102	75-125	
1,1,2-Trichlorotrifluoroethane	ug/L	20	18.1	90	60-135	
1,1-Dichloroethane	ug/L	20	20.1	101	69-125	
1,1-Dichloroethene	ug/L	20	20.4	102	68-125	
1,1-Dichloropropene	ug/L	20	20.0	100	74-125	
1,2,3-Trichlorobenzene	ug/L	20	17.3	86	69-136	
1,2,3-Trichloropropane	ug/L	20	20.5	102	75-125	
1,2,4-Trichlorobenzene	ug/L	20	19.1	96	73-127	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10329197

LABORATORY CONTROL SAMPLE: 2130205

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	20.8	104	75-125	
1,2-Dibromo-3-chloropropane	ug/L	50	49.9	100	65-145	
1,2-Dibromoethane (EDB)	ug/L	20	21.7	108	75-125	
1,2-Dichlorobenzene	ug/L	20	20.1	101	75-125	
1,2-Dichloroethane	ug/L	20	19.2	96	73-125	
1,2-Dichloropropane	ug/L	20	21.1	105	75-125	
1,3,5-Trimethylbenzene	ug/L	20	21.7	108	75-125	
1,3-Dichlorobenzene	ug/L	20	21.2	106	74-125	
1,3-Dichloropropane	ug/L	20	20.8	104	75-125	
1,4-Dichlorobenzene	ug/L	20	20.6	103	75-125	
2,2-Dichloropropane	ug/L	20	20.2	101	59-139	
2-Butanone (MEK)	ug/L	100	93.5	94	63-130	
2-Chlorotoluene	ug/L	20	20.6	103	72-125	
4-Chlorotoluene	ug/L	20	20.3	102	73-125	
4-Methyl-2-pentanone (MIBK)	ug/L	100	102	102	71-126	
Acetone	ug/L	100	107	107	69-131	
Allyl chloride	ug/L	20	20.4	102	67-125	
Benzene	ug/L	20	19.2	96	71-125	
Bromobenzene	ug/L	20	19.9	99	75-125	
Bromochloromethane	ug/L	20	18.8	94	75-125	
Bromodichloromethane	ug/L	20	20.2	101	75-125	
Bromoform	ug/L	20	19.3	96	70-125	
Bromomethane	ug/L	20	15.8	79	30-150	
Carbon tetrachloride	ug/L	20	19.1	96	75-126	
Chlorobenzene	ug/L	20	20.7	103	75-125	
Chloroethane	ug/L	20	19.1	95	65-134	
Chloroform	ug/L	20	19.4	97	75-125	
Chloromethane	ug/L	20	21.4	107	39-150	
cis-1,2-Dichloroethene	ug/L	20	20.3	102	72-125	
cis-1,3-Dichloropropene	ug/L	20	20.4	102	75-125	
Dibromochloromethane	ug/L	20	19.4	97	75-125	
Dibromomethane	ug/L	20	19.9	99	75-125	
Dichlorodifluoromethane	ug/L	20	17.3	87	50-134	
Dichlorofluoromethane	ug/L	20	20.1	101	69-125	
Diethyl ether (Ethyl ether)	ug/L	20	19.5	98	72-125	
Ethylbenzene	ug/L	20	20.1	100	75-125	
Hexachloro-1,3-butadiene	ug/L	20	20.0	100	70-138	
Isopropylbenzene (Cumene)	ug/L	20	21.1	106	75-125	
Methyl-tert-butyl ether	ug/L	20	19.8	99	73-125	
Methylene Chloride	ug/L	20	18.2	91	73-125	
n-Butylbenzene	ug/L	20	19.7	99	72-133	
n-Propylbenzene	ug/L	20	20.9	104	72-126	
Naphthalene	ug/L	20	17.0	85	70-127	
p-Isopropyltoluene	ug/L	20	21.3	107	72-132	
sec-Butylbenzene	ug/L	20	21.5	107	73-132	
Styrene	ug/L	20	20.2	101	75-125	
tert-Butylbenzene	ug/L	20	20.8	104	73-128	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10329197

LABORATORY CONTROL SAMPLE: 2130205

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethane	ug/L	20	20.1	100	74-125	
Tetrahydrofuran	ug/L	200	232	116	62-133	
Toluene	ug/L	20	20.5	103	74-125	
trans-1,2-Dichloroethene	ug/L	20	19.9	100	69-125	
trans-1,3-Dichloropropene	ug/L	20	20.7	103	75-125	
Trichloroethene	ug/L	20	19.4	97	75-125	
Trichlorofluoromethane	ug/L	20	19.1	95	74-127	
Vinyl chloride	ug/L	20	19.3	96	66-132	
Xylene (Total)	ug/L	60	61.8	103	75-125	
1,2-Dichloroethane-d4 (S)	%			98	75-125	
4-Bromofluorobenzene (S)	%			99	75-125	
Toluene-d8 (S)	%			102	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2130206 2130207

Parameter	Units	MS 10328304020		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
1,1,1,2-Tetrachloroethane	ug/L	ND	20	20	19.8	19.9	99	99	99	70-138	0	30	
1,1,1-Trichloroethane	ug/L	ND	20	20	22.5	22.6	112	113	113	55-150	1	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20	20.0	20.6	100	103	103	64-140	3	30	
1,1,2-Trichloroethane	ug/L	ND	20	20	20.3	20.2	102	101	101	67-137	1	30	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	20	20	25.1	24.0	126	120	120	51-150	4	30	
1,1-Dichloroethane	ug/L	ND	20	20	21.9	21.0	109	105	105	49-150	4	30	
1,1-Dichloroethene	ug/L	ND	20	20	23.5	22.3	118	111	111	40-150	6	30	
1,1-Dichloropropene	ug/L	ND	20	20	23.0	21.6	115	108	108	50-150	6	30	
1,2,3-Trichlorobenzene	ug/L	ND	20	20	21.5	22.9	107	115	115	59-148	6	30	
1,2,3-Trichloropropane	ug/L	ND	20	20	20.0	19.7	100	99	99	65-141	1	30	
1,2,4-Trichlorobenzene	ug/L	ND	20	20	22.3	22.6	112	113	113	61-140	1	30	
1,2,4-Trimethylbenzene	ug/L	ND	20	20	21.0	21.2	105	106	106	58-141	1	30	
1,2-Dibromo-3-chloropropane	ug/L	ND	50	50	48.5	53.1	97	106	106	53-150	9	30	
1,2-Dibromoethane (EDB)	ug/L	ND	20	20	20.3	20.6	102	103	103	65-137	1	30	
1,2-Dichlorobenzene	ug/L	ND	20	20	20.5	22.1	103	111	111	66-133	7	30	
1,2-Dichloroethane	ug/L	2.8	20	20	24.3	23.0	108	101	101	54-138	6	30	
1,2-Dichloropropane	ug/L	ND	20	20	21.1	20.8	106	104	104	62-138	1	30	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	21.7	22.0	109	110	110	58-140	1	30	
1,3-Dichlorobenzene	ug/L	ND	20	20	21.4	22.2	107	111	111	66-132	4	30	
1,3-Dichloropropane	ug/L	ND	20	20	20.5	21.4	103	107	107	66-134	4	30	
1,4-Dichlorobenzene	ug/L	ND	20	20	20.3	20.7	101	103	103	65-129	2	30	
2,2-Dichloropropane	ug/L	ND	20	20	21.9	20.8	110	104	104	40-150	5	30	
2-Butanone (MEK)	ug/L	ND	100	100	88.5	80.1	89	80	80	51-147	10	30	
2-Chlorotoluene	ug/L	ND	20	20	20.4	21.3	102	106	106	58-147	4	30	
4-Chlorotoluene	ug/L	ND	20	20	20.4	21.4	102	107	107	64-138	5	30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	100	100	100	99.0	100	99	99	59-143	1	30	
Acetone	ug/L	ND	100	100	86.8	76.1	87	76	76	63-147	13	30	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10329197

Parameter	Units	2130206		2130207		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10328304020 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Allyl chloride	ug/L	ND	20	20	20.0	19.7	100	99	45-150	1	30		
Benzene	ug/L	57.2	20	20	88.3	87.9	155	153	53-139	0	30	M3	
Bromobenzene	ug/L	ND	20	20	19.5	20.5	97	102	66-136	5	30		
Bromochloromethane	ug/L	ND	20	20	18.8	18.6	94	93	64-136	1	30		
Bromodichloromethane	ug/L	ND	20	20	20.8	20.7	104	104	66-138	0	30		
Bromoform	ug/L	ND	20	20	19.1	20.3	96	102	59-136	6	30		
Bromomethane	ug/L	ND	20	20	17.5	20.5	87	103	30-150	16	30		
Carbon tetrachloride	ug/L	ND	20	20	21.6	20.4	108	102	56-150	5	30		
Chlorobenzene	ug/L	ND	20	20	20.8	20.7	104	103	65-133	1	30		
Chloroethane	ug/L	ND	20	20	20.8	19.5	104	98	48-150	6	30		
Chloroform	ug/L	ND	20	20	21.3	21.3	106	107	57-145	0	30		
Chloromethane	ug/L	ND	20	20	25.3	27.6	126	138	30-150	9	30		
cis-1,2-Dichloroethene	ug/L	ND	20	20	21.3	19.6	106	98	49-150	8	30		
cis-1,3-Dichloropropene	ug/L	ND	20	20	21.2	20.8	106	104	64-130	2	30		
Dibromochloromethane	ug/L	ND	20	20	19.5	19.7	98	98	68-138	1	30		
Dibromomethane	ug/L	ND	20	20	19.6	19.8	98	99	67-134	1	30		
Dichlorodifluoromethane	ug/L	ND	20	20	22.1	21.2	111	106	45-150	5	30		
Dichlorofluoromethane	ug/L	ND	20	20	22.5	22.1	113	111	54-150	2	30		
Diethyl ether (Ethyl ether)	ug/L	ND	20	20	19.4	19.4	97	97	50-145	0	30		
Ethylbenzene	ug/L	ND	20	20	21.9	22.5	105	108	55-139	3	30		
Hexachloro-1,3-butadiene	ug/L	ND	20	20	22.5	23.7	112	119	49-150	5	30		
Isopropylbenzene (Cumene)	ug/L	ND	20	20	22.2	22.4	111	112	64-142	1	30		
Methyl-tert-butyl ether	ug/L	ND	20	20	21.7	20.7	109	103	62-129	5	30		
Methylene Chloride	ug/L	ND	20	20	17.9	18.1	90	91	57-132	1	30		
n-Butylbenzene	ug/L	ND	20	20	21.3	21.8	106	109	55-150	2	30		
n-Propylbenzene	ug/L	ND	20	20	21.3	21.9	106	109	59-142	3	30		
Naphthalene	ug/L	ND	20	20	20.6	21.8	103	109	51-150	6	30		
p-Isopropyltoluene	ug/L	ND	20	20	23.0	23.2	115	116	60-149	1	30		
sec-Butylbenzene	ug/L	ND	20	20	22.6	23.5	113	117	60-150	4	30		
Styrene	ug/L	ND	20	20	21.8	21.4	109	107	68-134	2	30		
tert-Butylbenzene	ug/L	ND	20	20	22.6	22.5	113	113	62-146	0	30		
Tetrachloroethene	ug/L	ND	20	20	20.6	21.7	103	109	50-150	6	30		
Tetrahydrofuran	ug/L	ND	200	200	220	227	110	113	59-145	3	30		
Toluene	ug/L	1.2	20	20	22.3	22.7	106	108	52-148	2	30		
trans-1,2-Dichloroethene	ug/L	ND	20	20	19.8	20.5	99	102	45-150	3	30		
trans-1,3-Dichloropropene	ug/L	ND	20	20	21.5	20.4	108	102	68-132	5	30		
Trichloroethene	ug/L	ND	20	20	20.8	21.6	104	108	52-150	4	30		
Trichlorofluoromethane	ug/L	ND	20	20	24.2	24.8	121	124	55-150	3	30		
Vinyl chloride	ug/L	ND	20	20	21.4	22.7	107	114	43-150	6	30		
Xylene (Total)	ug/L	ND	60	60	63.6	64.3	106	107	54-144	1	30		
1,2-Dichloroethane-d4 (S)	%						103	98	75-125				
4-Bromofluorobenzene (S)	%						95	99	75-125				
Toluene-d8 (S)	%						100	102	75-125				

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10329197

QC Batch: MSV/33726

Analysis Method: EPA 8260B

QC Batch Method: EPA 8260B

Analysis Description: 8260B MSV 465 W

Associated Lab Samples: 10329197004

METHOD BLANK: 2132162

Matrix: Water

Associated Lab Samples: 10329197004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	11/11/15 14:59	
1,1,1-Trichloroethane	ug/L	ND	1.0	11/11/15 14:59	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	11/11/15 14:59	
1,1,2-Trichloroethane	ug/L	ND	1.0	11/11/15 14:59	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	1.0	11/11/15 14:59	
1,1-Dichloroethane	ug/L	ND	1.0	11/11/15 14:59	
1,1-Dichloroethene	ug/L	ND	1.0	11/11/15 14:59	
1,1-Dichloropropene	ug/L	ND	1.0	11/11/15 14:59	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	11/11/15 14:59	
1,2,3-Trichloropropane	ug/L	ND	4.0	11/11/15 14:59	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	11/11/15 14:59	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	11/11/15 14:59	
1,2-Dibromo-3-chloropropane	ug/L	ND	4.0	11/11/15 14:59	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	11/11/15 14:59	
1,2-Dichlorobenzene	ug/L	ND	1.0	11/11/15 14:59	
1,2-Dichloroethane	ug/L	ND	1.0	11/11/15 14:59	
1,2-Dichloropropane	ug/L	ND	4.0	11/11/15 14:59	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	11/11/15 14:59	
1,3-Dichlorobenzene	ug/L	ND	1.0	11/11/15 14:59	
1,3-Dichloropropane	ug/L	ND	1.0	11/11/15 14:59	
1,4-Dichlorobenzene	ug/L	ND	1.0	11/11/15 14:59	
2,2-Dichloropropane	ug/L	ND	4.0	11/11/15 14:59	
2-Butanone (MEK)	ug/L	ND	5.0	11/11/15 14:59	
2-Chlorotoluene	ug/L	ND	1.0	11/11/15 14:59	
4-Chlorotoluene	ug/L	ND	1.0	11/11/15 14:59	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	11/11/15 14:59	
Acetone	ug/L	ND	20.0	11/11/15 14:59	
Allyl chloride	ug/L	ND	4.0	11/11/15 14:59	
Benzene	ug/L	ND	1.0	11/11/15 14:59	
Bromobenzene	ug/L	ND	1.0	11/11/15 14:59	
Bromochloromethane	ug/L	ND	1.0	11/11/15 14:59	
Bromodichloromethane	ug/L	ND	1.0	11/11/15 14:59	
Bromoform	ug/L	ND	4.0	11/11/15 14:59	
Bromomethane	ug/L	ND	4.0	11/11/15 14:59	
Carbon tetrachloride	ug/L	ND	1.0	11/11/15 14:59	
Chlorobenzene	ug/L	ND	1.0	11/11/15 14:59	
Chloroethane	ug/L	ND	1.0	11/11/15 14:59	
Chloroform	ug/L	ND	1.0	11/11/15 14:59	
Chloromethane	ug/L	ND	4.0	11/11/15 14:59	
cis-1,2-Dichloroethene	ug/L	ND	1.0	11/11/15 14:59	
cis-1,3-Dichloropropene	ug/L	ND	4.0	11/11/15 14:59	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10329197

METHOD BLANK: 2132162

Matrix: Water

Associated Lab Samples: 10329197004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/L	ND	1.0	11/11/15 14:59	
Dibromomethane	ug/L	ND	4.0	11/11/15 14:59	
Dichlorodifluoromethane	ug/L	ND	1.0	11/11/15 14:59	
Dichlorofluoromethane	ug/L	ND	1.0	11/11/15 14:59	
Diethyl ether (Ethyl ether)	ug/L	ND	4.0	11/11/15 14:59	
Ethylbenzene	ug/L	ND	1.0	11/11/15 14:59	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	11/11/15 14:59	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	11/11/15 14:59	
Methyl-tert-butyl ether	ug/L	ND	1.0	11/11/15 14:59	
Methylene Chloride	ug/L	ND	4.0	11/11/15 14:59	
n-Butylbenzene	ug/L	ND	1.0	11/11/15 14:59	
n-Propylbenzene	ug/L	ND	1.0	11/11/15 14:59	
Naphthalene	ug/L	ND	4.0	11/11/15 14:59	
p-Isopropyltoluene	ug/L	ND	1.0	11/11/15 14:59	
sec-Butylbenzene	ug/L	ND	1.0	11/11/15 14:59	
Styrene	ug/L	ND	1.0	11/11/15 14:59	
tert-Butylbenzene	ug/L	ND	1.0	11/11/15 14:59	
Tetrachloroethene	ug/L	ND	1.0	11/11/15 14:59	
Tetrahydrofuran	ug/L	ND	10.0	11/11/15 14:59	
Toluene	ug/L	ND	1.0	11/11/15 14:59	
trans-1,2-Dichloroethene	ug/L	ND	1.0	11/11/15 14:59	
trans-1,3-Dichloropropene	ug/L	ND	4.0	11/11/15 14:59	
Trichloroethene	ug/L	ND	0.40	11/11/15 14:59	
Trichlorofluoromethane	ug/L	ND	1.0	11/11/15 14:59	
Vinyl chloride	ug/L	ND	0.40	11/11/15 14:59	
Xylene (Total)	ug/L	ND	3.0	11/11/15 14:59	
1,2-Dichloroethane-d4 (S)	%	100	75-125	11/11/15 14:59	
4-Bromofluorobenzene (S)	%	100	75-125	11/11/15 14:59	
Toluene-d8 (S)	%	102	75-125	11/11/15 14:59	

LABORATORY CONTROL SAMPLE: 2132163

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	20	19.7	98	75-125	
1,1,1-Trichloroethane	ug/L	20	20.1	101	75-125	
1,1,2,2-Tetrachloroethane	ug/L	20	19.3	96	75-125	
1,1,2-Trichloroethane	ug/L	20	21.3	107	75-125	
1,1,2-Trichlorotrifluoroethane	ug/L	20	18.3	91	60-135	
1,1-Dichloroethane	ug/L	20	19.8	99	69-125	
1,1-Dichloroethene	ug/L	20	19.7	98	68-125	
1,1-Dichloropropene	ug/L	20	19.4	97	74-125	
1,2,3-Trichlorobenzene	ug/L	20	17.2	86	69-136	
1,2,3-Trichloropropane	ug/L	20	21.1	105	75-125	
1,2,4-Trichlorobenzene	ug/L	20	18.5	93	73-127	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10329197

LABORATORY CONTROL SAMPLE: 2132163

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	20.1	100	75-125	
1,2-Dibromo-3-chloropropane	ug/L	50	46.6	93	65-145	
1,2-Dibromoethane (EDB)	ug/L	20	21.0	105	75-125	
1,2-Dichlorobenzene	ug/L	20	19.6	98	75-125	
1,2-Dichloroethane	ug/L	20	20.0	100	73-125	
1,2-Dichloropropane	ug/L	20	19.4	97	75-125	
1,3,5-Trimethylbenzene	ug/L	20	20.3	102	75-125	
1,3-Dichlorobenzene	ug/L	20	20.6	103	74-125	
1,3-Dichloropropane	ug/L	20	21.3	106	75-125	
1,4-Dichlorobenzene	ug/L	20	19.4	97	75-125	
2,2-Dichloropropane	ug/L	20	19.9	99	59-139	
2-Butanone (MEK)	ug/L	100	97.9	98	63-130	
2-Chlorotoluene	ug/L	20	20.2	101	72-125	
4-Chlorotoluene	ug/L	20	19.8	99	73-125	
4-Methyl-2-pentanone (MIBK)	ug/L	100	89.4	89	71-126	
Acetone	ug/L	100	104	104	69-131	
Allyl chloride	ug/L	20	18.8	94	67-125	
Benzene	ug/L	20	19.5	98	71-125	
Bromobenzene	ug/L	20	20.3	101	75-125	
Bromochloromethane	ug/L	20	18.4	92	75-125	
Bromodichloromethane	ug/L	20	19.5	98	75-125	
Bromoform	ug/L	20	18.3	92	70-125	
Bromomethane	ug/L	20	18.0	90	30-150	
Carbon tetrachloride	ug/L	20	17.7	88	75-126	
Chlorobenzene	ug/L	20	20.0	100	75-125	
Chloroethane	ug/L	20	23.4	117	65-134	
Chloroform	ug/L	20	20.1	101	75-125	
Chloromethane	ug/L	20	20.6	103	39-150	
cis-1,2-Dichloroethene	ug/L	20	20.5	102	72-125	
cis-1,3-Dichloropropene	ug/L	20	18.6	93	75-125	
Dibromochloromethane	ug/L	20	19.1	96	75-125	
Dibromomethane	ug/L	20	19.2	96	75-125	
Dichlorodifluoromethane	ug/L	20	18.6	93	50-134	
Dichlorofluoromethane	ug/L	20	21.9	110	69-125	
Diethyl ether (Ethyl ether)	ug/L	20	18.6	93	72-125	
Ethylbenzene	ug/L	20	19.5	98	75-125	
Hexachloro-1,3-butadiene	ug/L	20	19.2	96	70-138	
Isopropylbenzene (Cumene)	ug/L	20	20.4	102	75-125	
Methyl-tert-butyl ether	ug/L	20	19.9	99	73-125	
Methylene Chloride	ug/L	20	17.8	89	73-125	
n-Butylbenzene	ug/L	20	19.0	95	72-133	
n-Propylbenzene	ug/L	20	19.7	99	72-126	
Naphthalene	ug/L	20	15.9	80	70-127	
p-Isopropyltoluene	ug/L	20	21.1	106	72-132	
sec-Butylbenzene	ug/L	20	20.3	102	73-132	
Styrene	ug/L	20	20.3	101	75-125	
tert-Butylbenzene	ug/L	20	20.3	101	73-128	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10329197

LABORATORY CONTROL SAMPLE: 2132163

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	ug/L	20	19.2	96	74-125	
Tetrahydrofuran	ug/L	200	237	119	62-133	
Toluene	ug/L	20	20.4	102	74-125	
trans-1,2-Dichloroethene	ug/L	20	19.1	96	69-125	
trans-1,3-Dichloropropene	ug/L	20	18.9	94	75-125	
Trichloroethene	ug/L	20	19.4	97	75-125	
Trichlorofluoromethane	ug/L	20	19.4	97	74-127	
Vinyl chloride	ug/L	20	20.3	101	66-132	
Xylene (Total)	ug/L	60	60.4	101	75-125	
1,2-Dichloroethane-d4 (S)	%			100	75-125	
4-Bromofluorobenzene (S)	%			98	75-125	
Toluene-d8 (S)	%			101	75-125	

MATRIX SPIKE SAMPLE: 2132380

Parameter	Units	10329032008 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	11.1	55	70-138	M1
1,1,1-Trichloroethane	ug/L	ND	20	17.7	89	55-150	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	16.4	82	64-140	
1,1,2-Trichloroethane	ug/L	ND	20	20.2	101	67-137	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	20	23.9	119	51-150	
1,1-Dichloroethane	ug/L	ND	20	21.9	109	49-150	
1,1-Dichloroethene	ug/L	ND	20	22.9	115	40-150	
1,1-Dichloropropene	ug/L	ND	20	21.4	107	50-150	
1,2,3-Trichlorobenzene	ug/L	ND	20	15.2	76	59-148	
1,2,3-Trichloropropane	ug/L	ND	20	19.8	99	65-141	
1,2,4-Trichlorobenzene	ug/L	ND	20	18.8	94	61-140	
1,2,4-Trimethylbenzene	ug/L	ND	20	20.5	102	58-141	
1,2-Dibromo-3-chloropropane	ug/L	ND	50	17.3	35	53-150	M1
1,2-Dibromoethane (EDB)	ug/L	ND	20	17.7	89	65-137	
1,2-Dichlorobenzene	ug/L	ND	20	20.2	101	66-133	
1,2-Dichloroethane	ug/L	ND	20	20.0	100	54-138	
1,2-Dichloropropane	ug/L	ND	20	20.9	104	62-138	
1,3,5-Trimethylbenzene	ug/L	ND	20	21.6	108	58-140	
1,3-Dichlorobenzene	ug/L	ND	20	21.3	107	66-132	
1,3-Dichloropropane	ug/L	ND	20	21.2	106	66-134	
1,4-Dichlorobenzene	ug/L	ND	20	20.7	104	65-129	
2,2-Dichloropropane	ug/L	ND	20	18.3	92	40-150	
2-Butanone (MEK)	ug/L	ND	100	81.7	82	51-147	
2-Chlorotoluene	ug/L	ND	20	20.9	104	58-147	
4-Chlorotoluene	ug/L	ND	20	20.3	102	64-138	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	100	88.8	89	59-143	
Acetone	ug/L	ND	100	106	106	63-147	
Allyl chloride	ug/L	ND	20	17.4	87	45-150	
Benzene	ug/L	ND	20	20.0	100	53-139	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10329197

MATRIX SPIKE SAMPLE:		2132380		10329032008		Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Result	% Rec	Limits	Qualifiers	
Bromobenzene	ug/L	ND	20	20.9	105			66-136		
Bromochloromethane	ug/L	ND	20	19.1	96			64-136		
Bromodichloromethane	ug/L	ND	20	13.9	70			66-138		
Bromoform	ug/L	ND	20	6.7	34			59-136	M1	
Bromomethane	ug/L	ND	20	22.9	115			30-150		
Carbon tetrachloride	ug/L	ND	20	11.2	56			56-150		
Chlorobenzene	ug/L	ND	20	20.6	103			65-133		
Chloroethane	ug/L	ND	20	23.5	118			48-150		
Chloroform	ug/L	ND	20	20.4	102			57-145		
Chloromethane	ug/L	ND	20	21.9	109			30-150		
cis-1,2-Dichloroethene	ug/L	ND	20	20.6	103			49-150		
cis-1,3-Dichloropropene	ug/L	ND	20	17.0	85			64-130		
Dibromochloromethane	ug/L	ND	20	9.3	47			68-138	M1	
Dibromomethane	ug/L	ND	20	20.0	100			67-134		
Dichlorodifluoromethane	ug/L	ND	20	24.1	121			45-150		
Dichlorofluoromethane	ug/L	ND	20	23.4	117			54-150		
Diethyl ether (Ethyl ether)	ug/L	ND	20	19.1	96			50-145		
Ethylbenzene	ug/L	ND	20	20.9	104			55-139		
Hexachloro-1,3-butadiene	ug/L	ND	20	17.1	85			49-150		
Isopropylbenzene (Cumene)	ug/L	ND	20	21.5	107			64-142		
Methyl-tert-butyl ether	ug/L	ND	20	19.8	99			62-129		
Methylene Chloride	ug/L	ND	20	18.1	91			57-132		
n-Butylbenzene	ug/L	ND	20	20.1	100			55-150		
n-Propylbenzene	ug/L	ND	20	21.2	106			59-142		
Naphthalene	ug/L	ND	20	14.0	70			51-150		
p-Isopropyltoluene	ug/L	ND	20	21.6	108			60-149		
sec-Butylbenzene	ug/L	ND	20	21.8	109			60-150		
Styrene	ug/L	ND	20	20.6	103			68-134		
tert-Butylbenzene	ug/L	ND	20	21.6	108			62-146		
Tetrachloroethene	ug/L	ND	20	21.7	108			50-150		
Tetrahydrofuran	ug/L	ND	200	248	124			59-145		
Toluene	ug/L	ND	20	20.8	104			52-148		
trans-1,2-Dichloroethene	ug/L	ND	20	20.9	105			45-150		
trans-1,3-Dichloropropene	ug/L	ND	20	15.8	79			68-132		
Trichloroethene	ug/L	ND	20	20.7	103			52-150		
Trichlorofluoromethane	ug/L	ND	20	25.6	128			55-150		
Vinyl chloride	ug/L	ND	20	23.3	117			43-150		
Xylene (Total)	ug/L	ND	60	63.9	106			54-144		
1,2-Dichloroethane-d4 (S)	%				98			75-125		
4-Bromofluorobenzene (S)	%				98			75-125		
Toluene-d8 (S)	%				98			75-125		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10329197

SAMPLE DUPLICATE: 2132381

Parameter	Units	10329032017 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,1-Trichloroethane	ug/L	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,2-Trichloroethane	ug/L	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	ND		30	
1,1-Dichloroethane	ug/L	ND	ND		30	
1,1-Dichloroethene	ug/L	ND	ND		30	
1,1-Dichloropropene	ug/L	ND	ND		30	
1,2,3-Trichlorobenzene	ug/L	ND	ND		30	
1,2,3-Trichloropropane	ug/L	ND	ND		30	
1,2,4-Trichlorobenzene	ug/L	ND	ND		30	
1,2,4-Trimethylbenzene	ug/L	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/L	ND	ND		30	
1,2-Dichlorobenzene	ug/L	ND	ND		30	
1,2-Dichloroethane	ug/L	ND	ND		30	
1,2-Dichloropropane	ug/L	ND	ND		30	
1,3,5-Trimethylbenzene	ug/L	ND	ND		30	
1,3-Dichlorobenzene	ug/L	ND	ND		30	
1,3-Dichloropropane	ug/L	ND	ND		30	
1,4-Dichlorobenzene	ug/L	ND	ND		30	
2,2-Dichloropropane	ug/L	ND	ND		30	
2-Butanone (MEK)	ug/L	ND	ND		30	
2-Chlorotoluene	ug/L	ND	ND		30	
4-Chlorotoluene	ug/L	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		30	
Acetone	ug/L	ND	ND		30	
Allyl chloride	ug/L	ND	ND		30	
Benzene	ug/L	ND	ND		30	
Bromobenzene	ug/L	ND	ND		30	
Bromochloromethane	ug/L	ND	ND		30	
Bromodichloromethane	ug/L	ND	ND		30	
Bromoform	ug/L	ND	ND		30	
Bromomethane	ug/L	ND	ND		30	
Carbon tetrachloride	ug/L	ND	ND		30	
Chlorobenzene	ug/L	ND	ND		30	
Chloroethane	ug/L	ND	ND		30	
Chloroform	ug/L	ND	ND		30	
Chloromethane	ug/L	ND	ND		30	
cis-1,2-Dichloroethene	ug/L	ND	ND		30	
cis-1,3-Dichloropropene	ug/L	ND	ND		30	
Dibromochloromethane	ug/L	ND	ND		30	
Dibromomethane	ug/L	ND	ND		30	
Dichlorodifluoromethane	ug/L	ND	ND		30	
Dichlorofluoromethane	ug/L	ND	ND		30	
Diethyl ether (Ethyl ether)	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10329197

SAMPLE DUPLICATE: 2132381

Parameter	Units	10329032017 Result	Dup Result	RPD	Max RPD	Qualifiers
Hexachloro-1,3-butadiene	ug/L	ND	ND		30	
Isopropylbenzene (Cumene)	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Methylene Chloride	ug/L	ND	ND		30	
n-Butylbenzene	ug/L	ND	ND		30	
n-Propylbenzene	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
p-Isopropyltoluene	ug/L	ND	ND		30	
sec-Butylbenzene	ug/L	ND	ND		30	
Styrene	ug/L	ND	ND		30	
tert-Butylbenzene	ug/L	ND	ND		30	
Tetrachloroethene	ug/L	ND	ND		30	
Tetrahydrofuran	ug/L	ND	ND		30	
Toluene	ug/L	ND	.24J		30	
trans-1,2-Dichloroethene	ug/L	ND	ND		30	
trans-1,3-Dichloropropene	ug/L	ND	ND		30	
Trichloroethene	ug/L	ND	ND		30	
Trichlorofluoromethane	ug/L	ND	ND		30	
Vinyl chloride	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%.	95	100	6		
4-Bromofluorobenzene (S)	%.	102	99	4		
Toluene-d8 (S)	%.	99	101	3		

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: PS BETA-NIROP

Pace Project No.: 10329197

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M3 Matrix spike recovery was outside laboratory control limits due to matrix interferences.

S2 Surrogate recovery outside laboratory control limits due to matrix interferences (confirmed by similar results from sample re-analysis).

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PS BETA-NIROP

Pace Project No.: 10329197

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10329197001	PMW-04	EPA 8260B	MSV/33694		
10329197002	PMW-03	EPA 8260B	MSV/33694		
10329197003	PMW-02	EPA 8260B	MSV/33694		
10329197004	PMW-01	EPA 8260B	MSV/33726		

REPORT OF LABORATORY ANALYSIS

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2 DAY TAT

CHAIN-OF-CUSTODY / Analytical Request Document

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

RUSH
KAC 11/6/15

Page: **2** of **2**
1039197

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company: REGENESIS	Report To: MELINDA PHAM	Company Name: BABAR NADEGI	Attention: REGENESIS	REGULATORY AGENCY	1988829
Address: 1011 CALLE SOMBERA	Copy To:	Address: 1011 CALLE SOMBERA		<input type="checkbox"/> NPDES <input type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER	
City: SAN CLEMENTE, CA 92673		Purchase Order No.:		<input type="checkbox"/> UST <input type="checkbox"/> RCRA	
Email To: MPHAM@REGENESIS.COM		Project Name: PS - BETA NILEOP		Site Location	
Phone: 949-366-3000 / 949-366-8090		Project Number: PS - BETA NILEOP		STATE: CA	
Requested Due Date/TAT: 2 DAY TAT					

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives							Analysis Test ↑	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No. / Lab I.D.
				COMPOSITE START	COMPOSITE END/GRAB			DATE	TIME	DATE	TIME	UNPRESERVED	H2SO4	HNO3				
1	PMW-04	DW	WTG	11/6/15	1025		21										21	
2	PMW-03	WW	WTG	11/6/15	1200		21										21	
3	PMW-02	P	WTG	11/6/15	1330		20										20	
4	PMW-01	SL	WTG	11/6/15	1445		21										21	
5		OL																
6		WP																
7		AR																
8		TS																
9		OT																
10																		
11																		
12																		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
2 DAY TAT	MELISSA MEADOWS/AECOM	11/6/15	1553	Jace	11/6/15	1553.8	Y N
						0.1	
						6.4	
ORIGINAL				SAMPLER NAME AND SIGNATURE		Temp in °C	Received on
				PRINT Name of SAMPLER: MELISSA MEADOWS		Ice (Y/N)	Custody (Y/N)
				SIGNATURE OF SAMPLER: [Signature]		Sealed Cooler (Y/N)	Samples Intact (Y/N)
				DATE SIGNED (MM/DD/YY): 11/6/15			

Sample Condition Upon Receipt

Client Name: Regenesis

Project #: **WO# : 10329197**



Courier: Fed Ex UPS USPS Client
 Commercial Pace SpeedDee Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No Optional: Proj. Due Date: _____ Proj. Name: _____

Packing Material: Bubble Wrap Bubble Bags None Other: _____ Temp Blank? Yes No

Thermometer Used: B88A9130516413 B88A912167504 B88A0143310098 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temp Read (°C): 5.8, 0.1, 6.4 Cooler Temp Corrected (°C): 5.8, 0.1, 6.4 Biological Tissue Frozen? Yes No N/A
 Temp should be above freezing to 6°C Correction Factor: +0.0 Date and Initials of Person Examining Contents: KAC 4/6/15

USDA Regulated Soil (N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or WA (check maps)? Yes No Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

		COMMENTS:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	10 / caps slightly broken in sample PMW-03
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>		
All containers needing acid/base preservation have been checked?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> HNO ₃ <input type="checkbox"/> H ₂ SO ₄ <input type="checkbox"/> NaOH <input type="checkbox"/> HCl
All containers needing preservation are found to be in compliance with EPA recommendation?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Sample #
(HNO ₃ , H ₂ SO ₄ , HCl <2; NaOH >9 Sulfide, NaOH >12 Cyanide) Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: 

Date: 1/9/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).



Pace Analytical Energy Services, LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

November 22, 2015

Jennifer Anderson
Pace Analytical Services, Inc.
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: **PS BETA-NIROP**

Pace Workorder: 17314

Dear Jennifer Anderson:

Enclosed are the analytical results for sample(s) received by the laboratory on Tuesday, November 10, 2015.

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

Sincerely,

Ruth Welsh 11/22/2015
Ruth.Welsh@pacelabs.com

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email info@microseeps.com.

Total Number of Pages 11

Report ID: 17314 - 734669

Page 1 of 9

CERTIFICATE OF ANALYSIS

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Page 29 of 39



Client Pace MN
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Project PS Beta Nirop
 Project # 10329197
 Report to Jennifer Anderson
 Tel: 612.607.1700
 Email: jennifer.anderson @ pacelabs.com

Pace Analytical CSIA Center
 220 William Pitt Way
 Pittsburgh, PA 15238
 Tel: 412.826.5245
 Report by: Dr. Yi Wang
 Director, CSIA Center of Excellence
 Cell: 609.721.2843
 Email: yi.wang@zymaxusa.com

REPORT OF ENVIRONMENTAL FORENSICS ISOTOPE ANALYSES

Date Received: 11/10/2015

Date Reported: 11/19/2015

Water sample submitted for $\delta^{13}\text{C}$ (‰ VPDB) stable carbon isotope forensics of chlorinated solvents

Pace CSIA Lab ID	Client's Sample ID Description	$\delta^{13}\text{C}$ TCE	$\delta^{13}\text{C}$ cDCE	$\delta^{13}\text{C}$ tDCE	$\delta^{13}\text{C}$ 11DCE	$\delta^{13}\text{C}$ 11DCA	$\delta^{13}\text{C}$ VC
17314-1	PMW-04	7.39	-17.46	-20.12	U ₋	U ₋	U ₋
17314-2	PMW-03	-8.52	-20.10	-20.97	U ₋	U ₋	-20.39
17314-3	PMW-02	12.09	-27.03	-37.54	-20.23	-29.16	-23.97
17314-4	PMW-01	U ₋	U ₋	U ₋	U ₋	U ₋	U ₋

cDCE & tDCE: *cis* & *trans*-1,2-dichloroethene
 TCE: trichloroethene

11DCA: 1,1-dichloroethane
 11DCE: 1,1-dichloroethene

VC: vinyl chloride

^J-Target analyte produced a low peak signal and the result is considered usable to $\pm 2\%$, but not the standard $\pm 0.5\%$

^U-Either there was no peak corresponding to the target analyte or that such a peak did not produce a reliable CSIA result

Method: Compound Specific Isotope Analysis for ^{13}C and ^2H by GC-IRMS, for ^{37}Cl by GC-qMS

Quality Control STDs	$\delta^{13}\text{C}$ TCE	$\delta^{13}\text{C}$ cDCE	$\delta^{13}\text{C}$ tDCE	$\delta^{13}\text{C}$ 11DCE	$\delta^{13}\text{C}$ 11DCA	$\delta^{13}\text{C}$ VC
QC-1	-26.29	-12.18	-22.74	-30.77	-33.03	-28.99
QC-2	-26.08	-11.77	-21.60	-30.37	-31.86	-28.92
Mean	-26.19	-11.98	-22.17	-30.57	-32.45	-28.96
Analytical precision (1 σ)	0.15	0.29	0.81	0.28	0.83	0.05

Pace CSIA Forensic Isotope Services

Product or Dissolved Organics: Chlorinated Solvents, Oil, Extract, Fraction and Kerogen

3D-CSIA of ^{13}C , ^{37}Cl , and ^2H for PCE, TCE, DCE, MTBE, BTEX, 1,4-Dioxane, Alkanes, Gasoline and Oil; Bulk ^{13}C , ^2H , ^{18}O , ^{34}S , and ^{15}N

Gas Sample

Gas Composition and 2D-CSIA of ^{13}C and ^2H of C1 to C5; ^{13}C of CO_2 ; ^{14}C of C1 and CO_2 ; ^{34}S of H_2S ; ^{15}N and ^{18}O of N_2O gas

Water and Dissolved Inorganics

^2H , ^3H and ^{18}O ; ^{34}S and ^{18}O of dissolved sulfate; ^{34}S of dissolved H_2S

^{15}N and ^{18}O of dissolved Nitrate; ^{15}N of Ammonia; ^{13}C of dissolved CO_2 and Carbonate/Bicarbonate

Soil and Minerals

^{13}C , ^{18}O , ^{15}N , ^{34}S , D/H; ^{14}C of carbonate or organics

Post-Analysis Forensic Isotope Data Interpretation

Pace CSIA Center of Excellence
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report Carbon

17314
 PACE-MIN
 Client Project Name: PS Beta Nirrop
 Client Project #: 10329197

Vinyl Chloride		Concentration (ug/l)				CSIA (Carbon)				
		Sample	PQL	Date	Area	Co-elution	Analysis	Date	Delta (%)	
Lab ID	Client ID									
173140001	PMW-04	<1 (U)	1	11/9/15	Sample < 1 (U)	1	No	4241	11/18/15	-
173140002	PMW-03	2	1	11/9/15	3.25	1	No	4242	11/18/15	-20.39
173140003	PMW-02	5	4	11/9/15	5.62	1	No	4246	11/18/15	-23.97
173140004	PMW-01	<1 (U)	1	11/11/15	< 1 (U)	1	No	4245	11/18/15	-
Duplicate	PMW-03	2	1	11/9/15	3.23	1	No	4243	11/18/15	-20.46
Blank	-	0	-	-	<1 (U)	1	No	4238	11/18/15	-
LCS Lo	-	10	-	-	12.4	1	No	4239	11/18/15	-28.99
LCS_Hi	-	20	-	-	15.7	1	No	4240	11/18/15	-28.92
LCS acceptance range		-28.90 <=> -27.90								

Method	8260B	AM-24-AR_C	AM-24-DL_C
Units	ug/l	Vs	%o, VPDB
Analyst	NA	CJS	CJS

Pace CSIA Center of Excellence
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report Carbon

17314
 PACE-MIN
 Client Project Name: PS Beta Nirrop
 Client Project #: 10329197

Lab ID	Client ID	Concentration (ug/l)				CSIA (Carbon)					Delta (%)
		Sample	PQL	Date	Area		Co-elution	Analysis	Date		
					Sample	PQL					
173140001	PMW-04	<1 (U)	1	11/9/15	<5 (U)	5	No	4241	11/18/15	-	
173140002	PMW-03	<1 (U)	1	11/9/15	<5 (U)	5	No	4242	11/18/15	-	
173140003	PMW-02	21	10	11/9/15	24.8	5	No	4246	11/18/15	-20.23	
173140004	PMW-01	<1 (U)	1	11/11/15	<5 (U)	5	No	4245	11/18/15	-	
Duplicate	PMW-03	<1 (U)	1	11/9/15	<5 (U)	5	No	4243	11/18/15	-	
Blank	-	0	-	-	<5 (U)	5	No	4238	11/18/15	-	
LCS_Lo	-	10	-	-	7.95	5	No	4239	11/18/15	-30.77	
LCS_Hi	-	50	-	-	37.0	5	No	4240	11/18/15	-30.37	
LCS acceptance range								-30.36	<=>	-31.36	
Method		8260B		AM-24-AR_C		AM-24-DL_C					
Units		ug/l		Vs		%o, VPDB					
Analyst		NA		CJS		CJS					

Pace CSIA Center of Excellence
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report Carbon

17314
 PACE-MN
 Client Project Name: PS Beta Nirrop
 Client Project #: 10329197

trans-Dichloroethene		Concentration (ug/l)				CSIA (Carbon)			
		Sample	PQL	Date	Area	Co-elution	Analysis	Date	Delta (%)
Lab ID	Client ID	Sample	PQL	Date	Area	Co-elution	Analysis	Date	Delta (%)
173140001	PMW-04	51	1	11/9/15	39.0	No	4241	11/18/15	-20.12
173140002	PMW-03	45	1	11/9/15	38.2	No	4242	11/18/15	-20.97
173140003	PMW-02	318	10	11/9/15	20.3	No	4244	11/18/15	-37.54
173140004	PMW-01	<1 (U)	1	11/11/15	<1 (U)	No	4245	11/18/15	-
Duplicate	PMW-03	45	1	11/9/15	38.2	No	4243	11/18/15	-21.24
Blank	-	0	-	-	<1 (U)	No	4238	11/18/15	-
LCS_Lo	-	10	-	-	7.23	No	4239	11/18/15	-22.74
LCS_Hi	-	50	-	-	38.1	No	4240	11/18/15	-21.60
LCS acceptance range								-22.29 <==>	

Method	8260B	AM-24-AR_C	AM-24-DL_C
Units	ug/l	Vs	%_VPDB
Analyst	NA	CJS	CJS

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CSIA Report Carbon

17314
 PACE-MN
 Client Project Name: PS Beta Nirrop
 Client Project #: 10329197

Lab ID	Client ID	Concentration (ug/l)				CSIA (Carbon)					
		Sample	PQL	Date	Sample	Area		Co-elution	Analysis	Date	Delta (‰)
						Area	PQL				
173140001	PMW-04	<1 (U)	1	11/9/15	< 4 (U)	4	No	4241	11/18/15	-	
173140002	PMW-03	1	1	11/9/15	< 4 (U)	4	No	4242	11/18/15	-	
173140003	PMW-02	34	10	11/9/15	45.4	4	No	4246	11/18/15	-29.16	
173140004	PMW-01	<1 (U)	1	11/11/15	< 4 (U)	4	No	4245	11/18/15	-	
Duplicate	PMW-03	1	1	11/9/15	< 4 (U)	4	No	4243	11/18/15	-	
Blank	-	0	-	-	<4 (U)	4	No	4238	11/18/15	-	
LCS_Lo	-	10	-	-	6.70	4	No	4269	11/18/15	-33.03	
LCS_Hi	-	50	-	-	39.6	4	No	4270	11/18/15	-31.86	
LCS acceptance range										-32.67 <=> -33.67	

Method	8260B	AM-24-AR_C	AM-24-DL_C
Units	ug/l	Vs	‰, VPDB
Analyst	NA	CJS	CJS

Pace CSIA Center of Excellence
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report Carbon

17314
 PACE-MIN
 Client Project Name: PS Beta Nirrop
 Client Project #: 10329197

cis-Dichloroethene		Concentration (ug/l)				CSIA (Carbon)				
		Sample	PQL	Date	Sample	Area PQL	Co-elution	Analysis	Date	Delta (%)
Lab ID	Client ID									
173140001	PMW-04	18	1	11/9/15	13.2	1	No	4241	11/18/15	-17.46
173140002	PMW-03	19	1	11/9/15	14.5	1	No	4242	11/18/15	-20.10
173140003	PMW-02	264	10	11/9/15	15.6	1	No	4244	11/18/15	-27.03
173140004	PMW-01	<1 (U)	1	11/11/15	<1 (U)	1	No	4245	11/18/15	-
Duplicate	PMW-03	19	1	11/9/15	14.6	1	No	4243	11/18/15	-20.56
Blank	-	0	-	-	<1 (U)	1	No	4238	11/18/15	-
LCS_Lo	-	10	-	-	6.70	1	No	4239	11/18/15	-12.18
LCS_Hi	-	50	-	-	34.6	1	No	4240	11/18/15	-11.77
LCS acceptance range								-12.22	<=>	-11.22
Method		8260B						AM-24-AR_C		AM-24-DL_C
Units		ug/l						Vs		%a, VPDB
Analyst		NA						CJS		CJS

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CSIA Report Carbon

17314
 PACE-MN
 Client Project Name: PS Beta Nirrop
 Client Project #: 10329197

Lab ID	Client ID	Concentration (ug/l)				CSIA (Carbon)				Delta (%)	
		Sample		Date		Area		Analysis			Date
		Sample	PQL	Sample	Date	Sample	PQL	Co-elution	Analysis		
173140001	PMW-04	15	1	11/9/15	8.47	1	No	4241	11/18/15	7.39	
173140002	PMW-03	21	1	11/9/15	11.6	1	No	4242	11/18/15	-8.52	
173140003	PMW-02	37	4	11/9/15	23.0	1	No	4246	11/18/15	12.09	
173140004	PMW-01	<1 (U)	1	11/11/15	<1 (U)	1	No	4245	11/18/15	-	
Duplicate	PMW-03	21	1	11/9/15	11.7	1	No	4243	11/18/15	-8.81	
Blank	-	0	-	-	<1 (U)	1	No	4238	11/18/15	-	
LCS_Lo	-	10	-	-	5.10	1	No	4239	11/18/15	-26.29	
LCS_Hi	-	50	-	-	27.7	1	No	4240	11/18/15	-26.08	
LCS acceptance range										-26.48 <=> -25.48	
Method	8260B				AM-24-AR_C				AM-24-DL_C		
Units	ug/l				Vs				%o, VPDB		
Analyst	NA				CJS				CJS		

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CSIA Report Carbon

17314
 PACE-MN
 Client Project Name: PS Beta Nirrop
 Client Project #: 10329197

1CP (Surrogate)		CSIA (Carbon)							
Lab ID	Client ID	Sample Collection	Area	Dilution	PQL	Co-elution	Analysis	Date	Delta (‰)
173140001	PMW-04	11/09/15	11.4	1	1	No	4241	11/18/15	-37.49
173140002	PMW-03	11/09/15	9.34	1	1	No	4242	11/18/15	-37.35
173140003	PMW-02	11/09/15	12.7	10	1	No	4244	11/18/15	-37.18
173140003	PMW-02	11/09/15	6.56	1	1	No	4246	11/18/15	-38.30
173140004	PMW-01	11/09/15	5.81	1	1	No	4245	11/18/15	-36.85
Duplicate	PMW-03	11/09/15	8.30	1	1	No	4243	11/18/15	-37.94
Blank	-	-	12.4	1	1	No	4238	11/18/15	-36.69
LCS Lo	-	-	11.8	1	1	No	4239	11/18/15	-37.49
LCS Hi	-	-	12.3	1	1	No	4240	11/18/15	-37.54
Surrogate acceptance range							-37.49	<=>	-36.49

Method	AM-24-AR_C	AM-24-DL_C
Units	Vs	‰, VPDB
Analyst	CJS	CJS

Case Narrative: The blank, LCS's, duplicate and surrogates were all close to or within the acceptance range and the data is reported as valid and representative of the samples as received.

Chain of Custody

17314



Workorder: 10329197 Workorder Name: PS BETA-NIROP Results Requested: 11/4/2015 12/1/15 JMA 11/9/15

Report / Invoice To: Jennifer Anderson
 Pace Analytical Minnesota
 1700 Elm Street
 Suite 200
 Minneapolis, MN 55414
 Phone (612)607-1700
 Email: jennifer.anderson@pacelabs.com

Subcontract To: MIC 10Seeps P.O. 10329197

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers					LAB USE ONLY	
					1	2	3	4	5		
1	PMW-04	11/6/2015 10:25	10329197001	Water							
2	PMW-03	11/6/2015 12:00	10329197002	Water							
3	PMW-02	11/6/2015 13:30	10329197003	Water							
4	PMW-01	11/6/2015 14:45	10329197004	Water							
5											

Transfers	Released By	Date/Time	Received By	Date/Time	Received on Ice	Y or N	Y or N	Y or N	Y or N	Comments
1	APK Pace	11/15/15	J. Anderson	11-10-15						Will send VOC data once analysis completes
2										
3										

Cooler Temperature on Receipt: 2 °C Custody Seal: Y or N Received on Ice: Y or N Samples Intact: Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
 This chain of custody is considered complete as is since this information is available in the owner laboratory.

Cooler Receipt Form

Client Name: Pace Project: PS Beta-Nirap Lab Work Order: 17314

A. Shipping/Container Information (circle appropriate response)

Courier: FedEx UPS USPS Client Other: _____ Air bill Present: Yes No

Tracking Number: 6484 8693 4478

Custody Seal on Cooler/Box Present: Yes No Seals Intact: Yes No

Cooler/Box Packing Material: Bubble Wrap Absorbent Foam Other: _____

Type of Ice: Wet Blue None Ice Intact: Yes Melted

Cooler Temperature: 20C Radiation Screened: Yes No Chain of Custody Present: Yes No

Comments: _____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non-conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished	✓			
Sampler Name & Signature on COC		✓		
Containers intact	✓			
Were samples in separate bags	✓			
Sample container labels match COC Sample name/date and time collected	✓			
Sufficient volume provided	✓			
PAES containers used		✓		
Are containers properly preserved for the requested testing? (as labeled)	✓			
If an unknown preservation state, were containers checked? Exception: VOA's coliform			✓	If yes, see pH form.
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			✓	

Comments: _____

Cooler contents examined/received by: LY Date: 11.10.15

Project Manager Review: RW Date: 11-11-15

November 20, 2015

Melinda Pham
Regenesis
1011 Calle Sombra
San Clemente, CA 92673

RE: Project: PS BETA-NIROP
Pace Project No.: 10329206

Dear Melinda Pham:

Enclosed are the analytical results for sample(s) received by the laboratory on November 06, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,



Jennifer Anderson
jennifer.anderson@pacelabs.com
Project Manager

Enclosures

cc: Ryan Moore, Regenesis



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PS BETA-NIROP
Pace Project No.: 10329206

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

Montana Certification IDs

150 N. 9th Street, Billings, MT 59101
Colorado Asbestos #: 17119
A2LA Certification #: 3590.01
EPA Region 8 Certification #: 8TMS-L
Idaho Certification #: MT00012

Minnesota Dept of Health Certification #: 030-999-442
Montana Certification #: MT CERT0040
North Dakota Dept. Of Health #: R-209
NVLAP Certification #: 101292-0
Washington Department of Ecology #: C993

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification #MN01084
Arizona Department of Health Certification #AZ0785
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203

Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007
Nevada DNR #MN010842015-1
Oklahoma Department of Environmental Quality

Ormond Beach Certification IDs

8 East Tower Circle, Ormond Beach, FL 32174
Alabama Certification #: 41320
Connecticut Certification #: PH-0216
Delaware Certification: FL NELAC Reciprocity
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Illinois Certification #: 200068
Indiana Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Kentucky Certification #: 90050
Louisiana Certification #: FL NELAC Reciprocity
Louisiana Environmental Certificate #: 05007
Maryland Certification: #346
Michigan Certification #: 9911
Mississippi Certification: FL NELAC Reciprocity

Missouri Certification #: 236
Montana Certification #: Cert 0074
Nebraska Certification: NE-OS-28-14
Nevada Certification: FL NELAC Reciprocity
New Hampshire Certification #: 2958
New York Certification #: 11608
North Carolina Environmental Certificate #: 667
North Carolina Certification #: 12710
North Dakota Certification #: R-216
Oklahoma Certification #: D9947
Pennsylvania Certification #: 68-00547
Puerto Rico Certification #: FL01264
South Carolina Certification: #96042001
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity
US Virgin Islands Certification: FL NELAC Reciprocity
Virginia Environmental Certification #: 460165

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PS BETA-NIROP
Pace Project No.: 10329206

Ormond Beach Certification IDs

West Virginia Certification #: 9962C
Wisconsin Certification #: 399079670

Wyoming (EPA Region 8): FL NELAC Reciprocity

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: PS BETA-NIROP

Pace Project No.: 10329206

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10329206001	PMW-04	Water	11/06/15 10:25	11/06/15 15:53
10329206002	PMW-03	Water	11/06/15 12:00	11/06/15 15:53
10329206003	PMW-02	Water	11/06/15 13:30	11/06/15 15:53
10329206004	PMW-01	Water	11/06/15 14:45	11/06/15 15:53

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: PS BETA-NIROP

Pace Project No.: 10329206

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10329206001	PMW-04	RSK 175	JRB	3	PASI-M
		EPA 6010C	WBS	1	PASI-M
		6010C Met	WBS	1	PASI-M
		SM 4500-S2-D	JME	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	KAM	2	PASI-O
		EPA 300.0	KEO	1	PASI-M
		EPA 353.2	KEO	1	PASI-M
		SM 5220D	KEO	1	PASI-M
10329206002	PMW-03	SM 5310C	KRV	1	PASI-V
		RSK 175	JRB	3	PASI-M
		EPA 6010C	WBS	1	PASI-M
		6010C Met	WBS	1	PASI-M
		SM 4500-S2-D	JME	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	KAM	2	PASI-O
		EPA 300.0	KEO	1	PASI-M
		EPA 353.2	KEO	1	PASI-M
10329206003	PMW-02	SM 5220D	KEO	1	PASI-M
		SM 5310C	KRV	1	PASI-V
		RSK 175	JRB	3	PASI-M
		EPA 6010C	WBS	1	PASI-M
		6010C Met	WBS	1	PASI-M
		SM 4500-S2-D	JME	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	KAM	2	PASI-O
		EPA 300.0	KEO	1	PASI-M
10329206004	PMW-01	EPA 353.2	KEO	1	PASI-M
		SM 5220D	KEO	1	PASI-M
		SM 5310C	KRV	1	PASI-V
		RSK 175	JRB	3	PASI-M
		EPA 6010C	WBS	1	PASI-M
		6010C Met	WBS	1	PASI-M
		SM 4500-S2-D	JME	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	KAM	2	PASI-O
EPA 300.0	KEO	1	PASI-M		

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SAMPLE ANALYTE COUNT

Project: PS BETA-NIROP

Pace Project No.: 10329206

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 353.2	KEO	1	PASI-M
		SM 5220D	KEO	1	PASI-M
		SM 5310C	KRV	1	PASI-V

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS BETA-NIROP

Pace Project No.: 10329206

Sample: PMW-04	Lab ID: 10329206001	Collected: 11/06/15 10:25	Received: 11/06/15 15:53	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace								
Analytical Method: RSK 175								
Ethane	ND	ug/L	10.0	1		11/10/15 21:52	74-84-0	
Ethene	ND	ug/L	10.0	1		11/10/15 21:52	74-85-1	
Methane	21.0	ug/L	10.0	1		11/10/15 21:52	74-82-8	
6010C MET ICP								
Analytical Method: EPA 6010C Preparation Method: EPA 3010								
Iron	4970	ug/L	50.0	1	11/10/15 10:00	11/10/15 19:21	7439-89-6	
6010C MET ICP, Dissolved								
Analytical Method: 6010C Met Preparation Method: EPA 3010								
Iron, Dissolved	2580	ug/L	50.0	1	11/10/15 10:00	11/10/15 18:15	7439-89-6	
4500S2D Sulfide Water								
Analytical Method: SM 4500-S2-D								
Sulfide	ND	mg/L	0.10	1		11/11/15 12:49		
2320B Alkalinity								
Analytical Method: SM 2320B								
Alkalinity, Total as CaCO3	275	mg/L	5.0	1		11/17/15 13:19		
Carbon Dioxide (SM4500CO2D)	24.5	mg/L	5.0	1		11/17/15 13:19	124-38-9	
Alkalinity, Total as CaCO3	281	mg/L	5.0	1		11/18/15 12:42		
Alkalinity,Bicarbonate (CaCO3)	281	mg/L	5.0	1		11/18/15 12:42		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	5.0	1		11/18/15 12:42		
300.0 IC Anions								
Analytical Method: EPA 300.0								
Sulfate	115	mg/L	2.4	2		11/09/15 20:48	14808-79-8	
353.2 Nitrate + Nitrite								
Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	ND	mg/L	0.020	1		11/12/15 10:25		
5220D COD								
Analytical Method: SM 5220D Preparation Method: SM 5220D								
Chemical Oxygen Demand	ND	mg/L	50.0	1	11/18/15 11:41	11/19/15 10:06		
5310C TOC								
Analytical Method: SM 5310C								
Total Organic Carbon	2.6	mg/L	1.0	1		11/12/15 19:37	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS BETA-NIROP
Pace Project No.: 10329206

Sample: PMW-03	Lab ID: 10329206002	Collected: 11/06/15 12:00	Received: 11/06/15 15:53	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace								
Analytical Method: RSK 175								
Ethane	ND	ug/L	10.0	1		11/10/15 22:01	74-84-0	
Ethene	ND	ug/L	10.0	1		11/10/15 22:01	74-85-1	
Methane	51.3	ug/L	10.0	1		11/10/15 22:01	74-82-8	
6010C MET ICP								
Analytical Method: EPA 6010C Preparation Method: EPA 3010								
Iron	7270	ug/L	50.0	1	11/10/15 10:00	11/10/15 19:36	7439-89-6	
6010C MET ICP, Dissolved								
Analytical Method: 6010C Met Preparation Method: EPA 3010								
Iron, Dissolved	5180	ug/L	50.0	1	11/10/15 10:00	11/10/15 18:31	7439-89-6	
4500S2D Sulfide Water								
Analytical Method: SM 4500-S2-D								
Sulfide	ND	mg/L	0.10	1		11/11/15 12:50		
2320B Alkalinity								
Analytical Method: SM 2320B								
Alkalinity, Total as CaCO ₃	357	mg/L	5.0	1		11/17/15 13:34		
Alkalinity, Total as CaCO ₃	369	mg/L	5.0	1		11/18/15 12:46		
Carbon Dioxide (SM4500CO ₂ D)	28.0	mg/L	5.0	1		11/17/15 13:34	124-38-9	
Alkalinity,Bicarbonate (CaCO ₃)	369	mg/L	5.0	1		11/18/15 12:46		
Alkalinity,Carbonate (CaCO ₃)	ND	mg/L	5.0	1		11/18/15 12:46		
300.0 IC Anions								
Analytical Method: EPA 300.0								
Sulfate	121	mg/L	2.4	2		11/09/15 21:37	14808-79-8	
353.2 Nitrate + Nitrite								
Analytical Method: EPA 353.2								
Nitrogen, NO ₂ plus NO ₃	ND	mg/L	0.020	1		11/12/15 10:26		
5220D COD								
Analytical Method: SM 5220D Preparation Method: SM 5220D								
Chemical Oxygen Demand	ND	mg/L	50.0	1	11/18/15 11:41	11/19/15 10:07		
5310C TOC								
Analytical Method: SM 5310C								
Total Organic Carbon	2.6	mg/L	1.0	1		11/12/15 20:15	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS BETA-NIROP

Pace Project No.: 10329206

Sample: PMW-02	Lab ID: 10329206003	Collected: 11/06/15 13:30	Received: 11/06/15 15:53	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace								
Analytical Method: RSK 175								
Ethane	ND	ug/L	10.0	1		11/10/15 22:09	74-84-0	
Ethene	ND	ug/L	10.0	1		11/10/15 22:09	74-85-1	
Methane	16.0	ug/L	10.0	1		11/10/15 22:09	74-82-8	
6010C MET ICP								
Analytical Method: EPA 6010C Preparation Method: EPA 3010								
Iron	3860	ug/L	50.0	1	11/10/15 10:00	11/10/15 19:40	7439-89-6	
6010C MET ICP, Dissolved								
Analytical Method: 6010C Met Preparation Method: EPA 3010								
Iron, Dissolved	3420	ug/L	50.0	1	11/10/15 10:00	11/10/15 18:34	7439-89-6	
4500S2D Sulfide Water								
Analytical Method: SM 4500-S2-D								
Sulfide	ND	mg/L	0.10	1		11/11/15 12:51		
2320B Alkalinity								
Analytical Method: SM 2320B								
Alkalinity, Total as CaCO ₃	426	mg/L	5.0	1		11/18/15 12:50		
Alkalinity, Total as CaCO ₃	409	mg/L	5.0	1		11/17/15 13:43		
Carbon Dioxide (SM4500CO ₂ D)	34.8	mg/L	5.0	1		11/17/15 13:43	124-38-9	
Alkalinity,Bicarbonate (CaCO ₃)	426	mg/L	5.0	1		11/18/15 12:50		
Alkalinity,Carbonate (CaCO ₃)	ND	mg/L	5.0	1		11/18/15 12:50		
300.0 IC Anions								
Analytical Method: EPA 300.0								
Sulfate	149	mg/L	2.4	2		11/09/15 21:55	14808-79-8	
353.2 Nitrate + Nitrite								
Analytical Method: EPA 353.2								
Nitrogen, NO ₂ plus NO ₃	ND	mg/L	0.020	1		11/12/15 10:27		
5220D COD								
Analytical Method: SM 5220D Preparation Method: SM 5220D								
Chemical Oxygen Demand	ND	mg/L	50.0	1	11/18/15 11:41	11/19/15 10:07		
5310C TOC								
Analytical Method: SM 5310C								
Total Organic Carbon	2.5	mg/L	1.0	1		11/12/15 20:28	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS BETA-NIROP

Pace Project No.: 10329206

Sample: PMW-01	Lab ID: 10329206004	Collected: 11/06/15 14:45	Received: 11/06/15 15:53	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace								
Analytical Method: RSK 175								
Ethane	ND	ug/L	10.0	1		11/10/15 22:17	74-84-0	
Ethene	ND	ug/L	10.0	1		11/10/15 22:17	74-85-1	
Methane	ND	ug/L	10.0	1		11/10/15 22:17	74-82-8	
6010C MET ICP								
Analytical Method: EPA 6010C Preparation Method: EPA 3010								
Iron	10500	ug/L	50.0	1	11/10/15 10:00	11/10/15 19:43	7439-89-6	
6010C MET ICP, Dissolved								
Analytical Method: 6010C Met Preparation Method: EPA 3010								
Iron, Dissolved	833	ug/L	50.0	1	11/10/15 10:00	11/10/15 18:37	7439-89-6	
4500S2D Sulfide Water								
Analytical Method: SM 4500-S2-D								
Sulfide	ND	mg/L	20.0	200		11/11/15 13:05		D3
2320B Alkalinity								
Analytical Method: SM 2320B								
Alkalinity, Total as CaCO3	519	mg/L	25.0	5		11/17/15 13:48		
Carbon Dioxide (SM4500CO2D)	ND	mg/L	25.0	5		11/17/15 13:48	124-38-9	
Alkalinity, Total as CaCO3	521	mg/L	5.0	1		11/18/15 12:54		
Alkalinity,Bicarbonate (CaCO3)	521	mg/L	5.0	1		11/18/15 12:54		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	5.0	1		11/18/15 12:54		
300.0 IC Anions								
Analytical Method: EPA 300.0								
Sulfate	172	mg/L	60.0	50		11/09/15 15:42	14808-79-8	
353.2 Nitrate + Nitrite								
Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	2.6	mg/L	0.20	10		11/12/15 10:28		
5220D COD								
Analytical Method: SM 5220D Preparation Method: SM 5220D								
Chemical Oxygen Demand	995	mg/L	500	1	11/18/15 11:41	11/19/15 10:07		
5310C TOC								
Analytical Method: SM 5310C								
Total Organic Carbon	ND	mg/L	100	100		11/14/15 13:57	7440-44-0	D3

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10329206

QC Batch: AIR/24604 Analysis Method: RSK 175
 QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE
 Associated Lab Samples: 10329206001, 10329206002, 10329206003, 10329206004

METHOD BLANK: 2130456 Matrix: Water
 Associated Lab Samples: 10329206001, 10329206002, 10329206003, 10329206004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	10.0	11/10/15 19:17	
Ethene	ug/L	ND	10.0	11/10/15 19:17	
Methane	ug/L	ND	10.0	11/10/15 19:17	

LABORATORY CONTROL SAMPLE & LCSD: 2130457

Parameter	Units	2130458								
		Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Ethane	ug/L	114	120	118	106	104	85-115	2	20	
Ethene	ug/L	106	112	111	106	104	85-115	1	20	
Methane	ug/L	60.7	63.3	61.9	104	102	85-115	2	20	

SAMPLE DUPLICATE: 2131438

Parameter	Units	92274799005		Dup Result		Max RPD	Qualifiers
		Result	Result	RPD	RPD		
Ethane	ug/L	ND	ND			20	
Ethene	ug/L	ND	ND			20	
Methane	ug/L	14.2	14.0		1	20	

SAMPLE DUPLICATE: 2131439

Parameter	Units	92275222009		Dup Result		Max RPD	Qualifiers
		Result	Result	RPD	RPD		
Ethane	ug/L	ND	ND			20	
Ethene	ug/L	860	729		16	20	
Methane	ug/L	1300	1090		17	20	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10329206

QC Batch: MPRP/59483 Analysis Method: EPA 6010C
 QC Batch Method: EPA 3010 Analysis Description: 6010C Water
 Associated Lab Samples: 10329206001, 10329206002, 10329206003, 10329206004

METHOD BLANK: 2130775 Matrix: Water
 Associated Lab Samples: 10329206001, 10329206002, 10329206003, 10329206004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron	ug/L	ND	50.0	11/10/15 18:53	

LABORATORY CONTROL SAMPLE: 2130776

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	10000	9730	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2130777 2130778

Parameter	Units	10329206001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Iron	ug/L	4970	10000	10000	14700	14900	97	99	75-125	1	20	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10329206

QC Batch: MPRP/59482

Analysis Method: 6010C Met

QC Batch Method: EPA 3010

Analysis Description: 6010C Water Dissolved

Associated Lab Samples: 10329206001, 10329206002, 10329206003, 10329206004

METHOD BLANK: 2130771

Matrix: Water

Associated Lab Samples: 10329206001, 10329206002, 10329206003, 10329206004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron, Dissolved	ug/L	ND	50.0	11/10/15 17:47	

LABORATORY CONTROL SAMPLE: 2130772

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron, Dissolved	ug/L	10000	9580	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2130773 2130774

Parameter	Units	10329206001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Iron, Dissolved	ug/L	2580	10000	10000	12000	12000	95	95	75-125	0	20	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10329206

QC Batch: MT/21411 Analysis Method: SM 4500-S2-D
 QC Batch Method: SM 4500-S2-D Analysis Description: 4500S2D Sulfide Water
 Associated Lab Samples: 10329206001, 10329206002, 10329206003, 10329206004

METHOD BLANK: 2132180 Matrix: Water
 Associated Lab Samples: 10329206001, 10329206002, 10329206003, 10329206004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfide	mg/L	ND	0.10	11/11/15 12:40	

LABORATORY CONTROL SAMPLE: 2132181

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide	mg/L	.99	0.94	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2132182 2132183

Parameter	Units	10329308001		10329308002		10329308003		10329308004		% Rec Limits	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Sulfide	mg/L	<0.0071	.99	.99	0.97	1.0	99	103	80-120	4	20	

SAMPLE DUPLICATE: 2132184

Parameter	Units	10329308002 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide	mg/L	<0.0071	ND		20	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10329206

QC Batch: WET/34192

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 10329206001, 10329206002, 10329206003, 10329206004

METHOD BLANK: 1394719

Matrix: Water

Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	ND	5.0	11/17/15 13:05	
Carbon Dioxide (SM4500CO2D)	mg/L	ND	5.0	11/17/15 13:05	

LABORATORY CONTROL SAMPLE: 1394720

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	250	244	98	90-110	

SAMPLE DUPLICATE: 1394721

Parameter	Units	10329206001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	275	273	1	20	
Carbon Dioxide (SM4500CO2D)	mg/L	24.5	22.5	9		

SAMPLE DUPLICATE: 1394722

Parameter	Units	35216416007 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	252	253	0	20	
Carbon Dioxide (SM4500CO2D)	mg/L	20.2	20.7	2		

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10329206

QC Batch: WET/45280

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 10329206001, 10329206002, 10329206003, 10329206004

METHOD BLANK: 2138105

Matrix: Water

Associated Lab Samples: 10329206001, 10329206002, 10329206003, 10329206004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	ND	5.0	11/18/15 10:18	
Alkalinity,Bicarbonate (CaCO3)	mg/L	ND	5.0	11/18/15 10:18	
Alkalinity,Carbonate (CaCO3)	mg/L	ND	5.0	11/18/15 10:18	

LABORATORY CONTROL SAMPLE & LCSD: 2138106

2138107

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	40	42.0	42.8	105	107	90-110	2	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2138108

2138109

Parameter	Units	10329231012 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	443	40	40	486	488	107	112	80-120	0	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2138110

2138111

Parameter	Units	10329231013 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	178	40	40	221	219	108	104	80-120	1	30	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10329206

QC Batch: WETA/25494 Analysis Method: EPA 300.0
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
 Associated Lab Samples: 10329206001, 10329206002, 10329206003, 10329206004

METHOD BLANK: 2130173 Matrix: Water
 Associated Lab Samples: 10329206001, 10329206002, 10329206003, 10329206004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.2	11/09/15 12:39	

LABORATORY CONTROL SAMPLE: 2130174

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	12.5	11.7	93	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2130175 2130176

Parameter	Units	10328811001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L		125	125	206	206	88	88	90-110	0	20	M6

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2130177 2130178

Parameter	Units	10328999001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	7.3	12.5	12.5	18.6	18.6	90	90	90-110	0	20	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10329206

QC Batch: WETA/25557 Analysis Method: EPA 353.2
 QC Batch Method: EPA 353.2 Analysis Description: 353.2 Nitrate + Nitrite, preserved
 Associated Lab Samples: 10329206001, 10329206002, 10329206003, 10329206004

METHOD BLANK: 2133292 Matrix: Water
 Associated Lab Samples: 10329206001, 10329206002, 10329206003, 10329206004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	ND	0.020	11/12/15 10:08	

LABORATORY CONTROL SAMPLE: 2133293

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	1	1.0	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2133294 2133295

Parameter	Units	10328335001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	0.16	1	1	1.1	1.1	94	94	90-110	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2133296 2133297

Parameter	Units	10329166001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	12.8	20	20	31.6	31.4	94	93	90-110	1	20	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10329206

QC Batch: WETA/25624

Analysis Method: SM 5220D

QC Batch Method: SM 5220D

Analysis Description: 5220D COD

Associated Lab Samples: 10329206001, 10329206002, 10329206003, 10329206004

METHOD BLANK: 2137619

Matrix: Water

Associated Lab Samples: 10329206001, 10329206002, 10329206003, 10329206004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50.0	11/19/15 10:03	

LABORATORY CONTROL SAMPLE: 2137620

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	300	299	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2137621 2137622

Parameter	Units	10329606001 Result	2137621		2137622		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Chemical Oxygen Demand	mg/L	ND	250	250	261	265	96	98	80-120	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2137623 2137624

Parameter	Units	10329246001 Result	2137623		2137624		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Chemical Oxygen Demand	mg/L	103	250	250	350	353	99	100	80-120	1	20	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10329206

QC Batch: WETA/14684 Analysis Method: SM 5310C
 QC Batch Method: SM 5310C Analysis Description: 5310C TOC
 Associated Lab Samples: 10329206001, 10329206002, 10329206003

METHOD BLANK: 267850 Matrix: Water

Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	11/12/15 19:11	

LABORATORY CONTROL SAMPLE: 267851

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	25	25.6	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 267852 267853

Parameter	Units	10329206001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	mg/L	2.6	25	25	27.9	27.8	101	101	80-120	0	20	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10329206

QC Batch: WETA/14709

Analysis Method: SM 5310C

QC Batch Method: SM 5310C

Analysis Description: 5310C TOC

Associated Lab Samples: 10329206004

METHOD BLANK: 268307

Matrix: Water

Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	11/14/15 06:01	

LABORATORY CONTROL SAMPLE: 268308

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	25	25.8	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 268309 268310

Parameter	Units	10329195001		MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec						
Total Organic Carbon	mg/L	10.4	25	25	34.9	35.0	98	98	80-120	0	20				

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 268311 268312

Parameter	Units	10329195010		MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec						
Total Organic Carbon	mg/L	5.2	25	25	30.1	30.4	100	101	80-120	1	20				

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

QUALIFIERS

Project: PS BETA-NIROP

Pace Project No.: 10329206

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

PASI-MT Pace Analytical Services - Montana

PASI-O Pace Analytical Services - Ormond Beach

PASI-V Pace Analytical Services - Virginia

ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PS BETA-NIROP

Pace Project No.: 10329206

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10329206001	PMW-04	RSK 175	AIR/24604		
10329206002	PMW-03	RSK 175	AIR/24604		
10329206003	PMW-02	RSK 175	AIR/24604		
10329206004	PMW-01	RSK 175	AIR/24604		
10329206001	PMW-04	EPA 3010	MPRP/59483	EPA 6010C	ICP/25906
10329206002	PMW-03	EPA 3010	MPRP/59483	EPA 6010C	ICP/25906
10329206003	PMW-02	EPA 3010	MPRP/59483	EPA 6010C	ICP/25906
10329206004	PMW-01	EPA 3010	MPRP/59483	EPA 6010C	ICP/25906
10329206001	PMW-04	EPA 3010	MPRP/59482	6010C Met	ICP/25905
10329206002	PMW-03	EPA 3010	MPRP/59482	6010C Met	ICP/25905
10329206003	PMW-02	EPA 3010	MPRP/59482	6010C Met	ICP/25905
10329206004	PMW-01	EPA 3010	MPRP/59482	6010C Met	ICP/25905
10329206001	PMW-04	SM 4500-S2-D	MT/21411		
10329206002	PMW-03	SM 4500-S2-D	MT/21411		
10329206003	PMW-02	SM 4500-S2-D	MT/21411		
10329206004	PMW-01	SM 4500-S2-D	MT/21411		
10329206001	PMW-04	SM 2320B	WET/34192		
10329206001	PMW-04	SM 2320B	WET/45280		
10329206002	PMW-03	SM 2320B	WET/34192		
10329206002	PMW-03	SM 2320B	WET/45280		
10329206003	PMW-02	SM 2320B	WET/34192		
10329206003	PMW-02	SM 2320B	WET/45280		
10329206004	PMW-01	SM 2320B	WET/34192		
10329206004	PMW-01	SM 2320B	WET/45280		
10329206001	PMW-04	EPA 300.0	WETA/25494		
10329206002	PMW-03	EPA 300.0	WETA/25494		
10329206003	PMW-02	EPA 300.0	WETA/25494		
10329206004	PMW-01	EPA 300.0	WETA/25494		
10329206001	PMW-04	EPA 353.2	WETA/25557		
10329206002	PMW-03	EPA 353.2	WETA/25557		
10329206003	PMW-02	EPA 353.2	WETA/25557		
10329206004	PMW-01	EPA 353.2	WETA/25557		
10329206001	PMW-04	SM 5220D	WETA/25624	SM 5220D	WETA/25637
10329206002	PMW-03	SM 5220D	WETA/25624	SM 5220D	WETA/25637
10329206003	PMW-02	SM 5220D	WETA/25624	SM 5220D	WETA/25637
10329206004	PMW-01	SM 5220D	WETA/25624	SM 5220D	WETA/25637
10329206001	PMW-04	SM 5310C	WETA/14684		
10329206002	PMW-03	SM 5310C	WETA/14684		
10329206003	PMW-02	SM 5310C	WETA/14684		
10329206004	PMW-01	SM 5310C	WETA/14709		

REPORT OF LABORATORY ANALYSIS

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Page: 1 of Z
1980825

Section A
Required Client Information:
Company: REGENESIS
Address: 1011 CALLE SOMBRA
SAN CLEMENTE, CA 92673
Email To: MELINDA PHAM
MELINDA@REGENESIS.COM
Phone: 949-366-8000 / 949-366-8000
Requested Due Date/TAT: 10 days

Section B
Required Project Information:
Report To: MELINDA PHAM
Copy To:
Purchase Order No.:
Project Name: PS BETA - NIROP
Project Number: PS BETA - NIROP

Section C
Invoice Information:
Attention: BAHAR NADER
Company Name: REGENESIS
Address: 1011 CALLE SOMBRA
Pace Quote Reference: 21466
Pace Project Manager:
Pace Profile #:

Section D
Required Client Information:
Matrix Codes: DW, WT, WW, P, SL, OL, WP, AR, TS, OT
Drinking Water, Waste Water, Product, Soil/Solid, Oil, Wipe, Air, Tissue, Other
SAMPLE ID (A-Z, 0-9 / -)
Sample IDs MUST BE UNIQUE

Section E
REGULATORY AGENCY
NPDES GROUND WATER DRINKING WATER
UST RCRA OTHER

Site Location: MN
STATE: MN

ITEM #	Matrix Codes	Matrix / CODE	COLLECTED	SAMPLE TYPE (G=GRAB C=COMP)	MATRIX CODE (see valid codes to left)	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
1	PMW-04	WTG	COMPOSITE START: 11/4/15 10:25 COMPOSITE END/GRAB: 12:00	WTG	WTG	Melissa Meunissen / Pace	11/6/15	15:53	Melissa Meunissen / Pace	11/6/15	15:53	Y N Y
2	PMW-03	WTG	COMPOSITE START: 12:00 COMPOSITE END/GRAB: 13:30	WTG	WTG	Melissa Meunissen / Pace	11/6/15	15:53	Melissa Meunissen / Pace	11/6/15	15:53	Y N Y
3	PMW-02	WTG	COMPOSITE START: 13:30 COMPOSITE END/GRAB: 14:45	WTG	WTG	Melissa Meunissen / Pace	11/6/15	15:53	Melissa Meunissen / Pace	11/6/15	15:53	Y N Y
4	PMW-01	WTG	COMPOSITE START: 14:45 COMPOSITE END/GRAB: 15:00	WTG	WTG	Melissa Meunissen / Pace	11/6/15	15:53	Melissa Meunissen / Pace	11/6/15	15:53	Y N Y

Requested Analysis Filtered (Y/N)
Residual Chlorine (Y/N)
MEANING, ETHANE, ETHYLENE
HANDSOME RSK FTS
TOTAL ORGANIC CARBON
SULFIDE IN WATER
SULFATE IN WATER
NITRATE + NITRITE
CARBON DIOXIDE IN WATER
DISSOLVED IRON
TOTAL IRON
AMALGAM, COPPER, DRY MATTER

ITEM #	Matrix Codes	Matrix / CODE	COLLECTED	SAMPLE TYPE (G=GRAB C=COMP)	MATRIX CODE (see valid codes to left)	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
1	PMW-04	WTG	COMPOSITE START: 11/4/15 10:25 COMPOSITE END/GRAB: 12:00	WTG	WTG	Melissa Meunissen / Pace	11/6/15	15:53	Melissa Meunissen / Pace	11/6/15	15:53	Y N Y
2	PMW-03	WTG	COMPOSITE START: 12:00 COMPOSITE END/GRAB: 13:30	WTG	WTG	Melissa Meunissen / Pace	11/6/15	15:53	Melissa Meunissen / Pace	11/6/15	15:53	Y N Y
3	PMW-02	WTG	COMPOSITE START: 13:30 COMPOSITE END/GRAB: 14:45	WTG	WTG	Melissa Meunissen / Pace	11/6/15	15:53	Melissa Meunissen / Pace	11/6/15	15:53	Y N Y
4	PMW-01	WTG	COMPOSITE START: 14:45 COMPOSITE END/GRAB: 15:00	WTG	WTG	Melissa Meunissen / Pace	11/6/15	15:53	Melissa Meunissen / Pace	11/6/15	15:53	Y N Y

Section E
REGULATORY AGENCY
NPDES GROUND WATER DRINKING WATER
UST RCRA OTHER

Site Location: MN
STATE: MN

Requested Analysis Filtered (Y/N)
Residual Chlorine (Y/N)
MEANING, ETHANE, ETHYLENE
HANDSOME RSK FTS
TOTAL ORGANIC CARBON
SULFIDE IN WATER
SULFATE IN WATER
NITRATE + NITRITE
CARBON DIOXIDE IN WATER
DISSOLVED IRON
TOTAL IRON
AMALGAM, COPPER, DRY MATTER

Section F
SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: MELISSA MEUNISSEN
SIGNATURE of SAMPLER: [Signature]
DATE Signed (MM/DD/YYYY): 11/6/15

ORIGINAL

Temp in °C: 9.6
0.1
6.4

Received on Ice (Y/N): Y
Custody Sealed Cooler (Y/N): N
Samples Intact (Y/N): Y

Sample Condition Upon Receipt

Client Name: Regenesis Project #: _____

WO# : 10329206



10329206

Courier: Fed Ex UPS USPS Client
 Commercial Pace SpeeDee Other: _____
 Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No Optional: Proj. Due Date: _____ Proj. Name: _____
 Packing Material: Bubble Wrap Bubble Bags None Other: _____ Temp Blank? Yes No
 Thermometer Used: B88A9130516413 B88A912167504 B88A0143310098 Type of Ice: Wet Blue None Samples on ice, cooling process has begun
 Cooler Temp Read (°C): 5.8, 0.1, 6.4 Cooler Temp Corrected (°C): 5.8, 0.1, 6.4 Biological Tissue Frozen? Yes No N/A
 Temp should be above freezing to 6°C Correction Factor: +0.0 Date and Initials of Person Examining Contents: KAC 4/6/15
 USDA Regulated Soil (N/A, water sample)
 Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or WA (check maps)? Yes No Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No
 If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>	
All containers needing acid/base preservation have been checked? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13. <input checked="" type="checkbox"/> HNO ₃ <input checked="" type="checkbox"/> H ₂ SO ₄ <input checked="" type="checkbox"/> NaOH <input type="checkbox"/> HCl
All containers needing preservation are found to be in compliance with EPA recommendation? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample # <u>1-4</u> <u>2/2</u> <u>7/2</u> <u>1/1</u>
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>12 Cyanide) Exception (VOA, Coliform, FOC, Oil and Grease, DRO/8015 (water) DOC) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____	


CLIENT NOTIFICATION/RESOLUTION

Person Contacted: _____ Date/Time: _____ Field Data Required? Yes No
 Comments/Resolution: _____

Project Manager Review: [Signature]

Date: 11/9/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

	Document Name: MN to MT Sample Transfer Form	Revised Date: 14Jul2014 Page: 1 of 1
	Document Number: F-MN-C-043-rev.11	Issuing Authority: Pace Minnesota Quality Office

Shipping (circle):	UPS <u> Fed Ex </u>
Tracking #:	<u>6484 8693 4537</u>
Client:	Regenesis
Due Date:	20-Nov-2015
Pace WO:	10329206
Project Manager:	JMA

MN to MT Sample Transfer Condition Upon Receipt Form

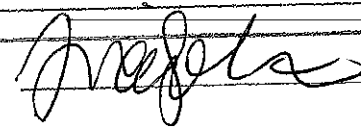
ANALYSIS REQUESTED					
Method Number & Description	Container Type	# of Bottles	Lab ID's	Preservative Yes or No	Verify Arrival Date & Initials
4500S2D Sulfide Water	BP2Z	4	001-004		<u>u/ro n/v</u>

REPORTING REQUIREMENTS/ADDITIONAL COMMENTS

MONTANA SAMPLE RECEIPT INFORMATION			
IR Gun: B88A0140728348, Correction Factor: <u>-0.1</u>	Sample Matrix: <u>WT</u>	Filtred volume rec'd for dissolved tests: Yes ___ No <u>NA</u>	
Cooler Temp Read (°C): <u>1.3</u>	Cooler Temp Corrected (°C): <u>1.2</u>	Samples pH have been checked: Yes <u>✓</u> No ___ NA ___	
Arrived on Ice: Yes <u>✓</u> No ___	Custody Seal Present: Yes <u>✓</u> No ___	Trip Blank Present: Yes ___ No ___ NA <u>✓</u>	
Short Hold Time Requested < 72 Hours: Yes ___ No <u>✓</u>	Rush TAT Requested: Yes ___ No <u>✓</u>	Trip Blank Custody Seals Present: Yes ___ No ___ NA <u>✓</u>	
Sufficient Sample Volume: Yes <u>✓</u> No ___	Samples Arrived within Hold Time: Yes <u>✓</u> No ___	Pace Trip Blank Lot #: <u>NA</u>	
Containers Intact: Yes <u>✓</u> No ___	Report Samples: Wet Wt. ___ Dry Wt. ___	Sample Composites Required: Yes ___ No <u>NA</u>	
Reporting Units:			

CUSTODY TRANSFER					
Relinquished by/Affiliation	Date	Time	Accepted By Affiliation	Date	Time
<u>JMA Pace Fed Ex</u>	<u>11/9/15</u>	<u>1142</u>	<u>u/ro n/v</u>	<u>11/10/15</u>	<u>0930</u>

CLIENT NOTIFICATION/RESOLUTION	
Person Contacted: _____	Date: _____
Comments/Resolution: _____	

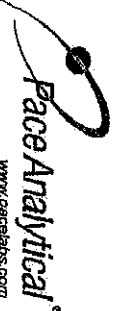
Project Manager Review:  Date: 11/10/15

Chain of Custody

MO# : 1256911

Due Date: 11/24/15

PM: HRZ
CLIENT: PACE MPLS



Workorder: 10329206 Workorder Name: PS BETA-NIROP

Owner Received Date: 11/6/2015 Results Requested By: 11/20/2015

Report to: Jennifer Anderson
 Face Analytical Services, Inc.
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone (612)607-1700
 Fax (612)607-6444

Subcontractor: Face Analytical Virginia MN
 315 Chestnut Street
 Virginia, MN 55792
 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Requested Containers	Requested Analysis	Comments
1	PMW-04	PS	11/6/2015 10:25	10329206001	Water	1		
2	PMW-03	PS	11/6/2015 12:00	10329206002	Water	1		
3	PMW-02	PS	11/6/2015 13:30	10329206003	Water	1		
4	PMW-01	PS	11/6/2015 14:45	10329206004	Water	1		
5								

Transfers	Released By	Date/Time	Received By	Date/Time	Received on Ice	Y or N	Samples Intact	Y or N
1	<i>[Signature]</i>	11/15/15	<i>[Signature]</i>	11/10/15				
2								
3								


Cooler Temperature on Receipt 5.4 °C Custody Seal Y or N Received on Ice Y or N Samples Intact Y or N

**In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
 This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Condition Upon Receipt

Client Name: Pace Mn Project # _____

WO# : 1256911



1256911

Courier: Fed Ex UPS USPS Client
 Commercial Pace Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No

Optional: Proj. Due Date: _____ Proj. Name: _____

Packing Material: Bubble Wrap Bubble Bags None Other: Harped Temp Blank? Yes No

Thermometer Used: 140792808 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temp Read °C: 5.1 Cooler Temp Corrected °C: 5.4 Biological Tissue Frozen? Yes No NA
 Temp should be above freezing to 6°C Correction Factor: 0.3 Date and Initials of Person Examining Contents: 11/10/15

			Comments:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.	
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.	
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.	
Sampler Name and Signature on COC?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.	
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.	
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.	
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.	
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.	
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.	
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.	
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.	Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.	
-Includes Date/Time/ID/Analysis Matrix: <u>wt</u>			
All containers needing acid/base preservation will be checked and documented in the pH logbook.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.	
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.	
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.	
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A		
Pace Trip Blank Lot # (if purchased):			

CLIENT NOTIFICATION/RESOLUTION Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____

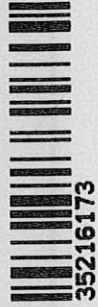
Comments/Resolution: _____

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: [Signature] Date: 11/10/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

WO#: 35216173



35216173



Chain of Custody

Workorder: 10329206 Workorder Name: PS BETA-NIROP Owner Received Date: 11/6/2015 Results Requested By: 11/20/2015

Report To: Subcontract To: Requested Analysis:

Jennifer Anderson
Pace Analytical Services, Inc.
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone (612)607-1700
Fax (612)607-6444

Pace Analytical Ormond Beach
8 East Tower Circle
Ormond Beach, FL 32174
Phone (386)672-5668

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers	
						Unpreserved	
1	PMW-04	PS	11/6/2015 10:25	10329206001	Water	1	
2	PMW-03	PS	11/6/2015 12:00	10329206002	Water	1	
3	PMW-02	PS	11/6/2015 13:30	10329206003	Water	1	
4	PMW-01	PS	11/6/2015 14:45	10329206004	Water	1	
5							

Urban Dioxin in Water

Transfers	Released By	Date/Time	Received By	Date/Time	Received on Ice	Y or N	Samples Intact	Y or N
1	J. Pace	11/9/15 11:29	[Signature]	11/11/15				
2								
3								

Comments

1030
TRC

Cooler Temperature on Receipt: 12°C Custody Seal: Y Received on Ice: Y Samples Intact: Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
This chain of custody is considered complete as is since this information is available in the owner laboratory.



Document Name:
Sample Condition Upon Receipt Form
Document No.:
F-FL-C-007 rev. 06

Document Revised:
August 11, 2014
Issuing Authority:
Pace Florida Quality Office

Sample Condition Upon Receipt Form (SCUR)

Table Number: _____

Client Name: PACE MN Project # 35216173

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking # 6484 8693.4732

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Date and Initials of person examining contents: 11/11/11

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used TU2 Type of Ice: Wet Blue None

Cooler Temperature °C 1.2 (Visual) (Correction Factor) 1.2 (Actual)

(Temp should be above freezing to 6°C). If below 0°C, then was sample frozen?
 Yes No

Receipt of samples satisfactory: Yes No

Rush TAT requested on COC: _____

If yes, then all conditions below were met: _____ If no, then mark box & describe issue (use comments area if necessary): _____

Chain of Custody Present	<input type="checkbox"/>
Chain of Custody Filled Out	<input type="checkbox"/>
Relinquished Signature & Sampler Name COC	<input type="checkbox"/>
Samples Arrived within Hold Time	<input type="checkbox"/>
Sufficient Volume	<input type="checkbox"/>
Correct Containers Used	<input type="checkbox"/>
Containers Intact	<input type="checkbox"/>
Sample Labels match COC (sample IDs & date/time of collection)	<input type="checkbox"/>
	No Labels: <input type="checkbox"/> No Time/Date on Labels: <input type="checkbox"/>
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/>
No Headspace in VOA Vials (>6mm):	<input type="checkbox"/>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____
 Comments/ Resolution (use back for additional comments): _____

Project Manager Review: _____ Date: 11/11

Finished Product Information Only	
F.P. Sample ID: _____	Size & Qty of Bottles Received
Production Code: _____	_____ x 5 Gal
Date/Time Opened: _____	_____ x 2.5 Gal
Number of Unopened Bottles Remaining: _____	_____ x 1 Gal
	_____ x 1 Liter
	_____ x 500 mL
	_____ x 250 mL
	_____ x Other: _____
Extra Sample in Shed: Yes No	



Pace Analytical Energy Services, LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

November 19, 2015

Jennifer Anderson
Pace Analytical Services, Inc.
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: **PS BETA-NIROP / 10329206**

Pace Workorder: 17310

Dear Jennifer Anderson:

Enclosed are the analytical results for sample(s) received by the laboratory on Tuesday, November 10, 2015. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

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

Sincerely,

Ruth Welsh 11/19/2015

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email info@microseeps.com.

Total Number of Pages 17

Report ID: 17310 - 733102

Page 1 of 13



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LABORATORY ACCREDITATIONS & CERTIFICATIONS

Accreditor:	Pennsylvania Department of Environmental Protection, Bureau of Laboratories
Accreditation ID:	02-00538
Scope:	NELAP Non-Potable Water and Solid & Hazardous Waste
Accreditor:	South Carolina Department of Health and Environmental Control, Office of Environmental Laboratory Certification
Accreditation ID:	89009003
Scope:	Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: New Jersey, Department of Environmental Protection
Accreditation ID:	PA026
Scope:	Non-Potable Water; Solid and Chemical Materials
Accreditor:	NELAP: New York, Department of Health Wadsworth Center
Accreditation ID:	11815
Scope:	Non-Potable Water; Solid and Hazardous Waste
Accreditor:	State of Connecticut, Department of Public Health, Division of Environmental Health
Accreditation ID:	PH-0263
Scope:	Clean Water Act (CWA) Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: Texas, Commission on Environmental Quality
Accreditation ID:	T104704453-09-TX
Scope:	Non-Potable Water
Accreditor:	State of New Hampshire
Accreditation ID:	299409
Scope:	Non-potable water
Accreditor:	State of Georgia
Accreditation ID:	Chapter 391-3-26
Scope:	As per the Georgia EPD Rules and Regulations for Commercial Laboratories, PAES is accredited by the Pennsylvania Department of Environmental Protection Bureau of Laboratories under the National Environmental Laboratory Approval Program (NELAC).



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Fax: (412) 826-3433

SAMPLE SUMMARY

Workorder: 17310 PS BETA-NIROP / 10329206

Lab ID	Sample ID	Matrix	Date Collected	Date Received
173100001	PMW-04	Water	11/6/2015 10:25	11/10/2015 11:30
173100002	PMW-03	Water	11/6/2015 12:00	11/10/2015 11:30
173100003	PMW-02	Water	11/6/2015 13:30	11/10/2015 11:30
173100004	PMW-01	Water	11/6/2015 14:45	11/10/2015 11:30



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PROJECT SUMMARY

Workorder: 17310 PS BETA-NIROP / 10329206

Workorder Comments

The analysis for volatile fatty acids, method AM23G, was reported at dilution for samples 17310 (0001-0004) due to the measured chloride concentration within the sample. This interfering compound will affect the instruments ability to accurately resolve target analytes within the sample.



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ANALYTICAL RESULTS

Workorder: 17310 PS BETA-NIROP / 10329206

Lab ID: **173100001** Date Received: 11/10/2015 11:30 Matrix: Water
 Sample ID: **PMW-04** Date Collected: 11/6/2015 10:25

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM23G			Analytical Method: AM23G					
Lactic Acid	<2.0	mg/l	2.0	0.030	10	11/15/2015 16:39	KB	d,B
Acetic Acid	<1.0	mg/l	1.0	0.060	10	11/15/2015 16:39	KB	d,B
Propionic Acid	<1.0	mg/l	1.0	0.010	10	11/15/2015 16:39	KB	d,B
Formic Acid	<1.0	mg/l	1.0	0.040	10	11/15/2015 16:39	KB	d,B
Butyric Acid	<1.0	mg/l	1.0	0.050	10	11/15/2015 16:39	KB	d,B
Pyruvic Acid	<1.0	mg/l	1.0	0.12	10	11/15/2015 16:39	KB	d
i-Pentanoic Acid	<1.0	mg/l	1.0	0.12	10	11/15/2015 16:39	KB	d
Pentanoic Acid	<1.0	mg/l	1.0	0.060	10	11/15/2015 16:39	KB	d
i-Hexanoic Acid	<2.0	mg/l	2.0	0.10	10	11/15/2015 16:39	KB	d
Hexanoic Acid	<2.0	mg/l	2.0	0.10	10	11/15/2015 16:39	KB	d



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ANALYTICAL RESULTS

Workorder: 17310 PS BETA-NIROP / 10329206

Lab ID: 173100002 Date Received: 11/10/2015 11:30 Matrix: Water
 Sample ID: PMW-03 Date Collected: 11/6/2015 12:00

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM23G			Analytical Method: AM23G					
Lactic Acid	<2.0	mg/l	2.0	0.030	10	11/15/2015 17:33	KB	d,B
Acetic Acid	<1.0	mg/l	1.0	0.060	10	11/15/2015 17:33	KB	d,B
Propionic Acid	<1.0	mg/l	1.0	0.010	10	11/15/2015 17:33	KB	d,B
Formic Acid	<1.0	mg/l	1.0	0.040	10	11/15/2015 17:33	KB	d,B
Butyric Acid	<1.0	mg/l	1.0	0.050	10	11/15/2015 17:33	KB	d,B
Pyruvic Acid	<1.0	mg/l	1.0	0.12	10	11/15/2015 17:33	KB	d
i-Pentanoic Acid	<1.0	mg/l	1.0	0.12	10	11/15/2015 17:33	KB	d
Pentanoic Acid	<1.0	mg/l	1.0	0.060	10	11/15/2015 17:33	KB	d
i-Hexanoic Acid	<2.0	mg/l	2.0	0.10	10	11/15/2015 17:33	KB	d
Hexanoic Acid	<2.0	mg/l	2.0	0.10	10	11/15/2015 17:33	KB	d



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ANALYTICAL RESULTS

Workorder: 17310 PS BETA-NIROP / 10329206

Lab ID: **173100003** Date Received: 11/10/2015 11:30 Matrix: Water
 Sample ID: **PMW-02** Date Collected: 11/6/2015 13:30

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM23G			Analytical Method: AM23G					
Lactic Acid	<2.0	mg/l	2.0	0.030	10	11/15/2015 18:26	KB	d,B
Acetic Acid	<1.0	mg/l	1.0	0.060	10	11/15/2015 18:26	KB	d,B
Propionic Acid	<1.0	mg/l	1.0	0.010	10	11/15/2015 18:26	KB	d,B
Formic Acid	<1.0	mg/l	1.0	0.040	10	11/15/2015 18:26	KB	d,B
Butyric Acid	<1.0	mg/l	1.0	0.050	10	11/15/2015 18:26	KB	d,B
Pyruvic Acid	<1.0	mg/l	1.0	0.12	10	11/15/2015 18:26	KB	d
i-Pentanoic Acid	<1.0	mg/l	1.0	0.12	10	11/15/2015 18:26	KB	d
Pentanoic Acid	<1.0	mg/l	1.0	0.060	10	11/15/2015 18:26	KB	d
i-Hexanoic Acid	<2.0	mg/l	2.0	0.10	10	11/15/2015 18:26	KB	d
Hexanoic Acid	<2.0	mg/l	2.0	0.10	10	11/15/2015 18:26	KB	d



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ANALYTICAL RESULTS

Workorder: 17310 PS BETA-NIROP / 10329206

Lab ID: 173100004 Date Received: 11/10/2015 11:30 Matrix: Water
 Sample ID: PMW-01 Date Collected: 11/6/2015 14:45

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM23G			Analytical Method: AM23G					
Lactic Acid	<2.0	mg/l	2.0	0.030	10	11/15/2015 19:20	KB	d,B
Acetic Acid	<1.0	mg/l	1.0	0.060	10	11/15/2015 19:20	KB	d,B
Propionic Acid	<1.0	mg/l	1.0	0.010	10	11/15/2015 19:20	KB	d,B
Formic Acid	<1.0	mg/l	1.0	0.040	10	11/15/2015 19:20	KB	d,B
Butyric Acid	<1.0	mg/l	1.0	0.050	10	11/15/2015 19:20	KB	d,B
Pyruvic Acid	<1.0	mg/l	1.0	0.12	10	11/15/2015 19:20	KB	d
i-Pentanoic Acid	<1.0	mg/l	1.0	0.12	10	11/15/2015 19:20	KB	d
Pentanoic Acid	<1.0	mg/l	1.0	0.060	10	11/15/2015 19:20	KB	d
i-Hexanoic Acid	<2.0	mg/l	2.0	0.10	10	11/15/2015 19:20	KB	d
Hexanoic Acid	<2.0	mg/l	2.0	0.10	10	11/15/2015 19:20	KB	d



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ANALYTICAL RESULTS QUALIFIERS

Workorder: 17310 PS BETA-NIROP / 10329206

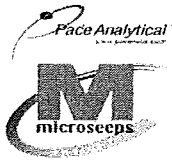
DEFINITIONS/QUALIFIERS

- Disclaimer : The Pennsylvania Department of Environmental Protection (PADEP) has decided to no longer recognize analyses that do not produce data for primary compliance, for NELAP accreditation. The methods affected by this decision are AM20Gax, AM21G, SW846 7199 and AM4.02. The laboratory shall continue to administer the NELAP/TNI standard requirements in the performance of these methods.
- MDL Method Detection Limit. Can be used synonymously with LOD; Limit Of Detection.
- PQL Practical Quantitation Limit. Can be used synonymously with LOQ; Limit Of Quantitation.
- ND Not detected at or above reporting limit.
- DF Dilution Factor.
- S Surrogate.
- RPD Relative Percent Difference.
- % Rec Percent Recovery.
- U Indicates the compound was analyzed for, but not detected at or above the noted concentration.
- J Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).
- B The analyte was detected in the associated blank.
- d The analyte concentration was determined from a dilution.



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QUALITY CONTROL DATA

Workorder: 17310 PS BETA-NIROP / 10329206

QC Batch: EDON/2715 Analysis Method: AM23G
 QC Batch Method: AM23G
 Associated Lab Samples: 173100001, 173100002, 173100003, 173100004

METHOD BLANK: 38566

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
EDonors				
Lactic Acid	mg/l	<0.20	0.20	B
Acetic Acid	mg/l	<0.10	0.10	B
Propionic Acid	mg/l	<0.10	0.10	B
Formic Acid	mg/l	<0.10	0.10	B
Butyric Acid	mg/l	<0.10	0.10	B
Pyruvic Acid	mg/l	<0.10	0.10	
i-Pentanoic Acid	mg/l	<0.10	0.10	
Pentanoic Acid	mg/l	<0.10	0.10	
i-Hexanoic Acid	mg/l	<0.20	0.20	
Hexanoic Acid	mg/l	<0.20	0.20	

LABORATORY CONTROL SAMPLE: 38567

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
EDonors						
Lactic Acid	mg/l	2	2.1	104	70-130	B
Acetic Acid	mg/l	2	2.1	105	70-130	B
Propionic Acid	mg/l	2	2.1	105	70-130	B
Formic Acid	mg/l	2	1.9	95	70-130	B
Butyric Acid	mg/l	2	2.1	105	70-130	B
Pyruvic Acid	mg/l	2	2.2	111	70-130	
i-Pentanoic Acid	mg/l	2	2.1	104	70-130	
Pentanoic Acid	mg/l	2	2.0	102	70-130	
i-Hexanoic Acid	mg/l	2	2.0	102	70-130	
Hexanoic Acid	mg/l	2	2.0	99	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 38568 38569 Original: 173350001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	Max RPD	Qualifiers
EDonors										
Lactic Acid	mg/l	0.5	200	200	200	102	101	70-130	0.99 30	d,B



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 Pittsburgh, PA 15238
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QUALITY CONTROL DATA

Workorder: 17310 PS BETA-NIROP / 10329206

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 38568 38569 Original: 173350001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	Max RPD	RPD	Qualifiers
Acetic Acid	mg/l	15	200	230	230	107	106	70-130	0.94	30	d,B
Propionic Acid	mg/l	0.59	200	210	210	107	106	70-130	0.94	30	d,B
Formic Acid	mg/l	1.4	200	190	190	94	93	70-130	1.1	30	d,B
Butyric Acid	mg/l	1.1	200	220	210	107	106	70-130	0.94	30	d,B
Pyruvic Acid	mg/l	0	200	210	210	106	107	70-130	0.94	30	d
i-Pentanoic Acid	mg/l	0	200	210	210	106	104	70-130	1.9	30	d
Pentanoic Acid	mg/l	0	200	210	200	105	103	70-130	1.9	30	d
i-Hexanoic Acid	mg/l	0	200	210	200	105	101	70-130	3.9	30	d
Hexanoic Acid	mg/l	0.37	200	210	200	103	100	70-130	3	30	d



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QUALITY CONTROL DATA QUALIFIERS

Workorder: 17310 PS BETA-NIROP / 10329206

QUALITY CONTROL PARAMETER QUALIFIERS

- B The analyte was detected in the associated blank.
- d The analyte concentration was determined from a dilution.



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Pittsburgh, PA 15238
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Fax: (412) 826-3433

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 17310 PS BETA-NIROP / 10329206

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
173100001	PMW-04			AM23G	EDON/2715
173100002	PMW-03			AM23G	EDON/2715
173100003	PMW-02			AM23G	EDON/2715
173100004	PMW-01			AM23G	EDON/2715



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Chain of Custody

17310



Workorder: 10329206 Workorder Name: PS BETA-NIROP Results Requested 11/20/2015

Report/Invoice To: Subcontract To: Requested Analysis

Jennifer Anderson
 Pace Analytical Minnesota
 1700 Elm Street
 Suite 200
 Minneapolis, MN 55414
 Phone (612)607-1700
 Email: jennifer.anderson@pacelabs.com

MICROS&DS

P.O. 11329206

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers		Requested Analysis	Comments
					Unpreserved	Preserved		
1	PMW-04	11/6/2015 10:25	10329206001	Water	2			
2	PMW-03	11/6/2015 12:00	10329206002	Water	2			
3	PMW-02	11/6/2015 13:30	10329206003	Water	2			
4	PMW-01	11/6/2015 14:45	10329206004	Water	2			
5								

Transfers	Released By	Date/Time	Received By	Date/Time	Cooler Temperature on Receipt	°C	Custody Seal Y or N	Received on Ice Y or N	Samples Intact Y or N
1			JASMA	11/16/15	2		Y	Y	Y
2									
3									

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
 This chain of custody is considered complete as is since this information is available in the owner laboratory.

Chain of Custody

17310



Workorder: 10329206 Workorder Name: PS BETA-NIROP Results Requested: 11/20/2015

Jennifer Anderson
 Pace Analytical Minnesota
 1700 Elm Street
 Suite 200
 Minneapolis, MN 55414
 Phone (612)607-1700
 Email: jennifer.anderson@pacelabs.com

Microseeds

P.O. 10329206

Item	Sample ID	Collected Date/Time	Lab ID	Preservation	Analysis	Received By	Date/Time	Received on Ice	Samples Intact
1	PMW-04	11/6/2015 10:25	10329206001	Water	X				
2	PMW-03	11/6/2015 12:00	10329206002	Water	X				
3	PMW-02	11/6/2015 13:30	10329206003	Water	X				
4	PMW-01	11/6/2015 14:45	10329206004	Water	X				
5									

Transfers	Released By	Date/Time	Received By	Date/Time	Received on Ice	Samples Intact
1	JFA	11/15/15	WAS	11/10/15		1130
2						
3						

**In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
 This chain of custody is considered complete as is since this information is available in the owner laboratory.

NON-CONFORMANCE FORM

PAES Work Order #: 17310

Date: 11.10.15 Time of Receipt: 1130 Receiver: LY

Client: Pace

REASON FOR NON-CONFORMANCE:

LOC was not relinquished by Client.

ACTION TAKEN:

Client name: _____

Date: _____

Time: _____

Relinquished COC attached

Customer Service Initials RW

Date: 11/11/15

Cooler Receipt Form

Client Name: Pace Project: PS Beta Nirap Lab Work Order: 17310
10329206

A. Shipping/Container Information (circle appropriate response)

Courier: FedEx UPS USPS Client Other: _____ Air bill Present: Yes No

Tracking Number: 6484 8693 4478

Custody Seal on Cooler/Box Present: Yes No Seals Intact: Yes No

Cooler/Box Packing Material: Bubble Wrap Absorbent Foam Other: _____

Type of Ice: Wet Blue None Ice Intact: Yes Melted

Cooler Temperature: 2°C Radiation Screened: Yes No Chain of Custody Present: Yes No

Comments: _____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non-conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished		✓		
Sampler Name & Signature on COC		✓		
Containers intact	✓			
Were samples in separate bags	✓			
Sample container labels match COC	✓			
Sample name/date and time collected	✓			
Sufficient volume provided	✓			
PAES containers used	✓			
Are containers properly preserved for the requested testing? (as labeled)	✓			
If an unknown preservation state, were containers checked? Exception: VOA's coliform			✓	If yes, see pH form.
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			✓	

Comments: _____

Cooler contents examined/received by: LY Date: 11.10.15

Project Manager Review: RW Date: 11.11.15



10515 Research Drive
Knoxville, TN 37932
Phone: (865) 573-8188
Fax: (865) 573-8133

Client: Melinda Pham
Regenesi Bioremediation, Inc.
1011 Calle Sombra
San Clemente, CA 92673

Phone:

Fax:

Identifier: 022MK

Date Rec: 11/07/2015

Report Date: 11/10/2015

Client Project #:

Client Project Name:

Purchase Order #:

Analysis Requested: CENSUS

Reviewed By:

NOTICE: This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.

Client: Regensis Bioremediation, Inc.
Project:

MI Project Number: 022MK
Date Received: 11/07/2015

Sample Information

Client Sample ID:	PMW-04	PMW-03	PMW-02	PMW-01
Sample Date:	11/06/2015	11/06/2015	11/06/2015	11/06/2015
Units:	cells/mL	cells/mL	cells/mL	cells/mL
Analyst:	JS	JS	JS	JS

Dechlorinating Bacteria

<i>Dehalococcoides</i>	DHC	1.05E+02	7.97E+03	6.30E+02	1.74E+04

Legend:

NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
 < = Result not detected

Quality Assurance/Quality Control Data

Samples Received 11/7/2015

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHC	11/07/2015	11/10/2015	0 °C	110%	non-detect	non-detect

December 09, 2015

Melinda Pham
Regenesis
1011 Calle Sombra
San Clemente, CA 92673

RE: Project: PS BETA-NIROP
Pace Project No.: 10332212

Dear Melinda Pham:

Enclosed are the analytical results for sample(s) received by the laboratory on December 04, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Jennifer Anderson
jennifer.anderson@pacelabs.com
Project Manager

Enclosures

cc: Ryan Moore, Regenesis



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PS BETA-NIROP

Pace Project No.: 10332212

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414

A2LA Certification #: 2926.01

Alaska Certification #: UST-078

Alaska Certification #MN00064

Alabama Certification #40770

Arizona Certification #: AZ-0014

Arkansas Certification #: 88-0680

California Certification #: 01155CA

Colorado Certification #Pace

Connecticut Certification #: PH-0256

EPA Region 8 Certification #: 8TMS-L

Florida/NELAP Certification #: E87605

Guam Certification #:14-008r

Georgia Certification #: 959

Georgia EPD #: Pace

Idaho Certification #: MN00064

Hawaii Certification #MN00064

Illinois Certification #: 200011

Indiana Certification#C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky Dept of Envi. Protection - DW #90062

Kentucky Dept of Envi. Protection - WW #:90062

Louisiana DEQ Certification #: 3086

Louisiana DHH #: LA140001

Maine Certification #: 2013011

Maryland Certification #: 322

Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: Pace

Montana Certification #: MT0092

Nevada Certification #: MN_00064

Nebraska Certification #: Pace

New Jersey Certification #: MN-002

New York Certification #: 11647

North Carolina Certification #: 530

North Carolina State Public Health #: 27700

North Dakota Certification #: R-036

Ohio EPA #: 4150

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Certification #: MN200001

Oregon Certification #: MN300001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification

Saipan (CNMI) #:MP0003

South Carolina #:74003001

Texas Certification #: T104704192

Tennessee Certification #: 02818

Utah Certification #: MN000642013-4

Virginia DGS Certification #: 251

Washington Certification #: C486

West Virginia Certification #: 382

West Virginia DHHR #:9952C

Wisconsin Certification #: 999407970

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: PS BETA-NIROP

Pace Project No.: 10332212

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10332212001	PMW-4	Water	12/04/15 09:25	12/04/15 15:06
10332212002	PMW-3	Water	12/04/15 10:50	12/04/15 15:06
10332212003	PMW-2	Water	12/04/15 12:35	12/04/15 15:06
10332212004	PMW-1	Water	12/04/15 13:40	12/04/15 15:06
10332212005	TB-1	Water	12/04/15 07:00	12/04/15 15:06

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SAMPLE ANALYTE COUNT

Project: PS BETA-NIROP

Pace Project No.: 10332212

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10332212001	PMW-4	EPA 8260B	DJB	70
10332212002	PMW-3	EPA 8260B	DJB	70
10332212003	PMW-2	EPA 8260B	DJB	70
10332212004	PMW-1	EPA 8260B	DJB	70
10332212005	TB-1	EPA 8260B	DJB	70

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ANALYTICAL RESULTS

Project: PS BETA-NIROP

Pace Project No.: 10332212

Sample: PMW-4	Lab ID: 10332212001	Collected: 12/04/15 09:25	Received: 12/04/15 15:06	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		12/05/15 17:48	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		12/05/15 17:48	107-05-1	
Benzene	ND	ug/L	1.0	1		12/05/15 17:48	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		12/05/15 17:48	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		12/05/15 17:48	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		12/05/15 17:48	75-27-4	
Bromoform	ND	ug/L	4.0	1		12/05/15 17:48	75-25-2	
Bromomethane	ND	ug/L	4.0	1		12/05/15 17:48	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		12/05/15 17:48	78-93-3	L3
n-Butylbenzene	ND	ug/L	1.0	1		12/05/15 17:48	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		12/05/15 17:48	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		12/05/15 17:48	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		12/05/15 17:48	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		12/05/15 17:48	108-90-7	
Chloroethane	ND	ug/L	1.0	1		12/05/15 17:48	75-00-3	
Chloroform	ND	ug/L	1.0	1		12/05/15 17:48	67-66-3	
Chloromethane	ND	ug/L	4.0	1		12/05/15 17:48	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		12/05/15 17:48	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		12/05/15 17:48	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		12/05/15 17:48	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		12/05/15 17:48	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		12/05/15 17:48	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		12/05/15 17:48	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		12/05/15 17:48	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		12/05/15 17:48	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		12/05/15 17:48	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		12/05/15 17:48	75-71-8	
1,1-Dichloroethane	1.4	ug/L	1.0	1		12/05/15 17:48	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		12/05/15 17:48	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		12/05/15 17:48	75-35-4	
cis-1,2-Dichloroethene	23.2	ug/L	1.0	1		12/05/15 17:48	156-59-2	
trans-1,2-Dichloroethene	69.0	ug/L	1.0	1		12/05/15 17:48	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		12/05/15 17:48	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		12/05/15 17:48	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		12/05/15 17:48	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		12/05/15 17:48	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		12/05/15 17:48	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		12/05/15 17:48	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		12/05/15 17:48	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		12/05/15 17:48	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		12/05/15 17:48	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		12/05/15 17:48	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		12/05/15 17:48	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		12/05/15 17:48	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		12/05/15 17:48	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		12/05/15 17:48	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		12/05/15 17:48	1634-04-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS BETA-NIROP

Pace Project No.: 10332212

Sample: PMW-4		Lab ID: 10332212001	Collected: 12/04/15 09:25	Received: 12/04/15 15:06	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		12/05/15 17:48	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		12/05/15 17:48	103-65-1	
Styrene	ND	ug/L	1.0	1		12/05/15 17:48	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		12/05/15 17:48	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		12/05/15 17:48	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		12/05/15 17:48	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		12/05/15 17:48	109-99-9	
Toluene	ND	ug/L	1.0	1		12/05/15 17:48	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		12/05/15 17:48	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		12/05/15 17:48	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		12/05/15 17:48	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		12/05/15 17:48	79-00-5	
Trichloroethene	16.5	ug/L	0.40	1		12/05/15 17:48	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		12/05/15 17:48	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		12/05/15 17:48	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		12/05/15 17:48	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		12/05/15 17:48	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		12/05/15 17:48	108-67-8	
Vinyl chloride	ND	ug/L	0.40	1		12/05/15 17:48	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		12/05/15 17:48	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	101	%.	75-125	1		12/05/15 17:48	17060-07-0	
Toluene-d8 (S)	96	%.	75-125	1		12/05/15 17:48	2037-26-5	
4-Bromofluorobenzene (S)	95	%.	75-125	1		12/05/15 17:48	460-00-4	

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ANALYTICAL RESULTS

Project: PS BETA-NIROP

Pace Project No.: 10332212

Sample: PMW-3	Lab ID: 10332212002	Collected: 12/04/15 10:50	Received: 12/04/15 15:06	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC								
Analytical Method: EPA 8260B								
Acetone	ND	ug/L	20.0	1		12/05/15 18:04	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		12/05/15 18:04	107-05-1	
Benzene	ND	ug/L	1.0	1		12/05/15 18:04	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		12/05/15 18:04	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		12/05/15 18:04	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		12/05/15 18:04	75-27-4	
Bromoform	ND	ug/L	4.0	1		12/05/15 18:04	75-25-2	
Bromomethane	ND	ug/L	4.0	1		12/05/15 18:04	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		12/05/15 18:04	78-93-3	L3
n-Butylbenzene	ND	ug/L	1.0	1		12/05/15 18:04	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		12/05/15 18:04	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		12/05/15 18:04	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		12/05/15 18:04	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		12/05/15 18:04	108-90-7	
Chloroethane	ND	ug/L	1.0	1		12/05/15 18:04	75-00-3	
Chloroform	ND	ug/L	1.0	1		12/05/15 18:04	67-66-3	
Chloromethane	ND	ug/L	4.0	1		12/05/15 18:04	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		12/05/15 18:04	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		12/05/15 18:04	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		12/05/15 18:04	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		12/05/15 18:04	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		12/05/15 18:04	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		12/05/15 18:04	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		12/05/15 18:04	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		12/05/15 18:04	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		12/05/15 18:04	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		12/05/15 18:04	75-71-8	
1,1-Dichloroethane	3.1	ug/L	1.0	1		12/05/15 18:04	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		12/05/15 18:04	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		12/05/15 18:04	75-35-4	
cis-1,2-Dichloroethene	34.5	ug/L	1.0	1		12/05/15 18:04	156-59-2	
trans-1,2-Dichloroethene	70.5	ug/L	1.0	1		12/05/15 18:04	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		12/05/15 18:04	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		12/05/15 18:04	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		12/05/15 18:04	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		12/05/15 18:04	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		12/05/15 18:04	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		12/05/15 18:04	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		12/05/15 18:04	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		12/05/15 18:04	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		12/05/15 18:04	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		12/05/15 18:04	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		12/05/15 18:04	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		12/05/15 18:04	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		12/05/15 18:04	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		12/05/15 18:04	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		12/05/15 18:04	1634-04-4	

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ANALYTICAL RESULTS

Project: PS BETA-NIROP

Pace Project No.: 10332212

Sample: PMW-3	Lab ID: 10332212002	Collected: 12/04/15 10:50	Received: 12/04/15 15:06	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		12/05/15 18:04	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		12/05/15 18:04	103-65-1	
Styrene	ND	ug/L	1.0	1		12/05/15 18:04	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		12/05/15 18:04	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		12/05/15 18:04	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		12/05/15 18:04	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		12/05/15 18:04	109-99-9	
Toluene	ND	ug/L	1.0	1		12/05/15 18:04	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		12/05/15 18:04	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		12/05/15 18:04	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		12/05/15 18:04	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		12/05/15 18:04	79-00-5	
Trichloroethene	19.5	ug/L	0.40	1		12/05/15 18:04	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		12/05/15 18:04	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		12/05/15 18:04	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		12/05/15 18:04	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		12/05/15 18:04	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		12/05/15 18:04	108-67-8	
Vinyl chloride	1.7	ug/L	0.40	1		12/05/15 18:04	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		12/05/15 18:04	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	108	%.	75-125	1		12/05/15 18:04	17060-07-0	
Toluene-d8 (S)	96	%.	75-125	1		12/05/15 18:04	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1		12/05/15 18:04	460-00-4	

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ANALYTICAL RESULTS

Project: PS BETA-NIROP

Pace Project No.: 10332212

Sample: PMW-2	Lab ID: 10332212003	Collected: 12/04/15 12:35	Received: 12/04/15 15:06	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		12/05/15 16:31	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		12/05/15 16:31	107-05-1	
Benzene	ND	ug/L	1.0	1		12/05/15 16:31	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		12/05/15 16:31	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		12/05/15 16:31	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		12/05/15 16:31	75-27-4	
Bromoform	ND	ug/L	4.0	1		12/05/15 16:31	75-25-2	
Bromomethane	ND	ug/L	4.0	1		12/05/15 16:31	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		12/05/15 16:31	78-93-3	L3
n-Butylbenzene	ND	ug/L	1.0	1		12/05/15 16:31	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		12/05/15 16:31	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		12/05/15 16:31	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		12/05/15 16:31	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		12/05/15 16:31	108-90-7	
Chloroethane	ND	ug/L	1.0	1		12/05/15 16:31	75-00-3	
Chloroform	ND	ug/L	1.0	1		12/05/15 16:31	67-66-3	
Chloromethane	ND	ug/L	4.0	1		12/05/15 16:31	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		12/05/15 16:31	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		12/05/15 16:31	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		12/05/15 16:31	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		12/05/15 16:31	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		12/05/15 16:31	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		12/05/15 16:31	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		12/05/15 16:31	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		12/05/15 16:31	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		12/05/15 16:31	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		12/05/15 16:31	75-71-8	
1,1-Dichloroethane	50.5	ug/L	1.0	1		12/05/15 16:31	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		12/05/15 16:31	107-06-2	
1,1-Dichloroethene	30.7	ug/L	1.0	1		12/05/15 16:31	75-35-4	
cis-1,2-Dichloroethene	257	ug/L	5.0	5		12/08/15 11:01	156-59-2	M1
trans-1,2-Dichloroethene	284	ug/L	5.0	5		12/08/15 11:01	156-60-5	M1
Dichlorofluoromethane	ND	ug/L	1.0	1		12/05/15 16:31	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		12/05/15 16:31	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		12/05/15 16:31	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		12/05/15 16:31	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		12/05/15 16:31	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		12/05/15 16:31	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		12/05/15 16:31	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		12/05/15 16:31	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		12/05/15 16:31	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		12/05/15 16:31	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		12/05/15 16:31	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		12/05/15 16:31	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		12/05/15 16:31	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		12/05/15 16:31	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		12/05/15 16:31	1634-04-4	

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ANALYTICAL RESULTS

Project: PS BETA-NIROP

Pace Project No.: 10332212

Sample: PMW-2		Lab ID: 10332212003	Collected: 12/04/15 12:35	Received: 12/04/15 15:06	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		12/05/15 16:31	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		12/05/15 16:31	103-65-1	
Styrene	ND	ug/L	1.0	1		12/05/15 16:31	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		12/05/15 16:31	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		12/05/15 16:31	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		12/05/15 16:31	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		12/05/15 16:31	109-99-9	
Toluene	ND	ug/L	1.0	1		12/05/15 16:31	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		12/05/15 16:31	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		12/05/15 16:31	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		12/05/15 16:31	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		12/05/15 16:31	79-00-5	
Trichloroethene	54.4	ug/L	0.40	1		12/05/15 16:31	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		12/05/15 16:31	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		12/05/15 16:31	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		12/05/15 16:31	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		12/05/15 16:31	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		12/05/15 16:31	108-67-8	
Vinyl chloride	4.1	ug/L	0.40	1		12/05/15 16:31	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		12/05/15 16:31	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	105	%.	75-125	1		12/05/15 16:31	17060-07-0	
Toluene-d8 (S)	96	%.	75-125	1		12/05/15 16:31	2037-26-5	
4-Bromofluorobenzene (S)	94	%.	75-125	1		12/05/15 16:31	460-00-4	

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ANALYTICAL RESULTS

Project: PS BETA-NIROP

Pace Project No.: 10332212

Sample: PMW-1		Lab ID: 10332212004	Collected: 12/04/15 13:40	Received: 12/04/15 15:06	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	100	5		12/08/15 13:31	67-64-1	
Allyl chloride	ND	ug/L	20.0	5		12/08/15 13:31	107-05-1	
Benzene	ND	ug/L	5.0	5		12/08/15 13:31	71-43-2	
Bromobenzene	ND	ug/L	5.0	5		12/08/15 13:31	108-86-1	
Bromochloromethane	ND	ug/L	5.0	5		12/08/15 13:31	74-97-5	
Bromodichloromethane	ND	ug/L	5.0	5		12/08/15 13:31	75-27-4	
Bromoform	ND	ug/L	20.0	5		12/08/15 13:31	75-25-2	
Bromomethane	ND	ug/L	20.0	5		12/08/15 13:31	74-83-9	
2-Butanone (MEK)	ND	ug/L	25.0	5		12/08/15 13:31	78-93-3	
n-Butylbenzene	ND	ug/L	5.0	5		12/08/15 13:31	104-51-8	
sec-Butylbenzene	ND	ug/L	5.0	5		12/08/15 13:31	135-98-8	
tert-Butylbenzene	ND	ug/L	5.0	5		12/08/15 13:31	98-06-6	
Carbon tetrachloride	ND	ug/L	5.0	5		12/08/15 13:31	56-23-5	
Chlorobenzene	ND	ug/L	5.0	5		12/08/15 13:31	108-90-7	
Chloroethane	ND	ug/L	5.0	5		12/08/15 13:31	75-00-3	
Chloroform	ND	ug/L	5.0	5		12/08/15 13:31	67-66-3	
Chloromethane	ND	ug/L	20.0	5		12/08/15 13:31	74-87-3	
2-Chlorotoluene	ND	ug/L	5.0	5		12/08/15 13:31	95-49-8	
4-Chlorotoluene	ND	ug/L	5.0	5		12/08/15 13:31	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	20.0	5		12/08/15 13:31	96-12-8	
Dibromochloromethane	ND	ug/L	5.0	5		12/08/15 13:31	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	5.0	5		12/08/15 13:31	106-93-4	
Dibromomethane	ND	ug/L	20.0	5		12/08/15 13:31	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	5.0	5		12/08/15 13:31	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	5.0	5		12/08/15 13:31	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	5.0	5		12/08/15 13:31	106-46-7	
Dichlorodifluoromethane	ND	ug/L	5.0	5		12/08/15 13:31	75-71-8	
1,1-Dichloroethane	ND	ug/L	5.0	5		12/08/15 13:31	75-34-3	
1,2-Dichloroethane	ND	ug/L	5.0	5		12/08/15 13:31	107-06-2	
1,1-Dichloroethene	ND	ug/L	5.0	5		12/08/15 13:31	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	5.0	5		12/08/15 13:31	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	5.0	5		12/08/15 13:31	156-60-5	
Dichlorofluoromethane	ND	ug/L	5.0	5		12/08/15 13:31	75-43-4	
1,2-Dichloropropane	ND	ug/L	20.0	5		12/08/15 13:31	78-87-5	
1,3-Dichloropropane	ND	ug/L	5.0	5		12/08/15 13:31	142-28-9	
2,2-Dichloropropane	ND	ug/L	20.0	5		12/08/15 13:31	594-20-7	
1,1-Dichloropropene	ND	ug/L	5.0	5		12/08/15 13:31	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	20.0	5		12/08/15 13:31	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	20.0	5		12/08/15 13:31	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	20.0	5		12/08/15 13:31	60-29-7	
Ethylbenzene	ND	ug/L	5.0	5		12/08/15 13:31	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	5.0	5		12/08/15 13:31	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	5.0	5		12/08/15 13:31	98-82-8	
p-Isopropyltoluene	ND	ug/L	5.0	5		12/08/15 13:31	99-87-6	
Methylene Chloride	ND	ug/L	20.0	5		12/08/15 13:31	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	25.0	5		12/08/15 13:31	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	5.0	5		12/08/15 13:31	1634-04-4	

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ANALYTICAL RESULTS

Project: PS BETA-NIROP

Pace Project No.: 10332212

Sample: PMW-1		Lab ID: 10332212004	Collected: 12/04/15 13:40	Received: 12/04/15 15:06	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	20.0	5		12/08/15 13:31	91-20-3	
n-Propylbenzene	ND	ug/L	5.0	5		12/08/15 13:31	103-65-1	
Styrene	ND	ug/L	5.0	5		12/08/15 13:31	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0	5		12/08/15 13:31	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0	5		12/08/15 13:31	79-34-5	
Tetrachloroethene	ND	ug/L	5.0	5		12/08/15 13:31	127-18-4	
Tetrahydrofuran	ND	ug/L	50.0	5		12/08/15 13:31	109-99-9	
Toluene	ND	ug/L	5.0	5		12/08/15 13:31	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	5.0	5		12/08/15 13:31	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	5.0	5		12/08/15 13:31	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	5.0	5		12/08/15 13:31	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	5.0	5		12/08/15 13:31	79-00-5	
Trichloroethene	ND	ug/L	2.0	5		12/08/15 13:31	79-01-6	
Trichlorofluoromethane	ND	ug/L	5.0	5		12/08/15 13:31	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	20.0	5		12/08/15 13:31	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	5.0	5		12/08/15 13:31	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	5.0	5		12/08/15 13:31	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	5.0	5		12/08/15 13:31	108-67-8	
Vinyl chloride	ND	ug/L	2.0	5		12/08/15 13:31	75-01-4	
Xylene (Total)	ND	ug/L	15.0	5		12/08/15 13:31	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	133	%.	75-125	5		12/08/15 13:31	17060-07-0	1M, C0
Toluene-d8 (S)	164	%.	75-125	5		12/08/15 13:31	2037-26-5	C0
4-Bromofluorobenzene (S)	188	%.	75-125	5		12/08/15 13:31	460-00-4	C0

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ANALYTICAL RESULTS

Project: PS BETA-NIROP

Pace Project No.: 10332212

Sample: TB-1	Lab ID: 10332212005	Collected: 12/04/15 07:00	Received: 12/04/15 15:06	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		12/05/15 14:28	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		12/05/15 14:28	107-05-1	
Benzene	ND	ug/L	1.0	1		12/05/15 14:28	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		12/05/15 14:28	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		12/05/15 14:28	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		12/05/15 14:28	75-27-4	
Bromoform	ND	ug/L	4.0	1		12/05/15 14:28	75-25-2	
Bromomethane	ND	ug/L	4.0	1		12/05/15 14:28	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		12/05/15 14:28	78-93-3	L3
n-Butylbenzene	ND	ug/L	1.0	1		12/05/15 14:28	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		12/05/15 14:28	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		12/05/15 14:28	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		12/05/15 14:28	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		12/05/15 14:28	108-90-7	
Chloroethane	ND	ug/L	1.0	1		12/05/15 14:28	75-00-3	
Chloroform	ND	ug/L	1.0	1		12/05/15 14:28	67-66-3	
Chloromethane	ND	ug/L	4.0	1		12/05/15 14:28	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		12/05/15 14:28	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		12/05/15 14:28	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		12/05/15 14:28	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		12/05/15 14:28	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		12/05/15 14:28	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		12/05/15 14:28	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		12/05/15 14:28	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		12/05/15 14:28	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		12/05/15 14:28	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		12/05/15 14:28	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		12/05/15 14:28	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		12/05/15 14:28	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		12/05/15 14:28	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		12/05/15 14:28	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		12/05/15 14:28	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		12/05/15 14:28	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		12/05/15 14:28	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		12/05/15 14:28	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		12/05/15 14:28	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		12/05/15 14:28	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		12/05/15 14:28	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		12/05/15 14:28	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		12/05/15 14:28	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		12/05/15 14:28	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		12/05/15 14:28	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		12/05/15 14:28	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		12/05/15 14:28	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		12/05/15 14:28	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		12/05/15 14:28	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		12/05/15 14:28	1634-04-4	

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ANALYTICAL RESULTS

Project: PS BETA-NIROP

Pace Project No.: 10332212

Sample: TB-1		Lab ID: 10332212005		Collected: 12/04/15 07:00	Received: 12/04/15 15:06	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		12/05/15 14:28	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		12/05/15 14:28	103-65-1	
Styrene	ND	ug/L	1.0	1		12/05/15 14:28	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		12/05/15 14:28	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		12/05/15 14:28	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		12/05/15 14:28	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		12/05/15 14:28	109-99-9	
Toluene	ND	ug/L	1.0	1		12/05/15 14:28	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		12/05/15 14:28	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		12/05/15 14:28	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		12/05/15 14:28	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		12/05/15 14:28	79-00-5	
Trichloroethene	ND	ug/L	0.40	1		12/05/15 14:28	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		12/05/15 14:28	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		12/05/15 14:28	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		12/05/15 14:28	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		12/05/15 14:28	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		12/05/15 14:28	108-67-8	
Vinyl chloride	ND	ug/L	0.40	1		12/05/15 14:28	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		12/05/15 14:28	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	103	%.	75-125	1		12/05/15 14:28	17060-07-0	
Toluene-d8 (S)	97	%.	75-125	1		12/05/15 14:28	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125	1		12/05/15 14:28	460-00-4	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10332212

QC Batch: MSV/33992 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV 465 W
Associated Lab Samples: 10332212001, 10332212002, 10332212003, 10332212005

METHOD BLANK: 2150208 Matrix: Water
Associated Lab Samples: 10332212001, 10332212002, 10332212003, 10332212005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	12/05/15 14:13	
1,1,1-Trichloroethane	ug/L	ND	1.0	12/05/15 14:13	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	12/05/15 14:13	
1,1,2-Trichloroethane	ug/L	ND	1.0	12/05/15 14:13	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	1.0	12/05/15 14:13	
1,1-Dichloroethane	ug/L	ND	1.0	12/05/15 14:13	
1,1-Dichloroethene	ug/L	ND	1.0	12/05/15 14:13	
1,1-Dichloropropene	ug/L	ND	1.0	12/05/15 14:13	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	12/05/15 14:13	
1,2,3-Trichloropropane	ug/L	ND	4.0	12/05/15 14:13	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	12/05/15 14:13	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	12/05/15 14:13	
1,2-Dibromo-3-chloropropane	ug/L	ND	4.0	12/05/15 14:13	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	12/05/15 14:13	
1,2-Dichlorobenzene	ug/L	ND	1.0	12/05/15 14:13	
1,2-Dichloroethane	ug/L	ND	1.0	12/05/15 14:13	
1,2-Dichloropropane	ug/L	ND	4.0	12/05/15 14:13	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	12/05/15 14:13	
1,3-Dichlorobenzene	ug/L	ND	1.0	12/05/15 14:13	
1,3-Dichloropropane	ug/L	ND	1.0	12/05/15 14:13	
1,4-Dichlorobenzene	ug/L	ND	1.0	12/05/15 14:13	
2,2-Dichloropropane	ug/L	ND	4.0	12/05/15 14:13	
2-Butanone (MEK)	ug/L	ND	5.0	12/05/15 14:13	
2-Chlorotoluene	ug/L	ND	1.0	12/05/15 14:13	
4-Chlorotoluene	ug/L	ND	1.0	12/05/15 14:13	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	12/05/15 14:13	
Acetone	ug/L	ND	20.0	12/05/15 14:13	
Allyl chloride	ug/L	ND	4.0	12/05/15 14:13	
Benzene	ug/L	ND	1.0	12/05/15 14:13	
Bromobenzene	ug/L	ND	1.0	12/05/15 14:13	
Bromochloromethane	ug/L	ND	1.0	12/05/15 14:13	
Bromodichloromethane	ug/L	ND	1.0	12/05/15 14:13	
Bromoform	ug/L	ND	4.0	12/05/15 14:13	
Bromomethane	ug/L	ND	4.0	12/05/15 14:13	
Carbon tetrachloride	ug/L	ND	1.0	12/05/15 14:13	
Chlorobenzene	ug/L	ND	1.0	12/05/15 14:13	
Chloroethane	ug/L	ND	1.0	12/05/15 14:13	
Chloroform	ug/L	ND	1.0	12/05/15 14:13	
Chloromethane	ug/L	ND	4.0	12/05/15 14:13	
cis-1,2-Dichloroethene	ug/L	ND	1.0	12/05/15 14:13	
cis-1,3-Dichloropropene	ug/L	ND	4.0	12/05/15 14:13	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10332212

METHOD BLANK: 2150208

Matrix: Water

Associated Lab Samples: 10332212001, 10332212002, 10332212003, 10332212005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/L	ND	1.0	12/05/15 14:13	
Dibromomethane	ug/L	ND	4.0	12/05/15 14:13	
Dichlorodifluoromethane	ug/L	ND	1.0	12/05/15 14:13	
Dichlorofluoromethane	ug/L	ND	1.0	12/05/15 14:13	
Diethyl ether (Ethyl ether)	ug/L	ND	4.0	12/05/15 14:13	
Ethylbenzene	ug/L	ND	1.0	12/05/15 14:13	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	12/05/15 14:13	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	12/05/15 14:13	
Methyl-tert-butyl ether	ug/L	ND	1.0	12/05/15 14:13	
Methylene Chloride	ug/L	ND	4.0	12/05/15 14:13	
n-Butylbenzene	ug/L	ND	1.0	12/05/15 14:13	
n-Propylbenzene	ug/L	ND	1.0	12/05/15 14:13	
Naphthalene	ug/L	ND	4.0	12/05/15 14:13	
p-Isopropyltoluene	ug/L	ND	1.0	12/05/15 14:13	
sec-Butylbenzene	ug/L	ND	1.0	12/05/15 14:13	
Styrene	ug/L	ND	1.0	12/05/15 14:13	
tert-Butylbenzene	ug/L	ND	1.0	12/05/15 14:13	
Tetrachloroethene	ug/L	ND	1.0	12/05/15 14:13	
Tetrahydrofuran	ug/L	ND	10.0	12/05/15 14:13	
Toluene	ug/L	ND	1.0	12/05/15 14:13	
trans-1,2-Dichloroethene	ug/L	ND	1.0	12/05/15 14:13	
trans-1,3-Dichloropropene	ug/L	ND	4.0	12/05/15 14:13	
Trichloroethene	ug/L	ND	0.40	12/05/15 14:13	
Trichlorofluoromethane	ug/L	ND	1.0	12/05/15 14:13	
Vinyl chloride	ug/L	ND	0.40	12/05/15 14:13	
Xylene (Total)	ug/L	ND	3.0	12/05/15 14:13	
1,2-Dichloroethane-d4 (S)	%	108	75-125	12/05/15 14:13	
4-Bromofluorobenzene (S)	%	94	75-125	12/05/15 14:13	
Toluene-d8 (S)	%	97	75-125	12/05/15 14:13	

LABORATORY CONTROL SAMPLE: 2150209

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	20	22.6	113	75-125	
1,1,1-Trichloroethane	ug/L	20	22.3	112	75-125	
1,1,2,2-Tetrachloroethane	ug/L	20	22.8	114	75-125	
1,1,2-Trichloroethane	ug/L	20	23.6	118	75-125	
1,1,2-Trichlorotrifluoroethane	ug/L	20	21.2	106	60-135	
1,1-Dichloroethane	ug/L	20	23.0	115	69-125	
1,1-Dichloroethene	ug/L	20	21.8	109	68-125	
1,1-Dichloropropene	ug/L	20	21.9	109	74-125	
1,2,3-Trichlorobenzene	ug/L	20	21.9	110	69-136	
1,2,3-Trichloropropane	ug/L	20	22.8	114	75-125	
1,2,4-Trichlorobenzene	ug/L	20	21.9	109	73-127	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10332212

LABORATORY CONTROL SAMPLE: 2150209

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	19.9	99	75-125	
1,2-Dibromo-3-chloropropane	ug/L	50	55.9	112	65-145	
1,2-Dibromoethane (EDB)	ug/L	20	24.2	121	75-125	
1,2-Dichlorobenzene	ug/L	20	21.3	107	75-125	
1,2-Dichloroethane	ug/L	20	23.6	118	73-125	
1,2-Dichloropropane	ug/L	20	20.8	104	75-125	
1,3,5-Trimethylbenzene	ug/L	20	20.1	100	75-125	
1,3-Dichlorobenzene	ug/L	20	20.5	103	74-125	
1,3-Dichloropropane	ug/L	20	23.2	116	75-125	
1,4-Dichlorobenzene	ug/L	20	20.0	100	75-125	
2,2-Dichloropropane	ug/L	20	23.4	117	59-139	
2-Butanone (MEK)	ug/L	100	133	133	63-130	L0
2-Chlorotoluene	ug/L	20	20.0	100	72-125	
4-Chlorotoluene	ug/L	20	19.9	99	73-125	
4-Methyl-2-pentanone (MIBK)	ug/L	100	125	125	71-126	
Acetone	ug/L	100	85.3	85	69-131	SS
Allyl chloride	ug/L	20	21.2	106	67-125	
Benzene	ug/L	20	21.9	110	71-125	
Bromobenzene	ug/L	20	21.2	106	75-125	
Bromochloromethane	ug/L	20	21.0	105	75-125	
Bromodichloromethane	ug/L	20	22.3	112	75-125	
Bromoform	ug/L	20	21.8	109	70-125	
Bromomethane	ug/L	20	15.1	75	30-150	
Carbon tetrachloride	ug/L	20	19.6	98	75-126	
Chlorobenzene	ug/L	20	20.8	104	75-125	
Chloroethane	ug/L	20	22.2	111	65-134	
Chloroform	ug/L	20	23.1	115	75-125	
Chloromethane	ug/L	20	21.2	106	39-150	
cis-1,2-Dichloroethene	ug/L	20	22.5	112	72-125	
cis-1,3-Dichloropropene	ug/L	20	22.6	113	75-125	
Dibromochloromethane	ug/L	20	21.3	107	75-125	
Dibromomethane	ug/L	20	23.3	116	75-125	
Dichlorodifluoromethane	ug/L	20	22.7	114	50-134	
Dichlorofluoromethane	ug/L	20	22.0	110	69-125	
Diethyl ether (Ethyl ether)	ug/L	20	22.5	113	72-125	
Ethylbenzene	ug/L	20	20.4	102	75-125	
Hexachloro-1,3-butadiene	ug/L	20	21.0	105	70-138	
Isopropylbenzene (Cumene)	ug/L	20	18.7	93	75-125	
Methyl-tert-butyl ether	ug/L	20	22.6	113	73-125	
Methylene Chloride	ug/L	20	20.7	103	73-125	
n-Butylbenzene	ug/L	20	21.0	105	72-133	
n-Propylbenzene	ug/L	20	18.4	92	72-126	
Naphthalene	ug/L	20	21.4	107	70-127	
p-Isopropyltoluene	ug/L	20	19.9	99	72-132	
sec-Butylbenzene	ug/L	20	17.8	89	73-132	
Styrene	ug/L	20	21.4	107	75-125	
tert-Butylbenzene	ug/L	20	19.1	96	73-128	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10332212

LABORATORY CONTROL SAMPLE: 2150209

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	ug/L	20	19.8	99	74-125	
Tetrahydrofuran	ug/L	200	168	84	62-133	SS
Toluene	ug/L	20	21.2	106	74-125	
trans-1,2-Dichloroethene	ug/L	20	22.8	114	69-125	
trans-1,3-Dichloropropene	ug/L	20	21.7	109	75-125	
Trichloroethene	ug/L	20	22.5	113	75-125	
Trichlorofluoromethane	ug/L	20	19.3	97	74-127	
Vinyl chloride	ug/L	20	20.6	103	66-132	
Xylene (Total)	ug/L	60	60.9	101	75-125	
1,2-Dichloroethane-d4 (S)	%			106	75-125	
4-Bromofluorobenzene (S)	%			94	75-125	
Toluene-d8 (S)	%			98	75-125	

MATRIX SPIKE SAMPLE: 2150709

Parameter	Units	10332212003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	21.2	106	70-138	
1,1,1-Trichloroethane	ug/L	ND	20	23.4	117	55-150	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	22.0	110	64-140	
1,1,2-Trichloroethane	ug/L	ND	20	23.7	118	67-137	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	20	26.1	131	51-150	
1,1-Dichloroethane	ug/L	50.5	20	75.0	123	49-150	
1,1-Dichloroethene	ug/L	30.7	20	56.5	129	40-150	
1,1-Dichloropropene	ug/L	ND	20	23.9	119	50-150	
1,2,3-Trichlorobenzene	ug/L	ND	20	20.1	101	59-148	
1,2,3-Trichloropropane	ug/L	ND	20	23.5	117	65-141	
1,2,4-Trichlorobenzene	ug/L	ND	20	21.1	105	61-140	
1,2,4-Trimethylbenzene	ug/L	ND	20	20.3	102	58-141	
1,2-Dibromo-3-chloropropane	ug/L	ND	50	41.8	84	53-150	
1,2-Dibromoethane (EDB)	ug/L	ND	20	23.3	116	65-137	
1,2-Dichlorobenzene	ug/L	ND	20	20.0	100	66-133	
1,2-Dichloroethane	ug/L	ND	20	22.4	112	54-138	
1,2-Dichloropropane	ug/L	ND	20	21.9	110	62-138	
1,3,5-Trimethylbenzene	ug/L	ND	20	20.3	101	58-140	
1,3-Dichlorobenzene	ug/L	ND	20	21.4	107	66-132	
1,3-Dichloropropane	ug/L	ND	20	22.5	113	66-134	
1,4-Dichlorobenzene	ug/L	ND	20	20.3	102	65-129	
2,2-Dichloropropane	ug/L	ND	20	24.4	122	40-150	
2-Butanone (MEK)	ug/L	ND	100	116	116	51-147	
2-Chlorotoluene	ug/L	ND	20	20.2	101	58-147	
4-Chlorotoluene	ug/L	ND	20	20.9	105	64-138	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	100	121	121	59-143	
Acetone	ug/L	ND	100	146	146	63-147	IS,SS
Allyl chloride	ug/L	ND	20	24.1	120	45-150	
Benzene	ug/L	ND	20	22.7	112	53-139	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10332212

MATRIX SPIKE SAMPLE: 2150709		10332212003	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Bromobenzene	ug/L	ND	20	22.4	112	66-136	
Bromochloromethane	ug/L	ND	20	22.5	112	64-136	
Bromodichloromethane	ug/L	ND	20	21.4	107	66-138	
Bromoform	ug/L	ND	20	18.3	91	59-136	
Bromomethane	ug/L	ND	20	14.6	73	30-150	
Carbon tetrachloride	ug/L	ND	20	20.5	102	56-150	
Chlorobenzene	ug/L	ND	20	21.4	107	65-133	
Chloroethane	ug/L	ND	20	21.5	107	48-150	
Chloroform	ug/L	ND	20	23.4	117	57-145	
Chloromethane	ug/L	ND	20	20.9	105	30-150	
cis-1,2-Dichloroethene	ug/L	257	20	384	638	49-150	E,M1
cis-1,3-Dichloropropene	ug/L	ND	20	20.3	101	64-130	
Dibromochloromethane	ug/L	ND	20	19.1	95	68-138	
Dibromomethane	ug/L	ND	20	22.9	115	67-134	
Dichlorodifluoromethane	ug/L	ND	20	24.1	120	45-150	
Dichlorofluoromethane	ug/L	ND	20	21.5	108	54-150	
Diethyl ether (Ethyl ether)	ug/L	ND	20	23.6	118	50-145	
Ethylbenzene	ug/L	ND	20	21.4	107	55-139	
Hexachloro-1,3-butadiene	ug/L	ND	20	19.0	95	49-150	
Isopropylbenzene (Cumene)	ug/L	ND	20	19.5	97	64-142	
Methyl-tert-butyl ether	ug/L	ND	20	22.9	114	62-129	
Methylene Chloride	ug/L	ND	20	19.3	97	57-132	
n-Butylbenzene	ug/L	ND	20	21.3	106	55-150	
n-Propylbenzene	ug/L	ND	20	19.1	96	59-142	
Naphthalene	ug/L	ND	20	19.3	97	51-150	
p-Isopropyltoluene	ug/L	ND	20	20.3	101	60-149	
sec-Butylbenzene	ug/L	ND	20	18.4	92	60-150	
Styrene	ug/L	ND	20	22.4	112	68-134	
tert-Butylbenzene	ug/L	ND	20	19.9	99	62-146	
Tetrachloroethene	ug/L	ND	20	20.7	104	50-150	
Tetrahydrofuran	ug/L	ND	200	313	156	59-145	IS,M1,SS
Toluene	ug/L	ND	20	22.0	110	52-148	
trans-1,2-Dichloroethene	ug/L	284	20	448	823	45-150	E,M1
trans-1,3-Dichloropropene	ug/L	ND	20	21.0	105	68-132	
Trichloroethene	ug/L	54.4	20	76.1	109	52-150	
Trichlorofluoromethane	ug/L	ND	20	19.6	98	55-150	
Vinyl chloride	ug/L	4.1	20	25.7	108	43-150	
Xylene (Total)	ug/L	ND	60	63.4	106	54-144	
1,2-Dichloroethane-d4 (S)	%				103	75-125	
4-Bromofluorobenzene (S)	%				96	75-125	
Toluene-d8 (S)	%				98	75-125	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10332212

SAMPLE DUPLICATE: 2152277

Parameter	Units	10332212001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,1-Trichloroethane	ug/L	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,2-Trichloroethane	ug/L	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	ND		30	
1,1-Dichloroethane	ug/L	1.4	1.5	5	30	
1,1-Dichloroethene	ug/L	ND	.46J		30	
1,1-Dichloropropene	ug/L	ND	ND		30	
1,2,3-Trichlorobenzene	ug/L	ND	ND		30	
1,2,3-Trichloropropane	ug/L	ND	ND		30	
1,2,4-Trichlorobenzene	ug/L	ND	ND		30	
1,2,4-Trimethylbenzene	ug/L	ND	.8J		30	
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/L	ND	ND		30	
1,2-Dichlorobenzene	ug/L	ND	ND		30	
1,2-Dichloroethane	ug/L	ND	ND		30	
1,2-Dichloropropane	ug/L	ND	ND		30	
1,3,5-Trimethylbenzene	ug/L	ND	.43J		30	
1,3-Dichlorobenzene	ug/L	ND	ND		30	
1,3-Dichloropropane	ug/L	ND	ND		30	
1,4-Dichlorobenzene	ug/L	ND	ND		30	
2,2-Dichloropropane	ug/L	ND	ND		30	
2-Butanone (MEK)	ug/L	ND	ND		30	
2-Chlorotoluene	ug/L	ND	ND		30	
4-Chlorotoluene	ug/L	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		30	
Acetone	ug/L	ND	ND		30	
Allyl chloride	ug/L	ND	ND		30	
Benzene	ug/L	ND	ND		30	
Bromobenzene	ug/L	ND	ND		30	
Bromochloromethane	ug/L	ND	ND		30	
Bromodichloromethane	ug/L	ND	ND		30	
Bromoform	ug/L	ND	ND		30	
Bromomethane	ug/L	ND	ND		30	
Carbon tetrachloride	ug/L	ND	ND		30	
Chlorobenzene	ug/L	ND	ND		30	
Chloroethane	ug/L	ND	ND		30	
Chloroform	ug/L	ND	ND		30	
Chloromethane	ug/L	ND	ND		30	
cis-1,2-Dichloroethene	ug/L	23.2	23.6	2	30	
cis-1,3-Dichloropropene	ug/L	ND	ND		30	
Dibromochloromethane	ug/L	ND	ND		30	
Dibromomethane	ug/L	ND	ND		30	
Dichlorodifluoromethane	ug/L	ND	ND		30	
Dichlorofluoromethane	ug/L	ND	ND		30	
Diethyl ether (Ethyl ether)	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	.3J		30	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10332212

SAMPLE DUPLICATE: 2152277

Parameter	Units	10332212001 Result	Dup Result	RPD	Max RPD	Qualifiers
Hexachloro-1,3-butadiene	ug/L	ND	ND		30	
Isopropylbenzene (Cumene)	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Methylene Chloride	ug/L	ND	ND		30	
n-Butylbenzene	ug/L	ND	ND		30	
n-Propylbenzene	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
p-Isopropyltoluene	ug/L	ND	ND		30	
sec-Butylbenzene	ug/L	ND	ND		30	
Styrene	ug/L	ND	ND		30	
tert-Butylbenzene	ug/L	ND	ND		30	
Tetrachloroethene	ug/L	ND	ND		30	
Tetrahydrofuran	ug/L	ND	ND		30	
Toluene	ug/L	ND	1.2		30	C8
trans-1,2-Dichloroethene	ug/L	69.0	66.5	4	30	
trans-1,3-Dichloropropene	ug/L	ND	ND		30	
Trichloroethene	ug/L	16.5	16.1	2	30	
Trichlorofluoromethane	ug/L	ND	ND		30	
Vinyl chloride	ug/L	ND	.18J		30	
Xylene (Total)	ug/L	ND	5.6		30	
1,2-Dichloroethane-d4 (S)	%	101	105	4		
4-Bromofluorobenzene (S)	%	95	97	2		
Toluene-d8 (S)	%	96	96	0		

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10332212

QC Batch: MSV/34009

Analysis Method: EPA 8260B

QC Batch Method: EPA 8260B

Analysis Description: 8260B MSV 465 W

Associated Lab Samples: 10332212004

METHOD BLANK: 2151496

Matrix: Water

Associated Lab Samples: 10332212004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	12/08/15 10:46	
1,1,1-Trichloroethane	ug/L	ND	1.0	12/08/15 10:46	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	12/08/15 10:46	
1,1,2-Trichloroethane	ug/L	ND	1.0	12/08/15 10:46	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	1.0	12/08/15 10:46	
1,1-Dichloroethane	ug/L	ND	1.0	12/08/15 10:46	
1,1-Dichloroethene	ug/L	ND	1.0	12/08/15 10:46	
1,1-Dichloropropene	ug/L	ND	1.0	12/08/15 10:46	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	12/08/15 10:46	
1,2,3-Trichloropropane	ug/L	ND	4.0	12/08/15 10:46	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	12/08/15 10:46	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	12/08/15 10:46	
1,2-Dibromo-3-chloropropane	ug/L	ND	4.0	12/08/15 10:46	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	12/08/15 10:46	
1,2-Dichlorobenzene	ug/L	ND	1.0	12/08/15 10:46	
1,2-Dichloroethane	ug/L	ND	1.0	12/08/15 10:46	
1,2-Dichloropropane	ug/L	ND	4.0	12/08/15 10:46	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	12/08/15 10:46	
1,3-Dichlorobenzene	ug/L	ND	1.0	12/08/15 10:46	
1,3-Dichloropropane	ug/L	ND	1.0	12/08/15 10:46	
1,4-Dichlorobenzene	ug/L	ND	1.0	12/08/15 10:46	
2,2-Dichloropropane	ug/L	ND	4.0	12/08/15 10:46	
2-Butanone (MEK)	ug/L	ND	5.0	12/08/15 10:46	
2-Chlorotoluene	ug/L	ND	1.0	12/08/15 10:46	
4-Chlorotoluene	ug/L	ND	1.0	12/08/15 10:46	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	12/08/15 10:46	
Acetone	ug/L	ND	20.0	12/08/15 10:46	
Allyl chloride	ug/L	ND	4.0	12/08/15 10:46	
Benzene	ug/L	ND	1.0	12/08/15 10:46	
Bromobenzene	ug/L	ND	1.0	12/08/15 10:46	
Bromochloromethane	ug/L	ND	1.0	12/08/15 10:46	
Bromodichloromethane	ug/L	ND	1.0	12/08/15 10:46	
Bromoform	ug/L	ND	4.0	12/08/15 10:46	
Bromomethane	ug/L	ND	4.0	12/08/15 10:46	
Carbon tetrachloride	ug/L	ND	1.0	12/08/15 10:46	
Chlorobenzene	ug/L	ND	1.0	12/08/15 10:46	
Chloroethane	ug/L	ND	1.0	12/08/15 10:46	
Chloroform	ug/L	ND	1.0	12/08/15 10:46	
Chloromethane	ug/L	ND	4.0	12/08/15 10:46	
cis-1,2-Dichloroethene	ug/L	ND	1.0	12/08/15 10:46	
cis-1,3-Dichloropropene	ug/L	ND	4.0	12/08/15 10:46	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10332212

METHOD BLANK: 2151496

Matrix: Water

Associated Lab Samples: 10332212004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/L	ND	1.0	12/08/15 10:46	
Dibromomethane	ug/L	ND	4.0	12/08/15 10:46	
Dichlorodifluoromethane	ug/L	ND	1.0	12/08/15 10:46	
Dichlorofluoromethane	ug/L	ND	1.0	12/08/15 10:46	
Diethyl ether (Ethyl ether)	ug/L	ND	4.0	12/08/15 10:46	
Ethylbenzene	ug/L	ND	1.0	12/08/15 10:46	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	12/08/15 10:46	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	12/08/15 10:46	
Methyl-tert-butyl ether	ug/L	ND	1.0	12/08/15 10:46	
Methylene Chloride	ug/L	ND	4.0	12/08/15 10:46	
n-Butylbenzene	ug/L	ND	1.0	12/08/15 10:46	
n-Propylbenzene	ug/L	ND	1.0	12/08/15 10:46	
Naphthalene	ug/L	ND	4.0	12/08/15 10:46	
p-Isopropyltoluene	ug/L	ND	1.0	12/08/15 10:46	
sec-Butylbenzene	ug/L	ND	1.0	12/08/15 10:46	
Styrene	ug/L	ND	1.0	12/08/15 10:46	
tert-Butylbenzene	ug/L	ND	1.0	12/08/15 10:46	
Tetrachloroethene	ug/L	ND	1.0	12/08/15 10:46	
Tetrahydrofuran	ug/L	ND	10.0	12/08/15 10:46	
Toluene	ug/L	ND	1.0	12/08/15 10:46	
trans-1,2-Dichloroethene	ug/L	ND	1.0	12/08/15 10:46	
trans-1,3-Dichloropropene	ug/L	ND	4.0	12/08/15 10:46	
Trichloroethene	ug/L	ND	0.40	12/08/15 10:46	
Trichlorofluoromethane	ug/L	ND	1.0	12/08/15 10:46	
Vinyl chloride	ug/L	ND	0.40	12/08/15 10:46	
Xylene (Total)	ug/L	ND	3.0	12/08/15 10:46	
1,2-Dichloroethane-d4 (S)	%	94	75-125	12/08/15 10:46	
4-Bromofluorobenzene (S)	%	98	75-125	12/08/15 10:46	
Toluene-d8 (S)	%	96	75-125	12/08/15 10:46	

LABORATORY CONTROL SAMPLE: 2151497

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	20	20.4	102	75-125	
1,1,1-Trichloroethane	ug/L	20	19.2	96	75-125	
1,1,2,2-Tetrachloroethane	ug/L	20	19.4	97	75-125	
1,1,2-Trichloroethane	ug/L	20	20.4	102	75-125	
1,1,2-Trichlorotrifluoroethane	ug/L	20	17.9	90	60-135	
1,1-Dichloroethane	ug/L	20	18.2	91	69-125	
1,1-Dichloroethene	ug/L	20	18.4	92	68-125	
1,1-Dichloropropene	ug/L	20	18.6	93	74-125	
1,2,3-Trichlorobenzene	ug/L	20	19.5	97	69-136	
1,2,3-Trichloropropane	ug/L	20	20.3	102	75-125	
1,2,4-Trichlorobenzene	ug/L	20	19.2	96	73-127	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10332212

LABORATORY CONTROL SAMPLE: 2151497

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	20.9	105	75-125	
1,2-Dibromo-3-chloropropane	ug/L	50	51.4	103	65-145	
1,2-Dibromoethane (EDB)	ug/L	20	20.6	103	75-125	
1,2-Dichlorobenzene	ug/L	20	19.9	100	75-125	
1,2-Dichloroethane	ug/L	20	18.7	93	73-125	
1,2-Dichloropropane	ug/L	20	19.8	99	75-125	
1,3,5-Trimethylbenzene	ug/L	20	20.2	101	75-125	
1,3-Dichlorobenzene	ug/L	20	19.8	99	74-125	
1,3-Dichloropropane	ug/L	20	19.4	97	75-125	
1,4-Dichlorobenzene	ug/L	20	19.1	95	75-125	
2,2-Dichloropropane	ug/L	20	19.3	96	59-139	
2-Butanone (MEK)	ug/L	100	90.9	91	63-130	
2-Chlorotoluene	ug/L	20	19.4	97	72-125	
4-Chlorotoluene	ug/L	20	20.1	101	73-125	
4-Methyl-2-pentanone (MIBK)	ug/L	100	95.0	95	71-126	
Acetone	ug/L	100	82.4	82	69-131	
Allyl chloride	ug/L	20	16.2	81	67-125	
Benzene	ug/L	20	18.7	93	71-125	
Bromobenzene	ug/L	20	20.0	100	75-125	
Bromochloromethane	ug/L	20	19.6	98	75-125	
Bromodichloromethane	ug/L	20	20.7	104	75-125	
Bromoform	ug/L	20	22.4	112	70-125	
Bromomethane	ug/L	20	19.1	96	30-150	
Carbon tetrachloride	ug/L	20	19.2	96	75-126	
Chlorobenzene	ug/L	20	19.1	96	75-125	
Chloroethane	ug/L	20	18.7	94	65-134	
Chloroform	ug/L	20	19.8	99	75-125	
Chloromethane	ug/L	20	17.3	86	39-150	
cis-1,2-Dichloroethene	ug/L	20	18.3	91	72-125	
cis-1,3-Dichloropropene	ug/L	20	21.1	106	75-125	
Dibromochloromethane	ug/L	20	20.6	103	75-125	
Dibromomethane	ug/L	20	21.8	109	75-125	
Dichlorodifluoromethane	ug/L	20	17.8	89	50-134	
Dichlorofluoromethane	ug/L	20	19.0	95	69-125	
Diethyl ether (Ethyl ether)	ug/L	20	18.8	94	72-125	
Ethylbenzene	ug/L	20	19.9	99	75-125	
Hexachloro-1,3-butadiene	ug/L	20	20.6	103	70-138	
Isopropylbenzene (Cumene)	ug/L	20	22.1	110	75-125	
Methyl-tert-butyl ether	ug/L	20	19.9	100	73-125	
Methylene Chloride	ug/L	20	18.6	93	73-125	
n-Butylbenzene	ug/L	20	19.6	98	72-133	
n-Propylbenzene	ug/L	20	19.5	98	72-126	
Naphthalene	ug/L	20	18.3	92	70-127	
p-Isopropyltoluene	ug/L	20	20.4	102	72-132	
sec-Butylbenzene	ug/L	20	20.1	100	73-132	
Styrene	ug/L	20	21.3	106	75-125	
tert-Butylbenzene	ug/L	20	20.2	101	73-128	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10332212

LABORATORY CONTROL SAMPLE: 2151497

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	ug/L	20	20.4	102	74-125	
Tetrahydrofuran	ug/L	200	176	88	62-133	
Toluene	ug/L	20	18.8	94	74-125	
trans-1,2-Dichloroethene	ug/L	20	18.5	93	69-125	
trans-1,3-Dichloropropene	ug/L	20	20.7	104	75-125	
Trichloroethene	ug/L	20	20.4	102	75-125	
Trichlorofluoromethane	ug/L	20	20.1	101	74-127	
Vinyl chloride	ug/L	20	18.7	94	66-132	
Xylene (Total)	ug/L	60	61.0	102	75-125	
1,2-Dichloroethane-d4 (S)	%			98	75-125	
4-Bromofluorobenzene (S)	%			97	75-125	
Toluene-d8 (S)	%			96	75-125	

MATRIX SPIKE SAMPLE: 2151890

Parameter	Units	10331531004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	21.5	107	70-138	
1,1,1-Trichloroethane	ug/L	ND	20	20.4	102	55-150	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	18.9	95	64-140	
1,1,2-Trichloroethane	ug/L	ND	20	21.0	105	67-137	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	20	20.3	102	51-150	
1,1-Dichloroethane	ug/L	ND	20	19.1	96	49-150	
1,1-Dichloroethene	ug/L	ND	20	19.9	100	40-150	
1,1-Dichloropropene	ug/L	ND	20	19.5	98	50-150	
1,2,3-Trichlorobenzene	ug/L	ND	20	19.0	95	59-148	
1,2,3-Trichloropropane	ug/L	ND	20	20.3	101	65-141	
1,2,4-Trichlorobenzene	ug/L	ND	20	19.5	98	61-140	
1,2,4-Trimethylbenzene	ug/L	19.0	20	41.1	111	58-141	
1,2-Dibromo-3-chloropropane	ug/L	ND	50	52.1	104	53-150	
1,2-Dibromoethane (EDB)	ug/L	ND	20	20.6	103	65-137	
1,2-Dichlorobenzene	ug/L	ND	20	19.7	98	66-133	
1,2-Dichloroethane	ug/L	175	20	229	272	54-138	M1
1,2-Dichloropropane	ug/L	ND	20	19.6	98	62-138	
1,3,5-Trimethylbenzene	ug/L	6.4	20	27.2	104	58-140	
1,3-Dichlorobenzene	ug/L	ND	20	19.9	100	66-132	
1,3-Dichloropropane	ug/L	ND	20	20.2	101	66-134	
1,4-Dichlorobenzene	ug/L	ND	20	18.5	93	65-129	
2,2-Dichloropropane	ug/L	ND	20	20.7	103	40-150	
2-Butanone (MEK)	ug/L	ND	100	91.1	91	51-147	
2-Chlorotoluene	ug/L	ND	20	20.6	103	58-147	
4-Chlorotoluene	ug/L	ND	20	19.9	100	64-138	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	100	93.8	94	59-143	
Acetone	ug/L	ND	100	98.9	89	63-147	
Allyl chloride	ug/L	ND	20	15.9	80	45-150	
Benzene	ug/L	50.5	20	71.7	106	53-139	

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10332212

MATRIX SPIKE SAMPLE:		2151890		10331531004		Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limit	Qualifiers			
Bromobenzene	ug/L	ND	20	20.3	101	66-136				
Bromochloromethane	ug/L	ND	20	19.5	98	64-136				
Bromodichloromethane	ug/L	ND	20	20.5	102	66-138				
Bromoform	ug/L	ND	20	22.6	113	59-136				
Bromomethane	ug/L	ND	20	20.0	100	30-150				
Carbon tetrachloride	ug/L	ND	20	20.9	105	56-150				
Chlorobenzene	ug/L	ND	20	19.4	97	65-133				
Chloroethane	ug/L	ND	20	19.1	96	48-150				
Chloroform	ug/L	ND	20	20.4	102	57-145				
Chloromethane	ug/L	ND	20	19.2	88	30-150				
cis-1,2-Dichloroethene	ug/L	ND	20	19.8	99	49-150				
cis-1,3-Dichloropropene	ug/L	ND	20	21.2	106	64-130				
Dibromochloromethane	ug/L	ND	20	21.2	106	68-138				
Dibromomethane	ug/L	ND	20	21.3	106	67-134				
Dichlorodifluoromethane	ug/L	ND	20	19.4	97	45-150				
Dichlorofluoromethane	ug/L	ND	20	18.6	93	54-150				
Diethyl ether (Ethyl ether)	ug/L	ND	20	19.2	96	50-145				
Ethylbenzene	ug/L	36.3	20	49.7	67	55-139				
Hexachloro-1,3-butadiene	ug/L	ND	20	20.2	101	49-150				
Isopropylbenzene (Cumene)	ug/L	2.0	20	24.2	111	64-142				
Methyl-tert-butyl ether	ug/L	ND	20	19.7	98	62-129				
Methylene Chloride	ug/L	ND	20	20.6	96	57-132				
n-Butylbenzene	ug/L	ND	20	20.3	100	55-150				
n-Propylbenzene	ug/L	3.4	20	22.5	95	59-142				
Naphthalene	ug/L	ND	20	20.3	89	51-150				
p-Isopropyltoluene	ug/L	ND	20	21.1	104	60-149				
sec-Butylbenzene	ug/L	ND	20	20.8	102	60-150				
Styrene	ug/L	ND	20	22.5	112	68-134				
tert-Butylbenzene	ug/L	ND	20	20.6	103	62-146				
Tetrachloroethene	ug/L	ND	20	21.5	107	50-150				
Tetrahydrofuran	ug/L	ND	200	174	87	59-145				
Toluene	ug/L	113	20	107	-28	52-148 M1				
trans-1,2-Dichloroethene	ug/L	ND	20	19.8	99	45-150				
trans-1,3-Dichloropropene	ug/L	ND	20	21.0	105	68-132				
Trichloroethene	ug/L	ND	20	21.5	107	52-150				
Trichlorofluoromethane	ug/L	ND	20	21.5	107	55-150				
Vinyl chloride	ug/L	ND	20	20.4	102	43-150				
Xylene (Total)	ug/L	121	60	161	67	54-144				
1,2-Dichloroethane-d4 (S)	%				93	75-125				
4-Bromofluorobenzene (S)	%				98	75-125				
Toluene-d8 (S)	%				98	75-125				

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10332212

SAMPLE DUPLICATE: 2151891

Parameter	Units	10332176003 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,1-Trichloroethane	ug/L	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,2-Trichloroethane	ug/L	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	ND		30	
1,1-Dichloroethane	ug/L	ND	ND		30	
1,1-Dichloroethene	ug/L	ND	ND		30	
1,1-Dichloropropene	ug/L	ND	ND		30	
1,2,3-Trichlorobenzene	ug/L	8.6	ND		30	
1,2,3-Trichloropropane	ug/L	ND	ND		30	
1,2,4-Trichlorobenzene	ug/L	ND	ND		30	
1,2,4-Trimethylbenzene	ug/L	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/L	ND	ND		30	
1,2-Dichlorobenzene	ug/L	ND	ND		30	
1,2-Dichloroethane	ug/L	ND	ND		30	
1,2-Dichloropropane	ug/L	ND	ND		30	
1,3,5-Trimethylbenzene	ug/L	ND	ND		30	
1,3-Dichlorobenzene	ug/L	ND	ND		30	
1,3-Dichloropropane	ug/L	ND	ND		30	
1,4-Dichlorobenzene	ug/L	ND	ND		30	
2,2-Dichloropropane	ug/L	ND	ND		30	
2-Butanone (MEK)	ug/L	ND	18.4J		30	
2-Chlorotoluene	ug/L	ND	ND		30	
4-Chlorotoluene	ug/L	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		30	
Acetone	ug/L	ND	63.9J		30	
Allyl chloride	ug/L	ND	ND		30	
Benzene	ug/L	ND	1.6J		30	
Bromobenzene	ug/L	ND	ND		30	
Bromochloromethane	ug/L	ND	ND		30	
Bromodichloromethane	ug/L	ND	ND		30	
Bromoform	ug/L	ND	ND		30	
Bromomethane	ug/L	ND	ND		30	
Carbon tetrachloride	ug/L	ND	ND		30	
Chlorobenzene	ug/L	ND	ND		30	
Chloroethane	ug/L	ND	ND		30	
Chloroform	ug/L	ND	ND		30	
Chloromethane	ug/L	ND	ND		30	
cis-1,2-Dichloroethene	ug/L	ND	ND		30	
cis-1,3-Dichloropropene	ug/L	ND	ND		30	
Dibromochloromethane	ug/L	ND	ND		30	
Dibromomethane	ug/L	ND	ND		30	
Dichlorodifluoromethane	ug/L	ND	ND		30	
Dichlorofluoromethane	ug/L	ND	ND		30	
Diethyl ether (Ethyl ether)	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS BETA-NIROP

Pace Project No.: 10332212

SAMPLE DUPLICATE: 2151891

Parameter	Units	10332176003 Result	Dup Result	RPD	Max RPD	Qualifiers
Hexachloro-1,3-butadiene	ug/L	ND	ND		30	
Isopropylbenzene (Cumene)	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Methylene Chloride	ug/L	ND	ND		30	
n-Butylbenzene	ug/L	ND	ND		30	
n-Propylbenzene	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	10.1J		30	
p-Isopropyltoluene	ug/L	ND	ND		30	
sec-Butylbenzene	ug/L	ND	ND		30	
Styrene	ug/L	ND	ND		30	
tert-Butylbenzene	ug/L	ND	ND		30	
Tetrachloroethene	ug/L	ND	ND		30	
Tetrahydrofuran	ug/L	ND	ND		30	
Toluene	ug/L	ND	2.1J		30	
trans-1,2-Dichloroethene	ug/L	ND	ND		30	
trans-1,3-Dichloropropene	ug/L	ND	ND		30	
Trichloroethene	ug/L	ND	ND		30	
Trichlorofluoromethane	ug/L	ND	ND		30	
Vinyl chloride	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%.	94	93	1		
4-Bromofluorobenzene (S)	%.	95	97	2		
Toluene-d8 (S)	%.	96	96	0		

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: PS BETA-NIROP

Pace Project No.: 10332212

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

1M	The sample was analyzed at a dilution due to a large amount of sediment in the vials.
C0	Result confirmed by second analysis.
C8	Result may be biased high due to carryover from previously analyzed sample.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
IS	The internal standard recovery associated with this result exceeds the lower control limit. The reported result should be considered an estimated value.
L0	Analyte recovery in the laboratory control sample (LCS) was outside QC limits.
L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples. Results unaffected by high bias.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
SS	This analyte did not meet the secondary source verification criteria for the initial calibration. The reported result should be considered an estimated value.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PS BETA-NIROP

Pace Project No.: 10332212

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10332212001	PMW-4	EPA 8260B	MSV/33992		
10332212002	PMW-3	EPA 8260B	MSV/33992		
10332212003	PMW-2	EPA 8260B	MSV/33992		
10332212004	PMW-1	EPA 8260B	MSV/34009		
10332212005	TB-1	EPA 8260B	MSV/33992		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical
www.pacelabs.com
2-DAY TAT

Form 12/4/15

Page: 1 of 2

RUSH

Section C

Invoice Information:

Attention: Bahar Naderi
Company Name: Regensis
Address: 1011 Calle Sombra
City: San Clemente, CA 92673
Purchase Order No.:
Project Name: PS Beta - NIROP
Project Number: PS Beta - NIROP
Phone: 949-366-8000 Fax: 343-366-8090
Requested Due Date/TAT: 2 days

Regensis
Copy To:
Email To: Mpham@regensis.com
Project Name: PS Beta - NIROP
Project Number: PS Beta - NIROP

Regulatory Agency: NPDES GROUND WATER DRINKING WATER
UST RCRA OTHER
Site Location: MN
STATE: MN

Section B

Required Project Information:

Report To: Melinda Pham
Copy To:
Purchase Order No.:
Project Name: PS Beta - NIROP
Project Number: PS Beta - NIROP

Section A

Required Client Information:

Company: Regensis
Address: 1011 Calle Sombra
City: San Clemente, CA 92673
Email To: Mpham@regensis.com
Phone: 949-366-8000 Fax: 343-366-8090
Requested Due Date/TAT: 2 days

ITEM #	Section D Required Client Information	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WASTE WATER WW WATER P PRODUCT SOLID OIL SL MILK MP MILK WP OTHER OR TISSUE TS	COLLECTED		SAMPLE TYPE (G-RAB C-COMP)	MATRIX CODE (see valid codes to left)	# OF CONTAINERS	Preservatives H ₂ SO ₄ HNO ₃ HCl NaOH Na ₂ S ₂ O ₃ Methanol Other	Y/N	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
			COMPOSITE START	COMPOSITE END/GRAB								
1	PMW-4		DATE: 12/4/15	TIME: 0925	WT 6		3					
2	PMW-3		DATE: 12/4/15	TIME: 1050	WT 6		3					
3	PMW-2		DATE: 12/4/15	TIME: 1235	WT 6		3					
4	PMW-1		DATE: 12/4/15	TIME: 1340	WT 6		3					
5												
6	TB-1		DATE: 12/4/15	TIME: 0700	WT -		2					
7												
8												
9												
10												
11												
12												

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
2 DAY TAT	<i>Rachel...</i>	12/4/15	1506	<i>Kate...</i>	12/4/16	1506	Temp in °C: 4.5 Ice (Y/N): Y Cooler (Y/N): N Samples Intact (Y/N): Y

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: *MOUSSA MBEWU SER*
SIGNATURE of SAMPLER: *[Signature]*
DATE Signed (MM/DD/YY): 12/4/15

Sample Condition Upon Receipt

Client Name: Regenesis Project #: _____

WO#: 10332212

 10332212

Courier: Fed Ex UPS USPS Client
 Commercial Pace Speedee Other: _____
 Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No
 Proj. Due Date: _____ Proj. Name: _____

Packing Material: Bubble Wrap Bubble Bags None Other: _____ Temp Blank? Yes No

Thermometer Used: B88A9130516413 B88A912167504 B88A0143310098
 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temp Read (°C): 4.1/2.7 Cooler Temp Corrected (°C): 4.5/3.1 Biological Tissue Frozen? Yes No N/A
 Temp should be above freezing to 6°C Correction Factor: 10.4 Date and Initials of Person Examining Contents: Bm 12/4/15

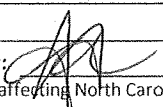
USDA Regulated Soil (N/A, water sample)
 Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or WA (check maps)? Yes No
 Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No
 If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>	
All containers needing acid/base preservation have been checked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> HNO ₃ <input type="checkbox"/> H ₂ SO ₄ <input type="checkbox"/> NaOH <input type="checkbox"/> HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl <2; NaOH >9 Sulfide, NaOH >12 Cyanide) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Sample #
Exceptions: <u>VOA</u> , Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): <u>112515-01</u>	

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____
 Comments/Resolution: _____

Project Manager Review: 

Date: 12/4/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

December 18, 2015

Melinda Pham
Regenesis
1011 Calle Sombra
San Clemente, CA 92673

RE: Project: PS Beta-NIROP
Pace Project No.: 10332217

Dear Melinda Pham:

Enclosed are the analytical results for sample(s) received by the laboratory on December 04, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,



Jennifer Anderson
jennifer.anderson@pacelabs.com
Project Manager

Enclosures

cc: Ryan Moore, Regenesis



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PS Beta-NIROP
Pace Project No.: 10332217

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

Montana Certification IDs

150 N. 9th Street, Billings, MT 59101
Colorado Asbestos #: 17119
A2LA Certification #: 3590.01
EPA Region 8 Certification #: 8TMS-L
Idaho Certification #: MT00012

Minnesota Dept of Health Certification #: 030-999-442
Montana Certification #: MT CERT0040
North Dakota Dept. Of Health #: R-209
NVLAP Certification #: 101292-0
Washington Department of Ecology #: C993

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification #MN01084
Arizona Department of Health Certification #AZ0785
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203

Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007
Nevada DNR #MN010842015-1
Oklahoma Department of Environmental Quality

Ormond Beach Certification IDs

8 East Tower Circle, Ormond Beach, FL 32174
Alabama Certification #: 41320
Connecticut Certification #: PH-0216
Delaware Certification: FL NELAC Reciprocity
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Illinois Certification #: 200068
Indiana Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Kentucky Certification #: 90050
Louisiana Certification #: FL NELAC Reciprocity
Louisiana Environmental Certificate #: 05007
Maryland Certification: #346
Michigan Certification #: 9911
Mississippi Certification: FL NELAC Reciprocity

Missouri Certification #: 236
Montana Certification #: Cert 0074
Nebraska Certification: NE-OS-28-14
Nevada Certification: FL NELAC Reciprocity
New Hampshire Certification #: 2958
New York Certification #: 11608
North Carolina Environmental Certificate #: 667
North Carolina Certification #: 12710
North Dakota Certification #: R-216
Oklahoma Certification #: D9947
Pennsylvania Certification #: 68-00547
Puerto Rico Certification #: FL01264
South Carolina Certification: #96042001
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity
US Virgin Islands Certification: FL NELAC Reciprocity
Virginia Environmental Certification #: 460165

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PS Beta-NIROP

Pace Project No.: 10332217

Ormond Beach Certification IDs

West Virginia Certification #: 9962C

Wisconsin Certification #: 399079670

Wyoming (EPA Region 8): FL NELAC Reciprocity

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: PS Beta-NIROP

Pace Project No.: 10332217

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10332217001	PMW-4	Water	12/04/15 09:25	12/04/15 15:06
10332217002	PMW-3	Water	12/04/15 10:50	12/04/15 15:06
10332217003	PMW-2	Water	12/04/15 12:35	12/04/15 15:06
10332217004	PMW-1	Water	12/04/15 13:40	12/04/15 15:06

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: PS Beta-NIROP

Pace Project No.: 10332217

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10332217001	PMW-4	RSK 175	DR1	3	PASI-M
		EPA 6010C	DM	1	PASI-M
		6010C Met	IP	1	PASI-M
		SM 4500-S2-D	JME	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	NMT	2	PASI-O
		EPA 300.0	KEO	1	PASI-M
		EPA 353.2	KEO	1	PASI-M
		SM 5220D	KEO	1	PASI-M
		SM 5310C	KRV	1	PASI-V
10332217002	PMW-3	RSK 175	DR1	3	PASI-M
		EPA 6010C	DM	1	PASI-M
		6010C Met	IP	1	PASI-M
		SM 4500-S2-D	JME	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	NMT	2	PASI-O
		EPA 300.0	KEO	1	PASI-M
		EPA 353.2	KEO	1	PASI-M
		SM 5220D	KEO	1	PASI-M
		SM 5310C	KRV	1	PASI-V
10332217003	PMW-2	RSK 175	DR1	3	PASI-M
		EPA 6010C	DM	1	PASI-M
		6010C Met	IP	1	PASI-M
		SM 4500-S2-D	JME	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	NMT	2	PASI-O
		EPA 300.0	KEO	1	PASI-M
		EPA 353.2	KEO	1	PASI-M
		SM 5220D	KEO	1	PASI-M
		SM 5310C	KRV	1	PASI-V
10332217004	PMW-1	RSK 175	DR1	3	PASI-M
		EPA 6010C	DM	1	PASI-M
		6010C Met	IP	1	PASI-M
		SM 4500-S2-D	JME	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	NMT	2	PASI-O
		EPA 300.0	KEO	1	PASI-M

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: PS Beta-NIROP

Pace Project No.: 10332217

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 353.2	KEO	1	PASI-M
		SM 5220D	KEO	1	PASI-M
		SM 5310C	KRV	1	PASI-V

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta-NIROP
Pace Project No.: 10332217

Sample: PMW-4		Lab ID: 10332217001	Collected: 12/04/15 09:25	Received: 12/04/15 15:06	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace		Analytical Method: RSK 175						
Ethane	ND	ug/L	10.0	1		12/08/15 11:41	74-84-0	
Ethene	ND	ug/L	10.0	1		12/08/15 11:41	74-85-1	
Methane	ND	ug/L	10.0	1		12/08/15 11:41	74-82-8	
6010C MET ICP		Analytical Method: EPA 6010C Preparation Method: EPA 3010						
Iron	8940	ug/L	50.0	1	12/07/15 21:52	12/08/15 12:48	7439-89-6	
6010C MET ICP, Dissolved		Analytical Method: 6010C Met Preparation Method: EPA 3010						
Iron, Dissolved	3370	ug/L	50.0	1	12/07/15 21:49	12/08/15 10:45	7439-89-6	
4500S2D Sulfide Water		Analytical Method: SM 4500-S2-D						
Sulfide	ND	mg/L	0.10	1		12/10/15 11:49		
2320B Alkalinity		Analytical Method: SM 2320B						
Alkalinity, Total as CaCO ₃	268	mg/L	5.0	1		12/09/15 12:05		
Carbon Dioxide (SM4500CO ₂ D)	36.0	mg/L	5.0	1		12/09/15 12:05	124-38-9	
Alkalinity, Total as CaCO ₃	273	mg/L	5.0	1		12/16/15 12:58		
Alkalinity, Bicarbonate (CaCO ₃)	273	mg/L	5.0	1		12/16/15 12:58		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	5.0	1		12/16/15 12:58		
300.0 IC Anions		Analytical Method: EPA 300.0						
Sulfate	97.1	mg/L	1.2	1		12/10/15 18:41	14808-79-8	
353.2 Nitrate + Nitrite		Analytical Method: EPA 353.2						
Nitrogen, NO ₂ plus NO ₃	ND	mg/L	0.020	1		12/10/15 09:21		
5220D COD		Analytical Method: SM 5220D Preparation Method: SM 5220D						
Chemical Oxygen Demand	ND	mg/L	50.0	1	12/09/15 09:44	12/09/15 15:22		
5310C TOC		Analytical Method: SM 5310C						
Total Organic Carbon	2.9	mg/L	1.0	1		12/09/15 17:13	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta-NIROP
Pace Project No.: 10332217

Sample: PMW-3		Lab ID: 10332217002		Collected: 12/04/15 10:50	Received: 12/04/15 15:06	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace		Analytical Method: RSK 175						
Ethane	ND	ug/L	10.0	1		12/08/15 11:49	74-84-0	
Ethene	ND	ug/L	10.0	1		12/08/15 11:49	74-85-1	
Methane	36.9	ug/L	10.0	1		12/08/15 11:49	74-82-8	
6010C MET ICP		Analytical Method: EPA 6010C Preparation Method: EPA 3010						
Iron	8360	ug/L	50.0	1	12/07/15 21:52	12/08/15 12:51	7439-89-6	
6010C MET ICP, Dissolved		Analytical Method: 6010C Met Preparation Method: EPA 3010						
Iron, Dissolved	7260	ug/L	50.0	1	12/07/15 21:49	12/08/15 11:05	7439-89-6	
4500S2D Sulfide Water		Analytical Method: SM 4500-S2-D						
Sulfide	ND	mg/L	0.10	1		12/10/15 11:52		
2320B Alkalinity		Analytical Method: SM 2320B						
Alkalinity, Total as CaCO3	364	mg/L	5.0	1		12/09/15 12:20		
Carbon Dioxide (SM4500CO2D)	48.0	mg/L	5.0	1		12/09/15 12:20	124-38-9	
Alkalinity, Total as CaCO3	370	mg/L	5.0	1		12/16/15 13:09		
Alkalinity,Bicarbonate (CaCO3)	370	mg/L	5.0	1		12/16/15 13:09		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	5.0	1		12/16/15 13:09		
300.0 IC Anions		Analytical Method: EPA 300.0						
Sulfate	136	mg/L	2.4	2		12/10/15 21:06	14808-79-8	
353.2 Nitrate + Nitrite		Analytical Method: EPA 353.2						
Nitrogen, NO2 plus NO3	ND	mg/L	0.020	1		12/10/15 09:22		
5220D COD		Analytical Method: SM 5220D Preparation Method: SM 5220D						
Chemical Oxygen Demand	ND	mg/L	50.0	1	12/09/15 09:44	12/09/15 15:23		
5310C TOC		Analytical Method: SM 5310C						
Total Organic Carbon	3.0	mg/L	1.0	1		12/09/15 17:52	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10332217

Sample: PMW-2	Lab ID: 10332217003	Collected: 12/04/15 12:35		Received: 12/04/15 15:06		Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace								
Analytical Method: RSK 175								
Ethane	ND	ug/L	10.0	1		12/08/15 12:30	74-84-0	
Ethene	ND	ug/L	10.0	1		12/08/15 12:30	74-85-1	
Methane	13.2	ug/L	10.0	1		12/08/15 12:30	74-82-8	
6010C MET ICP								
Analytical Method: EPA 6010C Preparation Method: EPA 3010								
Iron	7070	ug/L	50.0	1	12/07/15 21:52	12/08/15 12:54	7439-89-6	
6010C MET ICP, Dissolved								
Analytical Method: 6010C Met Preparation Method: EPA 3010								
Iron, Dissolved	5480	ug/L	50.0	1	12/07/15 21:49	12/08/15 11:09	7439-89-6	
4500S2D Sulfide Water								
Analytical Method: SM 4500-S2-D								
Sulfide	ND	mg/L	0.10	1		12/10/15 11:54		
2320B Alkalinity								
Analytical Method: SM 2320B								
Alkalinity, Total as CaCO ₃	413	mg/L	5.0	1		12/09/15 12:29		
Carbon Dioxide (SM4500CO ₂ D)	51.9	mg/L	5.0	1		12/09/15 12:29	124-38-9	
Alkalinity, Total as CaCO ₃	425	mg/L	5.0	1		12/16/15 13:14		
Alkalinity, Bicarbonate (CaCO ₃)	425	mg/L	5.0	1		12/16/15 13:14		
Alkalinity, Carbonate (CaCO ₃)	ND	mg/L	5.0	1		12/16/15 13:14		
300.0 IC Anions								
Analytical Method: EPA 300.0								
Sulfate	147	mg/L	2.4	2		12/10/15 21:55	14808-79-8	
353.2 Nitrate + Nitrite								
Analytical Method: EPA 353.2								
Nitrogen, NO ₂ plus NO ₃	ND	mg/L	0.020	1		12/10/15 09:26		
5220D COD								
Analytical Method: SM 5220D Preparation Method: SM 5220D								
Chemical Oxygen Demand	ND	mg/L	50.0	1	12/09/15 09:44	12/09/15 15:23		
5310C TOC								
Analytical Method: SM 5310C								
Total Organic Carbon	2.5	mg/L	1.0	1		12/09/15 18:04	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10332217

Sample: PMW-1	Lab ID: 10332217004	Collected: 12/04/15 13:40	Received: 12/04/15 15:06	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace								
Analytical Method: RSK 175								
Ethane	ND	ug/L	10.0	1		12/08/15 11:57	74-84-0	
Ethene	ND	ug/L	10.0	1		12/08/15 11:57	74-85-1	
Methane	ND	ug/L	10.0	1		12/08/15 11:57	74-82-8	
6010C MET ICP								
Analytical Method: EPA 6010C Preparation Method: EPA 3010								
Iron	13300	ug/L	250	1	12/07/15 21:52	12/08/15 13:04	7439-89-6	
6010C MET ICP, Dissolved								
Analytical Method: 6010C Met Preparation Method: EPA 3010								
Iron, Dissolved	2190	ug/L	50.0	1	12/07/15 21:49	12/08/15 11:14	7439-89-6	
4500S2D Sulfide Water								
Analytical Method: SM 4500-S2-D								
Sulfide	ND	mg/L	5.0	50		12/10/15 12:11		D3
2320B Alkalinity								
Analytical Method: SM 2320B								
Alkalinity, Total as CaCO3	611	mg/L	100	20		12/09/15 12:34		D3
Carbon Dioxide (SM4500CO2D)	ND	mg/L	100	20		12/09/15 12:34	124-38-9	D3
Alkalinity, Total as CaCO3	575	mg/L	5.0	1		12/16/15 13:18		
Alkalinity,Bicarbonate (CaCO3)	575	mg/L	5.0	1		12/16/15 13:18		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	5.0	1		12/16/15 13:18		
300.0 IC Anions								
Analytical Method: EPA 300.0								
Sulfate	117	mg/L	2.4	2		12/10/15 22:14	14808-79-8	
353.2 Nitrate + Nitrite								
Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	ND	mg/L	0.020	1		12/10/15 09:27		
5220D COD								
Analytical Method: SM 5220D Preparation Method: SM 5220D								
Chemical Oxygen Demand	342	mg/L	50.0	1	12/15/15 13:18	12/16/15 13:29		
5310C TOC								
Analytical Method: SM 5310C								
Total Organic Carbon	36.7	mg/L	20.0	20		12/09/15 18:18	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP
Pace Project No.: 10332217

QC Batch: AIR/24784 Analysis Method: RSK 175
QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE
Associated Lab Samples: 10332217001, 10332217002, 10332217003, 10332217004

METHOD BLANK: 2151500 Matrix: Water
Associated Lab Samples: 10332217001, 10332217002, 10332217003, 10332217004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	10.0	12/08/15 10:09	
Ethene	ug/L	ND	10.0	12/08/15 10:09	
Methane	ug/L	ND	10.0	12/08/15 10:09	

LABORATORY CONTROL SAMPLE & LCSD: 2151501

Parameter	Units	2151501		2151502		% Rec Limits	RPD	Max RPD	Qualifiers	
		Spike Conc.	LCS Result	LCSD Result	% Rec					
Ethane	ug/L	114	100	105	88	92	85-115	5	20	
Ethene	ug/L	106	94.7	98.5	89	93	85-115	4	20	
Methane	ug/L	60.7	54.0	56.0	89	92	85-115	4	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2151961

Parameter	Units	2151961		2151962		% Rec	MSD	% Rec	MSD	% Rec	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
Ethane	ug/L	ND	114	114	79.6	111	70	97	54-148	33	20	R1
Ethene	ug/L	ND	106	106	76.4	103	72	97	50-150	30	20	R1
Methane	ug/L	676	60.7	60.7	575	784	-166	179	30-150	31	20	M1,R1

SAMPLE DUPLICATE: 2151796

Parameter	Units	92278363004 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	ND	1.7J		20	

SAMPLE DUPLICATE: 2151797

Parameter	Units	10332217003 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	13.2	3.2J		20	

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10332217

QC Batch: MPRP/60144

Analysis Method: EPA 6010C

QC Batch Method: EPA 3010

Analysis Description: 6010C Water

Associated Lab Samples: 10332217001, 10332217002, 10332217003, 10332217004

METHOD BLANK: 2150466

Matrix: Water

Associated Lab Samples: 10332217001, 10332217002, 10332217003, 10332217004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron	ug/L	ND	50.0	12/08/15 12:26	

LABORATORY CONTROL SAMPLE: 2150467

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	10000	9750	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2150468 2150469

Parameter	Units	10332185001		MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec						
Iron	ug/L	501	10000	10000	10000	10400	10500	99	100	75-125	1	20			

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10332217

QC Batch: MPRP/60145

Analysis Method: 6010C Met

QC Batch Method: EPA 3010

Analysis Description: 6010C Water Dissolved

Associated Lab Samples: 10332217001, 10332217002, 10332217003, 10332217004

METHOD BLANK: 2150470

Matrix: Water

Associated Lab Samples: 10332217001, 10332217002, 10332217003, 10332217004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron, Dissolved	ug/L	ND	50.0	12/08/15 10:36	

LABORATORY CONTROL SAMPLE: 2150471

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron, Dissolved	ug/L	10000	9750	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2150472 2150473

Parameter	Units	2150472		2150473		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10332217001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Iron, Dissolved	ug/L	3370	10000	10000	12600	13200	93	98	75-125	4	20

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10332217

QC Batch: MT/21790

Analysis Method: SM 4500-S2-D

QC Batch Method: SM 4500-S2-D

Analysis Description: 4500S2D Sulfide Water

Associated Lab Samples: 10332217001, 10332217002, 10332217003, 10332217004

METHOD BLANK: 2152704

Matrix: Water

Associated Lab Samples: 10332217001, 10332217002, 10332217003, 10332217004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfide	mg/L	ND	0.10	12/10/15 11:47	

LABORATORY CONTROL SAMPLE: 2152705

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide	mg/L	.87	0.84	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2152706 2152707

Parameter	Units	10332217001		2152706		2152707		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MSD Spike Conc.	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result					MS % Rec
Sulfide	mg/L	ND	.87	.87	.87	0.86	0.91	95	101	80-120	6	20

SAMPLE DUPLICATE: 2152708

Parameter	Units	10332217002 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide	mg/L	ND	.023J		20	

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10332217

QC Batch: WET/34583 Analysis Method: SM 2320B
 QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
 Associated Lab Samples: 10332217001, 10332217002, 10332217003, 10332217004

METHOD BLANK: 1414754 Matrix: Water

Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	ND	5.0	12/09/15 11:50	
Carbon Dioxide (SM4500CO2D)	mg/L	ND	5.0	12/09/15 11:50	

LABORATORY CONTROL SAMPLE: 1414755

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	250	246	98	90-110	

SAMPLE DUPLICATE: 1414756

Parameter	Units	10332217001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	268	270	1	20	
Carbon Dioxide (SM4500CO2D)	mg/L	36.0	35.0	3		

SAMPLE DUPLICATE: 1414757

Parameter	Units	35219863001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	8.8	8.5	3	20	
Carbon Dioxide (SM4500CO2D)	mg/L	34.9	34.6	1		

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QUALITY CONTROL DATA

Project: PS Beta-NIROP
Pace Project No.: 10332217

QC Batch: WET/45676 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 10332217001, 10332217002, 10332217003, 10332217004

METHOD BLANK: 2158895 Matrix: Water
Associated Lab Samples: 10332217001, 10332217002, 10332217003, 10332217004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	ND	5.0	12/16/15 12:44	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	5.0	12/16/15 12:44	
Alkalinity,Carbonate (CaCO ₃)	mg/L	ND	5.0	12/16/15 12:44	

LABORATORY CONTROL SAMPLE & LCSD: 2158896 2158897

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	40	42.2	42.2	106	105	90-110	0	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2158898 2158899

Parameter	Units	10332217001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO ₃	mg/L	273	40	40	315	315	104	105	80-120	0	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2158900 2158901

Parameter	Units	10333108001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO ₃	mg/L	463	40	40	522	510	148	116	80-120	2	30	M1

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QUALITY CONTROL DATA

Project: PS Beta-NIROP
Pace Project No.: 10332217

QC Batch: WETA/25834 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 10332217001, 10332217002, 10332217003, 10332217004

METHOD BLANK: 2153511 Matrix: Water
Associated Lab Samples: 10332217001, 10332217002, 10332217003, 10332217004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.2	12/10/15 15:40	

LABORATORY CONTROL SAMPLE: 2153512

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	12.5	11.6	93	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2153513 2153514

Parameter	Units	10332275001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	4.8	12.5	12.5	16.1	16.2	90	91	90-110	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2153515 2153516

Parameter	Units	10332275002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	345	125	125	432	431	69	69	90-110	0	20	M6

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10332217

QC Batch: WETA/25837 Analysis Method: EPA 353.2
 QC Batch Method: EPA 353.2 Analysis Description: 353.2 Nitrate + Nitrite, preserved
 Associated Lab Samples: 10332217001, 10332217002, 10332217003, 10332217004

METHOD BLANK: 2154006 Matrix: Water
 Associated Lab Samples: 10332217001, 10332217002, 10332217003, 10332217004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	ND	0.020	12/10/15 09:29	

LABORATORY CONTROL SAMPLE: 2154007

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	1	1.0	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2154008 2154009

Parameter	Units	2154008		2154009		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		10332275001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							MSD Result
Nitrogen, NO2 plus NO3	mg/L	0.16	1	1	1.2	1.1	99	98	90-110	1	20	

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QUALITY CONTROL DATA

Project: PS Beta-NIROP
Pace Project No.: 10332217

QC Batch: WETA/25826 Analysis Method: SM 5220D
QC Batch Method: SM 5220D Analysis Description: 5220D COD
Associated Lab Samples: 10332217001, 10332217002, 10332217003

METHOD BLANK: 2152684 Matrix: Water
Associated Lab Samples: 10332217001, 10332217002, 10332217003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50.0	12/09/15 15:16	

LABORATORY CONTROL SAMPLE: 2152685

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	300	292	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2152686 2152687

Parameter	Units	10332338001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Spike Conc.	MSD Result						
Chemical Oxygen Demand	mg/L	ND	250	250	268	278	99	103	80-120	4	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2152688 2152689

Parameter	Units	10331877001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Spike Conc.	MSD Result						
Chemical Oxygen Demand	mg/L	2290	2500	4670	4760	95	99	80-120	2	20		

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QUALITY CONTROL DATA

Project: PS Beta-NIROP
Pace Project No.: 10332217

QC Batch: WETA/25862 Analysis Method: SM 5220D
QC Batch Method: SM 5220D Analysis Description: 5220D COD
Associated Lab Samples: 10332217004

METHOD BLANK: 2157376 Matrix: Water
Associated Lab Samples: 10332217004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50.0	12/16/15 13:24	

LABORATORY CONTROL SAMPLE: 2157377

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	300	292	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2157378 2157379

Parameter	Units	10332604001 Result	MS	MSD	MS	MSD	MS	MSD	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec				
Chemical Oxygen Demand	mg/L	1370	500	500	1810	1820	89	90	80-120	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2157380 2157381

Parameter	Units	10332691001 Result	MS	MSD	MS	MSD	MS	MSD	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec				
Chemical Oxygen Demand	mg/L	ND	250	250	270	264	99	97	80-120	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10332217

QC Batch: WETA/14997 Analysis Method: SM 5310C
 QC Batch Method: SM 5310C Analysis Description: 5310C TOC
 Associated Lab Samples: 10332217001, 10332217002, 10332217003, 10332217004

METHOD BLANK: 273845 Matrix: Water

Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	12/09/15 14:30	

LABORATORY CONTROL SAMPLE: 273846

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	25	25.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 273847 273848

Parameter	Units	1258020001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	mg/L	12.7	25	25	38.4	38.0	103	101	80-120	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 273849 273850

Parameter	Units	10332217001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	mg/L	2.9	25	25	27.8	27.8	99	99	80-120	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALIFIERS

Project: PS Beta-NIROP

Pace Project No.: 10332217

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

PASI-MT Pace Analytical Services - Montana

PASI-O Pace Analytical Services - Ormond Beach

PASI-V Pace Analytical Services - Virginia

ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PS Beta-NIROP

Pace Project No.: 10332217

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10332217001	PMW-4	RSK 175	AIR/24784		
10332217002	PMW-3	RSK 175	AIR/24784		
10332217003	PMW-2	RSK 175	AIR/24784		
10332217004	PMW-1	RSK 175	AIR/24784		
10332217001	PMW-4	EPA 3010	MPRP/60144	EPA 6010C	ICP/26197
10332217002	PMW-3	EPA 3010	MPRP/60144	EPA 6010C	ICP/26197
10332217003	PMW-2	EPA 3010	MPRP/60144	EPA 6010C	ICP/26197
10332217004	PMW-1	EPA 3010	MPRP/60144	EPA 6010C	ICP/26197
10332217001	PMW-4	EPA 3010	MPRP/60145	6010C Met	ICP/26200
10332217002	PMW-3	EPA 3010	MPRP/60145	6010C Met	ICP/26200
10332217003	PMW-2	EPA 3010	MPRP/60145	6010C Met	ICP/26200
10332217004	PMW-1	EPA 3010	MPRP/60145	6010C Met	ICP/26200
10332217001	PMW-4	SM 4500-S2-D	MT/21790		
10332217002	PMW-3	SM 4500-S2-D	MT/21790		
10332217003	PMW-2	SM 4500-S2-D	MT/21790		
10332217004	PMW-1	SM 4500-S2-D	MT/21790		
10332217001	PMW-4	SM 2320B	WET/34583		
10332217001	PMW-4	SM 2320B	WET/45676		
10332217002	PMW-3	SM 2320B	WET/34583		
10332217002	PMW-3	SM 2320B	WET/45676		
10332217003	PMW-2	SM 2320B	WET/34583		
10332217003	PMW-2	SM 2320B	WET/45676		
10332217004	PMW-1	SM 2320B	WET/34583		
10332217004	PMW-1	SM 2320B	WET/45676		
10332217001	PMW-4	EPA 300.0	WETA/25834		
10332217002	PMW-3	EPA 300.0	WETA/25834		
10332217003	PMW-2	EPA 300.0	WETA/25834		
10332217004	PMW-1	EPA 300.0	WETA/25834		
10332217001	PMW-4	EPA 353.2	WETA/25837		
10332217002	PMW-3	EPA 353.2	WETA/25837		
10332217003	PMW-2	EPA 353.2	WETA/25837		
10332217004	PMW-1	EPA 353.2	WETA/25837		
10332217001	PMW-4	SM 5220D	WETA/25826	SM 5220D	WETA/25829
10332217002	PMW-3	SM 5220D	WETA/25826	SM 5220D	WETA/25829
10332217003	PMW-2	SM 5220D	WETA/25826	SM 5220D	WETA/25829
10332217004	PMW-1	SM 5220D	WETA/25862	SM 5220D	WETA/25872
10332217001	PMW-4	SM 5310C	WETA/14997		
10332217002	PMW-3	SM 5310C	WETA/14997		
10332217003	PMW-2	SM 5310C	WETA/14997		
10332217004	PMW-1	SM 5310C	WETA/14997		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

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

10332217

Page: 2 of 2

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Regenesis	Report To:	Melinda Pham	Attention:	Bahar Naderi
Address:	1011 Calle Sombra	Copy To:		Company Name:	Regenesis
	San Clemente, CA 92673	Purchase Order No.:		Address:	1011 Calle Sombra
Email To:	Mpham@regenesis.com			Pace Quote Reference:	21466
Phone:	949-366-8000	Fax:	343-366-8090	Pace Project Manager:	
Requested Due Date/TAT:	10 days	Project Name:	PS Beta - NIROP	Pace Profile #:	
		Project Number:	PS Beta - NIROP	Site Location:	STATE: MN

ITEM #	Section D Required Client Information	Valid Matrix Codes MATERIAL CODE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives	Analysis Test	Requested Analysis Filtered (Y/N)						Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.		
					DATE	TIME					DATE	TIME	Alkalinity, CaCO3 in water	Chemical oxygen demand	Total iron	Dissolved iron			Volatile fatty acids	Carbon dioxide in water
1	PMW-4	DW WT PW P SI OI WP AR OT TS	B	G	12/4/15	1925	14	8	2	0	1	1	1	1	1	1	1	1	3	001
2	PMW-3		B	G	1050		14	8	3	2	1	1	1	1	1	1	1	1	3	002
3	PMW-2		B	G	1235		14	8	3	2	1	1	1	1	1	1	1	1	3	003
4	PMW-1		B	G	1340		14	8	3	2	1	1	1	1	1	1	1	1	3	004
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				

REINQUISHED BY / AFFILIATION		DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
<i>[Signature]</i>		12/4/15	086	<i>[Signature]</i>	12/4/15	1506	4.5	Y	N	Y
ADDITIONAL COMMENTS							31			

SAMPLER NAME AND SIGNATURE		DATE Signed (MM/DD/YY)
<i>[Signature]</i>		12/4/15
PRINT Name of SAMPLER:	MEISSA HEWSEN	
SIGNATURE of SAMPLER:	<i>[Signature]</i>	

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

F-ALL-Q-020rev.08, 12-Oct-2007



Document Name:
Sample Condition Upon Receipt Form

Document No.:
F-MN-L-213-rev.13

Document Revised: 23Feb2015
Page 1 of 1

Issuing Authority:
Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Regenesis Project #: WO# : 10332217

WO# : 10332217



10332217

Courier: Fed Ex UPS USPS Client

Commercial Pace Speedee Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No

Optional: Proj. Due Date: _____ Proj. Name: _____

Packing Material: Bubble Wrap Bubble Bags None Other: _____ Temp Blank? Yes No

Thermometer Used: B88A9130516413 B88A912167504 B88A0143310098

Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temp Read (°C): 4.1/2.7 Cooler Temp Corrected (°C): 4.5/3.1 Biological Tissue Frozen? Yes No N/A

Temp should be above freezing to 6°C Correction Factor: +0.4 Date and Initials of Person Examining Contents: Bm 12/4/15

USDA Regulated Soil (N/A, water sample) Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or WA (check maps)? Yes No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

		COMMENTS:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>		
All containers needing acid/base preservation have been checked?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide) Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample # <u>01-04</u>
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Initial when completed: _____ Lot # of added preservative: _____
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Pace Trip Blank Lot # (if purchased): _____		

CLIENT NOTIFICATION/RESOLUTION


Person Contacted: _____ Date/Time: _____ Field Data Required? Yes No

Comments/Resolution: _____

Project Manager Review: [Signature]

Date: 12/7/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

	Document Name: MN to MT Sample Transfer Form	Revised Date: 14 Jul 2014 Page: 1 of 1
	Document Number: F-MN-C-043-rev.11	Issuing Authority: Pace Minnesota Quality Office

Shipping (circle):	UPS <u>Fed Ex</u>
Tracking #:	<u>6454 2694 386 2</u>
Client:	Regenesis
Due Date:	18-Dec-2015
Pace WO:	10332217
Project Manager:	JMA

MN to MT Sample Transfer Condition Upon Receipt Form

ANALYSIS REQUESTED					
Method Number & Description	Container Type	# of Bottles	Lab ID's	Preservative Yes or No	Verify Arrival Date & Initials
4500S2D Sulfide Water	BP2Z	4	001-004	✓	12/8 JMA

REPORTING REQUIREMENTS/ADDITIONAL COMMENTS

MONTANA SAMPLE RECEIPT INFORMATION			
IR Gun: B88A0140728348, Correction Factor: <u>-0.1</u>	Sample Matrix: <u>WJ</u>	Cooler Temp Read (°C): <u>16</u>	
Cooler Temp Corrected (°C): <u>1.5</u>	Filtred volume rec'd for dissolved tests: Yes ___ No <u>X</u> NA ___	Arrived on Ice: Yes <u>X</u> No ___	
Custody Seal Present: Yes <u>X</u> No ___	Samples pH have been checked: Yes <u>X</u> No ___ NA ___	Short Hold Time Requested < 72 Hours: Yes ___ No <u>X</u>	
Short Hold Time Requested < 72 Hours: Yes ___ No <u>X</u>	Trip Blank Present: Yes ___ No ___ NA <u>X</u>	Rush TAT Requested: Yes ___ No <u>X</u>	
Rush TAT Requested: Yes ___ No <u>X</u>	Trip Blank Custody Seals Present: Yes ___ No ___ NA <u>X</u>	Sufficient Sample Volume: Yes <u>X</u> No ___	
Sufficient Sample Volume: Yes <u>X</u> No ___	Pace Trip Blank Lot #: <u>WJ</u>	Samples Arrived within Hold Time: Yes <u>X</u> No ___	
Samples Arrived within Hold Time: Yes <u>X</u> No ___	Sample Composites Required: Yes ___ No <u>X</u> NA ___	Containers Intact: Yes <u>X</u> No ___	
Containers Intact: Yes <u>X</u> No ___	Report Samples: Wet Wt. ___ Dry Wt. ___	Reporting Units: ___	

CUSTODY TRANSFER					
Relinquished by/Affiliation	Date	Time	Accepted By Affiliation	Date	Time
<u>JMA</u> Pace <u>Fed Ex</u>	<u>12/7/15</u>	<u>1005</u>	<u>JMA</u> Pace	<u>12/8/15</u>	<u>0945</u>

CLIENT NOTIFICATION/RESOLUTION	
Person Contacted: _____	Date: _____
Comments/Resolution: _____	

Project Manager Review: JMA Date: 12/8/15

Chain of Custody

MO#: 1258217

PM: HRZ Due Date: 12/22/15
 CLIENT: PACE MPLS

Workorder: 10332217 Workorder Name: PS Beta-NIROP Owner Received Date: 12/4/2015 Results Requested By: 12/18/2015

Report to: Jennifer Anderson
 Pace Analytical Services, Inc.
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone (612)607-1700
 Fax (612)607-6444

Subcontractor: Pace Analytical Virginia MN
 315 Chestnut Street
 Virginia, MN 55792
 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers	Requested Analysis	Comments
1	PMW-4	PS	12/4/2015 09:25	10332217001	Water	1	TOC	LAB USE ONLY
2	PMW-3	PS	12/4/2015 10:50	10332217002	Water	1	X	
3	PMW-2	PS	12/4/2015 12:35	10332217003	Water	1	X	
4	PMW-1	PS	12/4/2015 13:40	10332217004	Water	1	X	
5								

Transfers	Released By	Date/Time	Received By	Date/Time	Cooler Temperature on Receipt	Temp °C	Custody Seal	Y or N	Received on Ice	Y or N	Samples Intact	Y or N
1	JAC	12/15/15	CP	12/18/15	3	9	Y		Y		Y	
2												
3												

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
 This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Condition Upon Receipt **Client Name:** PACE MPLS **Project #:** WO# : 1258217

Courier: Fed Ex UPS USPS Client
 Commercial Pace Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No **Seals Intact?** Yes No

Packing Material: Bubble Wrap Bubble Bags None Other: _____ **Temp Blank?** Yes No

Thermometer Used: 140792808 **Type of Ice:** Wet Blue None Samples on ice, cooling process has begun

Cooler Temp Read °C: 3.6 **Cooler Temp Corrected °C:** 3.7 **Biological Tissue Frozen?** Yes No NA

Temp should be above freezing to 6°C Correction Factor: 0.3 **Date and Initials of Person Examining Contents:** 12-8-15 CL

			Comments:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and Signature on COC?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>			
All containers needing acid/base preservation will be checked and documented in the pH logbook.	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present?	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):	_____		

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** Yes No

Person Contacted: _____ Date/Time: _____


Comments/Resolution: _____

FECAL WAIVER ON FILE Y N **TEMPERATURE WAIVER ON FILE** Y N

Project Manager Review: Hunter 300 **Date:** 12/8/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

MO# : 35219976

 35219976



Workorder: 10332217 Workorder Name: PS Beta-NIROP

Owner Received Date: 12/4/2015 Results Requested By: 12/18/2015

Report To: Jennifer Anderson
 Pace Analytical Services, Inc.
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone (612)607-1700
 Fax (612)607-6444

Subcontract To: Pace Analytical Ormond Beach
 8 East Tower Circle
 Ormond Beach, FL 32174
 Phone (386)672-5668

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers		Comments
						Unpreserved	Preserved	
1	PMW-4	PS	12/4/2015 09:25	10332217001	Water	1		
2	PMW-3	PS	12/4/2015 10:50	10332217002	Water	1		
3	PMW-2	PS	12/4/2015 12:35	10332217003	Water	1		
4	PMW-1	PS	12/4/2015 13:40	10332217004	Water	1		
5								

Transfers	Released By	Date/Time	Received By	Date/Time	Cooler Temperature on Receipt	Seal	°C	Custody Seal	Y or N	Received on Ice	Y or N	Samples Intact	Y or N
1	<i>[Signature]</i>	12/15/10	<i>[Signature]</i>	12/8/15									
2													
3													

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
 This chain of custody is considered complete as is since this information is available in the owner laboratory.



Document Name:
Sample Condition Upon Receipt Form
Document No.:
F-FL-C-007 rev. 06

Document Revised:
August 11, 2014
Issuing Authority:
Pace Florida Quality Office

Sample Condition Upon Receipt Form (SCUR)

Table Number: _____

Client Name: PACE MN Project # 35219976

Courier: Fed Ex UPS USPS Client Commercial Pace

Other _____

Tracking # 6484 8694 3807

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Date and Initials of person examining contents: 12/8/15 JES

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used T199 Type of Ice: Wet Blue None

Cooler Temperature °C 3.7 (Visual) + 0.2 (Correction Factor) 3.9 (Actual)

(Temp should be above freezing to 6°C). If below 0°C, then was sample frozen?

Yes No

Receipt of samples satisfactory: Yes No

Rush TAT requested on COC: _____

If yes, then all conditions below were met:

If no, then mark box & describe issue (use comments area if necessary):

Chain of Custody Present	<input type="checkbox"/>
Chain of Custody Filled Out	<input type="checkbox"/>
Relinquished Signature & Sampler Name COC	<input type="checkbox"/>
Samples Arrived within Hold Time	<input type="checkbox"/>
Sufficient Volume	<input type="checkbox"/>
Correct Containers Used	<input type="checkbox"/>
Containers Intact	<input type="checkbox"/>
Sample Labels match COC (sample IDs & date/time of collection)	<input type="checkbox"/>
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/>
No Headspace in VOA Vials (>6mm):	<input type="checkbox"/>

No Labels: No Time/Date on Labels:

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____

Comments/ Resolution (use back for additional comments): _____

Project Manager Review: _____

Date: 12/9

Finished Product Information Only	
F.P. Sample ID: _____	Size & Qty of Bottles Received
Production Code: _____	_____ x 5 Gal
Date/Time Opened: _____	_____ x 2.5 Gal
Number of Unopened Bottles Remaining: _____	_____ x 1 Gal
	_____ x 1 Liter
	_____ x 500 mL
	_____ x 250 mL
	_____ x Other: _____
Extra Sample in Shed: Yes No	



Pace Analytical Energy Services, LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

December 17, 2015

Jennifer Anderson
Pace Analytical Services, Inc.
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: **PS BETA - NIROP / 10332217**

Pace Workorder: 17579

Dear Jennifer Anderson:

Enclosed are the analytical results for sample(s) received by the laboratory on Tuesday, December 08, 2015. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

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

Sincerely,

Ruth Welsh 12/17/2015 TM
Ruth.Welsh@pacelabs.com

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email info@microseeps.com.

Total Number of Pages **15**

Report ID: 17579 - 744044

Page 1 of 13



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LABORATORY ACCREDITATIONS & CERTIFICATIONS

Accreditor:	Pennsylvania Department of Environmental Protection, Bureau of Laboratories
Accreditation ID:	02-00538
Scope:	NELAP Non-Potable Water and Solid & Hazardous Waste
Accreditor:	South Carolina Department of Health and Environmental Control, Office of Environmental Laboratory Certification
Accreditation ID:	89009003
Scope:	Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: New Jersey, Department of Environmental Protection
Accreditation ID:	PA026
Scope:	Non-Potable Water; Solid and Chemical Materials
Accreditor:	NELAP: New York, Department of Health Wadsworth Center
Accreditation ID:	11815
Scope:	Non-Potable Water; Solid and Hazardous Waste
Accreditor:	State of Connecticut, Department of Public Health, Division of Environmental Health
Accreditation ID:	PH-0263
Scope:	Clean Water Act (CWA) Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: Texas, Commission on Environmental Quality
Accreditation ID:	T104704453-09-TX
Scope:	Non-Potable Water
Accreditor:	State of New Hampshire
Accreditation ID:	299409
Scope:	Non-potable water
Accreditor:	State of Georgia
Accreditation ID:	Chapter 391-3-26
Scope:	As per the Georgia EPD Rules and Regulations for Commercial Laboratories, PAES is accredited by the Pennsylvania Department of Environmental Protection Bureau of Laboratories under the National Environmental Laboratory Approval Program (NELAC).



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220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

SAMPLE SUMMARY

Workorder: 17579 PS BETA - NIROP / 10332217

Lab ID	Sample ID	Matrix	Date Collected	Date Received
175790001	PMW-4	Water	12/4/2015 09:25	12/8/2015 11:00
175790002	PMW-3	Water	12/4/2015 10:50	12/8/2015 11:00
175790003	PMW-2	Water	12/4/2015 12:35	12/8/2015 11:00
175790004	PMW-1	Water	12/4/2015 13:40	12/8/2015 11:00

Report ID: 17579 - 744044

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ANALYTICAL RESULTS

Workorder: 17579 PS BETA - NIROP / 10332217

Lab ID: 175790001 Date Received: 12/8/2015 11:00 Matrix: Water
 Sample ID: PMW-4 Date Collected: 12/4/2015 09:25

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM23G			Analytical Method: AM23G					
Lactic Acid	<0.20	mg/l	0.20	0.0080	1	12/10/2015 22:36	KB	B
Acetic Acid	<0.10	mg/l	0.10	0.012	1	12/10/2015 22:36	KB	
Propionic Acid	<0.10	mg/l	0.10	0.0060	1	12/10/2015 22:36	KB	
Formic Acid	<0.10	mg/l	0.10	0.0070	1	12/10/2015 22:36	KB	B
Butyric Acid	<0.10	mg/l	0.10	0.010	1	12/10/2015 22:36	KB	
Pyruvic Acid	<0.10	mg/l	0.10	0.015	1	12/10/2015 22:36	KB	
i-Pentanoic Acid	<0.10	mg/l	0.10	0.0070	1	12/10/2015 22:36	KB	
Pentanoic Acid	<0.10	mg/l	0.10	0.012	1	12/10/2015 22:36	KB	
i-Hexanoic Acid	<0.20	mg/l	0.20	0.014	1	12/10/2015 22:36	KB	
Hexanoic Acid	<0.20	mg/l	0.20	0.0070	1	12/10/2015 22:36	KB	



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ANALYTICAL RESULTS

Workorder: 17579 PS BETA - NIROP / 10332217

Lab ID: 175790002 Date Received: 12/8/2015 11:00 Matrix: Water
 Sample ID: PMW-3 Date Collected: 12/4/2015 10:50

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM23G			Analytical Method: AM23G					
Lactic Acid	<0.20	mg/l	0.20	0.0080	1	12/10/2015 23:29	KB	B
Acetic Acid	<0.10	mg/l	0.10	0.012	1	12/10/2015 23:29	KB	
Propionic Acid	<0.10	mg/l	0.10	0.0060	1	12/10/2015 23:29	KB	
Formic Acid	<0.10	mg/l	0.10	0.0070	1	12/10/2015 23:29	KB	B
Butyric Acid	<0.10	mg/l	0.10	0.010	1	12/10/2015 23:29	KB	
Pyruvic Acid	<0.10	mg/l	0.10	0.015	1	12/10/2015 23:29	KB	
i-Pentanoic Acid	<0.10	mg/l	0.10	0.0070	1	12/10/2015 23:29	KB	
Pentanoic Acid	<0.10	mg/l	0.10	0.012	1	12/10/2015 23:29	KB	
i-Hexanoic Acid	<0.20	mg/l	0.20	0.014	1	12/10/2015 23:29	KB	
Hexanoic Acid	<0.20	mg/l	0.20	0.0070	1	12/10/2015 23:29	KB	



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ANALYTICAL RESULTS

Workorder: 17579 PS BETA - NIROP / 10332217

Lab ID: **175790003** Date Received: 12/8/2015 11:00 Matrix: Water
 Sample ID: **PMW-2** Date Collected: 12/4/2015 12:35

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM23G			Analytical Method: AM23G					
Lactic Acid	<0.20	mg/l	0.20	0.0080	1	12/11/2015 00:23	KB	B
Acetic Acid	<0.10	mg/l	0.10	0.012	1	12/11/2015 00:23	KB	
Propionic Acid	<0.10	mg/l	0.10	0.0060	1	12/11/2015 00:23	KB	
Formic Acid	<0.10	mg/l	0.10	0.0070	1	12/11/2015 00:23	KB	B
Butyric Acid	<0.10	mg/l	0.10	0.010	1	12/11/2015 00:23	KB	
Pyruvic Acid	<0.10	mg/l	0.10	0.015	1	12/11/2015 00:23	KB	
i-Pentanoic Acid	<0.10	mg/l	0.10	0.0070	1	12/11/2015 00:23	KB	
Pentanoic Acid	<0.10	mg/l	0.10	0.012	1	12/11/2015 00:23	KB	
i-Hexanoic Acid	<0.20	mg/l	0.20	0.014	1	12/11/2015 00:23	KB	
Hexanoic Acid	<0.20	mg/l	0.20	0.0070	1	12/11/2015 00:23	KB	



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ANALYTICAL RESULTS

Workorder: 17579 PS BETA - NIROP / 10332217

Lab ID: 175790004 Date Received: 12/8/2015 11:00 Matrix: Water
 Sample ID: PMW-1 Date Collected: 12/4/2015 13:40

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM23G			Analytical Method: AM23G					
Lactic Acid	<2.0	mg/l	2.0	0.080	10	12/11/2015 21:14	KB	d,B
Acetic Acid	30	mg/l	1.0	0.12	10	12/11/2015 21:14	KB	d
Propionic Acid	15	mg/l	1.0	0.060	10	12/11/2015 21:14	KB	d
Formic Acid	<0.10	mg/l	0.10	0.0070	1	12/11/2015 01:16	KB	B
Butyric Acid	<0.10	mg/l	0.10	0.010	1	12/11/2015 01:16	KB	
Pyruvic Acid	<0.10	mg/l	0.10	0.015	1	12/11/2015 01:16	KB	
i-Pentanoic Acid	<0.10	mg/l	0.10	0.0070	1	12/11/2015 01:16	KB	
Pentanoic Acid	<0.10	mg/l	0.10	0.012	1	12/11/2015 01:16	KB	
i-Hexanoic Acid	<0.20	mg/l	0.20	0.014	1	12/11/2015 01:16	KB	
Hexanoic Acid	<0.20	mg/l	0.20	0.0070	1	12/11/2015 01:16	KB	



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ANALYTICAL RESULTS QUALIFIERS

Workorder: 17579 PS BETA - NIROP / 10332217

DEFINITIONS/QUALIFIERS

Disclaimer : The Pennsylvania Department of Environmental Protection (PADEP) has decided to no longer recognize analyses that do not produce data for primary compliance, for NELAP accreditation. The methods affected by this decision are AM20GAX, AM21G, SW846 7199 and AM4.02. The laboratory shall continue to administer the NELAP/TNI standard requirements in the performance of these methods.

- MDL** Method Detection Limit. Can be used synonymously with LOD; Limit Of Detection.
- PQL** Practical Quantitation Limit. Can be used synonymously with LOQ; Limit Of Quantitation.
- ND** Not detected at or above reporting limit.
- DF** Dilution Factor.
- S** Surrogate.
- RPD** Relative Percent Difference.
- % Rec** Percent Recovery.
- U** Indicates the compound was analyzed for, but not detected at or above the noted concentration.
- J** Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).

- B** The analyte was detected in the associated blank.

- d** The analyte concentration was determined from a dilution.



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QUALITY CONTROL DATA

Workorder: 17579 PS BETA - NIROP / 10332217

QC Batch: EDON/2744 Analysis Method: AM23G
 QC Batch Method: AM23G
 Associated Lab Samples: 175790001, 175790002, 175790003, 175790004

METHOD BLANK: 39141

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
EDonors				
Lactic Acid	mg/l	<0.20	0.20	B
Acetic Acid	mg/l	<0.10	0.10	
Propionic Acid	mg/l	<0.10	0.10	
Formic Acid	mg/l	<0.10	0.10	B
Butyric Acid	mg/l	<0.10	0.10	
Pyruvic Acid	mg/l	<0.10	0.10	
i-Pentanoic Acid	mg/l	<0.10	0.10	
Pentanoic Acid	mg/l	<0.10	0.10	
i-Hexanoic Acid	mg/l	<0.20	0.20	
Hexanoic Acid	mg/l	<0.20	0.20	

LABORATORY CONTROL SAMPLE: 39142

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
EDonors						
Lactic Acid	mg/l	2	2.0	100	70-130	B
Acetic Acid	mg/l	2	2.1	103	70-130	
Propionic Acid	mg/l	2	2.1	104	70-130	
Formic Acid	mg/l	2	1.8	90	70-130	B
Butyric Acid	mg/l	2	2.1	103	70-130	
Pyruvic Acid	mg/l	2	2.0	101	70-130	
i-Pentanoic Acid	mg/l	2	2.0	102	70-130	
Pentanoic Acid	mg/l	2	2.1	103	70-130	
i-Hexanoic Acid	mg/l	2	2.0	103	70-130	
Hexanoic Acid	mg/l	2	2.0	98	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 39143 39144 Original: 175570001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	Max RPD	RPD	Qualifiers
EDonors											
Lactic Acid	mg/l	0.027	2	2.1	2.1	102	102	70-130	0	30	B



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QUALITY CONTROL DATA

Workorder: 17579 PS BETA - NIROP / 10332217

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 39143 39144 Original: 175570001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	Max RPD	RPD	Qualifiers
Acetic Acid	mg/l	0.038	2	2.2	2.2	109	109	70-130	0	30	
Propionic Acid	mg/l	0.0022	2	2.2	2.2	112	112	70-130	0	30	
Formic Acid	mg/l	0.022	2	1.9	1.9	95	95	70-130	0	30	B
Butyric Acid	mg/l	0.006	2	2.2	2.2	111	111	70-130	0	30	
Pyruvic Acid	mg/l	0	2	2.1	2.1	105	105	70-130	0	30	
i-Pentanoic Acid	mg/l	0	2	2.2	2.2	111	111	70-130	0	30	
Pentanoic Acid	mg/l	0	2	2.4	2.3	118	117	70-130	0.85	30	
i-Hexanoic Acid	mg/l	0	2	2.4	2.4	121	121	70-130	0	30	
Hexanoic Acid	mg/l	0.0056	2	2.4	2.4	120	119	70-130	0.84	30	



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QUALITY CONTROL DATA

Workorder: 17579 PS BETA - NIROP / 10332217

QC Batch: EDON/2748 Analysis Method: AM23G
 QC Batch Method: AM23G
 Associated Lab Samples: 175790004

METHOD BLANK: 39252

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
EDonors				
Lactic Acid	mg/l	<0.20	0.20	B
Acetic Acid	mg/l	<0.10	0.10	
Propionic Acid	mg/l	<0.10	0.10	

LABORATORY CONTROL SAMPLE: 39253

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
EDonors						
Lactic Acid	mg/l	2	2.1	104	70-130	B
Acetic Acid	mg/l	2	2.1	105	70-130	
Propionic Acid	mg/l	2	2.1	107	70-130	



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Fax: (412) 826-3433

QUALITY CONTROL DATA QUALIFIERS

Workorder: 17579 PS BETA - NIROP / 10332217

QUALITY CONTROL PARAMETER QUALIFIERS

B The analyte was detected in the associated blank.

Report ID: 17579 - 744044

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Fax: (412) 826-3433

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 17579 PS BETA - NIROP / 10332217

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
175790001	PMW-4			AM23G	EDON/2744
175790002	PMW-3			AM23G	EDON/2744
175790003	PMW-2			AM23G	EDON/2744
175790004	PMW-1			AM23G	EDON/2744
175790004	PMW-1			AM23G	EDON/2748



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Chain of Custody

17579



Workorder: 10332217 Workorder Name: PS Beta-NIROP Results Requested 12/18/2015

Report/Invoice To: Subcontract To: Requested Analysis:

Jennifer Anderson
 Pace Analytical Minnesota
 1700 Elm Street
 Suite 200
 Minneapolis, MN 55414
 Phone (612)607-1700
 Email: jennifer.anderson@pacelabs.com

Pace Energy MicroSeeps P.O. 10332217

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers		Comments
					Unpreserved	Preserved	
1	PMW-4	12/4/2015 09:25	10332217001	Water	2		LAB USE ONLY
2	PMW-3	12/4/2015 10:50	10332217002	Water	2		
3	PMW-2	12/4/2015 12:35	10332217003	Water	2		
4	PMW-1	12/4/2015 13:40	10332217004	Water	2		
5							

Transfers	Released By	Date/Time	Received By	Date/Time	Cooler Temperature on Receipt °C	Custody Seal Y or N	Received on Ice Y or N	Samples Intact Y or N
1	JAC	12/15/103	WAS2	12/15	2	Y	Y	1100
2								
3								

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
 This chain of custody is considered complete as is since this information is available in the owner laboratory.

Cooler Receipt Form

Client Name: Pace Project: PS Beta Nirop Lab Work Order: 17579

A. Shipping/Container Information (circle appropriate response)

Courier: FedEx UPS USPS Client Other: _____ Air bill Present: Yes No

Tracking Number: 648486943840

Custody Seal on Cooler/Box Present: Yes No Seals Intact: Yes No

Cooler/Box Packing Material: Bubble Wrap Absorbent Foam Other: _____

Type of Ice: Wet Blue None Ice Intact: Yes Melted

Cooler Temperature: 2°C Radiation Screened: Yes No Chain of Custody Present: Yes No

Comments: _____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non-Conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished	✓			
Sampler Name & Signature on COC		✓		
Containers intact	✓			
Were samples in separate bags	✓			
Sample container labels match COC	✓			
Sample name/date and time collected	✓			
Sufficient volume provided	✓			
PAES containers used	✓			
Are containers properly preserved for the requested testing? (as labeled)	✓			
If an unknown preservation state, were containers checked? Exception: VOA's coliform			✓	If yes, see pH form.
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			✓	

Comments: _____

Cooler contents examined/received by: LY Date: 12.8.15

Project Manager Review: RW Date: 12.9.15

February 05, 2016

Melinda Pham
Regenesis
1011 Calle Sombra
San Clemente, CA 92673

RE: Project: PS Beta-NIROP
Pace Project No.: 10335268

Dear Melinda Pham:

Enclosed are the analytical results for sample(s) received by the laboratory on January 06, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,



Jennifer Anderson
jennifer.anderson@pacelabs.com
Project Manager

Enclosures

cc: Ryan Moore, Regenesis



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PS Beta-NIROP

Pace Project No.: 10335268

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414

525 N 8th Street, Salina, KS 67401

A2LA Certification #: 2926.01

Alaska Certification #: UST-078

Alaska Certification #MN00064

Alabama Certification #40770

Arizona Certification #: AZ-0014

Arkansas Certification #: 88-0680

California Certification #: 01155CA

Colorado Certification #Pace

Connecticut Certification #: PH-0256

EPA Region 8 Certification #: 8TMS-L

Florida/NELAP Certification #: E87605

Guam Certification #: 14-008r

Georgia Certification #: 959

Georgia EPD #: Pace

Idaho Certification #: MN00064

Hawaii Certification #MN00064

Illinois Certification #: 200011

Indiana Certification#C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky Dept of Envi. Protection - DW #90062

Kentucky Dept of Envi. Protection - WW #:90062

Louisiana DEQ Certification #: 3086

Louisiana DHH #: LA140001

Maine Certification #: 2013011

Maryland Certification #: 322

Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: Pace

Montana Certification #: MT0092

Nevada Certification #: MN_00064

Nebraska Certification #: Pace

New Jersey Certification #: MN-002

New York Certification #: 11647

North Carolina Certification #: 530

North Carolina State Public Health #: 27700

North Dakota Certification #: R-036

Ohio EPA #: 4150

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Certification #: MN200001

Oregon Certification #: MN300001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification

Saipan (CNMI) #:MP0003

South Carolina #:74003001

Texas Certification #: T104704192

Tennessee Certification #: 02818

Utah Certification #: MN000642013-4

Virginia DGS Certification #: 251

Virginia/VELAP Certification #: Pace

Washington Certification #: C486

West Virginia Certification #: 382

West Virginia DHHR #:9952C

Wisconsin Certification #: 999407970

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: PS Beta-NIROP

Pace Project No.: 10335268

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10335268001	PMW-01	Water	01/06/16 14:20	01/06/16 16:34
10335268002	PMW-02	Water	01/06/16 13:25	01/06/16 16:34
10335268003	PMW-03	Water	01/06/16 10:55	01/06/16 16:34
10335268004	PMW-04	Water	01/06/16 09:25	01/06/16 16:34
10335268005	Trip Blank	Water	01/06/16 00:00	01/06/16 16:54

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: PS Beta-NIROP

Pace Project No.: 10335268

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10335268001	PMW-01	EPA 8260B	DJB	70
10335268002	PMW-02	EPA 8260B	DJB	70
10335268003	PMW-03	EPA 8260B	DJB	70
10335268004	PMW-04	EPA 8260B	DJB	70
10335268005	Trip Blank	EPA 8260B	DJB	70

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10335268

Sample: PMW-01	Lab ID: 10335268001	Collected: 01/06/16 14:20	Received: 01/06/16 16:34	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		01/08/16 14:49	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		01/08/16 14:49	107-05-1	
Benzene	ND	ug/L	1.0	1		01/08/16 14:49	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		01/08/16 14:49	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		01/08/16 14:49	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		01/08/16 14:49	75-27-4	
Bromoform	ND	ug/L	4.0	1		01/08/16 14:49	75-25-2	
Bromomethane	ND	ug/L	4.0	1		01/08/16 14:49	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		01/08/16 14:49	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		01/08/16 14:49	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		01/08/16 14:49	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		01/08/16 14:49	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		01/08/16 14:49	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		01/08/16 14:49	108-90-7	
Chloroethane	ND	ug/L	4.0	1		01/08/16 14:49	75-00-3	
Chloroform	ND	ug/L	1.0	1		01/08/16 14:49	67-66-3	
Chloromethane	ND	ug/L	4.0	1		01/08/16 14:49	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		01/08/16 14:49	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		01/08/16 14:49	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	10.0	1		01/08/16 14:49	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		01/08/16 14:49	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		01/08/16 14:49	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		01/08/16 14:49	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		01/08/16 14:49	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		01/08/16 14:49	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		01/08/16 14:49	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		01/08/16 14:49	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		01/08/16 14:49	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		01/08/16 14:49	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		01/08/16 14:49	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		01/08/16 14:49	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		01/08/16 14:49	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		01/08/16 14:49	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		01/08/16 14:49	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		01/08/16 14:49	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		01/08/16 14:49	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		01/08/16 14:49	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		01/08/16 14:49	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		01/08/16 14:49	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		01/08/16 14:49	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		01/08/16 14:49	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		01/08/16 14:49	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		01/08/16 14:49	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		01/08/16 14:49	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		01/08/16 14:49	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		01/08/16 14:49	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		01/08/16 14:49	1634-04-4	

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10335268

Sample: PMW-01	Lab ID: 10335268001	Collected: 01/06/16 14:20	Received: 01/06/16 16:34	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		01/08/16 14:49	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		01/08/16 14:49	103-65-1	
Styrene	ND	ug/L	1.0	1		01/08/16 14:49	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		01/08/16 14:49	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		01/08/16 14:49	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		01/08/16 14:49	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		01/08/16 14:49	109-99-9	
Toluene	ND	ug/L	1.0	1		01/08/16 14:49	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		01/08/16 14:49	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		01/08/16 14:49	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		01/08/16 14:49	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		01/08/16 14:49	79-00-5	
Trichloroethene	ND	ug/L	0.40	1		01/08/16 14:49	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		01/08/16 14:49	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		01/08/16 14:49	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		01/08/16 14:49	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		01/08/16 14:49	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		01/08/16 14:49	108-67-8	
Vinyl chloride	ND	ug/L	0.40	1		01/08/16 14:49	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		01/08/16 14:49	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	103	%.	75-125	1		01/08/16 14:49	17060-07-0	
Toluene-d8 (S)	106	%.	75-125	1		01/08/16 14:49	2037-26-5	
4-Bromofluorobenzene (S)	166	%.	75-125	1		01/08/16 14:49	460-00-4	S3

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10335268

Sample: PMW-02		Lab ID: 10335268002	Collected: 01/06/16 13:25	Received: 01/06/16 16:34	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	40.0	2		01/08/16 15:05	67-64-1	
Allyl chloride	ND	ug/L	8.0	2		01/08/16 15:05	107-05-1	
Benzene	ND	ug/L	2.0	2		01/08/16 15:05	71-43-2	
Bromobenzene	ND	ug/L	2.0	2		01/08/16 15:05	108-86-1	
Bromochloromethane	ND	ug/L	2.0	2		01/08/16 15:05	74-97-5	
Bromodichloromethane	ND	ug/L	2.0	2		01/08/16 15:05	75-27-4	
Bromoform	ND	ug/L	8.0	2		01/08/16 15:05	75-25-2	
Bromomethane	ND	ug/L	8.0	2		01/08/16 15:05	74-83-9	
2-Butanone (MEK)	ND	ug/L	10.0	2		01/08/16 15:05	78-93-3	
n-Butylbenzene	ND	ug/L	2.0	2		01/08/16 15:05	104-51-8	
sec-Butylbenzene	ND	ug/L	2.0	2		01/08/16 15:05	135-98-8	
tert-Butylbenzene	ND	ug/L	2.0	2		01/08/16 15:05	98-06-6	
Carbon tetrachloride	ND	ug/L	2.0	2		01/08/16 15:05	56-23-5	
Chlorobenzene	ND	ug/L	2.0	2		01/08/16 15:05	108-90-7	
Chloroethane	ND	ug/L	8.0	2		01/08/16 15:05	75-00-3	
Chloroform	ND	ug/L	2.0	2		01/08/16 15:05	67-66-3	
Chloromethane	ND	ug/L	8.0	2		01/08/16 15:05	74-87-3	
2-Chlorotoluene	ND	ug/L	2.0	2		01/08/16 15:05	95-49-8	
4-Chlorotoluene	ND	ug/L	2.0	2		01/08/16 15:05	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	20.0	2		01/08/16 15:05	96-12-8	
Dibromochloromethane	ND	ug/L	2.0	2		01/08/16 15:05	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	2.0	2		01/08/16 15:05	106-93-4	
Dibromomethane	ND	ug/L	8.0	2		01/08/16 15:05	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	2.0	2		01/08/16 15:05	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	2.0	2		01/08/16 15:05	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	2.0	2		01/08/16 15:05	106-46-7	
Dichlorodifluoromethane	ND	ug/L	2.0	2		01/08/16 15:05	75-71-8	
1,1-Dichloroethane	37.8	ug/L	2.0	2		01/08/16 15:05	75-34-3	
1,2-Dichloroethane	ND	ug/L	2.0	2		01/08/16 15:05	107-06-2	
1,1-Dichloroethene	22.2	ug/L	2.0	2		01/08/16 15:05	75-35-4	
cis-1,2-Dichloroethene	282	ug/L	2.0	2		01/08/16 15:05	156-59-2	
trans-1,2-Dichloroethene	320	ug/L	2.0	2		01/08/16 15:05	156-60-5	
Dichlorofluoromethane	ND	ug/L	2.0	2		01/08/16 15:05	75-43-4	
1,2-Dichloropropane	ND	ug/L	8.0	2		01/08/16 15:05	78-87-5	
1,3-Dichloropropane	ND	ug/L	2.0	2		01/08/16 15:05	142-28-9	
2,2-Dichloropropane	ND	ug/L	8.0	2		01/08/16 15:05	594-20-7	
1,1-Dichloropropene	ND	ug/L	2.0	2		01/08/16 15:05	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	8.0	2		01/08/16 15:05	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	8.0	2		01/08/16 15:05	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	8.0	2		01/08/16 15:05	60-29-7	
Ethylbenzene	ND	ug/L	2.0	2		01/08/16 15:05	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	2.0	2		01/08/16 15:05	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	2.0	2		01/08/16 15:05	98-82-8	
p-Isopropyltoluene	ND	ug/L	2.0	2		01/08/16 15:05	99-87-6	
Methylene Chloride	ND	ug/L	8.0	2		01/08/16 15:05	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10.0	2		01/08/16 15:05	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	2.0	2		01/08/16 15:05	1634-04-4	

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10335268

Sample: PMW-02		Lab ID: 10335268002	Collected: 01/06/16 13:25	Received: 01/06/16 16:34	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	8.0	2		01/08/16 15:05	91-20-3	
n-Propylbenzene	ND	ug/L	2.0	2		01/08/16 15:05	103-65-1	
Styrene	ND	ug/L	2.0	2		01/08/16 15:05	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	2.0	2		01/08/16 15:05	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	2.0	2		01/08/16 15:05	79-34-5	
Tetrachloroethene	ND	ug/L	2.0	2		01/08/16 15:05	127-18-4	
Tetrahydrofuran	ND	ug/L	20.0	2		01/08/16 15:05	109-99-9	
Toluene	ND	ug/L	2.0	2		01/08/16 15:05	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	2.0	2		01/08/16 15:05	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	2.0	2		01/08/16 15:05	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	2.0	2		01/08/16 15:05	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	2.0	2		01/08/16 15:05	79-00-5	
Trichloroethene	51.2	ug/L	0.80	2		01/08/16 15:05	79-01-6	
Trichlorofluoromethane	ND	ug/L	2.0	2		01/08/16 15:05	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	8.0	2		01/08/16 15:05	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	2.0	2		01/08/16 15:05	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	2.0	2		01/08/16 15:05	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	2.0	2		01/08/16 15:05	108-67-8	
Vinyl chloride	ND	ug/L	0.80	2		01/08/16 15:05	75-01-4	
Xylene (Total)	ND	ug/L	6.0	2		01/08/16 15:05	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	104	%.	75-125	2		01/08/16 15:05	17060-07-0	
Toluene-d8 (S)	100	%.	75-125	2		01/08/16 15:05	2037-26-5	
4-Bromofluorobenzene (S)	104	%.	75-125	2		01/08/16 15:05	460-00-4	

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10335268

Sample: PMW-03	Lab ID: 10335268003	Collected: 01/06/16 10:55	Received: 01/06/16 16:34	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		01/07/16 22:07	67-64-1	M1
Allyl chloride	ND	ug/L	4.0	1		01/07/16 22:07	107-05-1	
Benzene	ND	ug/L	1.0	1		01/07/16 22:07	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		01/07/16 22:07	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		01/07/16 22:07	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		01/07/16 22:07	75-27-4	
Bromoform	ND	ug/L	4.0	1		01/07/16 22:07	75-25-2	
Bromomethane	ND	ug/L	4.0	1		01/07/16 22:07	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		01/07/16 22:07	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		01/07/16 22:07	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		01/07/16 22:07	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		01/07/16 22:07	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		01/07/16 22:07	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		01/07/16 22:07	108-90-7	
Chloroethane	ND	ug/L	4.0	1		01/07/16 22:07	75-00-3	M1
Chloroform	ND	ug/L	1.0	1		01/07/16 22:07	67-66-3	
Chloromethane	ND	ug/L	4.0	1		01/07/16 22:07	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		01/07/16 22:07	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		01/07/16 22:07	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	10.0	1		01/07/16 22:07	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		01/07/16 22:07	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		01/07/16 22:07	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		01/07/16 22:07	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		01/07/16 22:07	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		01/07/16 22:07	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		01/07/16 22:07	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		01/07/16 22:07	75-71-8	
1,1-Dichloroethane	2.6	ug/L	1.0	1		01/07/16 22:07	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		01/07/16 22:07	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		01/07/16 22:07	75-35-4	
cis-1,2-Dichloroethene	37.7	ug/L	1.0	1		01/07/16 22:07	156-59-2	
trans-1,2-Dichloroethene	67.7	ug/L	1.0	1		01/07/16 22:07	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		01/07/16 22:07	75-43-4	M1
1,2-Dichloropropane	ND	ug/L	4.0	1		01/07/16 22:07	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		01/07/16 22:07	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		01/07/16 22:07	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		01/07/16 22:07	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		01/07/16 22:07	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		01/07/16 22:07	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		01/07/16 22:07	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		01/07/16 22:07	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		01/07/16 22:07	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		01/07/16 22:07	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		01/07/16 22:07	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		01/07/16 22:07	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		01/07/16 22:07	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		01/07/16 22:07	1634-04-4	

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10335268

Sample: PMW-03		Lab ID: 10335268003	Collected: 01/06/16 10:55	Received: 01/06/16 16:34	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		01/07/16 22:07	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		01/07/16 22:07	103-65-1	
Styrene	ND	ug/L	1.0	1		01/07/16 22:07	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		01/07/16 22:07	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		01/07/16 22:07	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		01/07/16 22:07	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		01/07/16 22:07	109-99-9	M1
Toluene	ND	ug/L	1.0	1		01/07/16 22:07	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		01/07/16 22:07	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		01/07/16 22:07	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		01/07/16 22:07	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		01/07/16 22:07	79-00-5	
Trichloroethene	13.0	ug/L	0.40	1		01/07/16 22:07	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		01/07/16 22:07	75-69-4	M1
1,2,3-Trichloropropane	ND	ug/L	4.0	1		01/07/16 22:07	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		01/07/16 22:07	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		01/07/16 22:07	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		01/07/16 22:07	108-67-8	
Vinyl chloride	ND	ug/L	0.40	1		01/07/16 22:07	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		01/07/16 22:07	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%.	75-125	1		01/07/16 22:07	17060-07-0	
Toluene-d8 (S)	99	%.	75-125	1		01/07/16 22:07	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1		01/07/16 22:07	460-00-4	

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10335268

Sample: PMW-04	Lab ID: 10335268004	Collected: 01/06/16 09:25	Received: 01/06/16 16:34	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		01/07/16 23:09	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		01/07/16 23:09	107-05-1	
Benzene	ND	ug/L	1.0	1		01/07/16 23:09	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		01/07/16 23:09	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		01/07/16 23:09	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		01/07/16 23:09	75-27-4	
Bromoform	ND	ug/L	4.0	1		01/07/16 23:09	75-25-2	
Bromomethane	ND	ug/L	4.0	1		01/07/16 23:09	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		01/07/16 23:09	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		01/07/16 23:09	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		01/07/16 23:09	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		01/07/16 23:09	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		01/07/16 23:09	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		01/07/16 23:09	108-90-7	
Chloroethane	ND	ug/L	4.0	1		01/07/16 23:09	75-00-3	
Chloroform	ND	ug/L	1.0	1		01/07/16 23:09	67-66-3	
Chloromethane	ND	ug/L	4.0	1		01/07/16 23:09	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		01/07/16 23:09	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		01/07/16 23:09	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	10.0	1		01/07/16 23:09	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		01/07/16 23:09	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		01/07/16 23:09	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		01/07/16 23:09	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		01/07/16 23:09	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		01/07/16 23:09	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		01/07/16 23:09	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		01/07/16 23:09	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		01/07/16 23:09	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		01/07/16 23:09	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		01/07/16 23:09	75-35-4	
cis-1,2-Dichloroethene	16.4	ug/L	1.0	1		01/07/16 23:09	156-59-2	
trans-1,2-Dichloroethene	47.1	ug/L	1.0	1		01/07/16 23:09	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		01/07/16 23:09	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		01/07/16 23:09	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		01/07/16 23:09	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		01/07/16 23:09	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		01/07/16 23:09	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		01/07/16 23:09	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		01/07/16 23:09	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		01/07/16 23:09	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		01/07/16 23:09	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		01/07/16 23:09	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		01/07/16 23:09	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		01/07/16 23:09	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		01/07/16 23:09	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		01/07/16 23:09	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		01/07/16 23:09	1634-04-4	

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10335268

Sample: PMW-04		Lab ID: 10335268004	Collected: 01/06/16 09:25	Received: 01/06/16 16:34	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		01/07/16 23:09	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		01/07/16 23:09	103-65-1	
Styrene	ND	ug/L	1.0	1		01/07/16 23:09	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		01/07/16 23:09	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		01/07/16 23:09	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		01/07/16 23:09	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		01/07/16 23:09	109-99-9	
Toluene	ND	ug/L	1.0	1		01/07/16 23:09	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		01/07/16 23:09	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		01/07/16 23:09	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		01/07/16 23:09	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		01/07/16 23:09	79-00-5	
Trichloroethene	14.4	ug/L	0.40	1		01/07/16 23:09	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		01/07/16 23:09	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		01/07/16 23:09	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		01/07/16 23:09	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		01/07/16 23:09	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		01/07/16 23:09	108-67-8	
Vinyl chloride	ND	ug/L	0.40	1		01/07/16 23:09	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		01/07/16 23:09	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	101	%.	75-125	1		01/07/16 23:09	17060-07-0	
Toluene-d8 (S)	100	%.	75-125	1		01/07/16 23:09	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1		01/07/16 23:09	460-00-4	

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10335268

Sample: Trip Blank		Lab ID: 10335268005	Collected: 01/06/16 00:00	Received: 01/06/16 16:54	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		01/07/16 20:50	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		01/07/16 20:50	107-05-1	
Benzene	ND	ug/L	1.0	1		01/07/16 20:50	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		01/07/16 20:50	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		01/07/16 20:50	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		01/07/16 20:50	75-27-4	
Bromoform	ND	ug/L	4.0	1		01/07/16 20:50	75-25-2	
Bromomethane	ND	ug/L	4.0	1		01/07/16 20:50	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		01/07/16 20:50	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		01/07/16 20:50	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		01/07/16 20:50	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		01/07/16 20:50	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		01/07/16 20:50	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		01/07/16 20:50	108-90-7	
Chloroethane	ND	ug/L	4.0	1		01/07/16 20:50	75-00-3	
Chloroform	ND	ug/L	1.0	1		01/07/16 20:50	67-66-3	
Chloromethane	ND	ug/L	4.0	1		01/07/16 20:50	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		01/07/16 20:50	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		01/07/16 20:50	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	10.0	1		01/07/16 20:50	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		01/07/16 20:50	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		01/07/16 20:50	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		01/07/16 20:50	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		01/07/16 20:50	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		01/07/16 20:50	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		01/07/16 20:50	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		01/07/16 20:50	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		01/07/16 20:50	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		01/07/16 20:50	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		01/07/16 20:50	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		01/07/16 20:50	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		01/07/16 20:50	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		01/07/16 20:50	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		01/07/16 20:50	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		01/07/16 20:50	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		01/07/16 20:50	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		01/07/16 20:50	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		01/07/16 20:50	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		01/07/16 20:50	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		01/07/16 20:50	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		01/07/16 20:50	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		01/07/16 20:50	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		01/07/16 20:50	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		01/07/16 20:50	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		01/07/16 20:50	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		01/07/16 20:50	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		01/07/16 20:50	1634-04-4	

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10335268

Sample: Trip Blank		Lab ID: 10335268005	Collected: 01/06/16 00:00	Received: 01/06/16 16:54	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		01/07/16 20:50	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		01/07/16 20:50	103-65-1	
Styrene	ND	ug/L	1.0	1		01/07/16 20:50	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		01/07/16 20:50	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		01/07/16 20:50	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		01/07/16 20:50	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		01/07/16 20:50	109-99-9	
Toluene	ND	ug/L	1.0	1		01/07/16 20:50	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		01/07/16 20:50	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		01/07/16 20:50	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		01/07/16 20:50	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		01/07/16 20:50	79-00-5	
Trichloroethene	ND	ug/L	0.40	1		01/07/16 20:50	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		01/07/16 20:50	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		01/07/16 20:50	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		01/07/16 20:50	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		01/07/16 20:50	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		01/07/16 20:50	108-67-8	
Vinyl chloride	ND	ug/L	0.40	1		01/07/16 20:50	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		01/07/16 20:50	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	104	%.	75-125	1		01/07/16 20:50	17060-07-0	
Toluene-d8 (S)	99	%.	75-125	1		01/07/16 20:50	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125	1		01/07/16 20:50	460-00-4	

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10335268

QC Batch: MSV/34345 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV 465 W
Associated Lab Samples: 10335268003, 10335268004, 10335268005

METHOD BLANK: 2171177 Matrix: Water

Associated Lab Samples: 10335268003, 10335268004, 10335268005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	01/07/16 20:34	
1,1,1-Trichloroethane	ug/L	ND	1.0	01/07/16 20:34	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	01/07/16 20:34	
1,1,2-Trichloroethane	ug/L	ND	1.0	01/07/16 20:34	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	1.0	01/07/16 20:34	
1,1-Dichloroethane	ug/L	ND	1.0	01/07/16 20:34	
1,1-Dichloroethene	ug/L	ND	1.0	01/07/16 20:34	
1,1-Dichloropropene	ug/L	ND	1.0	01/07/16 20:34	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	01/07/16 20:34	
1,2,3-Trichloropropane	ug/L	ND	4.0	01/07/16 20:34	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	01/07/16 20:34	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	01/07/16 20:34	
1,2-Dibromo-3-chloropropane	ug/L	ND	10.0	01/07/16 20:34	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	01/07/16 20:34	
1,2-Dichlorobenzene	ug/L	ND	1.0	01/07/16 20:34	
1,2-Dichloroethane	ug/L	ND	1.0	01/07/16 20:34	
1,2-Dichloropropane	ug/L	ND	4.0	01/07/16 20:34	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	01/07/16 20:34	
1,3-Dichlorobenzene	ug/L	ND	1.0	01/07/16 20:34	
1,3-Dichloropropane	ug/L	ND	1.0	01/07/16 20:34	
1,4-Dichlorobenzene	ug/L	ND	1.0	01/07/16 20:34	
2,2-Dichloropropane	ug/L	ND	4.0	01/07/16 20:34	
2-Butanone (MEK)	ug/L	ND	5.0	01/07/16 20:34	
2-Chlorotoluene	ug/L	ND	1.0	01/07/16 20:34	
4-Chlorotoluene	ug/L	ND	1.0	01/07/16 20:34	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	01/07/16 20:34	
Acetone	ug/L	ND	20.0	01/07/16 20:34	
Allyl chloride	ug/L	ND	4.0	01/07/16 20:34	
Benzene	ug/L	ND	1.0	01/07/16 20:34	
Bromobenzene	ug/L	ND	1.0	01/07/16 20:34	
Bromochloromethane	ug/L	ND	1.0	01/07/16 20:34	
Bromodichloromethane	ug/L	ND	1.0	01/07/16 20:34	
Bromoform	ug/L	ND	4.0	01/07/16 20:34	
Bromomethane	ug/L	ND	4.0	01/07/16 20:34	
Carbon tetrachloride	ug/L	ND	1.0	01/07/16 20:34	
Chlorobenzene	ug/L	ND	1.0	01/07/16 20:34	
Chloroethane	ug/L	ND	4.0	01/07/16 20:34	
Chloroform	ug/L	ND	1.0	01/07/16 20:34	
Chloromethane	ug/L	ND	4.0	01/07/16 20:34	
cis-1,2-Dichloroethene	ug/L	ND	1.0	01/07/16 20:34	
cis-1,3-Dichloropropene	ug/L	ND	4.0	01/07/16 20:34	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10335268

METHOD BLANK: 2171177

Matrix: Water

Associated Lab Samples: 10335268003, 10335268004, 10335268005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/L	ND	1.0	01/07/16 20:34	
Dibromomethane	ug/L	ND	4.0	01/07/16 20:34	
Dichlorodifluoromethane	ug/L	ND	1.0	01/07/16 20:34	
Dichlorofluoromethane	ug/L	ND	1.0	01/07/16 20:34	
Diethyl ether (Ethyl ether)	ug/L	ND	4.0	01/07/16 20:34	
Ethylbenzene	ug/L	ND	1.0	01/07/16 20:34	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	01/07/16 20:34	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	01/07/16 20:34	
Methyl-tert-butyl ether	ug/L	ND	1.0	01/07/16 20:34	
Methylene Chloride	ug/L	ND	4.0	01/07/16 20:34	
n-Butylbenzene	ug/L	ND	1.0	01/07/16 20:34	
n-Propylbenzene	ug/L	ND	1.0	01/07/16 20:34	
Naphthalene	ug/L	ND	4.0	01/07/16 20:34	
p-Isopropyltoluene	ug/L	ND	1.0	01/07/16 20:34	
sec-Butylbenzene	ug/L	ND	1.0	01/07/16 20:34	
Styrene	ug/L	ND	1.0	01/07/16 20:34	
tert-Butylbenzene	ug/L	ND	1.0	01/07/16 20:34	
Tetrachloroethene	ug/L	ND	1.0	01/07/16 20:34	
Tetrahydrofuran	ug/L	ND	10.0	01/07/16 20:34	
Toluene	ug/L	ND	1.0	01/07/16 20:34	
trans-1,2-Dichloroethene	ug/L	ND	1.0	01/07/16 20:34	
trans-1,3-Dichloropropene	ug/L	ND	4.0	01/07/16 20:34	
Trichloroethene	ug/L	ND	0.40	01/07/16 20:34	
Trichlorofluoromethane	ug/L	ND	1.0	01/07/16 20:34	
Vinyl chloride	ug/L	ND	0.40	01/07/16 20:34	
Xylene (Total)	ug/L	ND	3.0	01/07/16 20:34	
1,2-Dichloroethane-d4 (S)	%	102	75-125	01/07/16 20:34	
4-Bromofluorobenzene (S)	%	100	75-125	01/07/16 20:34	
Toluene-d8 (S)	%	99	75-125	01/07/16 20:34	

LABORATORY CONTROL SAMPLE: 2171178

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	20	18.9	95	75-125	
1,1,1-Trichloroethane	ug/L	20	19.2	96	73-125	
1,1,2,2-Tetrachloroethane	ug/L	20	19.8	99	75-128	
1,1,2-Trichloroethane	ug/L	20	20.7	103	75-129	
1,1,2-Trichlorotrifluoroethane	ug/L	20	17.0	85	69-125	
1,1-Dichloroethane	ug/L	20	18.0	90	75-131	
1,1-Dichloroethene	ug/L	20	17.1	85	72-125	
1,1-Dichloropropene	ug/L	20	18.1	90	74-125	
1,2,3-Trichlorobenzene	ug/L	20	20.9	105	68-127	
1,2,3-Trichloropropane	ug/L	20	21.6	108	75-125	
1,2,4-Trichlorobenzene	ug/L	20	20.0	100	70-125	

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10335268

LABORATORY CONTROL SAMPLE: 2171178

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	19.5	98	75-130	
1,2-Dibromo-3-chloropropane	ug/L	50	49.5	99	74-125	
1,2-Dibromoethane (EDB)	ug/L	20	20.2	101	75-125	
1,2-Dichlorobenzene	ug/L	20	19.6	98	75-125	
1,2-Dichloroethane	ug/L	20	20.7	104	72-129	
1,2-Dichloropropane	ug/L	20	19.1	96	71-129	
1,3,5-Trimethylbenzene	ug/L	20	19.4	97	75-127	
1,3-Dichlorobenzene	ug/L	20	18.2	91	75-125	
1,3-Dichloropropane	ug/L	20	19.9	100	75-125	
1,4-Dichlorobenzene	ug/L	20	18.9	95	75-125	
2,2-Dichloropropane	ug/L	20	17.5	87	71-125	
2-Butanone (MEK)	ug/L	100	104	104	58-150	
2-Chlorotoluene	ug/L	20	19.0	95	75-125	
4-Chlorotoluene	ug/L	20	18.5	93	75-130	
4-Methyl-2-pentanone (MIBK)	ug/L	100	100	100	72-140	
Acetone	ug/L	100	89.6	90	69-137	
Allyl chloride	ug/L	20	16.4	82	68-132	
Benzene	ug/L	20	17.6	88	75-125	
Bromobenzene	ug/L	20	19.0	95	75-125	
Bromochloromethane	ug/L	20	18.2	91	75-125	
Bromodichloromethane	ug/L	20	20.9	104	69-128	
Bromoform	ug/L	20	20.6	103	75-125	
Bromomethane	ug/L	20	17.9	89	30-150	SS
Carbon tetrachloride	ug/L	20	19.4	97	74-125	
Chlorobenzene	ug/L	20	18.7	93	75-125	
Chloroethane	ug/L	20	17.2	86	60-150	
Chloroform	ug/L	20	19.2	96	75-126	
Chloromethane	ug/L	20	16.1	80	46-150	
cis-1,2-Dichloroethene	ug/L	20	18.2	91	75-126	
cis-1,3-Dichloropropene	ug/L	20	19.1	96	75-125	
Dibromochloromethane	ug/L	20	19.9	99	75-125	
Dibromomethane	ug/L	20	19.5	97	72-127	
Dichlorodifluoromethane	ug/L	20	18.4	92	58-135	
Dichlorofluoromethane	ug/L	20	20.3	101	68-149	
Diethyl ether (Ethyl ether)	ug/L	20	18.5	93	66-144	
Ethylbenzene	ug/L	20	19.3	97	75-125	
Hexachloro-1,3-butadiene	ug/L	20	19.9	99	73-125	
Isopropylbenzene (Cumene)	ug/L	20	20.2	101	69-140	
Methyl-tert-butyl ether	ug/L	20	20.1	101	75-126	
Methylene Chloride	ug/L	20	16.1	81	71-130	
n-Butylbenzene	ug/L	20	19.7	99	71-129	
n-Propylbenzene	ug/L	20	18.2	91	71-133	
Naphthalene	ug/L	20	21.5	107	59-137	
p-Isopropyltoluene	ug/L	20	19.5	98	74-127	
sec-Butylbenzene	ug/L	20	18.4	92	66-140	
Styrene	ug/L	20	19.9	100	75-125	
tert-Butylbenzene	ug/L	20	19.3	96	73-129	

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10335268

LABORATORY CONTROL SAMPLE: 2171178

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	ug/L	20	19.0	95	75-125	
Tetrahydrofuran	ug/L	200	179	90	71-129	
Toluene	ug/L	20	18.9	94	75-125	
trans-1,2-Dichloroethene	ug/L	20	17.5	88	75-125	
trans-1,3-Dichloropropene	ug/L	20	19.0	95	75-125	
Trichloroethene	ug/L	20	19.5	97	75-125	
Trichlorofluoromethane	ug/L	20	22.5	113	74-128	
Vinyl chloride	ug/L	20	17.9	90	71-131	
Xylene (Total)	ug/L	60	59.3	99	75-125	
1,2-Dichloroethane-d4 (S)	%			102	75-125	
4-Bromofluorobenzene (S)	%			98	75-125	
Toluene-d8 (S)	%			101	75-125	

MATRIX SPIKE SAMPLE: 2172067

Parameter	Units	10335268003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	24.2	121	75-125	
1,1,1-Trichloroethane	ug/L	ND	20	27.1	135	71-144	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	22.3	111	75-131	
1,1,2-Trichloroethane	ug/L	ND	20	24.6	123	75-125	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	20	24.8	124	75-150	
1,1-Dichloroethane	ug/L	2.6	20	25.9	117	64-150	
1,1-Dichloroethene	ug/L	ND	20	24.2	117	68-150	
1,1-Dichloropropene	ug/L	ND	20	25.2	126	68-145	
1,2,3-Trichlorobenzene	ug/L	ND	20	21.3	106	57-142	
1,2,3-Trichloropropane	ug/L	ND	20	23.0	115	75-125	
1,2,4-Trichlorobenzene	ug/L	ND	20	22.1	110	60-135	
1,2,4-Trimethylbenzene	ug/L	ND	20	23.3	117	67-148	
1,2-Dibromo-3-chloropropane	ug/L	ND	50	51.4	103	32-137	
1,2-Dibromoethane (EDB)	ug/L	ND	20	24.4	122	75-125	
1,2-Dichlorobenzene	ug/L	ND	20	23.0	115	75-125	
1,2-Dichloroethane	ug/L	ND	20	26.2	131	62-138	
1,2-Dichloropropane	ug/L	ND	20	24.3	121	62-144	
1,3,5-Trimethylbenzene	ug/L	ND	20	23.2	116	67-148	
1,3-Dichlorobenzene	ug/L	ND	20	22.6	113	74-131	
1,3-Dichloropropane	ug/L	ND	20	24.6	123	75-127	
1,4-Dichlorobenzene	ug/L	ND	20	23.2	116	74-126	
2,2-Dichloropropane	ug/L	ND	20	23.0	115	56-146	
2-Butanone (MEK)	ug/L	ND	100	99.4	99	47-150	
2-Chlorotoluene	ug/L	ND	20	23.0	115	74-137	
4-Chlorotoluene	ug/L	ND	20	23.4	117	72-138	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	100	112	112	60-147	
Acetone	ug/L	ND	100	186	186	61-150 IS,M1	
Allyl chloride	ug/L	ND	20	21.1	106	53-150	
Benzene	ug/L	ND	20	22.7	114	52-147	

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10335268

MATRIX SPIKE SAMPLE: 2172067

Parameter	Units	10335268003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromobenzene	ug/L	ND	20	23.2	116	75-129	
Bromochloromethane	ug/L	ND	20	24.7	124	72-128	
Bromodichloromethane	ug/L	ND	20	25.1	125	65-137	
Bromoform	ug/L	ND	20	24.0	120	59-133	
Bromomethane	ug/L	ND	20	23.4	117	30-150	SS
Carbon tetrachloride	ug/L	ND	20	27.9	140	73-144	
Chlorobenzene	ug/L	ND	20	24.2	121	75-126	
Chloroethane	ug/L	ND	20	37.7	188	55-150	M1
Chloroform	ug/L	ND	20	24.4	122	66-143	
Chloromethane	ug/L	ND	20	25.4	127	42-150	
cis-1,2-Dichloroethene	ug/L	37.7	20	62.5	124	65-143	
cis-1,3-Dichloropropene	ug/L	ND	20	23.4	117	75-125	
Dibromochloromethane	ug/L	ND	20	24.2	121	75-125	
Dibromomethane	ug/L	ND	20	24.3	121	66-133	
Dichlorodifluoromethane	ug/L	ND	20	29.6	148	74-150	
Dichlorofluoromethane	ug/L	ND	20	30.4	152	68-150	M1
Diethyl ether (Ethyl ether)	ug/L	ND	20	21.5	107	57-148	
Ethylbenzene	ug/L	ND	20	24.0	120	67-149	
Hexachloro-1,3-butadiene	ug/L	ND	20	24.9	124	65-143	
Isopropylbenzene (Cumene)	ug/L	ND	20	25.3	127	64-150	
Methyl-tert-butyl ether	ug/L	ND	20	24.3	121	71-130	
Methylene Chloride	ug/L	ND	20	20.5	102	67-137	
n-Butylbenzene	ug/L	ND	20	23.8	119	70-138	
n-Propylbenzene	ug/L	ND	20	22.8	114	70-148	
Naphthalene	ug/L	ND	20	20.3	102	39-150	
p-Isopropyltoluene	ug/L	ND	20	24.1	120	74-138	
sec-Butylbenzene	ug/L	ND	20	22.4	112	64-150	
Styrene	ug/L	ND	20	23.8	119	75-132	
tert-Butylbenzene	ug/L	ND	20	23.6	118	75-138	
Tetrachloroethene	ug/L	ND	20	24.8	124	73-136	
Tetrahydrofuran	ug/L	ND	200	432	216	68-142	IS,M1
Toluene	ug/L	ND	20	23.5	117	69-139	
trans-1,2-Dichloroethene	ug/L	67.7	20	91.4	119	75-135	
trans-1,3-Dichloropropene	ug/L	ND	20	23.7	118	66-136	
Trichloroethene	ug/L	13.0	20	37.9	124	74-135	
Trichlorofluoromethane	ug/L	ND	20	36.5	182	75-150	M1
Vinyl chloride	ug/L	ND	20	28.6	143	69-150	
Xylene (Total)	ug/L	ND	60	72.2	120	70-147	
1,2-Dichloroethane-d4 (S)	%				100	75-125	
4-Bromofluorobenzene (S)	%				99	75-125	
Toluene-d8 (S)	%				101	75-125	

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10335268

SAMPLE DUPLICATE: 2172068

Parameter	Units	10335268004 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,1-Trichloroethane	ug/L	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,2-Trichloroethane	ug/L	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	ND		30	
1,1-Dichloroethane	ug/L	ND	ND		30	
1,1-Dichloroethene	ug/L	ND	.41J		30	
1,1-Dichloropropene	ug/L	ND	ND		30	
1,2,3-Trichlorobenzene	ug/L	ND	ND		30	
1,2,3-Trichloropropane	ug/L	ND	ND		30	
1,2,4-Trichlorobenzene	ug/L	ND	ND		30	
1,2,4-Trimethylbenzene	ug/L	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/L	ND	ND		30	
1,2-Dichlorobenzene	ug/L	ND	ND		30	
1,2-Dichloroethane	ug/L	ND	ND		30	
1,2-Dichloropropane	ug/L	ND	ND		30	
1,3,5-Trimethylbenzene	ug/L	ND	ND		30	
1,3-Dichlorobenzene	ug/L	ND	ND		30	
1,3-Dichloropropane	ug/L	ND	ND		30	
1,4-Dichlorobenzene	ug/L	ND	ND		30	
2,2-Dichloropropane	ug/L	ND	ND		30	
2-Butanone (MEK)	ug/L	ND	ND		30	
2-Chlorotoluene	ug/L	ND	ND		30	
4-Chlorotoluene	ug/L	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		30	
Acetone	ug/L	ND	ND		30	
Allyl chloride	ug/L	ND	ND		30	
Benzene	ug/L	ND	ND		30	
Bromobenzene	ug/L	ND	ND		30	
Bromochloromethane	ug/L	ND	ND		30	
Bromodichloromethane	ug/L	ND	ND		30	
Bromoform	ug/L	ND	ND		30	
Bromomethane	ug/L	ND	ND		30	
Carbon tetrachloride	ug/L	ND	ND		30	
Chlorobenzene	ug/L	ND	ND		30	
Chloroethane	ug/L	ND	ND		30	
Chloroform	ug/L	ND	ND		30	
Chloromethane	ug/L	ND	ND		30	
cis-1,2-Dichloroethene	ug/L	16.4	16.9	3	30	
cis-1,3-Dichloropropene	ug/L	ND	ND		30	
Dibromochloromethane	ug/L	ND	ND		30	
Dibromomethane	ug/L	ND	ND		30	
Dichlorodifluoromethane	ug/L	ND	ND		30	
Dichlorofluoromethane	ug/L	ND	ND		30	
Diethyl ether (Ethyl ether)	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10335268

SAMPLE DUPLICATE: 2172068

Parameter	Units	10335268004 Result	Dup Result	RPD	Max RPD	Qualifiers
Hexachloro-1,3-butadiene	ug/L	ND	ND		30	
Isopropylbenzene (Cumene)	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Methylene Chloride	ug/L	ND	ND		30	
n-Butylbenzene	ug/L	ND	ND		30	
n-Propylbenzene	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
p-Isopropyltoluene	ug/L	ND	ND		30	
sec-Butylbenzene	ug/L	ND	ND		30	
Styrene	ug/L	ND	ND		30	
tert-Butylbenzene	ug/L	ND	ND		30	
Tetrachloroethene	ug/L	ND	ND		30	
Tetrahydrofuran	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
trans-1,2-Dichloroethene	ug/L	47.1	48.1	2	30	
trans-1,3-Dichloropropene	ug/L	ND	ND		30	
Trichloroethene	ug/L	14.4	14.2	1	30	
Trichlorofluoromethane	ug/L	ND	ND		30	
Vinyl chloride	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	101	105	4		
4-Bromofluorobenzene (S)	%	99	99	1		
Toluene-d8 (S)	%	100	99	1		

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10335268

QC Batch: MSV/34351

Analysis Method: EPA 8260B

QC Batch Method: EPA 8260B

Analysis Description: 8260B MSV 465 W

Associated Lab Samples: 10335268001, 10335268002

METHOD BLANK: 2171993

Matrix: Water

Associated Lab Samples: 10335268001, 10335268002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	01/08/16 12:46	
1,1,1-Trichloroethane	ug/L	ND	1.0	01/08/16 12:46	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	01/08/16 12:46	
1,1,2-Trichloroethane	ug/L	ND	1.0	01/08/16 12:46	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	1.0	01/08/16 12:46	
1,1-Dichloroethane	ug/L	ND	1.0	01/08/16 12:46	
1,1-Dichloroethene	ug/L	ND	1.0	01/08/16 12:46	
1,1-Dichloropropene	ug/L	ND	1.0	01/08/16 12:46	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	01/08/16 12:46	
1,2,3-Trichloropropane	ug/L	ND	4.0	01/08/16 12:46	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	01/08/16 12:46	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	01/08/16 12:46	
1,2-Dibromo-3-chloropropane	ug/L	ND	10.0	01/08/16 12:46	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	01/08/16 12:46	
1,2-Dichlorobenzene	ug/L	ND	1.0	01/08/16 12:46	
1,2-Dichloroethane	ug/L	ND	1.0	01/08/16 12:46	
1,2-Dichloropropane	ug/L	ND	4.0	01/08/16 12:46	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	01/08/16 12:46	
1,3-Dichlorobenzene	ug/L	ND	1.0	01/08/16 12:46	
1,3-Dichloropropane	ug/L	ND	1.0	01/08/16 12:46	
1,4-Dichlorobenzene	ug/L	ND	1.0	01/08/16 12:46	
2,2-Dichloropropane	ug/L	ND	4.0	01/08/16 12:46	
2-Butanone (MEK)	ug/L	ND	5.0	01/08/16 12:46	
2-Chlorotoluene	ug/L	ND	1.0	01/08/16 12:46	
4-Chlorotoluene	ug/L	ND	1.0	01/08/16 12:46	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	01/08/16 12:46	
Acetone	ug/L	ND	20.0	01/08/16 12:46	
Allyl chloride	ug/L	ND	4.0	01/08/16 12:46	
Benzene	ug/L	ND	1.0	01/08/16 12:46	
Bromobenzene	ug/L	ND	1.0	01/08/16 12:46	
Bromochloromethane	ug/L	ND	1.0	01/08/16 12:46	
Bromodichloromethane	ug/L	ND	1.0	01/08/16 12:46	
Bromoform	ug/L	ND	4.0	01/08/16 12:46	
Bromomethane	ug/L	ND	4.0	01/08/16 12:46	
Carbon tetrachloride	ug/L	ND	1.0	01/08/16 12:46	
Chlorobenzene	ug/L	ND	1.0	01/08/16 12:46	
Chloroethane	ug/L	ND	4.0	01/08/16 12:46	
Chloroform	ug/L	ND	1.0	01/08/16 12:46	
Chloromethane	ug/L	ND	4.0	01/08/16 12:46	
cis-1,2-Dichloroethene	ug/L	ND	1.0	01/08/16 12:46	
cis-1,3-Dichloropropene	ug/L	ND	4.0	01/08/16 12:46	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10335268

METHOD BLANK: 2171993

Matrix: Water

Associated Lab Samples: 10335268001, 10335268002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/L	ND	1.0	01/08/16 12:46	
Dibromomethane	ug/L	ND	4.0	01/08/16 12:46	
Dichlorodifluoromethane	ug/L	ND	1.0	01/08/16 12:46	
Dichlorofluoromethane	ug/L	ND	1.0	01/08/16 12:46	
Diethyl ether (Ethyl ether)	ug/L	ND	4.0	01/08/16 12:46	
Ethylbenzene	ug/L	ND	1.0	01/08/16 12:46	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	01/08/16 12:46	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	01/08/16 12:46	
Methyl-tert-butyl ether	ug/L	ND	1.0	01/08/16 12:46	
Methylene Chloride	ug/L	ND	4.0	01/08/16 12:46	
n-Butylbenzene	ug/L	ND	1.0	01/08/16 12:46	
n-Propylbenzene	ug/L	ND	1.0	01/08/16 12:46	
Naphthalene	ug/L	ND	4.0	01/08/16 12:46	
p-Isopropyltoluene	ug/L	ND	1.0	01/08/16 12:46	
sec-Butylbenzene	ug/L	ND	1.0	01/08/16 12:46	
Styrene	ug/L	ND	1.0	01/08/16 12:46	
tert-Butylbenzene	ug/L	ND	1.0	01/08/16 12:46	
Tetrachloroethene	ug/L	ND	1.0	01/08/16 12:46	
Tetrahydrofuran	ug/L	ND	10.0	01/08/16 12:46	
Toluene	ug/L	ND	1.0	01/08/16 12:46	
trans-1,2-Dichloroethene	ug/L	ND	1.0	01/08/16 12:46	
trans-1,3-Dichloropropene	ug/L	ND	4.0	01/08/16 12:46	
Trichloroethene	ug/L	ND	0.40	01/08/16 12:46	
Trichlorofluoromethane	ug/L	ND	1.0	01/08/16 12:46	
Vinyl chloride	ug/L	ND	0.40	01/08/16 12:46	
Xylene (Total)	ug/L	ND	3.0	01/08/16 12:46	
1,2-Dichloroethane-d4 (S)	%	104	75-125	01/08/16 12:46	
4-Bromofluorobenzene (S)	%	100	75-125	01/08/16 12:46	
Toluene-d8 (S)	%	98	75-125	01/08/16 12:46	

LABORATORY CONTROL SAMPLE: 2171994

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	20	18.8	94	75-125	
1,1,1-Trichloroethane	ug/L	20	18.9	95	73-125	
1,1,2,2-Tetrachloroethane	ug/L	20	19.5	97	75-128	
1,1,2-Trichloroethane	ug/L	20	19.9	99	75-129	
1,1,2-Trichlorotrifluoroethane	ug/L	20	17.8	89	69-125	
1,1-Dichloroethane	ug/L	20	18.0	90	75-131	
1,1-Dichloroethene	ug/L	20	16.8	84	72-125	
1,1-Dichloropropene	ug/L	20	17.9	89	74-125	
1,2,3-Trichlorobenzene	ug/L	20	19.9	99	68-127	
1,2,3-Trichloropropane	ug/L	20	20.9	104	75-125	
1,2,4-Trichlorobenzene	ug/L	20	19.0	95	70-125	

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10335268

LABORATORY CONTROL SAMPLE: 2171994

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	18.0	90	75-130	
1,2-Dibromo-3-chloropropane	ug/L	50	47.9	96	74-125	
1,2-Dibromoethane (EDB)	ug/L	20	20.7	103	75-125	
1,2-Dichlorobenzene	ug/L	20	18.6	93	75-125	
1,2-Dichloroethane	ug/L	20	21.4	107	72-129	
1,2-Dichloropropane	ug/L	20	17.6	88	71-129	
1,3,5-Trimethylbenzene	ug/L	20	18.5	93	75-127	
1,3-Dichlorobenzene	ug/L	20	17.8	89	75-125	
1,3-Dichloropropane	ug/L	20	19.8	99	75-125	
1,4-Dichlorobenzene	ug/L	20	17.8	89	75-125	
2,2-Dichloropropane	ug/L	20	18.5	92	71-125	
2-Butanone (MEK)	ug/L	100	102	102	58-150	
2-Chlorotoluene	ug/L	20	18.3	91	75-125	
4-Chlorotoluene	ug/L	20	18.5	93	75-130	
4-Methyl-2-pentanone (MIBK)	ug/L	100	104	104	72-140	
Acetone	ug/L	100	116	116	69-137	
Allyl chloride	ug/L	20	16.0	80	68-132	
Benzene	ug/L	20	17.4	87	75-125	
Bromobenzene	ug/L	20	17.7	88	75-125	
Bromochloromethane	ug/L	20	18.5	92	75-125	
Bromodichloromethane	ug/L	20	19.9	99	69-128	
Bromoform	ug/L	20	20.8	104	75-125	
Bromomethane	ug/L	20	15.3	76	30-150	SS
Carbon tetrachloride	ug/L	20	19.6	98	74-125	
Chlorobenzene	ug/L	20	18.1	90	75-125	
Chloroethane	ug/L	20	17.3	87	60-150	
Chloroform	ug/L	20	19.0	95	75-126	
Chloromethane	ug/L	20	16.1	81	46-150	
cis-1,2-Dichloroethene	ug/L	20	18.2	91	75-126	
cis-1,3-Dichloropropene	ug/L	20	19.2	96	75-125	
Dibromochloromethane	ug/L	20	20.3	101	75-125	
Dibromomethane	ug/L	20	20.2	101	72-127	
Dichlorodifluoromethane	ug/L	20	19.2	96	58-135	
Dichlorofluoromethane	ug/L	20	20.3	102	68-149	
Diethyl ether (Ethyl ether)	ug/L	20	16.9	85	66-144	
Ethylbenzene	ug/L	20	18.5	92	75-125	
Hexachloro-1,3-butadiene	ug/L	20	20.9	105	73-125	
Isopropylbenzene (Cumene)	ug/L	20	19.6	98	69-140	
Methyl-tert-butyl ether	ug/L	20	20.0	100	75-126	
Methylene Chloride	ug/L	20	15.4	77	71-130	
n-Butylbenzene	ug/L	20	19.4	97	71-129	
n-Propylbenzene	ug/L	20	18.1	91	71-133	
Naphthalene	ug/L	20	18.9	94	59-137	
p-Isopropyltoluene	ug/L	20	19.1	95	74-127	
sec-Butylbenzene	ug/L	20	18.1	91	66-140	
Styrene	ug/L	20	18.8	94	75-125	
tert-Butylbenzene	ug/L	20	18.7	93	73-129	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10335268

LABORATORY CONTROL SAMPLE: 2171994

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	ug/L	20	18.3	92	75-125	
Tetrahydrofuran	ug/L	200	242	121	71-129	
Toluene	ug/L	20	17.9	89	75-125	
trans-1,2-Dichloroethene	ug/L	20	16.9	84	75-125	
trans-1,3-Dichloropropene	ug/L	20	19.6	98	75-125	
Trichloroethene	ug/L	20	18.5	93	75-125	
Trichlorofluoromethane	ug/L	20	24.3	121	74-128	
Vinyl chloride	ug/L	20	17.3	86	71-131	
Xylene (Total)	ug/L	60	55.7	93	75-125	
1,2-Dichloroethane-d4 (S)	%			111	75-125	
4-Bromofluorobenzene (S)	%			97	75-125	
Toluene-d8 (S)	%			100	75-125	

MATRIX SPIKE SAMPLE: 2172509

Parameter	Units	10335138001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	18.1	90	75-125	
1,1,1-Trichloroethane	ug/L	ND	20	19.0	95	71-144	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	16.1	80	75-131	
1,1,2-Trichloroethane	ug/L	ND	20	17.4	87	75-125	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	20	18.7	94	75-150	
1,1-Dichloroethane	ug/L	ND	20	17.0	85	64-150	
1,1-Dichloroethene	ug/L	ND	20	17.0	85	68-150	
1,1-Dichloropropene	ug/L	ND	20	18.5	93	68-145	
1,2,3-Trichlorobenzene	ug/L	ND	20	17.7	88	57-142	
1,2,3-Trichloropropane	ug/L	ND	20	15.7	78	75-125	
1,2,4-Trichlorobenzene	ug/L	ND	20	17.0	85	60-135	
1,2,4-Trimethylbenzene	ug/L	ND	20	18.0	88	67-148	
1,2-Dibromo-3-chloropropane	ug/L	ND	50	39.0	78	32-137	
1,2-Dibromoethane (EDB)	ug/L	ND	20	17.2	86	75-125	
1,2-Dichlorobenzene	ug/L	ND	20	17.7	89	75-125	
1,2-Dichloroethane	ug/L	ND	20	18.8	94	62-138	
1,2-Dichloropropane	ug/L	ND	20	17.5	88	62-144	
1,3,5-Trimethylbenzene	ug/L	ND	20	17.9	90	67-148	
1,3-Dichlorobenzene	ug/L	ND	20	17.3	87	74-131	
1,3-Dichloropropane	ug/L	ND	20	17.3	87	75-127	
1,4-Dichlorobenzene	ug/L	ND	20	16.7	84	74-126	
2,2-Dichloropropane	ug/L	ND	20	18.3	91	56-146	
2-Butanone (MEK)	ug/L	ND	100	76.8	77	47-150	
2-Chlorotoluene	ug/L	ND	20	17.6	88	74-137	
4-Chlorotoluene	ug/L	ND	20	17.8	89	72-138	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	100	77.8	78	60-147	
Acetone	ug/L	ND	100	153	153	61-150 M1	
Allyl chloride	ug/L	ND	20	16.3	81	53-150	
Benzene	ug/L	ND	20	17.2	85	52-147	

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QUALITY CONTROL DATA

Project: PS Beta-NIROP
Pace Project No.: 10335268

MATRIX SPIKE SAMPLE:		2172509					
Parameter	Units	10335138001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromobenzene	ug/L	ND	20	17.6	88	75-129	
Bromochloromethane	ug/L	ND	20	17.9	90	72-128	
Bromodichloromethane	ug/L	ND	20	19.1	95	65-137	
Bromoform	ug/L	ND	20	17.5	87	59-133	
Bromomethane	ug/L	ND	20	16.2	81	30-150	SS
Carbon tetrachloride	ug/L	ND	20	21.3	106	73-144	
Chlorobenzene	ug/L	ND	20	17.6	88	75-126	
Chloroethane	ug/L	ND	20	19.7	99	55-150	
Chloroform	ug/L	ND	20	18.1	91	66-143	
Chloromethane	ug/L	ND	20	16.7	83	42-150	
cis-1,2-Dichloroethene	ug/L	ND	20	18.2	91	65-143	
cis-1,3-Dichloropropene	ug/L	ND	20	17.4	87	75-125	
Dibromochloromethane	ug/L	ND	20	17.6	88	75-125	
Dibromomethane	ug/L	ND	20	18.2	91	66-133	
Dichlorodifluoromethane	ug/L	ND	20	20.4	102	74-150	
Dichlorofluoromethane	ug/L	ND	20	19.8	99	68-150	
Diethyl ether (Ethyl ether)	ug/L	ND	20	16.4	82	57-148	
Ethylbenzene	ug/L	ND	20	18.4	92	67-149	
Hexachloro-1,3-butadiene	ug/L	ND	20	19.6	98	65-143	
Isopropylbenzene (Cumene)	ug/L	ND	20	19.7	99	64-150	
Methyl-tert-butyl ether	ug/L	ND	20	18.1	90	71-130	
Methylene Chloride	ug/L	ND	20	15.2	76	67-137	
n-Butylbenzene	ug/L	ND	20	18.8	94	70-138	
n-Propylbenzene	ug/L	ND	20	17.8	89	70-148	
Naphthalene	ug/L	ND	20	15.8	79	39-150	
p-Isopropyltoluene	ug/L	ND	20	18.7	93	74-138	
sec-Butylbenzene	ug/L	ND	20	17.7	88	64-150	
Styrene	ug/L	ND	20	18.0	90	75-132	
tert-Butylbenzene	ug/L	ND	20	18.0	90	75-138	
Tetrachloroethene	ug/L	ND	20	18.5	93	73-136	
Tetrahydrofuran	ug/L	ND	200	342	171	68-142	M1
Toluene	ug/L	ND	20	17.7	87	69-139	
trans-1,2-Dichloroethene	ug/L	ND	20	17.0	85	75-135	
trans-1,3-Dichloropropene	ug/L	ND	20	17.0	85	66-136	
Trichloroethene	ug/L	ND	20	19.0	95	74-135	
Trichlorofluoromethane	ug/L	ND	20	24.9	125	75-150	
Vinyl chloride	ug/L	ND	20	18.1	90	69-150	
Xylene (Total)	ug/L	ND	60	55.3	92	70-147	
1,2-Dichloroethane-d4 (S)	%				104	75-125	
4-Bromofluorobenzene (S)	%				99	75-125	
Toluene-d8 (S)	%				98	75-125	

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10335268

SAMPLE DUPLICATE: 2172508

Parameter	Units	10335137001 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,1-Trichloroethane	ug/L	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,2-Trichloroethane	ug/L	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	ND		30	
1,1-Dichloroethane	ug/L	ND	ND		30	
1,1-Dichloroethene	ug/L	ND	ND		30	
1,1-Dichloropropene	ug/L	ND	ND		30	
1,2,3-Trichlorobenzene	ug/L	ND	ND		30	
1,2,3-Trichloropropane	ug/L	ND	ND		30	
1,2,4-Trichlorobenzene	ug/L	ND	ND		30	
1,2,4-Trimethylbenzene	ug/L	ND	.22J		30	
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/L	ND	ND		30	
1,2-Dichlorobenzene	ug/L	ND	ND		30	
1,2-Dichloroethane	ug/L	ND	ND		30	
1,2-Dichloropropane	ug/L	ND	ND		30	
1,3,5-Trimethylbenzene	ug/L	ND	.34J		30	
1,3-Dichlorobenzene	ug/L	ND	ND		30	
1,3-Dichloropropane	ug/L	ND	ND		30	
1,4-Dichlorobenzene	ug/L	ND	ND		30	
2,2-Dichloropropane	ug/L	ND	ND		30	
2-Butanone (MEK)	ug/L	ND	ND		30	
2-Chlorotoluene	ug/L	ND	ND		30	
4-Chlorotoluene	ug/L	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		30	
Acetone	ug/L	ND	ND		30	
Allyl chloride	ug/L	ND	ND		30	
Benzene	ug/L	ND	ND		30	
Bromobenzene	ug/L	ND	ND		30	
Bromochloromethane	ug/L	ND	ND		30	
Bromodichloromethane	ug/L	ND	ND		30	
Bromoform	ug/L	ND	ND		30	
Bromomethane	ug/L	ND	ND		30	
Carbon tetrachloride	ug/L	ND	ND		30	
Chlorobenzene	ug/L	ND	ND		30	
Chloroethane	ug/L	ND	ND		30	
Chloroform	ug/L	ND	ND		30	
Chloromethane	ug/L	ND	ND		30	
cis-1,2-Dichloroethene	ug/L	ND	ND		30	
cis-1,3-Dichloropropene	ug/L	ND	ND		30	
Dibromochloromethane	ug/L	ND	ND		30	
Dibromomethane	ug/L	ND	ND		30	
Dichlorodifluoromethane	ug/L	ND	ND		30	
Dichlorofluoromethane	ug/L	ND	ND		30	
Diethyl ether (Ethyl ether)	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10335268

SAMPLE DUPLICATE: 2172508

Parameter	Units	10335137001 Result	Dup Result	RPD	Max RPD	Qualifiers
Hexachloro-1,3-butadiene	ug/L	ND	ND		30	
Isopropylbenzene (Cumene)	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Methylene Chloride	ug/L	ND	ND		30	
n-Butylbenzene	ug/L	ND	ND		30	
n-Propylbenzene	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
p-Isopropyltoluene	ug/L	ND	ND		30	
sec-Butylbenzene	ug/L	ND	ND		30	
Styrene	ug/L	ND	ND		30	
tert-Butylbenzene	ug/L	ND	ND		30	
Tetrachloroethene	ug/L	ND	ND		30	
Tetrahydrofuran	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
trans-1,2-Dichloroethene	ug/L	ND	ND		30	
trans-1,3-Dichloropropene	ug/L	ND	ND		30	
Trichloroethene	ug/L	ND	ND		30	
Trichlorofluoromethane	ug/L	ND	ND		30	
Vinyl chloride	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	106	107	1		
4-Bromofluorobenzene (S)	%	100	98	1		
Toluene-d8 (S)	%	96	100	4		

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QUALIFIERS

Project: PS Beta-NIROP

Pace Project No.: 10335268

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

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TNI - The NELAC Institute.

ANALYTE QUALIFIERS

- | | |
|----|--|
| IS | The internal standard recovery associated with this result exceeds the lower control limit. The reported result should be considered an estimated value. |
| M1 | Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery. |
| S3 | Surrogate recovery exceeded laboratory control limits. Analyte presence below reporting limits in associated samples. Results unaffected by high bias. |
| SS | This analyte did not meet the secondary source verification criteria for the initial calibration. The reported result should be considered an estimated value. |

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PS Beta-NIROP

Pace Project No.: 10335268

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10335268001	PMW-01	EPA 8260B	MSV/34351		
10335268002	PMW-02	EPA 8260B	MSV/34351		
10335268003	PMW-03	EPA 8260B	MSV/34345		
10335268004	PMW-04	EPA 8260B	MSV/34345		
10335268005	Trip Blank	EPA 8260B	MSV/34345		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

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

W335268

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Regenesis	Report To:	Melinda Pham	Attention:	Bahar Naderi
Address:	1011 Calle Sombra	Copy To:		Company Name:	Regenesis
	San Clemente, CA 92673	Purchase Order No.:		Address:	1011 Calle Sombra
Email To:	Mpham@regenesis.com			Pace Quote Reference:	21466
Phone:	949-366-8000	Project Name:	PS Beta - NIROP	Pace Project Manager:	
Requested Due Date/TAT:	2 days	Project Number:	PS Beta - NIROP	Site Location STATE:	MN

Page: _____ of _____

REGULATORY AGENCY

NPDES GROUND WATER DRINKING WATER

UST RCRA OTHER _____

#	ITEM	Section D Required Client Information	Valid Matrix Codes	MATRIX CODE	MATRIX TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives	Analysis Test ↑	W/N ↑	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
						COMPOSITE START	COMPOSITE END/GRAB								
1		PAW-01	DRINKING WATER	DW	GRAB	DATE	TIME		3	HCl				100	
2		PAW-02	WASTE WATER	WW	GRAB	DATE	TIME		3	NaOH				200	
3		PAW-03	WASTE WATER PRODUCT	WP	GRAB	DATE	TIME		3	HNO ₃				50	
4		PAW-04	WASTE WATER SOLID	WS	GRAB	DATE	TIME		3	H ₂ SO ₄				50	

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
ON KE	Melissa Moursen/Regenesis	1/6/16	16:31	BAH N	1/6/16	16:34	Y N Y
							Y N Y
							Y N Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: MELISSA MOURSEN

SIGNATURE of SAMPLER: [Signature]

DATE Signed (MM/DD/YYYY): 1/6/16

Temp in °C: _____

Received on: _____

Ice (Y/N): _____

Cooler (Y/N): _____

Samples Intact (Y/N): _____

Sample Condition Upon Receipt

Client Name: _____ Project #: _____

WO#: 10335268



10335268

Courier: Fed Ex UPS USPS Client
 Commercial Pace SpeedDee Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No **Optional:** Proj. Due Date: _____ Proj. Name: _____

Packing Material: Bubble Wrap Bubble Bags None Other: _____ Temp Blank? Yes No

Thermometer Used: 151401163 151401164 888A912167504 888A0143310098 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temp Read (°C): _____ Cooler Temp Corrected (°C): 5.2 Biological Tissue Frozen? Yes No N/A
 Temp should be above freezing to 6°C Correction Factor: +0.2 Date and Initials of Person Examining Contents: Rm 1/6/16

USDA Regulated Soil (N/A, water sample)
 Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or WA (check maps)? Yes No Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

		COMMENTS:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>		
All containers needing acid/base preservation have been checked?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> HNO ₃ <input type="checkbox"/> H ₂ SO ₄ <input type="checkbox"/> NaOH <input type="checkbox"/> HCl
All containers needing preservation are found to be in compliance with EPA recommendation?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Sample #
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide) Exceptions: <u>VOA</u> Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present? <u>Rm 1/6/15</u>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): <u>120 120815-01</u>		

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: [Signature]

Date: 1/7/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).



Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

February 5, 2016

Jennifer Anderson
Pace Analytical Services, Inc.
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: **PS BETA-NIROP**

Pace Workorder: 17890

Dear Jennifer Anderson:

Enclosed are the analytical results for sample(s) received by the laboratory on Friday, January 08, 2016.

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

Sincerely,

Ruth Welsh 02/05/2016
Ruth.Welsh@pacelabs.com

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email info@microseeps.com.

Total Number of Pages 12

Report ID: 17890 - 762043

CERTIFICATE OF ANALYSIS

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Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

SAMPLE SUMMARY

Workorder: 17890 PS BETA-NIROP

Lab ID	Sample ID	Matrix	Date Collected	Date Received
178900001	PMW-03	Water	1/6/2016 10:55	1/8/2016 14:36

Report ID: 17890 - 762043

CERTIFICATE OF ANALYSIS

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Client Pace MN
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Project PS Beta Nirop
 Project # 10335268
 Report to Jennifer Anderson
 Tel: 612.607.1700
 Email: jennifer.anderson @ pacelabs.com

Pace Analytical CSIA Center
 220 William Pitt Way
 Pittsburgh, PA 15238
 Tel: 412.826.5245
 Report by: Dr. Yi Wang
 Director, CSIA Center of Excellence
 Cell: 609.721.2843
 Email: yi.wang@pacelabs.com

REPORT OF ENVIRONMENTAL FORENSICS ISOTOPE ANALYSES

Date Received: 1/8/2016

Date Reported: 2/2/2016

Water sample submitted for $\delta^{13}\text{C}$ (‰ VPDB) stable carbon isotope forensics of chlorinated solvents

Pace CSIA Lab ID	Client's Sample ID Description	$\delta^{13}\text{C}$ VC	$\delta^{13}\text{C}$ cDCE	$\delta^{13}\text{C}$ tDCE	$\delta^{13}\text{C}$ 11DCE	$\delta^{13}\text{C}$ 11DCA	$\delta^{13}\text{C}$ TCE
17890-1	PMW-03	^U -	-19.78	-22.58	^U -	-23.48	-3.77

VC: vinyl chloride

cDCE: *cis*-1,2-dichloroethene

tDCE: *trans*-1,2-dichloroethene

11DCE: 1,1-dichloroethene

11DCA: 1,1-dichloroethane

TCE: trichloroethene

^J-Target analyte produced a low peak signal and the result is considered usable to $\pm 2\%$, but not the standard $\pm 0.5\%$

^U-Either there was no peak corresponding to the target analyte or that such a peak did not produce a reliable CSIA result due to sample matrix effect or dilutions applied to prevent instrument contamination

Method: Compound Specific Isotope Analysis for ^{13}C and ^2H by GC-IRMS, for ^{37}Cl by GC-qMS

	$\delta^{13}\text{C}$	$\delta^{13}\text{C}$	$\delta^{13}\text{C}$	$\delta^{13}\text{C}$	$\delta^{13}\text{C}$	$\delta^{13}\text{C}$
Quality Control STDs	VC	cDCE	tDCE	11DCE	11DCA	TCE
QC-1	-29.39	-11.85	-21.72	-31.10	-33.17	-26.62
QC-2	-28.92	-11.70	-21.53	-30.62	-32.73	-26.24
Mean	-29.16	-11.78	-21.63	-30.86	-32.95	-26.43
Analytical precision (1 σ)	0.33	0.11	0.13	0.34	0.31	0.27

Pace CSIA Forensic Isotope Services

Product or Dissolved Organics: Chlorinated Solvents, Oil, Extract, Fraction and Kerogen

3D-CSIA of ^{13}C , ^{37}Cl , and ^2H for PCE, TCE, DCE, MTBE, BTEX, 1,4-Dioxane, Alkanes, Gasoline and Oil; Bulk ^{13}C , ^2H , ^{18}O , ^{34}S , and ^{15}N

Gas Sample

Gas Composition and 2D-CSIA of ^{13}C and ^2H of C1 to C5; ^{13}C of CO_2 ; ^{14}C of C1 and CO_2 ; ^{34}S of H_2S ; ^{15}N and ^{18}O of N_2O gas

Water and Dissolved Inorganics

^2H , ^3H and ^{18}O ; ^{34}S and ^{18}O of dissolved sulfate; ^{34}S of dissolved H_2S

^{15}N and ^{18}O of dissolved Nitrate; ^{15}N of Ammonia; ^{13}C of dissolved CO_2 and Carbonate/Bicarbonate

Soil and Minerals

^{13}C , ^{18}O , ^{15}N , ^{34}S , D/H; ^{14}C of carbonate or organics

Post-Analysis Forensic Isotope Data Interpretation

Pace CSIA Center of Excellence
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report Carbon

17890
 PACE-MN
 Client Project Name: PS Beta Nirop
 Client Project #: 10335268

Vinyl Chloride		Concentration (ug/l)				CSIA (Carbon)				
		Sample	PQL	Date	Area	Co-elution	Analysis	Date	Delta (%)	
Lab ID	Client ID	Sample	PQL	Date	Sample	PQL				
178900001	PMW-03	<1 (U)	1	1/7/16	<1 (U)	1	No	4612	1/26/16	-
Duplicate	PMW-03 (DF2)	ND	1	1/7/16	<1 (U)	1	No	4611	1/26/16	-
Blank	-	0	-	-	<1 (U)	1	No	4598	1/26/16	-
LCS_Lo	-	10	-	-	11.6	1	No	4599	1/26/16	-29.39
LCS_Hi	-	20	-	-	16.4	1	No	4600	1/26/16	-28.92
LCS acceptance range		-28.90 <=> -27.90								

Method	8260B	AM-24-AR_C	AM-24-DL_C
Units	ug/l	Vs	%o, VPDB
Analyst	NA	CJS	CJS

Pace CSIA Center of Excellence
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report Carbon

17890
 PACE-MN
 Client Project Name: PS Beta Nirrop
 Client Project #: 10335268

1,1-Dichloroethene		Concentration (ug/l)						CSIA (Carbon)					
		Sample		PQL		Date		Area		Co-elution	Analysis	Date	Delta (‰)
		Sample	PQL	Sample	PQL	Sample	PQL	Area	PQL				
178900001	Client ID	<1 (U)	1	1/7/16	1	1/7/16	<1 (U)	1	No	4612	1/26/16	-	
Duplicate	PMW-03	NA	1	1/7/16	1	1/7/16	<1 (U)	1	No	4611	1/26/16	-	
Blank	PMW-03 (DF2)	0	-	-	0	-	<1 (U)	1	No	4598	1/26/16	-	
LCS_Lo	-	10	-	-	3.11	-	3.11	1	No	4599	1/26/16	-31.10	
LCS_Hi	-	50	-	-	15.3	-	15.3	1	No	4600	1/26/16	-30.62	
LCS acceptance range										-29.49	<=>		-28.49

Method	8260B	AM-24-AR_C	AM-24-DL_C
Units	ug/l	Vs	%o, VPDB
Analyst	NA	CJS	CJS

Pace CSIA Center of Excellence
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report Carbon

17890
 PACE-MN
 Client Project Name: PS Beta Nirrop
 Client Project #: 10335268

trans-Dichloroethene		Concentration (ug/l)				CSIA (Carbon)				
		Sample	PQL	Date	Area	Co-elution	Analysis	Date	Delta (‰)	
Lab ID	Client ID				Sample	PQL				
178900001	PMW-03	68	1	1/7/16	17.5	1	No	4610	1/26/16	-22.58
Duplicate	PMW-03 (DF2)	68	1	1/7/16	16.0	1	No	4611	1/26/16	-22.59
Blank	-	0	-	-	<1 (U)	1	No	4598	1/26/16	-
LCS_Lo	-	10	-	-	4.51	1	No	4599	1/26/16	-21.72
LCS_Hi	-	50	-	-	24.7	1	No	4600	1/26/16	-21.53
LCS acceptance range						-22.08 <=> -21.08				

Method	8260B	AM-24-AR_C	AM-24-DL_C
Units	ug/l	Vs	‰, VPDB
Analyst	NA	CJS	CJS

Pace CSIA Center of Excellence
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report Carbon

17890
 PACE-MN
 Client Project Name: PS Beta Nitrop
 Client Project #: 10335268

		Concentration				CSIA (Carbon)					
		Sample	PQL	Date	Area	Co-elution	Analysis	Date	Delta (%)		
Lab ID	Client ID				Sample	PQL					
178900001	PMW-03	3	1	1/7/16	3.73	1	No	4612	1/26/16	-23.48	
Duplicate	PMW-03 (DF2)	3	1	1/7/16	<1 (U)	1	No	4611	1/26/16	-	
Blank	-	0	-	-	<1 (U)	1	No	4598	1/26/16	-	
LCS_Lo	-	10	-	-	5.05	1	No	4599	1/26/16	-33.17	
LCS_Hi	-	50	-	-	27.0	1	No	4600	1/26/16	-32.73	
LCS acceptance range								-32.88	<=>	-31.88	

Method	8260B	AM-24-AR_C	AM-24-DL_C
Units	ug/l	Vs	%o, VPDB
Analyst	NA	CJS	CJS

Pace CSIA Center of Excellence
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report Carbon

17890
 PACE-MN
 Client Project Name: PS Beta Nirop
 Client Project #: 10335268

cis-Dichloroethene		Concentration				CSIA (Carbon)					
		Sample	PQL	Date	Area	Co-elution	Analysis	Date	Delta (‰)		
Lab ID	Client ID	Sample	PQL	Date	Sample	PQL					
178900001	PMW-03	38	1	1/7/16	9.30	1	No	4610	1/26/16	-19.78	
Duplicate	PMW-03 (DF2)	38	1	1/7/16	8.55	1	No	4611	1/26/16	-19.76	
Blank	-	0	-	-	<1 (U)	1	No	4598	1/26/16	-	
LCS_Lo	-	10	-	-	4.99	1	No	4599	1/26/16	-11.85	
LCS_Hi	-	50	-	-	27.0	1	No	4600	1/26/16	-11.70	
LCS acceptance range		-12.22 <=> -11.22									

Method	8260B	AM-24-AR_C	AM-24-DL_C
Units	ug/l	Vs	‰, VPDB
Analyst	NA	CJS	CJS

Pace CSIA Center of Excellence
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report

Carbon

17890
 PACE-MN
 Client Project Name: PS Beta Nirrop
 Client Project #: 10335268

Trichloroethene		Concentration (ug/l)				CSIA (Carbon)			
		Sample	PQL	Date	Area	Co-elution	Analysis	Date	Delta (‰)
Lab ID	Client ID								
178900001	PMW-03	13	1	1/7/16	6.13	No	4612	1/26/16	-3.77
Duplicate	PMW-03 (DF2)	13	1	1/7/16	< 1 (U)	No	4611	1/26/16	-
Blank	-	0	-	-	< 1 (U)	No	4598	1/26/16	-
LCS_Lo	-	10	-	-	2.69	No	4599	1/26/16	-26.62
LCS_Hi	-	50	-	-	15.9	No	4600	1/26/16	-26.24
LCS acceptance range							-26.48	<=>	-25.48

Method	8260B	AM-24-AR_C	AM-24-DL_C
Units	ug/l	Vs	‰, VPDB
Analyst	NA	CJS	CJS

Pace CSIA Center of Excellence
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report Carbon

17890
 PACE-MN
 Client Project Name: PS Beta Nirrop
 Client Project #: 10335268

1CP (Surrogate)		CSIA (Carbon)							
Lab ID	Client ID	Sample Collection	Area	Dilution	PQL	Co-elution	Analysis	Date	Delta (‰)
178900001	PMW-03	01/06/16	4.22	2	1	No	4610	01/26/16	-36.71
178900001	PMW-03	01/06/16	1.75	1	1	No	4612	01/26/16	-36.69
Duplicate	PMW-03 (DF2)	01/06/16	5.05	2	1	No	4611	01/26/16	-36.83
Blank	-	-	4.86	1	1	No	4598	01/26/16	-36.90
LCS Lo	-	-	4.85	1	1	No	4599	01/26/16	-37.20
LCS Hi	-	-	4.60	1	1	No	4600	01/26/16	-37.31
Surrogate acceptance range							-37.49	<=>	-36.49

Method	AM-24-AR_C	AM-24-DL_C
Units	Vs	‰, VPDB
Analyst	CJS	CJS

Case Narrative: The blank, LCS's, duplicate and surrogates were all close to or within the acceptance range and the data is reported as valid and representative of the samples as received.

Chain of Custody

17890

Workorder Name: PS Beta-NIROP

Workorder: 10335268

Results Requested 4/8/2016

2/4/15 JMA
1/7/16



Report / Invoice To: Subcontract To

Jennifer Anderson
Pace Analytical Minnesota
1700 Elm Street
Suite 200
Minneapolis, MN 55414
Phone (612)607-1700
Email: jennifer.anderson@pacelabs.com

Pace Energy/Microseps P.O. 10335268

Requested Analysis

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers					LAB USE ONLY	
					HCl						
1	PMW-03	1/6/2016 10:55	10335268003	Water							
2											
3											
4											
5											

Transfers	Released By	Date/Time	Received By	Date/Time	Received on Ice	Y or N	Y or N	Samples Intact	Y or N
1	J. Pace	1/7/16 12:59	J. Pace	1.8.16					
2									
3									

Cooler Temperature on Receipt 1.4°C Custody Seal Y or N Received on Ice Y or N Samples Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Cooler Receipt Form

Client Name: Paer MN Project: PS Beta Lab Work Order: 17890
- NIROP

A. Shipping/Container Information (circle appropriate response)

Courier: FedEx UPS USPS Client Other: _____ Air bill Present Yes No

Tracking Number: 6484 8695 1768

Custody Seal on Cooler/Box Present: Yes No Seals Intact: Yes No

Cooler/Box Packing Material: Bubble Wrap Absorbent Foam Other: _____

Type of Ice: Wet Blue None Ice Intact: Yes Melted

Cooler Temperature: 1.4°C Radiation Screened: Yes No Chain of Custody Present: Yes No

Comments: _____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non Conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished	✓			
Sampler Name & Signature on CDC		✓		
Containers intact	✓			
Were samples in separate bags	✓			
Sample container labels match CDC	✓			
Sample name/date and time collected	✓			
Sufficient volume provided	✓			
PAES containers used	✓			
Are containers properly preserved for the requested testing? (as labeled)	✓			
If an unknown preservation state, were containers checked? Exception: VDA's coliform			✓	If yes, see pH form...
Was volume for dissolved testing field filtered, as noted on the CDC? Was volume received in a preserved container?			✓	

Comments: _____

Cooler contents examined/received by: LY Date: 7-8-16

Project Manager Review: lu Date: 7-8-16

January 19, 2016

Melinda Pham
Regenesis
1011 Calle Sombra
San Clemente, CA 92673

RE: Project: PS Beta-NIROP
Pace Project No.: 10335267

Dear Melinda Pham:

Enclosed are the analytical results for sample(s) received by the laboratory on January 06, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,



Jennifer Anderson
jennifer.anderson@pacelabs.com
Project Manager

Enclosures

cc: Ryan Moore, Regenesis



REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, Inc..

CERTIFICATIONS

Project: PS Beta-NIROP
Pace Project No.: 10335267

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
525 N 8th Street, Salina, KS 67401
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

Montana Certification IDs

150 N. 9th Street, Billings, MT 59101
Colorado Asbestos #: 17119
A2LA Certification #: 3590.01
EPA Region 8 Certification #: 8TMS-L
Idaho Certification #: MT00012

Minnesota Dept of Health Certification #: 030-999-442
Montana Certification #: MT CERT0040
North Dakota Dept. Of Health #: R-209
NVLAP Certification #: 101292-0
Washington Department of Ecology #: C993

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification #MN01084
Arizona Department of Health Certification #AZ0785
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203

Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007
Nevada DNR #MN010842015-1
Oklahoma Department of Environmental Quality

Ormond Beach Certification IDs

8 East Tower Circle, Ormond Beach, FL 32174
Alabama Certification #: 41320
Connecticut Certification #: PH-0216
Delaware Certification: FL NELAC Reciprocity
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Illinois Certification #: 200068
Indiana Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Kentucky Certification #: 90050
Louisiana Certification #: FL NELAC Reciprocity
Louisiana Environmental Certificate #: 05007
Maryland Certification: #346
Michigan Certification #: 9911

Mississippi Certification: FL NELAC Reciprocity
Missouri Certification #: 236
Montana Certification #: Cert 0074
Nebraska Certification: NE-OS-28-14
Nevada Certification: FL NELAC Reciprocity
New Hampshire Certification #: 2958
New York Certification #: 11608
North Carolina Environmental Certificate #: 667
North Carolina Certification #: 12710
North Dakota Certification #: R-216
Oklahoma Certification #: D9947
Pennsylvania Certification #: 68-00547
Puerto Rico Certification #: FL01264
South Carolina Certification: #96042001
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PS Beta-NIROP

Pace Project No.: 10335267

Ormond Beach Certification IDs

US Virgin Islands Certification: FL NELAC Reciprocity

Virginia Environmental Certification #: 460165

West Virginia Certification #: 9962C

Wisconsin Certification #: 399079670

Wyoming (EPA Region 8): FL NELAC Reciprocity

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SAMPLE SUMMARY

Project: PS Beta-NIROP

Pace Project No.: 10335267

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10335267001	PMW-01	Water	01/06/16 14:20	01/06/16 16:54
10335267002	PMW-02	Water	01/06/16 13:25	01/06/16 16:54
10335267003	PMW-03	Water	01/06/16 10:55	01/06/16 16:54
10335267004	PMW-04	Water	01/06/16 09:25	01/06/16 16:54

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: PS Beta-NIROP

Pace Project No.: 10335267

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10335267001	PMW-01	RSK 175	DR1	3	PASI-M
		EPA 6010C	DM	1	PASI-M
		6010C Met	DM	1	PASI-M
		SM 4500-S2-D	CAC	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	NMT	1	PASI-O
		EPA 300.0	KEO	1	PASI-M
		EPA 353.2	MW	1	PASI-M
		SM 5220D	DCL	1	PASI-M
		SM 5310C	MAR	1	PASI-V
10335267002	PMW-02	RSK 175	DR1	3	PASI-M
		EPA 6010C	DM	1	PASI-M
		6010C Met	DM	1	PASI-M
		SM 4500-S2-D	CAC	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	NMT	1	PASI-O
		EPA 300.0	KEO	1	PASI-M
		EPA 353.2	MW	1	PASI-M
		SM 5220D	DCL	1	PASI-M
		SM 5310C	MAR	1	PASI-V
10335267003	PMW-03	RSK 175	DR1	3	PASI-M
		EPA 6010C	DM	1	PASI-M
		6010C Met	DM	1	PASI-M
		SM 4500-S2-D	CAC	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	NMT	1	PASI-O
		EPA 300.0	KEO	1	PASI-M
		EPA 353.2	MW	1	PASI-M
		SM 5220D	DCL	1	PASI-M
		SM 5310C	MAR	1	PASI-V
10335267004	PMW-04	RSK 175	DR1	3	PASI-M
		EPA 6010C	DM	1	PASI-M
		6010C Met	DM	1	PASI-M
		SM 4500-S2-D	CAC	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	NMT	1	PASI-O
		EPA 300.0	KEO	1	PASI-M

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SAMPLE ANALYTE COUNT

Project: PS Beta-NIROP
Pace Project No.: 10335267

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 353.2	MW	1	PASI-M
		SM 5220D	DCL	1	PASI-M
		SM 5310C	MAR	1	PASI-V

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10335267

Sample: PMW-01	Lab ID: 10335267001	Collected: 01/06/16 14:20	Received: 01/06/16 16:54	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace								
Analytical Method: RSK 175								
Ethane	ND	ug/L	10.0	1		01/07/16 09:07	74-84-0	
Ethene	ND	ug/L	10.0	1		01/07/16 09:07	74-85-1	
Methane	31.7	ug/L	10.0	1		01/07/16 09:07	74-82-8	
6010C MET ICP								
Analytical Method: EPA 6010C Preparation Method: EPA 3010								
Iron	17600	ug/L	50.0	1	01/07/16 09:11	01/13/16 11:47	7439-89-6	
6010C MET ICP, Dissolved								
Analytical Method: 6010C Met Preparation Method: EPA 3010								
Iron, Dissolved	11600	ug/L	50.0	1	01/07/16 09:03	01/07/16 14:22	7439-89-6	
4500S2D Sulfide Water								
Analytical Method: SM 4500-S2-D								
Sulfide	ND	mg/L	0.10	1		01/11/16 16:32		
2320B Alkalinity								
Analytical Method: SM 2320B								
Carbon Dioxide (SM4500CO2D)	103	mg/L	25.0	5		01/16/16 10:30	124-38-9	
Alkalinity, Total as CaCO3	605	mg/L	5.0	1		01/07/16 13:41		
Alkalinity,Bicarbonate (CaCO3)	605	mg/L	5.0	1		01/07/16 13:41		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	5.0	1		01/07/16 13:41		
300.0 IC Anions								
Analytical Method: EPA 300.0								
Sulfate	104	mg/L	2.4	2		01/07/16 14:46	14808-79-8	
353.2 Nitrate + Nitrite								
Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	ND	mg/L	0.020	1		01/13/16 09:25		
5220D COD								
Analytical Method: SM 5220D Preparation Method: SM 5220D								
Chemical Oxygen Demand	278	mg/L	50.0	1	01/11/16 09:32	01/11/16 14:06		
5310C TOC								
Analytical Method: SM 5310C								
Total Organic Carbon	91.9	mg/L	5.0	5		01/13/16 11:46	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10335267

Sample: PMW-02	Lab ID: 10335267002	Collected: 01/06/16 13:25	Received: 01/06/16 16:54	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace								
Analytical Method: RSK 175								
Ethane	ND	ug/L	10.0	1		01/07/16 09:23	74-84-0	
Ethene	ND	ug/L	10.0	1		01/07/16 09:23	74-85-1	
Methane	13.0	ug/L	10.0	1		01/07/16 09:23	74-82-8	
6010C MET ICP								
Analytical Method: EPA 6010C Preparation Method: EPA 3010								
Iron	8910	ug/L	50.0	1	01/07/16 09:11	01/13/16 12:02	7439-89-6	
6010C MET ICP, Dissolved								
Analytical Method: 6010C Met Preparation Method: EPA 3010								
Iron, Dissolved	6320	ug/L	50.0	1	01/07/16 09:03	01/07/16 14:43	7439-89-6	
4500S2D Sulfide Water								
Analytical Method: SM 4500-S2-D								
Sulfide	ND	mg/L	0.10	1		01/11/16 16:34		
2320B Alkalinity								
Analytical Method: SM 2320B								
Carbon Dioxide (SM4500CO2D)	54.0	mg/L	5.0	1		01/16/16 10:44	124-38-9	
Alkalinity, Total as CaCO3	421	mg/L	5.0	1		01/07/16 13:45		
Alkalinity,Bicarbonate (CaCO3)	421	mg/L	5.0	1		01/07/16 13:45		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	5.0	1		01/07/16 13:45		
300.0 IC Anions								
Analytical Method: EPA 300.0								
Sulfate	157	mg/L	2.4	2		01/07/16 15:05	14808-79-8	
353.2 Nitrate + Nitrite								
Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	ND	mg/L	0.020	1		01/13/16 09:26		
5220D COD								
Analytical Method: SM 5220D Preparation Method: SM 5220D								
Chemical Oxygen Demand	ND	mg/L	50.0	1	01/11/16 09:32	01/11/16 14:07		
5310C TOC								
Analytical Method: SM 5310C								
Total Organic Carbon	2.4	mg/L	1.0	1		01/12/16 21:12	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10335267

Sample: PMW-03	Lab ID: 10335267003	Collected: 01/06/16 10:55	Received: 01/06/16 16:54	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace								
Analytical Method: RSK 175								
Ethane	ND	ug/L	10.0	1		01/07/16 09:32	74-84-0	
Ethene	ND	ug/L	10.0	1		01/07/16 09:32	74-85-1	
Methane	24.6	ug/L	10.0	1		01/07/16 09:32	74-82-8	
6010C MET ICP								
Analytical Method: EPA 6010C Preparation Method: EPA 3010								
Iron	10800	ug/L	50.0	1	01/07/16 09:11	01/13/16 12:06	7439-89-6	
6010C MET ICP, Dissolved								
Analytical Method: 6010C Met Preparation Method: EPA 3010								
Iron, Dissolved	7410	ug/L	50.0	1	01/07/16 09:03	01/07/16 14:46	7439-89-6	
4500S2D Sulfide Water								
Analytical Method: SM 4500-S2-D								
Sulfide	ND	mg/L	0.10	1		01/11/16 16:35		
2320B Alkalinity								
Analytical Method: SM 2320B								
Alkalinity, Total as CaCO ₃	328	mg/L	5.0	1		01/07/16 13:50		
Carbon Dioxide (SM4500CO ₂ D)	35.9	mg/L	5.0	1		01/16/16 10:53	124-38-9	
Alkalinity,Bicarbonate (CaCO ₃)	328	mg/L	5.0	1		01/07/16 13:50		
Alkalinity,Carbonate (CaCO ₃)	ND	mg/L	5.0	1		01/07/16 13:50		
300.0 IC Anions								
Analytical Method: EPA 300.0								
Sulfate	130	mg/L	2.4	2		01/07/16 13:33	14808-79-8	
353.2 Nitrate + Nitrite								
Analytical Method: EPA 353.2								
Nitrogen, NO ₂ plus NO ₃	ND	mg/L	0.020	1		01/13/16 09:28		
5220D COD								
Analytical Method: SM 5220D Preparation Method: SM 5220D								
Chemical Oxygen Demand	ND	mg/L	50.0	1	01/11/16 09:32	01/11/16 14:07		
5310C TOC								
Analytical Method: SM 5310C								
Total Organic Carbon	2.8	mg/L	1.0	1		01/12/16 22:15	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10335267

Sample: PMW-04	Lab ID: 10335267004	Collected: 01/06/16 09:25	Received: 01/06/16 16:54	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace		Analytical Method: RSK 175						
Ethane	ND	ug/L	10.0	1		01/07/16 09:40	74-84-0	
Ethene	ND	ug/L	10.0	1		01/07/16 09:40	74-85-1	
Methane	ND	ug/L	10.0	1		01/07/16 09:40	74-82-8	
6010C MET ICP		Analytical Method: EPA 6010C Preparation Method: EPA 3010						
Iron	5920	ug/L	50.0	1	01/07/16 09:11	01/13/16 12:09	7439-89-6	
6010C MET ICP, Dissolved		Analytical Method: 6010C Met Preparation Method: EPA 3010						
Iron, Dissolved	3330	ug/L	50.0	1	01/07/16 09:03	01/07/16 14:49	7439-89-6	
4500S2D Sulfide Water		Analytical Method: SM 4500-S2-D						
Sulfide	ND	mg/L	0.10	1		01/11/16 16:38		
2320B Alkalinity		Analytical Method: SM 2320B						
Alkalinity, Total as CaCO ₃	267	mg/L	5.0	1		01/07/16 14:04		
Carbon Dioxide (SM4500CO ₂ D)	35.9	mg/L	5.0	1		01/16/16 11:00	124-38-9	
Alkalinity,Bicarbonate (CaCO ₃)	267	mg/L	5.0	1		01/07/16 14:04		
Alkalinity,Carbonate (CaCO ₃)	ND	mg/L	5.0	1		01/07/16 14:04		
300.0 IC Anions		Analytical Method: EPA 300.0						
Sulfate	101	mg/L	2.4	2		01/07/16 13:57	14808-79-8	
353.2 Nitrate + Nitrite		Analytical Method: EPA 353.2						
Nitrogen, NO ₂ plus NO ₃	0.46	mg/L	0.020	1		01/13/16 09:29		
5220D COD		Analytical Method: SM 5220D Preparation Method: SM 5220D						
Chemical Oxygen Demand	ND	mg/L	50.0	1	01/11/16 09:32	01/11/16 14:07		
5310C TOC		Analytical Method: SM 5310C						
Total Organic Carbon	3.2	mg/L	1.0	1		01/12/16 22:28	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP
Pace Project No.: 10335267

QC Batch: AIR/24976 Analysis Method: RSK 175
QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE
Associated Lab Samples: 10335267001, 10335267002, 10335267003, 10335267004

METHOD BLANK: 2171096 Matrix: Water
Associated Lab Samples: 10335267001, 10335267002, 10335267003, 10335267004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	10.0	01/07/16 08:59	
Ethene	ug/L	ND	10.0	01/07/16 08:59	
Methane	ug/L	ND	10.0	01/07/16 08:59	

LABORATORY CONTROL SAMPLE & LCSD: 2171097

Parameter	Units	2171098								
		Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Ethane	ug/L	114	103	98.3	91	86	85-115	5	20	
Ethene	ug/L	106	97.1	92.9	91	88	85-115	4	20	
Methane	ug/L	60.7	57.0	57.2	94	94	85-115	0	20	

SAMPLE DUPLICATE: 2172099

Parameter	Units	10335267001		Dup		Max RPD	Qualifiers
		Result	Dup Result	RPD	RPD		
Ethane	ug/L	ND	ND			20	
Ethene	ug/L	ND	.57J			20	
Methane	ug/L	31.7	30.8		3	20	

SAMPLE DUPLICATE: 2172100

Parameter	Units	92281981001		Dup		Max RPD	Qualifiers
		Result	Dup Result	RPD	RPD		
Ethane	ug/L	ND	ND			20	
Ethene	ug/L	ND	1.1J			20	
Methane	ug/L	ND	9.5J			20	

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10335267

QC Batch: MPRP/60797 Analysis Method: EPA 6010C
 QC Batch Method: EPA 3010 Analysis Description: 6010C Water
 Associated Lab Samples: 10335267001, 10335267002, 10335267003, 10335267004

METHOD BLANK: 2171054 Matrix: Water
 Associated Lab Samples: 10335267001, 10335267002, 10335267003, 10335267004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron	ug/L	ND	50.0	01/13/16 11:41	

LABORATORY CONTROL SAMPLE: 2171055

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	10000	9600	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2171056 2171057

Parameter	Units	10335267001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Iron	ug/L	17600	10000	10000	27700	28000	101	103	75-125	1	20	

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QUALITY CONTROL DATA

Project: PS Beta-NIROP
Pace Project No.: 10335267

QC Batch: MPRP/60796 Analysis Method: 6010C Met
QC Batch Method: EPA 3010 Analysis Description: 6010C Water Dissolved
Associated Lab Samples: 10335267001, 10335267002, 10335267003, 10335267004

METHOD BLANK: 2171050 Matrix: Water
Associated Lab Samples: 10335267001, 10335267002, 10335267003, 10335267004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron, Dissolved	ug/L	ND	50.0	01/07/16 14:16	

LABORATORY CONTROL SAMPLE: 2171051

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron, Dissolved	ug/L	10000	9690	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2171052 2171053

Parameter	Units	10335267001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Iron, Dissolved	ug/L	11600	10000	10000	21300	21300	97	97	75-125	0	20	

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QUALITY CONTROL DATA

Project: PS Beta-NIROP
Pace Project No.: 10335267

QC Batch: MT/22121 Analysis Method: SM 4500-S2-D
QC Batch Method: SM 4500-S2-D Analysis Description: 4500S2D Sulfide Water
Associated Lab Samples: 10335267001, 10335267002, 10335267003, 10335267004

METHOD BLANK: 2173060 Matrix: Water
Associated Lab Samples: 10335267001, 10335267002, 10335267003, 10335267004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfide	mg/L	ND	0.10	01/11/16 15:56	

LABORATORY CONTROL SAMPLE: 2173061

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide	mg/L	.97	1.0	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2173062 2173063

Parameter	Units	10335025001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfide	mg/L	ND	.97	.97	0.84	0.82	85	84	80-120	2	20	

SAMPLE DUPLICATE: 2173064

Parameter	Units	10335267003 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide	mg/L	ND	ND		20	

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QUALITY CONTROL DATA

Project: PS Beta-NIROP
Pace Project No.: 10335267

QC Batch: WET/35249 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 10335267001, 10335267002, 10335267003, 10335267004

METHOD BLANK: 1450327 Matrix: Water
Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Carbon Dioxide (SM4500CO2D)	mg/L	ND	5.0	01/16/16 10:18	

SAMPLE DUPLICATE: 1450329

Parameter	Units	10335267001 Result	Dup Result	RPD	Max RPD	Qualifiers
Carbon Dioxide (SM4500CO2D)	mg/L	103	104	1		

SAMPLE DUPLICATE: 1450330

Parameter	Units	35224346013 Result	Dup Result	RPD	Max RPD	Qualifiers
Carbon Dioxide (SM4500CO2D)	mg/L	5.0U	ND			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10335267

QC Batch: WET/45936 Analysis Method: SM 2320B
 QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
 Associated Lab Samples: 10335267001, 10335267002, 10335267003, 10335267004

METHOD BLANK: 2171082 Matrix: Water
 Associated Lab Samples: 10335267001, 10335267002, 10335267003, 10335267004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	ND	5.0	01/07/16 13:06	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	5.0	01/07/16 13:06	
Alkalinity,Carbonate (CaCO ₃)	mg/L	ND	5.0	01/07/16 13:06	

LABORATORY CONTROL SAMPLE & LCSD: 2171083 2171084

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	40	41.4	42.0	103	105	90-110	1	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2171085 2171086

Parameter	Units	10334947004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO ₃	mg/L	338	40	40	376	379	95	102	80-120	1	30	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10335267

QC Batch: WETA/26041 Analysis Method: EPA 300.0
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
 Associated Lab Samples: 10335267001, 10335267002, 10335267003, 10335267004

METHOD BLANK: 2171281 Matrix: Water
 Associated Lab Samples: 10335267001, 10335267002, 10335267003, 10335267004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.2	01/07/16 11:32	

LABORATORY CONTROL SAMPLE: 2171282

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	12.5	12.0	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2171283 2171284

Parameter	Units	10335056002		2171283		2171284		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MSD Spike Conc.	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result					MS % Rec
Sulfate	mg/L	<0.60	12.5	12.5	12.5	12.0	12.1	96	97	90-110	0	20

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP
Pace Project No.: 10335267

QC Batch: WETA/26084 Analysis Method: EPA 353.2
QC Batch Method: EPA 353.2 Analysis Description: 353.2 Nitrate + Nitrite, preserved
Associated Lab Samples: 10335267001, 10335267002, 10335267003, 10335267004

METHOD BLANK: 2174103 Matrix: Water
Associated Lab Samples: 10335267001, 10335267002, 10335267003, 10335267004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	ND	0.020	01/13/16 09:24	

LABORATORY CONTROL SAMPLE: 2174104

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	1	1.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2174105 2174106

Parameter	Units	10335639001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	7.6	20	20	27.8	27.8	101	101	90-110	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP
Pace Project No.: 10335267

QC Batch: WETA/26067 Analysis Method: SM 5220D
QC Batch Method: SM 5220D Analysis Description: 5220D COD
Associated Lab Samples: 10335267001, 10335267002, 10335267003, 10335267004

METHOD BLANK: 2172937 Matrix: Water
Associated Lab Samples: 10335267001, 10335267002, 10335267003, 10335267004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50.0	01/11/16 14:01	

LABORATORY CONTROL SAMPLE: 2172938

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	300	294	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2172939 2172940

Parameter	Units	10335110001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chemical Oxygen Demand	mg/L	1340	2500	2500	3560	3520	89	87	80-120	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2172941 2172942

Parameter	Units	10334884002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chemical Oxygen Demand	mg/L	27000	25000	25000	49800	49800	91	91	80-120	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10335267

QC Batch: WETA/15362 Analysis Method: SM 5310C
 QC Batch Method: SM 5310C Analysis Description: 5310C TOC
 Associated Lab Samples: 10335267001, 10335267002, 10335267003, 10335267004

METHOD BLANK: 280850 Matrix: Water

Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	01/12/16 16:30	

LABORATORY CONTROL SAMPLE: 280851

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	25	25.4	102	90-110	

LABORATORY CONTROL SAMPLE: 280888

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	25	25.5	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 280852 280853

Parameter	Units	10335267002 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	Spike Conc.	MSD Result						
Total Organic Carbon	mg/L	2.4	25	27.6	25	27.8	101	102	80-120	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 280854 280855

Parameter	Units	10335414001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	Spike Conc.	MSD Result						
Total Organic Carbon	mg/L	1.6	25	26.9	25	27.1	101	102	80-120	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: PS Beta-NIROP

Pace Project No.: 10335267

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

PASI-MT Pace Analytical Services - Montana

PASI-O Pace Analytical Services - Ormond Beach

PASI-V Pace Analytical Services - Virginia

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PS Beta-NIROP
Pace Project No.: 10335267

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10335267001	PMW-01	RSK 175	AIR/24976		
10335267002	PMW-02	RSK 175	AIR/24976		
10335267003	PMW-03	RSK 175	AIR/24976		
10335267004	PMW-04	RSK 175	AIR/24976		
10335267001	PMW-01	EPA 3010	MPRP/60797	EPA 6010C	ICP/26476
10335267002	PMW-02	EPA 3010	MPRP/60797	EPA 6010C	ICP/26476
10335267003	PMW-03	EPA 3010	MPRP/60797	EPA 6010C	ICP/26476
10335267004	PMW-04	EPA 3010	MPRP/60797	EPA 6010C	ICP/26476
10335267001	PMW-01	EPA 3010	MPRP/60796	6010C Met	ICP/26475
10335267002	PMW-02	EPA 3010	MPRP/60796	6010C Met	ICP/26475
10335267003	PMW-03	EPA 3010	MPRP/60796	6010C Met	ICP/26475
10335267004	PMW-04	EPA 3010	MPRP/60796	6010C Met	ICP/26475
10335267001	PMW-01	SM 4500-S2-D	MT/22121		
10335267002	PMW-02	SM 4500-S2-D	MT/22121		
10335267003	PMW-03	SM 4500-S2-D	MT/22121		
10335267004	PMW-04	SM 4500-S2-D	MT/22121		
10335267001	PMW-01	SM 2320B	WET/35249		
10335267001	PMW-01	SM 2320B	WET/45936		
10335267002	PMW-02	SM 2320B	WET/35249		
10335267002	PMW-02	SM 2320B	WET/45936		
10335267003	PMW-03	SM 2320B	WET/35249		
10335267003	PMW-03	SM 2320B	WET/45936		
10335267004	PMW-04	SM 2320B	WET/35249		
10335267004	PMW-04	SM 2320B	WET/45936		
10335267001	PMW-01	EPA 300.0	WETA/26041		
10335267002	PMW-02	EPA 300.0	WETA/26041		
10335267003	PMW-03	EPA 300.0	WETA/26041		
10335267004	PMW-04	EPA 300.0	WETA/26041		
10335267001	PMW-01	EPA 353.2	WETA/26084		
10335267002	PMW-02	EPA 353.2	WETA/26084		
10335267003	PMW-03	EPA 353.2	WETA/26084		
10335267004	PMW-04	EPA 353.2	WETA/26084		
10335267001	PMW-01	SM 5220D	WETA/26067	SM 5220D	WETA/26071
10335267002	PMW-02	SM 5220D	WETA/26067	SM 5220D	WETA/26071
10335267003	PMW-03	SM 5220D	WETA/26067	SM 5220D	WETA/26071
10335267004	PMW-04	SM 5220D	WETA/26067	SM 5220D	WETA/26071
10335267001	PMW-01	SM 5310C	WETA/15362		
10335267002	PMW-02	SM 5310C	WETA/15362		
10335267003	PMW-03	SM 5310C	WETA/15362		
10335267004	PMW-04	SM 5310C	WETA/15362		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

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

10335267

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company: Regensis	Address: 1011 Calle Sombra	Report To: Malinda Pham	Copy To:	Attention: Bahar Naderi	Company Name: Regensis
San Clemente, CA 92673				Address: 1011 Calle Sombra	Page Quote: 21466
Email To: Mpham@regensis.com		Purchase Order No.:		Reference:	Pace Project Manager:
Phone: 949-366-8000	Fax: 343-366-8090	Project Name: PS Beta - NIROP		Pace Profile #:	
Requested Due Date/AT: 10 days		Project Number: PS Beta - NIROP			
REGULATORY AGENCY		Requested Analysis: Filtered (Y/N)		Requested Analysis: Filtered (Y/N)	
<input type="checkbox"/> NPDES	<input type="checkbox"/> GROUND WATER	<input type="checkbox"/> DRINKING WATER	Site Location STATE: MN		
<input type="checkbox"/> OTHER					

ITEM #	Section D Required Client Information	Valid Matrix Codes MATRIX CODE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives						Analysis Test	Requested Analysis: Filtered (Y/N)	Pace Project No./ Lab I.D.													
					COMPOSITE START	COMPOSITE END/RAB			H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃	Methanol				Other	Alkalinity, CaCO ₃ in water	Chemical oxygen demand	Total iron	Dissolved iron	Volatile fatty acids	Carbon dioxide in water	Nitrate+Nitrite	Sulfate in water	Sulfide in water	Total organic carbon	CSIA	Residual Chlorine (Y/N)
1	PMW-01	WT 6	WT 6	G	16/16	1/20		14	3	2	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	001
2	PMW-02	WT 6	WT 6	G	13/25	1/05		14	8	3	2	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	002
3	PMW-03	WT 6	WT 6	G	10/55	1/05		3	2	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	003
4	PMW-04	WT 6	WT 6	G	09/25	1/05		14	8	3	2	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	004

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
ON ICE	Melissa Meeraus	16/16	10:34	BL	16/16	16:51	Y Y N Y

SAMPLER NAME AND SIGNATURE	
PRINT Name of SAMPLER: MELISSA MEERUS	DATE Signed (MM/DD/YY): 1/6/16
SIGNATURE of SAMPLER: <i>Melissa Meeraus</i>	

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

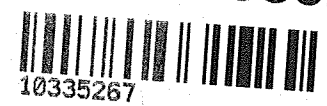
F-ALL-Q-020rev.08, 12-Oct-2007

Sample Condition Upon Receipt

Client Name: Regentis

Project #: _____

WO#: 10335267



10335267

Courier: Fed Ex UPS USPS Client

Commercial Pace SpeeDee Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No

Packing Material: Bubble Wrap Bubble Bags None Other: _____ Temp Blank? Yes No

Thermometer Used: 151401163 B88A912167504 B88A0143310098 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temp Read (°C): _____ Cooler Temp Corrected (°C): set COC Biological Tissue Frozen? Yes No N/A
 Temp should be above freezing to 6°C Correction Factor: +0.2 Date and Initials of Person Examining Contents: SM 1/6/16

USDA Regulated Soil (N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or WA (check maps)? Yes No Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
- Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
- Includes Date/Time/ID/Analysis Matrix: <u>WT</u>	
All containers needing acid/base preservation have been checked? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13. <input checked="" type="checkbox"/> HNO ₃ <input checked="" type="checkbox"/> H ₂ SO ₄ <input checked="" type="checkbox"/> NaOH <input type="checkbox"/> HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH >12 Cyanide) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample # <u>01-04</u>
Exceptions: <u>VOA</u> Coliform <u>DOC</u> Oil and Grease, DRO/8015 (water) DOC <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____	

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? Yes No

Person Contacted: _____


Date/Time: _____

Comments/Resolution: _____

Project Manager Review: 

Date: 1/7/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

	Document Name: MN to MT Sample Transfer Form	Revised Date: 14Jul2014
	Document Number: F-MN-C-043-rev.11	Page: 1 of 1 Issuing Authority: Pace Minnesota Quality Office

Shipping (circle):	UPS Fed Ex
Tracking #:	6484 8695 1246
Client:	Regenesis
Due Date:	20-Jan-2016
Pace WO:	10335267
Project Manager:	JMA

MN to MT Sample Transfer Condition Upon Receipt Form

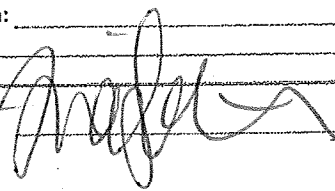
ANALYSIS REQUESTED					
Method Number & Description	Container Type	# of Bottles	Lab ID's	Preservative Yes or No	Verify Arrival Date & Initials
4500S2D Sulfido	BP2Z	4	001-004		new 1/8/16

REPORTING REQUIREMENTS/ADDITIONAL COMMENTS

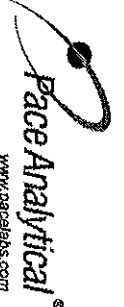
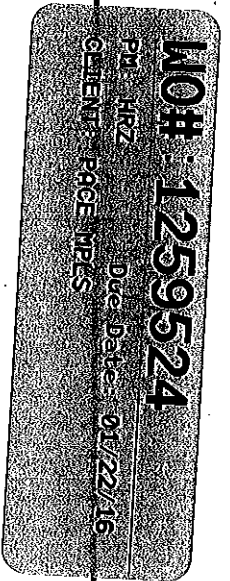
MONTANA SAMPLE RECEIPT INFORMATION			
IR Gun: B88A0140728348, Correction Factor:		Sample Matrix: <u>H₂O</u>	
Cooler Temp Read (°C): <u>1.2</u>	Cooler Temp Corrected (°C): <u>1.1</u>	Filtred volume rec'd for dissolved tests:	Yes ___ No ___ NA <u>X</u>
Arrived on Ice:	Yes <u>X</u> No ___	Samples pH have been checked:	Yes <u>X</u> No ___ NA ___
Custody Seal Present:	Yes <u>X</u> No ___	Trip Blank Present:	Yes ___ No ___ NA <u>Y</u>
Short Hold Time Requested < 72 Hours:	Yes ___ No <u>X</u>	Trip Blank Custody Seals Present:	Yes ___ No ___ NA <u>Y</u>
Rush TAT Requested:	Yes ___ No <u>X</u>	Pace Trip Blank Lot #:	<u>104</u>
Sufficient Sample Volume:	Yes <u>Y</u> No ___	Sample Composites Required:	Yes ___ No ___ NA <u>Y</u>
Samples Arrived within Hold Time:	Yes <u>Y</u> No ___	Report Samples:	Wet Wt. ___ Dry Wt. ___
Containers Intact:	Yes <u>X</u> No ___	Reporting Units:	

CUSTODY TRANSFER					
Relinquished by/Affiliation	Date	Time	Accepted By Affiliation	Date	Time
<u>AA Pace Seal Ex</u>	<u>1/7/16</u>	<u>1101</u>	<u>M. Walters Pace</u>	<u>1/8/16</u>	<u>0930</u>

CLIENT NOTIFICATION/RESOLUTION	
Person Contacted: _____	Date: _____
Comments/Resolution: _____	

Project Manager Review:  Date: 1/8/15

Chain of Custody



Workorder: 10335267 Workorder Name: PS Beta-NIROP Owner Received Date: 1/6/2016 Results Requested By: 1/20/2016

Report To:
 Jennifer Anderson
 Pace Analytical Services, Inc.
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone (612)607-1700
 Fax (612)607-6444

Subcontract To:
 Pace Analytical Virginia MN
 315 Chestnut Street
 Virginia, MN 55792
 Phone (218)742-1042

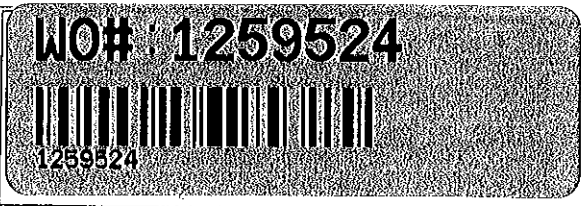
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers	Requested Analysis	Comments
1	PMW-01	PS	1/6/2016 14:20	10335267001	Water	1		LAB USE ONLY
2	PMW-02	PS	1/6/2016 13:25	10335267002	Water	1		
3	PMW-03	PS	1/6/2016 10:55	10335267003	Water	1		
4	PMW-04	PS	1/6/2016 09:25	10335267004	Water	1		
5								

Transfers	Released By	Date/Time	Received By	Date/Time	Cooler Temperature on Receipt	°C	Custody Seal	Y or N	Received on Ice	Y or N	Samples Intact	Y or N
1	J Pace	1/17/16 11:25	J Pace	1/17/16 16:04	1.2		Y		Y		Y	
2		1/17/16 11:05		1-8-16 08:00								
3												

**In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
 This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Condition Upon Receipt

Client Name: Pace - MIL Project #: WO# 1259524



Courier: Fed Ex UPS USPS Client
 Commercial Pace Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No
 Optional: Proj. Due Date: _____ Proj. Name: _____

Packing Material: Bubble Wrap Bubble Bags None Other: _____ Temp Blank? Yes No

Thermometer Used: 140792808 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temp Read °C: 1.2 Cooler Temp Corrected °C: 1.5 Biological Tissue Frozen? Yes No NA
 Temp should be above freezing to 6°C Correction Factor: 1.3 Date and Initials of Person Examining Contents: JPK 1/17/16
 Comments: 1-8-16 CL

Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and Signature on COC?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)?	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix:	<u>WT</u>	
All containers needing acid/base preservation will be checked and documented in the pH logbook.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

FECAL WAIVER ON FILE Y N


TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Heather ZW

Date: 1/11/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

WO#: 35224227




Chain of Custody

Workorder: 10335267 Workorder Name: PS Beta-NIROP Owner Received Date: 1/6/2016 Results Requested By: 1/20/2016

Jennifer Anderson
Pace Analytical Services, Inc.
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone (612)607-1700
Fax (612)607-6444

Pace Analytical Ormond Beach
8 East Tower Circle
Ormond Beach, FL 32174
Phone (386)672-5668

Report ID		Subcontract To		Requested Analysis					
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers		Comments	LAB USE ONLY
						Unpreserved			
1	PMW-01	PS	1/6/2016 14:20	10335267001	Water	1		X	
2	PMW-02	PS	1/6/2016 13:25	10335267002	Water	1		X	
3	PMW-03	PS	1/6/2016 10:55	10335267003	Water	1		X	
4	PMW-04	PS	1/6/2016 09:25	10335267004	Water	1		X	
5									

Carbon Dioxide in water

Transfers	Released By	Date/Time	Received By	Date/Time
1	JAF Pace	1/16/16 11:04	[Signature]	1/18/16 11:20
2				
3				

Cooler Temperature on Receipt 2.1 °C Custody Seal or N Received on Ice or N Samples Intact or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Condition Upon Receipt Form (SCUR)

Project # **WO# : 35224227**
 Project Manager: **PM: JJY** Due Date: **01/14/16**
 Client: **CLIENT: PACMIN**

Date and Initials of person examining contents: JJY
 Label: _____
 Deliver: _____
 pH: _____

Courier: Fed Ex UPS USPS Client Commercial Pace Other
 Shipping Method: First Overnight Priority Overnight Standard Overnight Ground
 Billing: Recipient Sender Third Party Unknown Cooler Size if Applicable: _____
 Tracking # 6484 8095 1780

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no
 Packing Material: Bubble Wrap Bubble Bags None Other _____ Biological Tissue is Frozen: Yes No N/A
 Thermometer Used T200 Type of Ice: Wet Blue None Samples on ice, cooling process has begun
 Cooler #1 Temperature°C 2.1 (Visual) 0 (Correction Factor) 2.1 (Actual)
 Cooler #2 Temperature°C _____ (Visual) _____ (Correction Factor) _____ (Actual)
 Cooler #3 Temperature°C _____ (Visual) _____ (Correction Factor) _____ (Actual) Temp should be above freezing to 6°C
 Cooler #4 Temperature°C _____ (Visual) _____ (Correction Factor) _____ (Actual)
 Cooler #5 Temperature°C _____ (Visual) _____ (Correction Factor) _____ (Actual)
 Cooler #6 Temperature°C _____ (Visual) _____ (Correction Factor) _____ (Actual)

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody Filled Out	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Relinquished Signature & Sampler Name COC	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples Arrived within Hold Time	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Rush TAT requested on COC	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient Volume	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct Containers Used	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Containers Used	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Sample Labels match COC (sample IDs & date/time of collection)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing acid/base preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	HNO3 pH<2
All Containers needing preservation are found to be in compliance with EPA recommendation: Exceptions: VOA, Coliform, TOC, O&G	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	HCl pH<2
	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	H2SO4 pH<2
	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	NaOH pH>12
No Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	NaOH/ZnOAc pH>9
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

Client Notification/ Resolution:
 Person Contacted: _____ Date/Time: _____

Comments/ Resolution (use back for additional comments):

Project Manager Review: _____ Date: 1/14/16



Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

January 18, 2016

Jennifer Anderson
Pace Analytical Services, Inc.
1790 Elm Street
Suite 200
Minneapolis, MN 55414

RE: **PS BETA-NIROP / 10335267**

Pace Workorder: 17899

Dear Jennifer Anderson:

Enclosed are the analytical results for sample(s) received by the laboratory on Friday, January 08, 2016. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

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

Sincerely,

Ruth Welsh 01/18/2016
Ruth.Welsh@pacelabs.com

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email info@microseeps.com.

Total Number of Pages 15

Report ID: 17899 - 755160

Page 1 of 13



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LABORATORY ACCREDITATIONS & CERTIFICATIONS

Accreditor:	Pennsylvania Department of Environmental Protection, Bureau of Laboratories
Accreditation ID:	02-00538
Scope:	NELAP Non-Potable Water and Solid & Hazardous Waste
Accreditor:	South Carolina Department of Health and Environmental Control, Office of Environmental Laboratory Certification
Accreditation ID:	89009003
Scope:	Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: New Jersey, Department of Environmental Protection
Accreditation ID:	PA026
Scope:	Non-Potable Water; Solid and Chemical Materials
Accreditor:	NELAP: New York, Department of Health Wadsworth Center
Accreditation ID:	11815
Scope:	Non-Potable Water; Solid and Hazardous Waste
Accreditor:	State of Connecticut, Department of Public Health, Division of Environmental Health
Accreditation ID:	PH-0263
Scope:	Clean Water Act (CWA) Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: Texas, Commission on Environmental Quality
Accreditation ID:	T104704453-09-TX
Scope:	Non-Potable Water
Accreditor:	State of New Hampshire
Accreditation ID:	299409
Scope:	Non-potable water
Accreditor:	State of Georgia
Accreditation ID:	Chapter 391-3-26
Scope:	As per the Georgia EPD Rules and Regulations for Commercial Laboratories, PAES is accredited by the Pennsylvania Department of Environmental Protection Bureau of Laboratories under the National Environmental Laboratory Approval Program (NELAC).



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Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

SAMPLE SUMMARY

Workorder: 17899 PS BETA-NIROP / 10335267

Lab ID	Sample ID	Matrix	Date Collected	Date Received
178990001	PMW-01	Water	1/6/2016 14:20	1/8/2016 11:15
178990002	PMW-02	Water	1/6/2016 13:25	1/8/2016 11:15
178990003	PMW-03	Water	1/6/2016 10:55	1/8/2016 11:15
178990004	PMW-04	Water	1/6/2016 09:25	1/8/2016 11:15



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ANALYTICAL RESULTS

Workorder: 17899 PS BETA-NIROP / 10335267

Lab ID: 178990001 Date Received: 1/8/2016 11:15 Matrix: Water
 Sample ID: PMW-01 Date Collected: 1/6/2016 14:20

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM23G			Analytical Method: AM23G					
Lactic Acid	<2.0	mg/l	2.0	0.030	10	1/15/2016 08:27	KB	d,B
Acetic Acid	120	mg/l	10	0.60	100	1/15/2016 09:21	KB	d,B
Propionic Acid	86	mg/l	10	0.10	100	1/15/2016 09:21	KB	d,B
Formic Acid	<1.0	mg/l	1.0	0.040	10	1/15/2016 08:27	KB	d,B
Butyric Acid	1.8	mg/l	1.0	0.050	10	1/15/2016 08:27	KB	d,B
Pyruvic Acid	<1.0	mg/l	1.0	0.12	10	1/15/2016 08:27	KB	d
i-Pentanoic Acid	<1.0	mg/l	1.0	0.12	10	1/15/2016 08:27	KB	d
Pentanoic Acid	<1.0	mg/l	1.0	0.060	10	1/15/2016 08:27	KB	d
i-Hexanoic Acid	<2.0	mg/l	2.0	0.10	10	1/15/2016 08:27	KB	d
Hexanoic Acid	<2.0	mg/l	2.0	0.10	10	1/15/2016 08:27	KB	d



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ANALYTICAL RESULTS

Workorder: 17899 PS BETA-NIROP / 10335267

Lab ID: **178990002** Date Received: 1/8/2016 11:15 Matrix: Water
 Sample ID: **PMW-02** Date Collected: 1/6/2016 13:25

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM23G			Analytical Method: AM23G					
Lactic Acid	<0.20	mg/l	0.20	0.0030	1	1/12/2016 09:57	KB	B
Acetic Acid	<0.10	mg/l	0.10	0.0060	1	1/12/2016 09:57	KB	B
Propionic Acid	<0.10	mg/l	0.10	0.0010	1	1/12/2016 09:57	KB	
Formic Acid	<0.10	mg/l	0.10	0.0040	1	1/12/2016 09:57	KB	B
Butyric Acid	<0.10	mg/l	0.10	0.0050	1	1/12/2016 09:57	KB	
Pyruvic Acid	<0.10	mg/l	0.10	0.012	1	1/12/2016 09:57	KB	
i-Pentanoic Acid	<0.10	mg/l	0.10	0.012	1	1/12/2016 09:57	KB	
Pentanoic Acid	<0.10	mg/l	0.10	0.0060	1	1/12/2016 09:57	KB	
i-Hexanoic Acid	<0.20	mg/l	0.20	0.010	1	1/12/2016 09:57	KB	
Hexanoic Acid	<0.20	mg/l	0.20	0.010	1	1/12/2016 09:57	KB	



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ANALYTICAL RESULTS

Workorder: 17899 PS BETA-NIROP / 10335267

Lab ID: 178990003 Date Received: 1/8/2016 11:15 Matrix: Water
 Sample ID: PMW-03 Date Collected: 1/6/2016 10:55

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM23G			Analytical Method: AM23G					
Lactic Acid	<0.20	mg/l	0.20	0.0030	1	1/12/2016 10:51	KB	B
Acetic Acid	<0.10	mg/l	0.10	0.0060	1	1/12/2016 10:51	KB	B
Propionic Acid	<0.10	mg/l	0.10	0.0010	1	1/12/2016 10:51	KB	
Formic Acid	<0.10	mg/l	0.10	0.0040	1	1/12/2016 10:51	KB	B
Butyric Acid	<0.10	mg/l	0.10	0.0050	1	1/12/2016 10:51	KB	
Pyruvic Acid	<0.10	mg/l	0.10	0.012	1	1/12/2016 10:51	KB	
i-Pentanoic Acid	<0.10	mg/l	0.10	0.012	1	1/12/2016 10:51	KB	
Pentanoic Acid	<0.10	mg/l	0.10	0.0060	1	1/12/2016 10:51	KB	
i-Hexanoic Acid	<0.20	mg/l	0.20	0.010	1	1/12/2016 10:51	KB	
Hexanoic Acid	<0.20	mg/l	0.20	0.010	1	1/12/2016 10:51	KB	



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ANALYTICAL RESULTS

Workorder: 17899 PS BETA-NIROP / 10335267

Lab ID: 178990004 Date Received: 1/8/2016 11:15 Matrix: Water
 Sample ID: PMW-04 Date Collected: 1/6/2016 09:25

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM23G			Analytical Method: AM23G					
Lactic Acid	<0.20	mg/l	0.20	0.0030	1	1/12/2016 11:44	KB	B
Acetic Acid	0.14	mg/l	0.10	0.0060	1	1/12/2016 11:44	KB	B
Propionic Acid	<0.10	mg/l	0.10	0.0010	1	1/12/2016 11:44	KB	
Formic Acid	<0.10	mg/l	0.10	0.0040	1	1/12/2016 11:44	KB	B
Butyric Acid	<0.10	mg/l	0.10	0.0050	1	1/12/2016 11:44	KB	
Pyruvic Acid	<0.10	mg/l	0.10	0.012	1	1/12/2016 11:44	KB	
i-Pentanoic Acid	<0.10	mg/l	0.10	0.012	1	1/12/2016 11:44	KB	
Pentanoic Acid	<0.10	mg/l	0.10	0.0060	1	1/12/2016 11:44	KB	
i-Hexanoic Acid	<0.20	mg/l	0.20	0.010	1	1/12/2016 11:44	KB	
Hexanoic Acid	<0.20	mg/l	0.20	0.010	1	1/12/2016 11:44	KB	



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ANALYTICAL RESULTS QUALIFIERS

Workorder: 17899 PS BETA-NIROP / 10335267

DEFINITIONS/QUALIFIERS

Disclaimer : The Pennsylvania Department of Environmental Protection (PADEP) has decided to no longer recognize analyses that do not produce data for primary compliance, for NELAP accreditation. The methods affected by this decision are AM20Gax, AM21G, SW846 7199 and AM4.02. The laboratory shall continue to administer the NELAP/TNI standard requirements in the performance of these methods.

- MDL Method Detection Limit. Can be used synonymously with LOD; Limit Of Detection.
- PQL Practical Quantitation Limit. Can be used synonymously with LOQ; Limit Of Quantitation.
- ND Not detected at or above reporting limit.
- DF Dilution Factor.
- S Surrogate.
- RPD Relative Percent Difference.
- % Rec Percent Recovery.
- U Indicates the compound was analyzed for, but not detected at or above the noted concentration.
- J Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).

- B The analyte was detected in the associated blank.
- d The analyte concentration was determined from a dilution.



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QUALITY CONTROL DATA

Workorder: 17899 PS BETA-NIROP / 10335267

QC Batch: EDON/2770 Analysis Method: AM23G

QC Batch Method: AM23G

Associated Lab Samples: 178990002, 178990003, 178990004

METHOD BLANK: 39699

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
EDonors				
Lactic Acid	mg/l	<0.20	0.20	B
Acetic Acid	mg/l	<0.10	0.10	B
Propionic Acid	mg/l	<0.10	0.10	
Formic Acid	mg/l	<0.10	0.10	B
Butyric Acid	mg/l	<0.10	0.10	
Pyruvic Acid	mg/l	<0.10	0.10	
i-Pentanoic Acid	mg/l	<0.10	0.10	
Pentanoic Acid	mg/l	<0.10	0.10	
i-Hexanoic Acid	mg/l	<0.20	0.20	
Hexanoic Acid	mg/l	<0.20	0.20	

LABORATORY CONTROL SAMPLE: 39700

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
EDonors						
Lactic Acid	mg/l	2	2.1	103	70-130	B
Acetic Acid	mg/l	2	2.1	106	70-130	B
Propionic Acid	mg/l	2	2.2	109	70-130	
Formic Acid	mg/l	2	1.9	93	70-130	B
Butyric Acid	mg/l	2	2.1	107	70-130	
Pyruvic Acid	mg/l	2	2.1	104	70-130	
i-Pentanoic Acid	mg/l	2	2.1	105	70-130	
Pentanoic Acid	mg/l	2	2.1	107	70-130	
i-Hexanoic Acid	mg/l	2	2.1	104	70-130	
Hexanoic Acid	mg/l	2	2.0	101	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 39701 39702 Original: 178670001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	Max RPD	Qualifiers
EDonors										
Lactic Acid	mg/l	1.1	20	22	22	103	102	70-130	0.98 30	d,B



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Pace Analytical Energy Services LLC
 220 William Pitt Way
 Pittsburgh, PA 15238
 Phone: (412) 826-5245
 Fax: (412) 826-3433

QUALITY CONTROL DATA

Workorder: 17899 PS BETA-NIROP / 10335267

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 39701 39702 Original: 178670001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Acetic Acid	mg/l	49	20	68	67	94	91	70-130	3.2	30	d,B
Propionic Acid	mg/l	48	20	66	66	92	89	70-130	3.3	30	d
Formic Acid	mg/l	6	20	25	24	94	93	70-130	1.1	30	d,B
Butyric Acid	mg/l	10	20	32	32	109	107	70-130	1.9	30	d
Pyruvic Acid	mg/l	1.4	20	23	23	109	108	70-130	0.92	30	d
i-Pentanoic Acid	mg/l	0.56	20	22	22	107	106	70-130	0.94	30	d
Pentanoic Acid	mg/l	12	20	34	34	110	108	70-130	1.8	30	d
i-Hexanoic Acid	mg/l	0	20	21	21	107	105	70-130	1.9	30	d
Hexanoic Acid	mg/l	1.3	20	22	22	107	105	70-130	1.9	30	d



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QUALITY CONTROL DATA

Workorder: 17899 PS BETA-NIROP / 10335267

QC Batch: EDON/2774 Analysis Method: AM23G
 QC Batch Method: AM23G
 Associated Lab Samples: 178990001

METHOD BLANK: 39782

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
EDonors				
Lactic Acid	mg/l	<0.20	0.20	B
Acetic Acid	mg/l	<0.10	0.10	B
Propionic Acid	mg/l	<0.10	0.10	B
Formic Acid	mg/l	<0.10	0.10	B
Butyric Acid	mg/l	<0.10	0.10	B
Pyruvic Acid	mg/l	<0.10	0.10	
i-Pentanoic Acid	mg/l	<0.10	0.10	
Pentanoic Acid	mg/l	<0.10	0.10	
i-Hexanoic Acid	mg/l	<0.20	0.20	
Hexanoic Acid	mg/l	<0.20	0.20	

LABORATORY CONTROL SAMPLE: 39783

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
EDonors						
Lactic Acid	mg/l	2	2.1	104	70-130	B
Acetic Acid	mg/l	2	2.2	108	70-130	B
Propionic Acid	mg/l	2	2.2	110	70-130	B
Formic Acid	mg/l	2	1.9	94	70-130	B
Butyric Acid	mg/l	2	2.1	107	70-130	B
Pyruvic Acid	mg/l	2	2.1	105	70-130	
i-Pentanoic Acid	mg/l	2	2.1	105	70-130	
Pentanoic Acid	mg/l	2	2.1	107	70-130	
i-Hexanoic Acid	mg/l	2	2.1	105	70-130	
Hexanoic Acid	mg/l	2	2.0	102	70-130	



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220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA QUALIFIERS

Workorder: 17899 PS BETA-NIROP / 10335267

QUALITY CONTROL PARAMETER QUALIFIERS

- B The analyte was detected in the associated blank.
- d The analyte concentration was determined from a dilution.

Report ID: 17899 - 755160

Page 12 of 13



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Page 41 of 44



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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 17899 PS BETA-NIROP / 10335267

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
178990002	PMW-02			AM23G	EDON/2770
178990003	PMW-03			AM23G	EDON/2770
178990004	PMW-04			AM23G	EDON/2770
178990001	PMW-01			AM23G	EDON/2774

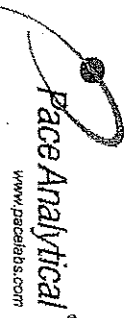


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Chain of Custody

17899



Worker Order: 10335267 Worker Order Name: PS Beta-NIROP Results Requested: 1/20/2016

Report/Invoice To: Jennifer Anderson
 Pace Analytical Minnesota
 1700 Elm Street
 Suite 200
 Minneapolis, MN 55414
 Phone (612)607-1700
 Email: jennifer.anderson@pacelabs.com

Subcontractor: Pac Energy / Microsteps P.O. 10335267

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers		HCL	Unpreserved	Requested Analysis	Comments																																																				
1	PMW-01	1/6/2016 14:20	10335267001	Water			X																																																							
2	PMW-02	1/6/2016 13:25	10335267002	Water			X																																																							
3	PMW-03	1/6/2016 10:55	10335267003	Water			X																																																							
4	PMW-04	1/6/2016 09:25	10335267004	Water			X																																																							
<table border="1"> <thead> <tr> <th>Transfers</th> <th>Released By</th> <th>Date/Time</th> <th>Received By</th> <th>Date/Time</th> <th>Cooler Temperature on Receipt</th> <th>°C</th> <th>Custody Seal</th> <th>Y or N</th> <th>Received on Ice</th> <th>Y or N</th> <th>Samples Intact</th> <th>Y or N</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>JR Pace</td> <td>1/11/16</td> <td>Koon</td> <td>1.8.16</td> <td></td> <td></td> <td>Y</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>											Transfers	Released By	Date/Time	Received By	Date/Time	Cooler Temperature on Receipt	°C	Custody Seal	Y or N	Received on Ice	Y or N	Samples Intact	Y or N	1	JR Pace	1/11/16	Koon	1.8.16			Y						2													3												
Transfers	Released By	Date/Time	Received By	Date/Time	Cooler Temperature on Receipt	°C	Custody Seal	Y or N	Received on Ice	Y or N	Samples Intact	Y or N																																																		
1	JR Pace	1/11/16	Koon	1.8.16			Y																																																							
2																																																														
3																																																														

Volatile Fatty Acids

11/15

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
 This chain of custody is considered complete as is since this information is available in the owner laboratory.

Cooler Receipt Form

Client Name: Paace MN Project: PS Beta - Lab Work Order: 17899

Niroop

A. Shipping/Container Information (circle appropriate response)

Courier: FedEx UPS USPS Client Other: _____ Air bill Present: Yes No

Tracking Number: 6484 8695 1768

Custody Seal on Cooler/Box Present: Yes No Seals Intact: Yes No

Cooler/Box Packing Material: Bubble Wrap Absorbent Foam Other: _____

Type of Ice: Wet Blue None Ice Intact: Yes Melted

Cooler Temperature: 1.4°C Radiation Screened: Yes No Chain of Custody Present: Yes No

Comments: _____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non Conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished	✓			
Sampler Name & Signature on CDC		✓		
Containers intact	✓			
Were samples in separate bags	✓			
Sample container labels match CDC	✓			
Sample name/date and time collected	✓			
Sufficient volume provided	✓			
PAES containers used	✓			
Are containers properly preserved for the requested testing? (as labeled)	✓			
If an unknown preservation state, were containers checked? Exception: VDA's coliform			✓	If yes, see pH form
Was volume for dissolved testing field filtered, as noted on the CDC? Was volume received in a preserved container?			✓	

Comments: _____

Cooler contents examined/received by: LY Date: 1.8.16

Project Manager Review: GW Date: 1-11-16

January 28, 2016

Melinda Pham
Regenesis
1011 Calle Sombra
San Clemente, CA 92673

RE: Project: PS Beta -NIROP
Pace Project No.: 10336701

Dear Melinda Pham:

Enclosed are the analytical results for sample(s) received by the laboratory on January 25, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Jennifer Anderson
jennifer.anderson@pacelabs.com
Project Manager

Enclosures

cc: Ryan Moore, Regenesis



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PS Beta -NIROP
Pace Project No.: 10336701

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
525 N 8th Street, Salina, KS 67401
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

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SAMPLE SUMMARY

Project: PS Beta -NIROP

Pace Project No.: 10336701

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10336701001	PMW-03	Water	01/25/16 12:25	01/25/16 13:55
10336701002	PMW-04	Water	01/25/16 11:05	01/25/16 13:55
10336701003	Trip Blank	Water	01/25/16 00:00	01/25/16 13:55

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SAMPLE ANALYTE COUNT

Project: PS Beta -NIROP

Pace Project No.: 10336701

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10336701001	PMW-03	EPA 8260B	DJB	70
10336701002	PMW-04	EPA 8260B	DJB	70
10336701003	Trip Blank	EPA 8260B	DJB	70

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta -NIROP

Pace Project No.: 10336701

Sample: PMW-03	Lab ID: 10336701001	Collected: 01/25/16 12:25	Received: 01/25/16 13:55	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		01/26/16 17:54	67-64-1	L3,MO
Allyl chloride	ND	ug/L	4.0	1		01/26/16 17:54	107-05-1	
Benzene	ND	ug/L	1.0	1		01/26/16 17:54	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		01/26/16 17:54	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		01/26/16 17:54	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		01/26/16 17:54	75-27-4	
Bromoform	ND	ug/L	4.0	1		01/26/16 17:54	75-25-2	
Bromomethane	ND	ug/L	4.0	1		01/26/16 17:54	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		01/26/16 17:54	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		01/26/16 17:54	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		01/26/16 17:54	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		01/26/16 17:54	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		01/26/16 17:54	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		01/26/16 17:54	108-90-7	
Chloroethane	ND	ug/L	4.0	1		01/26/16 17:54	75-00-3	
Chloroform	ND	ug/L	1.0	1		01/26/16 17:54	67-66-3	
Chloromethane	ND	ug/L	4.0	1		01/26/16 17:54	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		01/26/16 17:54	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		01/26/16 17:54	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	10.0	1		01/26/16 17:54	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		01/26/16 17:54	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		01/26/16 17:54	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		01/26/16 17:54	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		01/26/16 17:54	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		01/26/16 17:54	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		01/26/16 17:54	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		01/26/16 17:54	75-71-8	
1,1-Dichloroethane	2.8	ug/L	1.0	1		01/26/16 17:54	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		01/26/16 17:54	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		01/26/16 17:54	75-35-4	
cis-1,2-Dichloroethene	42.3	ug/L	1.0	1		01/26/16 17:54	156-59-2	
trans-1,2-Dichloroethene	65.9	ug/L	1.0	1		01/26/16 17:54	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		01/26/16 17:54	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		01/26/16 17:54	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		01/26/16 17:54	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		01/26/16 17:54	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		01/26/16 17:54	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		01/26/16 17:54	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		01/26/16 17:54	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		01/26/16 17:54	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		01/26/16 17:54	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		01/26/16 17:54	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		01/26/16 17:54	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		01/26/16 17:54	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		01/26/16 17:54	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		01/26/16 17:54	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		01/26/16 17:54	1634-04-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta -NIROP
Pace Project No.: 10336701

Sample: PMW-03		Lab ID: 10336701001	Collected: 01/25/16 12:25	Received: 01/25/16 13:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		01/26/16 17:54	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		01/26/16 17:54	103-65-1	
Styrene	ND	ug/L	1.0	1		01/26/16 17:54	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		01/26/16 17:54	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		01/26/16 17:54	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		01/26/16 17:54	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		01/26/16 17:54	109-99-9	L3,M0
Toluene	ND	ug/L	1.0	1		01/26/16 17:54	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		01/26/16 17:54	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		01/26/16 17:54	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		01/26/16 17:54	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		01/26/16 17:54	79-00-5	
Trichloroethene	10.8	ug/L	0.40	1		01/26/16 17:54	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		01/26/16 17:54	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		01/26/16 17:54	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		01/26/16 17:54	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		01/26/16 17:54	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		01/26/16 17:54	108-67-8	
Vinyl chloride	0.72	ug/L	0.40	1		01/26/16 17:54	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		01/26/16 17:54	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%.	75-125	1		01/26/16 17:54	17060-07-0	
Toluene-d8 (S)	100	%.	75-125	1		01/26/16 17:54	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125	1		01/26/16 17:54	460-00-4	

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ANALYTICAL RESULTS

Project: PS Beta -NIROP

Pace Project No.: 10336701

Sample: PMW-04	Lab ID: 10336701002	Collected: 01/25/16 11:05	Received: 01/25/16 13:55	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		01/26/16 18:41	67-64-1	L3
Allyl chloride	ND	ug/L	4.0	1		01/26/16 18:41	107-05-1	
Benzene	ND	ug/L	1.0	1		01/26/16 18:41	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		01/26/16 18:41	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		01/26/16 18:41	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		01/26/16 18:41	75-27-4	
Bromoform	ND	ug/L	4.0	1		01/26/16 18:41	75-25-2	
Bromomethane	ND	ug/L	4.0	1		01/26/16 18:41	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		01/26/16 18:41	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		01/26/16 18:41	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		01/26/16 18:41	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		01/26/16 18:41	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		01/26/16 18:41	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		01/26/16 18:41	108-90-7	
Chloroethane	ND	ug/L	4.0	1		01/26/16 18:41	75-00-3	
Chloroform	ND	ug/L	1.0	1		01/26/16 18:41	67-66-3	
Chloromethane	ND	ug/L	4.0	1		01/26/16 18:41	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		01/26/16 18:41	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		01/26/16 18:41	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	10.0	1		01/26/16 18:41	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		01/26/16 18:41	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		01/26/16 18:41	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		01/26/16 18:41	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		01/26/16 18:41	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		01/26/16 18:41	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		01/26/16 18:41	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		01/26/16 18:41	75-71-8	
1,1-Dichloroethane	1.1	ug/L	1.0	1		01/26/16 18:41	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		01/26/16 18:41	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		01/26/16 18:41	75-35-4	
cis-1,2-Dichloroethene	19.3	ug/L	1.0	1		01/26/16 18:41	156-59-2	
trans-1,2-Dichloroethene	49.9	ug/L	1.0	1		01/26/16 18:41	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		01/26/16 18:41	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		01/26/16 18:41	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		01/26/16 18:41	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		01/26/16 18:41	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		01/26/16 18:41	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		01/26/16 18:41	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		01/26/16 18:41	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		01/26/16 18:41	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		01/26/16 18:41	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		01/26/16 18:41	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		01/26/16 18:41	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		01/26/16 18:41	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		01/26/16 18:41	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		01/26/16 18:41	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		01/26/16 18:41	1634-04-4	

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ANALYTICAL RESULTS

Project: PS Beta -NIROP

Pace Project No.: 10336701

Sample: PMW-04	Lab ID: 10336701002	Collected: 01/25/16 11:05	Received: 01/25/16 13:55	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		01/26/16 18:41	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		01/26/16 18:41	103-65-1	
Styrene	ND	ug/L	1.0	1		01/26/16 18:41	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		01/26/16 18:41	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		01/26/16 18:41	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		01/26/16 18:41	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		01/26/16 18:41	109-99-9	L3
Toluene	ND	ug/L	1.0	1		01/26/16 18:41	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		01/26/16 18:41	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		01/26/16 18:41	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		01/26/16 18:41	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		01/26/16 18:41	79-00-5	
Trichloroethene	19.3	ug/L	0.40	1		01/26/16 18:41	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		01/26/16 18:41	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		01/26/16 18:41	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		01/26/16 18:41	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		01/26/16 18:41	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		01/26/16 18:41	108-67-8	
Vinyl chloride	ND	ug/L	0.40	1		01/26/16 18:41	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		01/26/16 18:41	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	101	%.	75-125	1		01/26/16 18:41	17060-07-0	
Toluene-d8 (S)	96	%.	75-125	1		01/26/16 18:41	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125	1		01/26/16 18:41	460-00-4	

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ANALYTICAL RESULTS

Project: PS Beta -NIROP

Pace Project No.: 10336701

Sample: Trip Blank		Lab ID: 10336701003	Collected: 01/25/16 00:00	Received: 01/25/16 13:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		01/26/16 16:36	67-64-1	L3
Allyl chloride	ND	ug/L	4.0	1		01/26/16 16:36	107-05-1	
Benzene	ND	ug/L	1.0	1		01/26/16 16:36	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		01/26/16 16:36	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		01/26/16 16:36	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		01/26/16 16:36	75-27-4	
Bromoform	ND	ug/L	4.0	1		01/26/16 16:36	75-25-2	
Bromomethane	ND	ug/L	4.0	1		01/26/16 16:36	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		01/26/16 16:36	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		01/26/16 16:36	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		01/26/16 16:36	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		01/26/16 16:36	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		01/26/16 16:36	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		01/26/16 16:36	108-90-7	
Chloroethane	ND	ug/L	4.0	1		01/26/16 16:36	75-00-3	
Chloroform	ND	ug/L	1.0	1		01/26/16 16:36	67-66-3	
Chloromethane	ND	ug/L	4.0	1		01/26/16 16:36	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		01/26/16 16:36	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		01/26/16 16:36	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	10.0	1		01/26/16 16:36	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		01/26/16 16:36	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		01/26/16 16:36	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		01/26/16 16:36	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		01/26/16 16:36	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		01/26/16 16:36	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		01/26/16 16:36	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		01/26/16 16:36	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		01/26/16 16:36	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		01/26/16 16:36	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		01/26/16 16:36	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		01/26/16 16:36	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		01/26/16 16:36	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		01/26/16 16:36	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		01/26/16 16:36	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		01/26/16 16:36	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		01/26/16 16:36	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		01/26/16 16:36	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		01/26/16 16:36	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		01/26/16 16:36	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		01/26/16 16:36	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		01/26/16 16:36	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		01/26/16 16:36	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		01/26/16 16:36	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		01/26/16 16:36	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		01/26/16 16:36	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		01/26/16 16:36	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		01/26/16 16:36	1634-04-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta -NIROP

Pace Project No.: 10336701

Sample: Trip Blank		Lab ID: 10336701003	Collected: 01/25/16 00:00	Received: 01/25/16 13:55	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		01/26/16 16:36	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		01/26/16 16:36	103-65-1	
Styrene	ND	ug/L	1.0	1		01/26/16 16:36	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		01/26/16 16:36	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		01/26/16 16:36	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		01/26/16 16:36	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		01/26/16 16:36	109-99-9	L3
Toluene	ND	ug/L	1.0	1		01/26/16 16:36	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		01/26/16 16:36	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		01/26/16 16:36	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		01/26/16 16:36	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		01/26/16 16:36	79-00-5	
Trichloroethene	ND	ug/L	0.40	1		01/26/16 16:36	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		01/26/16 16:36	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		01/26/16 16:36	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		01/26/16 16:36	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		01/26/16 16:36	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		01/26/16 16:36	108-67-8	
Vinyl chloride	ND	ug/L	0.40	1		01/26/16 16:36	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		01/26/16 16:36	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%.	75-125	1		01/26/16 16:36	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	1		01/26/16 16:36	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125	1		01/26/16 16:36	460-00-4	

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QUALITY CONTROL DATA

Project: PS Beta -NIROP

Pace Project No.: 10336701

QC Batch: MSV/34462 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV 465 W
Associated Lab Samples: 10336701001, 10336701002, 10336701003

METHOD BLANK: 2180972 Matrix: Water

Associated Lab Samples: 10336701001, 10336701002, 10336701003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	01/26/16 16:20	
1,1,1-Trichloroethane	ug/L	ND	1.0	01/26/16 16:20	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	01/26/16 16:20	
1,1,2-Trichloroethane	ug/L	ND	1.0	01/26/16 16:20	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	1.0	01/26/16 16:20	
1,1-Dichloroethane	ug/L	ND	1.0	01/26/16 16:20	
1,1-Dichloroethene	ug/L	ND	1.0	01/26/16 16:20	
1,1-Dichloropropene	ug/L	ND	1.0	01/26/16 16:20	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	01/26/16 16:20	
1,2,3-Trichloropropane	ug/L	ND	4.0	01/26/16 16:20	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	01/26/16 16:20	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	01/26/16 16:20	
1,2-Dibromo-3-chloropropane	ug/L	ND	10.0	01/26/16 16:20	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	01/26/16 16:20	
1,2-Dichlorobenzene	ug/L	ND	1.0	01/26/16 16:20	
1,2-Dichloroethane	ug/L	ND	1.0	01/26/16 16:20	
1,2-Dichloropropane	ug/L	ND	4.0	01/26/16 16:20	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	01/26/16 16:20	
1,3-Dichlorobenzene	ug/L	ND	1.0	01/26/16 16:20	
1,3-Dichloropropane	ug/L	ND	1.0	01/26/16 16:20	
1,4-Dichlorobenzene	ug/L	ND	1.0	01/26/16 16:20	
2,2-Dichloropropane	ug/L	ND	4.0	01/26/16 16:20	
2-Butanone (MEK)	ug/L	ND	5.0	01/26/16 16:20	
2-Chlorotoluene	ug/L	ND	1.0	01/26/16 16:20	
4-Chlorotoluene	ug/L	ND	1.0	01/26/16 16:20	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	01/26/16 16:20	
Acetone	ug/L	ND	20.0	01/26/16 16:20	
Allyl chloride	ug/L	ND	4.0	01/26/16 16:20	
Benzene	ug/L	ND	1.0	01/26/16 16:20	
Bromobenzene	ug/L	ND	1.0	01/26/16 16:20	
Bromochloromethane	ug/L	ND	1.0	01/26/16 16:20	
Bromodichloromethane	ug/L	ND	1.0	01/26/16 16:20	
Bromoform	ug/L	ND	4.0	01/26/16 16:20	
Bromomethane	ug/L	ND	4.0	01/26/16 16:20	
Carbon tetrachloride	ug/L	ND	1.0	01/26/16 16:20	
Chlorobenzene	ug/L	ND	1.0	01/26/16 16:20	
Chloroethane	ug/L	ND	4.0	01/26/16 16:20	
Chloroform	ug/L	ND	1.0	01/26/16 16:20	
Chloromethane	ug/L	ND	4.0	01/26/16 16:20	
cis-1,2-Dichloroethene	ug/L	ND	1.0	01/26/16 16:20	
cis-1,3-Dichloropropene	ug/L	ND	4.0	01/26/16 16:20	

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QUALITY CONTROL DATA

Project: PS Beta -NIROP

Pace Project No.: 10336701

METHOD BLANK: 2180972

Matrix: Water

Associated Lab Samples: 10336701001, 10336701002, 10336701003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/L	ND	1.0	01/26/16 16:20	
Dibromomethane	ug/L	ND	4.0	01/26/16 16:20	
Dichlorodifluoromethane	ug/L	ND	1.0	01/26/16 16:20	
Dichlorofluoromethane	ug/L	ND	1.0	01/26/16 16:20	
Diethyl ether (Ethyl ether)	ug/L	ND	4.0	01/26/16 16:20	
Ethylbenzene	ug/L	ND	1.0	01/26/16 16:20	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	01/26/16 16:20	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	01/26/16 16:20	
Methyl-tert-butyl ether	ug/L	ND	1.0	01/26/16 16:20	
Methylene Chloride	ug/L	ND	4.0	01/26/16 16:20	
n-Butylbenzene	ug/L	ND	1.0	01/26/16 16:20	
n-Propylbenzene	ug/L	ND	1.0	01/26/16 16:20	
Naphthalene	ug/L	ND	4.0	01/26/16 16:20	
p-Isopropyltoluene	ug/L	ND	1.0	01/26/16 16:20	
sec-Butylbenzene	ug/L	ND	1.0	01/26/16 16:20	
Styrene	ug/L	ND	1.0	01/26/16 16:20	
tert-Butylbenzene	ug/L	ND	1.0	01/26/16 16:20	
Tetrachloroethene	ug/L	ND	1.0	01/26/16 16:20	
Tetrahydrofuran	ug/L	ND	10.0	01/26/16 16:20	
Toluene	ug/L	ND	1.0	01/26/16 16:20	
trans-1,2-Dichloroethene	ug/L	ND	1.0	01/26/16 16:20	
trans-1,3-Dichloropropene	ug/L	ND	4.0	01/26/16 16:20	
Trichloroethene	ug/L	ND	0.40	01/26/16 16:20	
Trichlorofluoromethane	ug/L	ND	1.0	01/26/16 16:20	
Vinyl chloride	ug/L	ND	0.40	01/26/16 16:20	
Xylene (Total)	ug/L	ND	3.0	01/26/16 16:20	
1,2-Dichloroethane-d4 (S)	%	98	75-125	01/26/16 16:20	
4-Bromofluorobenzene (S)	%	100	75-125	01/26/16 16:20	
Toluene-d8 (S)	%	99	75-125	01/26/16 16:20	

LABORATORY CONTROL SAMPLE: 2180973

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	20	20.1	100	75-125	
1,1,1-Trichloroethane	ug/L	20	20.3	101	73-125	
1,1,2,2-Tetrachloroethane	ug/L	20	22.6	113	75-128	
1,1,2-Trichloroethane	ug/L	20	23.0	115	75-129	
1,1,2-Trichlorotrifluoroethane	ug/L	20	18.6	93	69-125	
1,1-Dichloroethane	ug/L	20	20.4	102	75-131	
1,1-Dichloroethene	ug/L	20	19.3	96	72-125	
1,1-Dichloropropene	ug/L	20	19.5	97	74-125	
1,2,3-Trichlorobenzene	ug/L	20	22.8	114	68-127	
1,2,3-Trichloropropane	ug/L	20	23.2	116	75-125	
1,2,4-Trichlorobenzene	ug/L	20	21.3	107	70-125	

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QUALITY CONTROL DATA

Project: PS Beta -NIROP

Pace Project No.: 10336701

LABORATORY CONTROL SAMPLE: 2180973

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	20.5	102	75-130	
1,2-Dibromo-3-chloropropane	ug/L	50	56.9	114	74-125	
1,2-Dibromoethane (EDB)	ug/L	20	22.2	111	75-125	
1,2-Dichlorobenzene	ug/L	20	20.4	102	75-125	
1,2-Dichloroethane	ug/L	20	21.6	108	72-129	
1,2-Dichloropropane	ug/L	20	19.3	97	71-129	
1,3,5-Trimethylbenzene	ug/L	20	20.5	102	75-127	
1,3-Dichlorobenzene	ug/L	20	19.8	99	75-125	
1,3-Dichloropropane	ug/L	20	21.3	107	75-125	
1,4-Dichlorobenzene	ug/L	20	20.2	101	75-125	
2,2-Dichloropropane	ug/L	20	19.5	97	71-125	
2-Butanone (MEK)	ug/L	100	114	114	58-150	
2-Chlorotoluene	ug/L	20	19.9	99	75-125	
4-Chlorotoluene	ug/L	20	20.1	100	75-130	
4-Methyl-2-pentanone (MIBK)	ug/L	100	107	107	72-140	
Acetone	ug/L	100	157	157	69-137	CH,L0
Allyl chloride	ug/L	20	18.4	92	68-132	
Benzene	ug/L	20	19.0	95	75-125	
Bromobenzene	ug/L	20	20.4	102	75-125	
Bromochloromethane	ug/L	20	20.1	100	75-125	
Bromodichloromethane	ug/L	20	21.2	106	69-128	
Bromoform	ug/L	20	22.7	114	75-125	
Bromomethane	ug/L	20	20.6	103	30-150	
Carbon tetrachloride	ug/L	20	21.1	106	74-125	
Chlorobenzene	ug/L	20	20.4	102	75-125	
Chloroethane	ug/L	20	18.4	92	60-150	
Chloroform	ug/L	20	19.2	96	75-126	
Chloromethane	ug/L	20	17.5	87	46-150	
cis-1,2-Dichloroethene	ug/L	20	20.1	101	75-126	
cis-1,3-Dichloropropene	ug/L	20	19.6	98	75-125	
Dibromochloromethane	ug/L	20	20.9	104	75-125	
Dibromomethane	ug/L	20	21.0	105	72-127	
Dichlorodifluoromethane	ug/L	20	18.5	93	58-135	
Dichlorofluoromethane	ug/L	20	20.2	101	68-149	
Diethyl ether (Ethyl ether)	ug/L	20	19.5	98	66-144	
Ethylbenzene	ug/L	20	20.0	100	75-125	
Hexachloro-1,3-butadiene	ug/L	20	20.6	103	73-125	
Isopropylbenzene (Cumene)	ug/L	20	20.6	103	69-140	
Methyl-tert-butyl ether	ug/L	20	21.3	106	75-126	
Methylene Chloride	ug/L	20	18.6	93	71-130	
n-Butylbenzene	ug/L	20	21.0	105	71-129	
n-Propylbenzene	ug/L	20	19.8	99	71-133	
Naphthalene	ug/L	20	21.6	108	59-137	
p-Isopropyltoluene	ug/L	20	20.7	104	74-127	
sec-Butylbenzene	ug/L	20	19.4	97	66-140	
Styrene	ug/L	20	20.2	101	75-125	
tert-Butylbenzene	ug/L	20	20.3	101	73-129	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta -NIROP

Pace Project No.: 10336701

LABORATORY CONTROL SAMPLE: 2180973

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	ug/L	20	20.9	105	75-125	
Tetrahydrofuran	ug/L	200	323	162	71-129	CH,L0
Toluene	ug/L	20	20.5	103	75-125	
trans-1,2-Dichloroethene	ug/L	20	19.1	95	75-125	
trans-1,3-Dichloropropene	ug/L	20	20.9	104	75-125	
Trichloroethene	ug/L	20	20.2	101	75-125	
Trichlorofluoromethane	ug/L	20	22.6	113	74-128	
Vinyl chloride	ug/L	20	20.4	102	71-131	
Xylene (Total)	ug/L	60	62.1	103	75-125	
1,2-Dichloroethane-d4 (S)	%			106	75-125	
4-Bromofluorobenzene (S)	%			97	75-125	
Toluene-d8 (S)	%			102	75-125	

MATRIX SPIKE SAMPLE: 2181174

Parameter	Units	10336701001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	19.3	96	75-125	
1,1,1-Trichloroethane	ug/L	ND	20	19.8	99	71-144	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	19.6	98	75-131	
1,1,2-Trichloroethane	ug/L	ND	20	20.6	103	75-125	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	20	20.7	103	75-150	
1,1-Dichloroethane	ug/L	2.8	20	21.0	91	64-150	
1,1-Dichloroethene	ug/L	ND	20	20.4	98	68-150	
1,1-Dichloropropene	ug/L	ND	20	19.2	96	68-145	
1,2,3-Trichlorobenzene	ug/L	ND	20	19.9	99	57-142	
1,2,3-Trichloropropane	ug/L	ND	20	20.3	101	75-125	
1,2,4-Trichlorobenzene	ug/L	ND	20	18.9	95	60-135	
1,2,4-Trimethylbenzene	ug/L	ND	20	19.4	96	67-148	
1,2-Dibromo-3-chloropropane	ug/L	ND	50	46.2	92	32-137	
1,2-Dibromoethane (EDB)	ug/L	ND	20	19.9	100	75-125	
1,2-Dichlorobenzene	ug/L	ND	20	18.8	94	75-125	
1,2-Dichloroethane	ug/L	ND	20	19.2	96	62-138	
1,2-Dichloropropane	ug/L	ND	20	18.7	93	62-144	
1,3,5-Trimethylbenzene	ug/L	ND	20	19.2	96	67-148	
1,3-Dichlorobenzene	ug/L	ND	20	19.1	95	74-131	
1,3-Dichloropropane	ug/L	ND	20	18.9	95	75-127	
1,4-Dichlorobenzene	ug/L	ND	20	18.7	93	74-126	
2,2-Dichloropropane	ug/L	ND	20	18.0	90	56-146	
2-Butanone (MEK)	ug/L	ND	100	87.9	88	47-150	
2-Chlorotoluene	ug/L	ND	20	19.2	96	74-137	
4-Chlorotoluene	ug/L	ND	20	19.2	96	72-138	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	100	91.1	91	60-147	
Acetone	ug/L	ND	100	157	157	61-150	CH,M0
Allyl chloride	ug/L	ND	20	16.7	83	53-150	
Benzene	ug/L	ND	20	17.9	89	52-147	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta -NIROP

Pace Project No.: 10336701

MATRIX SPIKE SAMPLE:		2181174		10336701001		Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Result	% Rec	Limits	Qualifiers	
Bromobenzene	ug/L	ND	20	19.4	97	75-129				
Bromochloromethane	ug/L	ND	20	19.4	97	72-128				
Bromodichloromethane	ug/L	ND	20	19.2	96	65-137				
Bromoform	ug/L	ND	20	19.8	99	59-133				
Bromomethane	ug/L	ND	20	19.6	98	30-150				
Carbon tetrachloride	ug/L	ND	20	21.3	107	73-144				
Chlorobenzene	ug/L	ND	20	18.4	92	75-126				
Chloroethane	ug/L	ND	20	17.8	89	55-150				
Chloroform	ug/L	ND	20	18.0	90	66-143				
Chloromethane	ug/L	ND	20	18.3	91	42-150				
cis-1,2-Dichloroethene	ug/L	42.3	20	61.1	94	65-143				
cis-1,3-Dichloropropene	ug/L	ND	20	17.7	88	75-125				
Dibromochloromethane	ug/L	ND	20	19.5	97	75-125				
Dibromomethane	ug/L	ND	20	18.6	93	66-133				
Dichlorodifluoromethane	ug/L	ND	20	19.8	99	74-150				
Dichlorofluoromethane	ug/L	ND	20	20.1	100	68-150				
Diethyl ether (Ethyl ether)	ug/L	ND	20	18.7	94	57-148				
Ethylbenzene	ug/L	ND	20	18.5	93	67-149				
Hexachloro-1,3-butadiene	ug/L	ND	20	20.4	102	65-143				
Isopropylbenzene (Cumene)	ug/L	ND	20	19.3	97	64-150				
Methyl-tert-butyl ether	ug/L	ND	20	19.2	96	71-130				
Methylene Chloride	ug/L	ND	20	16.4	82	67-137				
n-Butylbenzene	ug/L	ND	20	20.4	102	70-138				
n-Propylbenzene	ug/L	ND	20	19.3	97	70-148				
Naphthalene	ug/L	ND	20	19.6	98	39-150				
p-Isopropyltoluene	ug/L	ND	20	20.2	101	74-138				
sec-Butylbenzene	ug/L	ND	20	19.2	96	64-150				
Styrene	ug/L	ND	20	18.6	93	75-132				
tert-Butylbenzene	ug/L	ND	20	19.5	97	75-138				
Tetrachloroethene	ug/L	ND	20	19.1	96	73-136				
Tetrahydrofuran	ug/L	ND	200	315	158	68-142	CH,M0			
Toluene	ug/L	ND	20	19.1	94	69-139				
trans-1,2-Dichloroethene	ug/L	65.9	20	87.1	106	75-135				
trans-1,3-Dichloropropene	ug/L	ND	20	18.7	93	66-136				
Trichloroethene	ug/L	10.8	20	30.6	99	74-135				
Trichlorofluoromethane	ug/L	ND	20	26.0	130	75-150				
Vinyl chloride	ug/L	0.72	20	20.8	100	69-150				
Xylene (Total)	ug/L	ND	60	55.9	93	70-147				
1,2-Dichloroethane-d4 (S)	%				104	75-125				
4-Bromofluorobenzene (S)	%				100	75-125				
Toluene-d8 (S)	%				103	75-125				

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QUALITY CONTROL DATA

Project: PS Beta -NIROP

Pace Project No.: 10336701

SAMPLE DUPLICATE: 2181175

Parameter	Units	10336701002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,1-Trichloroethane	ug/L	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,2-Trichloroethane	ug/L	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	ND		30	
1,1-Dichloroethane	ug/L	1.1	1.1	0	30	
1,1-Dichloroethene	ug/L	ND	.67J		30	
1,1-Dichloropropene	ug/L	ND	ND		30	
1,2,3-Trichlorobenzene	ug/L	ND	ND		30	
1,2,3-Trichloropropane	ug/L	ND	ND		30	
1,2,4-Trichlorobenzene	ug/L	ND	ND		30	
1,2,4-Trimethylbenzene	ug/L	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/L	ND	ND		30	
1,2-Dichlorobenzene	ug/L	ND	ND		30	
1,2-Dichloroethane	ug/L	ND	ND		30	
1,2-Dichloropropane	ug/L	ND	ND		30	
1,3,5-Trimethylbenzene	ug/L	ND	ND		30	
1,3-Dichlorobenzene	ug/L	ND	ND		30	
1,3-Dichloropropane	ug/L	ND	ND		30	
1,4-Dichlorobenzene	ug/L	ND	ND		30	
2,2-Dichloropropane	ug/L	ND	ND		30	
2-Butanone (MEK)	ug/L	ND	ND		30	
2-Chlorotoluene	ug/L	ND	ND		30	
4-Chlorotoluene	ug/L	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		30	
Acetone	ug/L	ND	ND		30	
Allyl chloride	ug/L	ND	ND		30	
Benzene	ug/L	ND	ND		30	
Bromobenzene	ug/L	ND	ND		30	
Bromochloromethane	ug/L	ND	ND		30	
Bromodichloromethane	ug/L	ND	ND		30	
Bromoform	ug/L	ND	ND		30	
Bromomethane	ug/L	ND	ND		30	
Carbon tetrachloride	ug/L	ND	ND		30	
Chlorobenzene	ug/L	ND	ND		30	
Chloroethane	ug/L	ND	ND		30	
Chloroform	ug/L	ND	ND		30	
Chloromethane	ug/L	ND	ND		30	
cis-1,2-Dichloroethene	ug/L	19.3	20.6	7	30	
cis-1,3-Dichloropropene	ug/L	ND	ND		30	
Dibromochloromethane	ug/L	ND	ND		30	
Dibromomethane	ug/L	ND	ND		30	
Dichlorodifluoromethane	ug/L	ND	ND		30	
Dichlorofluoromethane	ug/L	ND	ND		30	
Diethyl ether (Ethyl ether)	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	

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QUALITY CONTROL DATA

Project: PS Beta -NIROP

Pace Project No.: 10336701

SAMPLE DUPLICATE: 2181175

Parameter	Units	10336701002 Result	Dup Result	RPD	Max RPD	Qualifiers
Hexachloro-1,3-butadiene	ug/L	ND	ND		30	
Isopropylbenzene (Cumene)	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Methylene Chloride	ug/L	ND	ND		30	
n-Butylbenzene	ug/L	ND	ND		30	
n-Propylbenzene	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
p-Isopropyltoluene	ug/L	ND	ND		30	
sec-Butylbenzene	ug/L	ND	ND		30	
Styrene	ug/L	ND	ND		30	
tert-Butylbenzene	ug/L	ND	ND		30	
Tetrachloroethene	ug/L	ND	ND		30	
Tetrahydrofuran	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
trans-1,2-Dichloroethene	ug/L	49.9	51.6	4	30	
trans-1,3-Dichloropropene	ug/L	ND	ND		30	
Trichloroethene	ug/L	19.3	20.1	4	30	
Trichlorofluoromethane	ug/L	ND	ND		30	
Vinyl chloride	ug/L	ND	.31J		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	101	101	0		
4-Bromofluorobenzene (S)	%	102	98	5		
Toluene-d8 (S)	%	96	98	2		

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: PS Beta -NIROP

Pace Project No.: 10336701

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

CH The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.

L0 Analyte recovery in the laboratory control sample (LCS) was outside QC limits.

L3 Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples. Results unaffected by high bias.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PS Beta -NIROP

Pace Project No.: 10336701

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10336701001	PMW-03	EPA 8260B	MSV/34462		
10336701002	PMW-04	EPA 8260B	MSV/34462		
10336701003	Trip Blank	EPA 8260B	MSV/34462		

REPORT OF LABORATORY ANALYSIS

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Document Name:
Sample Condition Upon Receipt Form

Document No.:
F-MN-L-213-rev.15

Document Revised: 05Jan2016
Page 1 of 1

Issuing Authority:
Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Regenesis

Project #: _____

WO#: 10336701

Courier: Fed Ex UPS USPS Client

Commercial Pace Speedee Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No

Optional: Proj. Due Date: _____ Proj. Name: _____

Packing Material: Bubble Wrap Bubble Bags None Other: _____ Temp Blank? Yes No

Thermometer Used: 151401163 151401164 B88A912167504 B88A0143310098

Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temp Read (°C): 0.3 Cooler Temp Corrected (°C): 0.5 Biological Tissue Frozen? Yes No N/A

Temp should be above freezing to 6°C Correction Factor: +0.2 Date and Initials of Person Examining Contents: CMB/1/25/16

USDA Regulated Soil N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or WA (check maps)? Yes No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7. <u>2-DAY</u>
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>water</u>	
All containers needing acid/base preservation have been checked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> HNO ₃ <input type="checkbox"/> H ₂ SO ₄ <input type="checkbox"/> NaOH <input type="checkbox"/> HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): <u>012016-01</u>	

CLIENT NOTIFICATION/RESOLUTION Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Carrigan Date: 1/25/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

February 10, 2016

Melinda Pham
Regenesis
1011 Calle Sombra
San Clemente, CA 92673

RE: Project: PS Beta -NIROP
Pace Project No.: 10336704

Dear Melinda Pham:

Enclosed are the analytical results for sample(s) received by the laboratory on January 25, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,



Jennifer Anderson
jennifer.anderson@pacelabs.com
Project Manager

Enclosures

cc: Ryan Moore, Regenesis



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PS Beta -NIROP
Pace Project No.: 10336704

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
525 N 8th Street, Salina, KS 67401
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

Montana Certification IDs

150 N. 9th Street, Billings, MT 59101
Colorado Asbestos #: 17119
A2LA Certification #: 3590.01
EPA Region 8 Certification #: 8TMS-L
Idaho Certification #: MT00012

Minnesota Dept of Health Certification #: 030-999-442
Montana Certification #: MT CERT0040
North Dakota Dept. Of Health #: R-209
NVLAP Certification #: 101292-0
Washington Department of Ecology #: C993

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification #MN01084
Arizona Department of Health Certification #AZ0785
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203

Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007
Nevada DNR #MN010842015-1
Oklahoma Department of Environmental Quality

Ormond Beach Certification IDs

8 East Tower Circle, Ormond Beach, FL 32174
Alabama Certification #: 41320
Connecticut Certification #: PH-0216
Delaware Certification: FL NELAC Reciprocity
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Illinois Certification #: 200068
Indiana Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Kentucky Certification #: 90050
Louisiana Certification #: FL NELAC Reciprocity
Louisiana Environmental Certificate #: 05007
Maryland Certification: #346
Michigan Certification #: 9911

Mississippi Certification: FL NELAC Reciprocity
Missouri Certification #: 236
Montana Certification #: Cert 0074
Nebraska Certification: NE-OS-28-14
Nevada Certification: FL NELAC Reciprocity
New Hampshire Certification #: 2958
New York Certification #: 11608
North Carolina Environmental Certificate #: 667
North Carolina Certification #: 12710
North Dakota Certification #: R-216
Oklahoma Certification #: D9947
Pennsylvania Certification #: 68-00547
Puerto Rico Certification #: FL01264
South Carolina Certification: #96042001
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PS Beta -NIROP

Pace Project No.: 10336704

Ormond Beach Certification IDs

US Virgin Islands Certification: FL NELAC Reciprocity

Virginia Environmental Certification #: 460165

West Virginia Certification #: 9962C

Wisconsin Certification #: 399079670

Wyoming (EPA Region 8): FL NELAC Reciprocity

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SAMPLE SUMMARY

Project: PS Beta -NIROP

Pace Project No.: 10336704

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10336704001	PMW-03	Water	01/25/16 12:25	01/25/16 13:55
10336704002	PMW-04	Water	01/25/16 11:05	01/25/16 13:55

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: PS Beta -NIROP

Pace Project No.: 10336704

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10336704001	PMW-03	RSK 175	STV	3	PASI-M
		EPA 6010C	IP	1	PASI-M
		6010C Met	IP	1	PASI-M
		SM 4500-S2-D	WT1	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	KAM	1	PASI-O
		EPA 300.0	KEO	1	PASI-M
		EPA 353.2	MW	1	PASI-M
		SM 5220D	DCL	1	PASI-M
		SM 5310C	KRV	1	PASI-V
10336704002	PMW-04	RSK 175	STV	3	PASI-M
		EPA 6010C	IP	1	PASI-M
		6010C Met	IP	1	PASI-M
		SM 4500-S2-D	WT1	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	KAM	1	PASI-O
		EPA 300.0	KEO	1	PASI-M
		EPA 353.2	MW	1	PASI-M
		SM 5220D	DCL	1	PASI-M
		SM 5310C	KRV	1	PASI-V

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta -NIROP
Pace Project No.: 10336704

Sample: PMW-03	Lab ID: 10336704001	Collected: 01/25/16 12:25	Received: 01/25/16 13:55	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace								
Analytical Method: RSK 175								
Ethane	ND	ug/L	10.0	1		01/27/16 17:34	74-84-0	
Ethene	ND	ug/L	10.0	1		01/27/16 17:34	74-85-1	
Methane	23.1	ug/L	10.0	1		01/27/16 17:34	74-82-8	
6010C MET ICP								
Analytical Method: EPA 6010C Preparation Method: EPA 3010								
Iron	10700	ug/L	50.0	1	01/26/16 08:30	01/26/16 14:35	7439-89-6	
6010C MET ICP, Dissolved								
Analytical Method: 6010C Met Preparation Method: EPA 3010								
Iron, Dissolved	5880	ug/L	50.0	1	01/26/16 08:33	01/26/16 13:54	7439-89-6	
4500S2D Sulfide Water								
Analytical Method: SM 4500-S2-D								
Sulfide	ND	mg/L	0.10	1		02/01/16 14:06		1M
2320B Alkalinity								
Analytical Method: SM 2320B								
Carbon Dioxide (SM4500CO2D)	40.6	mg/L	5.0	1		02/02/16 15:59	124-38-9	
Alkalinity, Total as CaCO3	341	mg/L	5.0	1		01/29/16 10:55		
Alkalinity,Bicarbonate (CaCO3)	341	mg/L	5.0	1		01/29/16 10:55		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	5.0	1		01/29/16 10:55		
300.0 IC Anions								
Analytical Method: EPA 300.0								
Sulfate	141	mg/L	6.0	5		01/26/16 13:14	14808-79-8	M1
353.2 Nitrate + Nitrite								
Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	ND	mg/L	0.020	1		01/27/16 10:03		
5220D COD								
Analytical Method: SM 5220D Preparation Method: SM 5220D								
Chemical Oxygen Demand	ND	mg/L	50.0	1	02/02/16 10:22	02/02/16 15:38		
5310C TOC								
Analytical Method: SM 5310C								
Total Organic Carbon	3.1	mg/L	1.0	1		01/29/16 14:45	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta -NIROP
Pace Project No.: 10336704

Sample: PMW-04	Lab ID: 10336704002	Collected: 01/25/16 11:05	Received: 01/25/16 13:55	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace								
Analytical Method: RSK 175								
Ethane	ND	ug/L	10.0	1		01/27/16 17:50	74-84-0	
Ethene	ND	ug/L	10.0	1		01/27/16 17:50	74-85-1	
Methane	ND	ug/L	10.0	1		01/27/16 17:50	74-82-8	
6010C MET ICP								
Analytical Method: EPA 6010C Preparation Method: EPA 3010								
Iron	4860	ug/L	50.0	1	01/26/16 08:30	01/26/16 14:51	7439-89-6	
6010C MET ICP, Dissolved								
Analytical Method: 6010C Met Preparation Method: EPA 3010								
Iron, Dissolved	3420	ug/L	50.0	1	01/26/16 08:33	01/26/16 14:10	7439-89-6	
4500S2D Sulfide Water								
Analytical Method: SM 4500-S2-D								
Sulfide	ND	mg/L	0.10	1		02/01/16 14:11		1M
2320B Alkalinity								
Analytical Method: SM 2320B								
Carbon Dioxide (SM4500CO2D)	32.4	mg/L	5.0	1		02/02/16 16:15	124-38-9	
Alkalinity, Total as CaCO3	251	mg/L	5.0	1		01/29/16 10:59		
Alkalinity,Bicarbonate (CaCO3)	251	mg/L	5.0	1		01/29/16 10:59		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	5.0	1		01/29/16 10:59		
300.0 IC Anions								
Analytical Method: EPA 300.0								
Sulfate	80.5	mg/L	2.4	2		01/26/16 12:58	14808-79-8	
353.2 Nitrate + Nitrite								
Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	ND	mg/L	0.020	1		01/27/16 09:19		
5220D COD								
Analytical Method: SM 5220D Preparation Method: SM 5220D								
Chemical Oxygen Demand	ND	mg/L	50.0	1	02/02/16 10:22	02/02/16 15:39		
5310C TOC								
Analytical Method: SM 5310C								
Total Organic Carbon	3.2	mg/L	1.0	1		01/29/16 14:58	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta -NIROP

Pace Project No.: 10336704

QC Batch: AIR/25095

Analysis Method: RSK 175

QC Batch Method: RSK 175

Analysis Description: RSK 175 AIR HEADSPACE

Associated Lab Samples: 10336704001, 10336704002

METHOD BLANK: 2181051

Matrix: Water

Associated Lab Samples: 10336704001, 10336704002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	10.0	01/27/16 17:26	
Ethene	ug/L	ND	10.0	01/27/16 17:26	
Methane	ug/L	ND	10.0	01/27/16 17:26	

LABORATORY CONTROL SAMPLE & LCSD: 2181052

2181053

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Ethane	ug/L	114	106	106	93	93	85-115	0	20	
Ethene	ug/L	106	98.1	98.7	92	93	85-115	1	20	
Methane	ug/L	60.7	54.9	55.1	91	91	85-115	0	20	

SAMPLE DUPLICATE: 2182262

Parameter	Units	10336704001 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	23.1	3.2J		20	

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QUALITY CONTROL DATA

Project: PS Beta -NIROP

Pace Project No.: 10336704

QC Batch: MPRP/61125

Analysis Method: EPA 6010C

QC Batch Method: EPA 3010

Analysis Description: 6010C Water

Associated Lab Samples: 10336704001, 10336704002

METHOD BLANK: 2180616

Matrix: Water

Associated Lab Samples: 10336704001, 10336704002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron	ug/L	ND	50.0	01/26/16 14:29	

LABORATORY CONTROL SAMPLE: 2180617

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	10000	9710	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2180618 2180619

Parameter	Units	2180618		2180619		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Iron	ug/L	10700	10000	20600	20800	98	101	75-125	1	20	

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QUALITY CONTROL DATA

Project: PS Beta -NIROP

Pace Project No.: 10336704

QC Batch: MPRP/61124

Analysis Method: 6010C Met

QC Batch Method: EPA 3010

Analysis Description: 6010C Water Dissolved

Associated Lab Samples: 10336704001, 10336704002

METHOD BLANK: 2180612

Matrix: Water

Associated Lab Samples: 10336704001, 10336704002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron, Dissolved	ug/L	ND	50.0	01/26/16 13:48	

LABORATORY CONTROL SAMPLE: 2180613

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron, Dissolved	ug/L	10000	9530	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2180614 2180615

Parameter	Units	2180614		2180615		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10336704001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Iron, Dissolved	ug/L	5880	10000	10000	15300	15500	94	96	75-125	1	20

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QUALITY CONTROL DATA

Project: PS Beta -NIROP

Pace Project No.: 10336704

QC Batch:	MT/22348	Analysis Method:	SM 4500-S2-D
QC Batch Method:	SM 4500-S2-D	Analysis Description:	4500S2D Sulfide Water
Associated Lab Samples:	10336704001, 10336704002		

METHOD BLANK: 2184141 Matrix: Water

Associated Lab Samples: 10336704001, 10336704002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfide	mg/L	ND	0.10	02/01/16 13:57	

LABORATORY CONTROL SAMPLE: 2184142

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide	mg/L	.99	1.0	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2184143 2184144

Parameter	Units	10336680001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfide	mg/L	ND	.99	.99	1.2	1.2	119	119	80-120	0	20	

SAMPLE DUPLICATE: 2184145

Parameter	Units	10336704001 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide	mg/L	ND	ND		20	

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QUALITY CONTROL DATA

Project: PS Beta -NIROP

Pace Project No.: 10336704

QC Batch:	WET/35658	Analysis Method:	SM 2320B
QC Batch Method:	SM 2320B	Analysis Description:	2320B Alkalinity
Associated Lab Samples:	10336704001, 10336704002		

METHOD BLANK: 1466874 Matrix: Water

Associated Lab Samples: 10336704001, 10336704002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Carbon Dioxide (SM4500CO2D)	mg/L	ND	5.0	02/02/16 15:43	

SAMPLE DUPLICATE: 1466876

Parameter	Units	10336704001 Result	Dup Result	RPD	Max RPD	Qualifiers
Carbon Dioxide (SM4500CO2D)	mg/L	40.6	38.0	7		

SAMPLE DUPLICATE: 1466877

Parameter	Units	35226920005 Result	Dup Result	RPD	Max RPD	Qualifiers
Carbon Dioxide (SM4500CO2D)	mg/L	50.0U	ND			

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QUALITY CONTROL DATA

Project: PS Beta -NIROP

Pace Project No.: 10336704

QC Batch: WET/46236 Analysis Method: SM 2320B
 QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
 Associated Lab Samples: 10336704001, 10336704002

METHOD BLANK: 2182977 Matrix: Water

Associated Lab Samples: 10336704001, 10336704002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	ND	5.0	01/29/16 09:29	
Alkalinity,Bicarbonate (CaCO3)	mg/L	ND	5.0	01/29/16 09:29	
Alkalinity,Carbonate (CaCO3)	mg/L	ND	5.0	01/29/16 09:29	

LABORATORY CONTROL SAMPLE & LCSD: 2182978 2182979

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	40	41.9	42.3	105	106	90-110	1	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2182980 2182981

Parameter	Units	10336626002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	849	40	40	905	909	139	148	80-120	0	30	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2182982 2182983

Parameter	Units	10336946001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	11.0	40	40	52.7	52.8	104	105	80-120	0	30	

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QUALITY CONTROL DATA

Project: PS Beta -NIROP

Pace Project No.: 10336704

QC Batch: WETA/26172

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 10336704001, 10336704002

METHOD BLANK: 2180677

Matrix: Water

Associated Lab Samples: 10336704001, 10336704002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.2	01/26/16 10:54	

LABORATORY CONTROL SAMPLE: 2180678

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	12.5	11.9	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2180679 2180680

Parameter	Units	2180679		2180680		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10336704001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Sulfate	mg/L	141	62.5	62.5	187	188	75	75	90-110	0	20 M1

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QUALITY CONTROL DATA

Project: PS Beta -NIROP

Pace Project No.: 10336704

QC Batch: WETA/26178

Analysis Method: EPA 353.2

QC Batch Method: EPA 353.2

Analysis Description: 353.2 Nitrate + Nitrite, preserved

Associated Lab Samples: 10336704001, 10336704002

METHOD BLANK: 2181532

Matrix: Water

Associated Lab Samples: 10336704001, 10336704002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	ND	0.020	01/27/16 09:04	FS

LABORATORY CONTROL SAMPLE: 2181533

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	1	1.0	104	90-110	FS

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2181534 2181535

Parameter	Units	2181534		2181535		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10336764001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Nitrogen, NO2 plus NO3	mg/L	11.2	20	20	33.0	32.0	109	104	90-110	3	20

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QUALITY CONTROL DATA

Project: PS Beta -NIROP
Pace Project No.: 10336704

QC Batch: WETA/26237 Analysis Method: SM 5220D
QC Batch Method: SM 5220D Analysis Description: 5220D COD
Associated Lab Samples: 10336704001, 10336704002

METHOD BLANK: 2184550 Matrix: Water
Associated Lab Samples: 10336704001, 10336704002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50.0	02/02/16 15:30	

LABORATORY CONTROL SAMPLE: 2184551

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	300	314	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2184552 2184553

Parameter	Units	10336682007		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec				
Chemical Oxygen Demand	mg/L	5840	2500	2500	8470	8560	105	109	80-120	1	20		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2184554 2184555

Parameter	Units	10336682008		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec				
Chemical Oxygen Demand	mg/L	2110	2500	2500	2040	2140	-3	1	80-120	5	20	M6	

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QUALITY CONTROL DATA

Project: PS Beta -NIROP
Pace Project No.: 10336704

QC Batch: WETA/15512 Analysis Method: SM 5310C
QC Batch Method: SM 5310C Analysis Description: 5310C TOC
Associated Lab Samples: 10336704001, 10336704002

METHOD BLANK: 284229 Matrix: Water
Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	01/29/16 11:08	

LABORATORY CONTROL SAMPLE: 284230

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	25	25.3	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 284231 284232

Parameter	Units	10336705001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	mg/L	ND	25	25	25.7	25.1	102	99	80-120	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 284233 284234

Parameter	Units	10336707001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	mg/L	ND	25	25	25.3	25.5	100	101	80-120	1	20	

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QUALIFIERS

Project: PS Beta -NIROP

Pace Project No.: 10336704

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

PASI-MT Pace Analytical Services - Montana

PASI-O Pace Analytical Services - Ormond Beach

PASI-V Pace Analytical Services - Virginia

ANALYTE QUALIFIERS

1M Closing CCV failed low. Sample result could be biased low. Rerun out of hold confirms this result.

FS The sample was filtered in the laboratory prior to analysis.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PS Beta -NIROP

Pace Project No.: 10336704

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10336704001	PMW-03	RSK 175	AIR/25095		
10336704002	PMW-04	RSK 175	AIR/25095		
10336704001	PMW-03	EPA 3010	MPRP/61125	EPA 6010C	ICP/26635
10336704002	PMW-04	EPA 3010	MPRP/61125	EPA 6010C	ICP/26635
10336704001	PMW-03	EPA 3010	MPRP/61124	6010C Met	ICP/26634
10336704002	PMW-04	EPA 3010	MPRP/61124	6010C Met	ICP/26634
10336704001	PMW-03	SM 4500-S2-D	MT/22348		
10336704001	PMW-03	SM 4500-S2-D	MT/22386		
10336704002	PMW-04	SM 4500-S2-D	MT/22348		
10336704002	PMW-04	SM 4500-S2-D	MT/22386		
10336704001	PMW-03	SM 2320B	WET/35658		
10336704001	PMW-03	SM 2320B	WET/46236		
10336704002	PMW-04	SM 2320B	WET/35658		
10336704002	PMW-04	SM 2320B	WET/46236		
10336704001	PMW-03	EPA 300.0	WETA/26172		
10336704002	PMW-04	EPA 300.0	WETA/26172		
10336704001	PMW-03	EPA 353.2	WETA/26178		
10336704002	PMW-04	EPA 353.2	WETA/26178		
10336704001	PMW-03	SM 5220D	WETA/26237	SM 5220D	WETA/26244
10336704002	PMW-04	SM 5220D	WETA/26237	SM 5220D	WETA/26244
10336704001	PMW-03	SM 5310C	WETA/15512		
10336704002	PMW-04	SM 5310C	WETA/15512		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Regenesis	Report To:	Melinda Pham	Attention:	Bahar Naderi
Address:	1011 Calle Sombra	Copy To:		Company Name:	Regenesis
	San Clemente, CA 92673	Purchase Order No.:		Address:	1011 Calle Sombra
Email To:	Mpham@regenesis.com			Pace Quote Reference:	21466
Phone:	949-366-8000	Fax:	343-366-8090	Pace Project Manager:	
Requested Due Date/AT:	10 days	Project Name:	PS Beta - NIROP	Pace Profile #:	
		Project Number:	PS Beta - NIROP		
REGULATORY AGENCY			Requested Analysis Filtered (Y/N)		
<input type="checkbox"/> NPDES <input type="checkbox"/> UST <input type="checkbox"/> GROUND WATER <input type="checkbox"/> RORA <input type="checkbox"/> DRINKING WATER <input type="checkbox"/> OTHER			<input type="checkbox"/> Alkalinity, CaCO3 in water <input type="checkbox"/> Chemical oxygen demand <input type="checkbox"/> Total iron <input type="checkbox"/> Dissolved iron <input type="checkbox"/> Volatile fatty acids <input type="checkbox"/> Carbon dioxide in water <input type="checkbox"/> Nitrate+Nitrite <input type="checkbox"/> Sulfate in water <input type="checkbox"/> Sulfide in water <input type="checkbox"/> Total organic carbon <input type="checkbox"/> Dissolved gases <input type="checkbox"/> Residual Chlorine (Y/N)		
Site Location STATE: MN			Requested Analysis Filtered (Y/N)		

ITEM #	Section D Required Client Information	Valid Matrix Codes MATRIX CODE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives						Analysis Test	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	SAMPLE CONDITIONS	
					DATE	TIME			DATE	TIME	Unpreserved	H ₂ SO ₄	HNO ₃	HCl					NaOH
1	PMW-03	DW WT WW	WT C		1/25/16	1225	14	3											
2	PMW-04	P SL SOL/SOIL/D	WT G		1/25/16	1105	14	3											
3		DRINKING WATER WASTE WATER PRODUCT SOL/SOIL/D																	
4		OIL WIPE AIR OTHER TISSUE																	
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			

ADDITIONAL COMMENTS		RELINQUISHED BY / AFFILIATION		DATE		TIME		ACCEPTED BY / AFFILIATION		DATE		TIME	
		Melissa Meuwissen / Airon		1/25/16		1355		Melissa Meuwissen		1/25/16		13:55	

SAMPLER NAME AND SIGNATURE		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	MELISSA MEUWISSEN				
SIGNATURE of SAMPLER:	<i>Melissa Meuwissen</i>				
DATE Signed (MM/DD/YY):	1/25/16				

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.
F-ALL-Q-020rev.08, 12-Oct-2007



Document Name:
Sample Condition Upon Receipt Form

Document No.:
F-MN-L-213-rev.15

Document Revised: 05Jan2016
Page 1 of 1

Issuing Authority:
Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Regenesis Project #: _____

WO# : 10336704

Courier: Fed Ex UPS USPS Client
 Commercial Pace SpeeDee Other: _____
 Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No

Packing Material: Bubble Wrap Bubble Bags None Other: _____ Temp Blank? Yes No

Thermometer 151401163 B88A912167504 B88A0143310098
 Used: 151401164 B88A0143310098 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temp Read (°C): 0.3 Cooler Temp Corrected (°C): 0.5 Biological Tissue Frozen? Yes No N/A
 Temp should be above freezing to 6°C Correction Factor: -0.2 Date and Initials of Person Examining Contents: OMB/1/25/16

USDA Regulated Soil (N/A, water sample)
 Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or WA (check maps)? Yes No
 Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No
 If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>water</u>	
All containers needing acid/base preservation have been checked? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13. <input checked="" type="checkbox"/> HNO ₃ <input checked="" type="checkbox"/> H ₂ SO ₄ <input type="checkbox"/> NaOH <input type="checkbox"/> HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>12 Cyanide) Exceptions: VOA, Coliform, <u>TOC</u> , Oil and Grease, DRO/8015 (water) DOC <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample # <u>4/4</u> <u>1-2</u> Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____	


CLIENT NOTIFICATION/RESOLUTION Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: [Signature] Date: 1/26/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

	Document Name: MN to MT Sample Transfer Form	Revised Date: 14Jul2014 Page: 1 of 1
	Document Number: F-MN-C-043-rev.11	Issuing Authority: Pace Minnesota Quality Office

Shipping (circle):	UPS Fed Ex
Tracking #:	6484 8693 4447
Client:	Regenesis
Due Date:	8-Feb-2016
Pace WO:	10336704
Project Manager:	JMA

MN to MT Sample Transfer Condition Upon Receipt Form

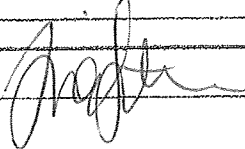
ANALYSIS REQUESTED					
Method Number & Description	Container Type	# of Bottles	Lab ID's	Preservative Yes or No	Verify Arrival Date & Initials
4500S2D Sulfide	BP2Z	2	001-002	Yes	JMA

REPORTING REQUIREMENTS/ADDITIONAL COMMENTS

MONTANA SAMPLE RECEIPT INFORMATION			
IR Gun: B88A0140728348, Correction Factor:		Sample Matrix: H ₂ O	
Cooler Temp Read (°C): 2.4	Cooler Temp Corrected (°C): 2.2	Filtred volume rec'd for dissolved tests:	Yes ___ No ___ NA <input checked="" type="checkbox"/>
Arrived on Ice:	Yes <input checked="" type="checkbox"/> No ___	Samples pH have been checked:	Yes ___ No ___ NA <input checked="" type="checkbox"/>
Custody Seal Present:	Yes <input checked="" type="checkbox"/> No ___	Trip Blank Present:	Yes ___ No ___ NA <input checked="" type="checkbox"/>
Short Hold Time Requested < 72 Hours:	Yes ___ No <input checked="" type="checkbox"/>	Trip Blank Custody Seals Present:	Yes ___ No ___ NA <input checked="" type="checkbox"/>
Rush TAT Requested:	Yes ___ No <input checked="" type="checkbox"/>	Pace Trip Blank Lot #:	NA
Sufficient Sample Volume:	Yes <input checked="" type="checkbox"/> No ___	Sample Composites Required:	Yes ___ No ___ NA <input checked="" type="checkbox"/>
Samples Arrived within Hold Time:	Yes <input checked="" type="checkbox"/> No ___	Report Samples:	Wet Wt. ___ Dry Wt. ___
Containers Intact:	Yes <input checked="" type="checkbox"/> No ___	Reporting Units:	

CUSTODY TRANSFER					
Relinquished by/Affiliation	Date	Time	Accepted By Affiliation	Date	Time
JMA Pace Fed Ex	1/27/16	1110	Muelster - Pace	1/27/16	0930

CLIENT NOTIFICATION/RESOLUTION	
Person Contacted: _____	Date: _____
Comments/Resolution: _____	

Project Manager Review:  Date: 1/27/16

Chain of Custody

MO#: 1260251

PH: HRZ
 CLIENT: PACE MPLS
 Due Date: 02/10/16
 iytical
 jacobslabs.com

Workorder: 10336704 Workorder Name: PS Beta - NIROP Owner Received Date: 1/25/2016 Results Requested By: z/8/2016

Report To:
 Jennifer Anderson
 Pace Analytical Services, Inc.
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone (612)607-1700
 Fax (612)607-6444

Subcontract To:
 Pace Analytical Virginia MN
 315 Chestnut Street
 Virginia, MN 55792
 Phone (218)742-1042


Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers	Requested Analysis	Comments
1	PMW-03	PS	1/25/2016 12:25	10336704001	Water	1	TOC	LAB USE ONLY
2	PMW-04	PS	1/25/2016 11:05	10336704002	Water	1	X	
3								
4								
5								

Transfers	Released By	Date/Time	Received By	Date/Time	Cooler Temperature on Receipt °C	Custody Seal	Y or N	Received on Ice	Y or N	Samples Intact	Y or N
1	J. Pace	1/25/16 11:2	J. Pace	1/25/16 12:05	0.9	Y		Y		Y	
2		1/26/16 20:35		1-27-16 08:00							
3											

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
 This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Condition Upon Receipt

Client Name: Pace-IV Project #: _____

WO# : 1260251

 1260251

Courier: Fed Ex UPS USPS Client
 Commercial Pace Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No
 Optional: Proj. Due Date: _____ Proj. Name: _____

Packing Material: Bubble Wrap Bubble Bags None Other: _____ Temp Blank? Yes No

Thermometer Used: 140792808 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temp Read °C: 0.9 Cooler Temp Corrected °C: 1.2 Biological Tissue Frozen? Yes No N/A
 Temp should be above freezing to 6°C Correction Factor: +0.3 Date and Initials of Person Examining Contents: JPK 1/27/16

Comments: JPK 1-27-16

Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and Signature on COC?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>W/T</u>		
All containers needing acid/base preservation will be checked and documented in the pH logbook.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

FECAL WAIVER ON FILE Y N

TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: KAT for HRZ Date: 1-27-16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

WO#: 35226759



35226759

Chain of Custody



Pace Analytical
www.pacelabs.com

Workorder: 10336704 Workorder Name: PS Beta -NIROP Owner Received Date: 1/25/2016 Results Requested By: 2/8/2016

Report To:
Jennifer Anderson
Pace Analytical Services, Inc.
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone (612)607-1700
Fax (612)607-6444

Subcontract To:
Pace Analytical Ormond Beach
8 East Tower Circle
Ormond Beach, FL 32174
Phone (386)672-5668

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers					LAB USE ONLY	
						Unreserved						
1	PMW-03	PS	1/25/2016 12:25	10336704001	Water	1						
2	PMW-04	PS	1/25/2016 11:05	10336704002	Water	1						
3												
4												
5												

Transfers	Released By	Date/Time	Received By	Date/Time	Comments
1	<i>[Signature]</i>	1/27/16 11:13	<i>[Signature]</i>	1/27/16 12:10	
2					
3					

Cooler Temperature on Receipt 2.8 °C Custody Seal or N Received on Ice or N Samples Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
This chain of custody is considered complete as is since this information is available in the owner laboratory.



Document Name:
Sample Condition Upon Receipt Form
Document No.:
F-FL-C-007 rev. 07

Document Revised:
December 28, 2015
Issuing Authority:
Pace Florida Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #
Project Manager:
Client:

WO# : 35226759

PM: JJV Due Date: 02/02/16
CLIENT: PACMIN

Date and Initials of person examining contents: 1-27-16 1210
Label: _____
Deliver: _____
pH: _____

Courier: Fed Ex UPS USPS Client Commercial Pace
Shipping Method: First Overnight Priority Overnight Standard Overnight Ground
Billing: Recipient Sender Third Party Unkown
Tracking # 7755 0449 8165 Cooler Size if Applicable: _____

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no
Packing Material: Bubble Wrap Bubble Bags None Other
Thermometer Used F-198 Type of Ice: Wet Blue None Samples on ice, cooling process has begun
Cooler #1 Temperature°C 15.8 (Visual) -0.3 (Correction Factor) 15.5 (Actual)
Cooler #2 Temperature°C _____ (Visual) _____ (Correction Factor) _____ (Actual)
Cooler #3 Temperature°C _____ (Visual) _____ (Correction Factor) _____ (Actual)
Cooler #4 Temperature°C _____ (Visual) _____ (Correction Factor) _____ (Actual)
Cooler #5 Temperature°C _____ (Visual) _____ (Correction Factor) _____ (Actual)
Cooler #6 Temperature°C _____ (Visual) _____ (Correction Factor) _____ (Actual)
Temp should be above freezing to 6°C

		Comments:
Chain of Custody Present	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody Filled Out	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Relinquished Signature & Sampler Name COC	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples Arrived within Hold Time	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Rush TAT requested on COC	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient Volume	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct Containers Used	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<u>received vials and ASbestos both are Amber Glass Vials</u>
Pace Containers Used	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Sample Labels match COC (sample IDs & date/time of collection)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing acid/base preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	HNO3 pH<2 HCl pH<2 H2SO4 pH<2 NaOH pH>12 NaOH/ZnOAc pH>9
All Containers needing preservation are found to be in compliance with EPA recommendation: Exceptions: VOA, Coliform, TOC, O&G	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
No Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	

Client Notification/ Resolution:
Person Contacted: _____ Date/Time: _____
Comments/ Resolution (use back for additional comments):

Project Manager Review: _____ Date: 1/27



Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

February 9, 2016

Jennifer Anderson
Pace Analytical Services, Inc.
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: PS BETA - NIROP / 10336704

Pace Workorder: 18011

Dear Jennifer Anderson:

Enclosed are the analytical results for sample(s) received by the laboratory on Wednesday, January 27, 2016. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

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

Sincerely,

Ruth Welsh 02/09/2016
Ruth.Welsh@pacelabs.com

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email info@microseeps.com.

Total Number of Pages ____

Report ID: 18011 - 762662

Page 1 of 11



CERTIFICATE OF ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Energy Services LLC.



LABORATORY ACCREDITATIONS & CERTIFICATIONS

Accreditor:	Pennsylvania Department of Environmental Protection, Bureau of Laboratories
Accreditation ID:	02-00538
Scope:	NELAP Non-Potable Water and Solid & Hazardous Waste
Accreditor:	South Carolina Department of Health and Environmental Control, Office of Environmental Laboratory Certification
Accreditation ID:	89009003
Scope:	Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: New Jersey, Department of Environmental Protection
Accreditation ID:	PA026
Scope:	Non-Potable Water; Solid and Chemical Materials
Accreditor:	NELAP: New York, Department of Health Wadsworth Center
Accreditation ID:	11815
Scope:	Non-Potable Water; Solid and Hazardous Waste
Accreditor:	State of Connecticut, Department of Public Health, Division of Environmental Health
Accreditation ID:	PH-0263
Scope:	Clean Water Act (CWA) Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: Texas, Commission on Environmental Quality
Accreditation ID:	T104704453-09-TX
Scope:	Non-Potable Water
Accreditor:	State of New Hampshire
Accreditation ID:	299409
Scope:	Non-potable water
Accreditor:	State of Georgia
Accreditation ID:	Chapter 391-3-26
Scope:	As per the Georgia EPD Rules and Regulations for Commercial Laboratories, PAES is accredited by the Pennsylvania Department of Environmental Protection Bureau of Laboratories under the National Environmental Laboratory Approval Program (NELAC).



CERTIFICATE OF ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Energy Services LLC.



Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

SAMPLE SUMMARY

Workorder: 18011 PS BETA - NIROP / 10336704

Lab ID	Sample ID	Matrix	Date Collected	Date Received
180110001	PMW-03	Water	1/25/2016 12:25	1/27/2016 11:30
180110002	PMW-04	Water	1/25/2016 11:05	1/27/2016 11:30

Report ID: 18011 - 762662

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PROJECT SUMMARY

Workorder: 18011 PS BETA - NIROP / 10336704

Workorder Comments

The analysis for volatile fatty acids, method AM23G, was reported at dilution for samples 18011 (0001-0002) due to the measured chloride concentration within the sample; matrix interfering compound.



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ANALYTICAL RESULTS

Workorder: 18011 PS BETA - NIROP / 10336704

Lab ID: 180110001 Date Received: 1/27/2016 11:30 Matrix: Water
 Sample ID: PMW-03 Date Collected: 1/25/2016 12:25

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM23G			Analytical Method: AM23G					
Lactic Acid	<2.0	mg/l	2.0	0.080	10	2/4/2016 13:06	KB	d
Acetic Acid	<1.0	mg/l	1.0	0.12	10	2/4/2016 13:06	KB	d,B
Propionic Acid	<1.0	mg/l	1.0	0.060	10	2/4/2016 13:06	KB	d
Formic Acid	<1.0	mg/l	1.0	0.070	10	2/4/2016 13:06	KB	d,B
Butyric Acid	<1.0	mg/l	1.0	0.10	10	2/4/2016 13:06	KB	d
Pyruvic Acid	<1.0	mg/l	1.0	0.15	10	2/4/2016 13:06	KB	d
I-Pentanoic Acid	<1.0	mg/l	1.0	0.070	10	2/4/2016 13:06	KB	d
Pentanoic Acid	<1.0	mg/l	1.0	0.12	10	2/4/2016 13:06	KB	d
I-Hexanoic Acid	<2.0	mg/l	2.0	0.14	10	2/4/2016 13:06	KB	d
Hexanoic Acid	<2.0	mg/l	2.0	0.070	10	2/4/2016 13:06	KB	d



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ANALYTICAL RESULTS

Workorder: 18011 PS BETA - NIROP / 10336704

Lab ID: 180110002 Date Received: 1/27/2016 11:30 Matrix: Water
 Sample ID: PMW-04 Date Collected: 1/25/2016 11:05

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM23G Analytical Method: AM23G								
Lactic Acid	<2.0	mg/l	2.0	0.080	10	2/4/2016 13:59	KB	d
Acetic Acid	<1.0	mg/l	1.0	0.12	10	2/4/2016 13:59	KB	d,B
Propionic Acid	<1.0	mg/l	1.0	0.060	10	2/4/2016 13:59	KB	d
Formic Acid	<1.0	mg/l	1.0	0.070	10	2/4/2016 13:59	KB	d,B
Butyric Acid	<1.0	mg/l	1.0	0.10	10	2/4/2016 13:59	KB	d
Pyruvic Acid	<1.0	mg/l	1.0	0.15	10	2/4/2016 13:59	KB	d
i-Pentanoic Acid	<1.0	mg/l	1.0	0.070	10	2/4/2016 13:59	KB	d
Pentanoic Acid	<1.0	mg/l	1.0	0.12	10	2/4/2016 13:59	KB	d
i-Hexanoic Acid	<2.0	mg/l	2.0	0.14	10	2/4/2016 13:59	KB	d
Hexanoic Acid	<2.0	mg/l	2.0	0.070	10	2/4/2016 13:59	KB	d



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ANALYTICAL RESULTS QUALIFIERS

Workorder: 18011 PS BETA - NIROP / 10336704

DEFINITIONS/QUALIFIERS

Disclaimer : The Pennsylvania Department of Environmental Protection (PADEP) has decided to no longer recognize analyses that do not produce data for primary compliance, for NELAP accreditation. The methods affected by this decision are AM20Gax, AM21G, SW846 7199 and AM4.02. The laboratory shall continue to administer the NELAP/TNI standard requirements in the performance of these methods.

- MDL Method Detection Limit. Can be used synonymously with LOD; Limit Of Detection.
- PQL Practical Quantitation Limit. Can be used synonymously with LOQ; Limit Of Quantitation.
- ND Not detected at or above reporting limit.
- DF Dilution Factor.
- S Surrogate.
- RPD Relative Percent Difference.
- % Rec Percent Recovery.
- U Indicates the compound was analyzed for, but not detected at or above the noted concentration.
- J Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).

- B The analyte was detected in the associated blank.

- d The analyte concentration was determined from a dilution.



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QUALITY CONTROL DATA

Workorder: 18011 PS BETA - NIROP / 10336704

QC Batch: EDON/2790 Analysis Method: AM23G
 QC Batch Method: AM23G
 Associated Lab Samples: 180110001, 180110002

METHOD BLANK: 40014

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
EDonors				
Lactic Acid	mg/l	<0.20	0.20	
Acetic Acid	mg/l	<0.10	0.10	B
Propionic Acid	mg/l	<0.10	0.10	
Formic Acid	mg/l	<0.10	0.10	B
Butyric Acid	mg/l	<0.10	0.10	
Pyruvic Acid	mg/l	<0.10	0.10	
i-Pentanoic Acid	mg/l	<0.10	0.10	
Pentanoic Acid	mg/l	<0.10	0.10	
i-Hexanoic Acid	mg/l	<0.20	0.20	
Hexanoic Acid	mg/l	<0.20	0.20	

LABORATORY CONTROL SAMPLE: 40015

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
EDonors						
Lactic Acid	mg/l	2	1.9	94	70-130	
Acetic Acid	mg/l	2	2.0	102	70-130	B
Propionic Acid	mg/l	2	2.0	100	70-130	
Formic Acid	mg/l	2	1.7	87	70-130	B
Butyric Acid	mg/l	2	1.9	97	70-130	
Pyruvic Acid	mg/l	2	1.9	97	70-130	
i-Pentanoic Acid	mg/l	2	1.9	95	70-130	
Pentanoic Acid	mg/l	2	2.0	100	70-130	
i-Hexanoic Acid	mg/l	2	1.9	96	70-130	
Hexanoic Acid	mg/l	2	1.7	85	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 40016 40017 Original: 180160001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	Max RPD	RPD	Qualifiers
EDonors											
Lactic Acid	mg/l	0.071	20	18	19	89	94	70-130	5.5	30	d

Report ID: 18011 - 762662

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QUALITY CONTROL DATA

Workorder: 18011 PS BETA - NIROP / 10336704

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 40016 40017 Original: 180160001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	Max RPD	RPD	Qualifiers
Acetic Acid	mg/l	0.55	20	21	21	102	104	70-130	1.9	30	d,B
Propionic Acid	mg/l	0.061	20	21	21	103	104	70-130	0.97	30	d
Formic Acid	mg/l	0.18	20	17	18	86	90	70-130	4.5	30	d,B
Butyric Acid	mg/l	0.12	20	21	21	102	102	70-130	0	30	d
Pyruvic Acid	mg/l	0	20	19	20	95	99	70-130	4.1	30	d
i-Pentanoic Acid	mg/l	0	20	21	20	104	103	70-130	0.97	30	d
Pentanoic Acid	mg/l	0	20	22	22	113	109	70-130	3.6	30	d
i-Hexanoic Acid	mg/l	0	20	24	23	118	117	70-130	0.85	30	d
Hexanoic Acid	mg/l	0	20	24	23	119	114	70-130	4.3	30	d



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QUALITY CONTROL DATA QUALIFIERS

Workorder: 18011 PS BETA - NIROP / 10336704

QUALITY CONTROL PARAMETER QUALIFIERS

- B The analyte was detected in the associated blank.
- d The analyte concentration was determined from a dilution.



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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 18011 PS BETA - NIROP / 10336704

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
180110001	PMW-03			AM23G	EDON/2790
180110002	PMW-04			AM23G	EDON/2790



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Chain of Custody

18011



Workorder: 10336704

Workorder Name: PS Beta -NIROP

Results Requested 2/8/2016

Report/Invoice To: Jennifer Anderson
 Pace Analytical Minnesota
 1700 Elm Street
 Suite 200
 Minneapolis, MN 55414
 Phone (612)607-1700
 Email: jennifer.anderson@pacelabs.com

Subcontract To: Pace Energy / Microscopy

P.O. 10336704

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers		Requested Analysis	Comments
					Unpreserved	Preserved		
1	PMW-03	1/25/2016 12:25	10336704001	Water	X			
2	PMW-04	1/25/2016 11:05	10336704002	Water	X			
3								
4								
5								

Transfers	Released By	Date/Time	Received By	Date/Time	Cooler Temperature on Receipt °C	Custody Seal Y or N	Received on Ice Y or N	Samples Intact Y or N
1	JA PACE	1/25/16	PAUL M III	1/27/16	5	Y	Y	N
2								
3								

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
 This chain of custody is considered complete as is since this information is available in the owner laboratory.

Cooler Receipt Form

Client Name: Pace - MN Project: PS Beta - NIROP Lab Work Order: 18011

A. Shipping/Container Information (circle appropriate response)

Courier: FedEx UPS USPS Client Other: _____ Air bill Present: Yes No

Tracking Number: 6484 8695 4436

Custody Seal on Cooler/Box Present: Yes No Seals Intact: Yes No

Cooler/Box Packing Material: Bubble Wrap Absorbent Foam Other: _____

Type of Ice: Ice Blue None Ice Intact: Yes Malted

Cooler Temperature: 5°C Radiation Screened: Yes No Chain of Custody Present: Yes No

Comments: _____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non-conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished	✓			
Sampler Name & Signature on COC		✓		
Containers intact	✓			
Were samples in separate bags		✓		
Sample container labels match COC	✓			
Sample name/date and time collected	✓			
Sufficient volume provided	✓			
PAES containers used	✓			
Are containers properly preserved for the requested testing? (as labeled)	✓			
If an unknown preservation state, were containers checked? Exception: VDA's coliform			✓	If yes, see pH form.
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			✓	

Comments: _____

Cooler contents examined/received by: cy Date: 1-28-16

Project Manager Review: RW Date: 1-28-16

February 11, 2016

Melinda Pham
Regenesis
1011 Calle Sombra
San Clemente, CA 92673

RE: Project: PS Beta-NIROP
Pace Project No.: 10337912

Dear Melinda Pham:

Enclosed are the analytical results for sample(s) received by the laboratory on February 08, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Jennifer Anderson
jennifer.anderson@pacelabs.com
Project Manager

Enclosures

cc: Ryan Moore, Regenesis



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PS Beta-NIROP
Pace Project No.: 10337912

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
525 N 8th Street, Salina, KS 67401
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #: 14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

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SAMPLE SUMMARY

Project: PS Beta-NIROP

Pace Project No.: 10337912

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10337912001	PMW-03	Water	02/08/16 10:30	02/08/16 11:13
10337912002	PMW-04	Water	02/08/16 09:00	02/08/16 11:13
10337912003	TRIP BLANK	Water	02/08/16 07:00	02/08/16 11:13

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SAMPLE ANALYTE COUNT

Project: PS Beta-NIROP
Pace Project No.: 10337912

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10337912001	PMW-03	EPA 8260B	AH2	70
10337912002	PMW-04	EPA 8260B	AH2	70
10337912003	TRIP BLANK	EPA 8260B	AH2	70

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10337912

Sample: PMW-03		Lab ID: 10337912001	Collected: 02/08/16 10:30	Received: 02/08/16 11:13	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		02/11/16 00:08	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		02/11/16 00:08	107-05-1	
Benzene	ND	ug/L	1.0	1		02/11/16 00:08	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		02/11/16 00:08	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		02/11/16 00:08	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		02/11/16 00:08	75-27-4	
Bromoform	ND	ug/L	4.0	1		02/11/16 00:08	75-25-2	
Bromomethane	ND	ug/L	4.0	1		02/11/16 00:08	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		02/11/16 00:08	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		02/11/16 00:08	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		02/11/16 00:08	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		02/11/16 00:08	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		02/11/16 00:08	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		02/11/16 00:08	108-90-7	
Chloroethane	ND	ug/L	1.0	1		02/11/16 00:08	75-00-3	
Chloroform	ND	ug/L	1.0	1		02/11/16 00:08	67-66-3	
Chloromethane	ND	ug/L	4.0	1		02/11/16 00:08	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		02/11/16 00:08	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		02/11/16 00:08	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		02/11/16 00:08	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		02/11/16 00:08	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		02/11/16 00:08	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		02/11/16 00:08	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		02/11/16 00:08	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		02/11/16 00:08	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		02/11/16 00:08	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		02/11/16 00:08	75-71-8	
1,1-Dichloroethane	3.7	ug/L	1.0	1		02/11/16 00:08	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		02/11/16 00:08	107-06-2	
1,1-Dichloroethene	1.5	ug/L	1.0	1		02/11/16 00:08	75-35-4	
cis-1,2-Dichloroethene	57.6	ug/L	1.0	1		02/11/16 00:08	156-59-2	
trans-1,2-Dichloroethene	97.6	ug/L	1.0	1		02/11/16 00:08	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		02/11/16 00:08	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		02/11/16 00:08	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		02/11/16 00:08	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		02/11/16 00:08	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		02/11/16 00:08	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		02/11/16 00:08	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		02/11/16 00:08	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		02/11/16 00:08	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		02/11/16 00:08	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	2.0	1		02/11/16 00:08	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		02/11/16 00:08	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		02/11/16 00:08	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		02/11/16 00:08	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		02/11/16 00:08	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		02/11/16 00:08	1634-04-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10337912

Sample: PMW-03		Lab ID: 10337912001	Collected: 02/08/16 10:30	Received: 02/08/16 11:13	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		02/11/16 00:08	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		02/11/16 00:08	103-65-1	
Styrene	ND	ug/L	1.0	1		02/11/16 00:08	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		02/11/16 00:08	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		02/11/16 00:08	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		02/11/16 00:08	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		02/11/16 00:08	109-99-9	
Toluene	ND	ug/L	1.0	1		02/11/16 00:08	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		02/11/16 00:08	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		02/11/16 00:08	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		02/11/16 00:08	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		02/11/16 00:08	79-00-5	
Trichloroethene	12.9	ug/L	0.40	1		02/11/16 00:08	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		02/11/16 00:08	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		02/11/16 00:08	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		02/11/16 00:08	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		02/11/16 00:08	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		02/11/16 00:08	108-67-8	
Vinyl chloride	1.2	ug/L	0.40	1		02/11/16 00:08	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		02/11/16 00:08	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	97	%.	75-125	1		02/11/16 00:08	17060-07-0	
Toluene-d8 (S)	104	%.	75-125	1		02/11/16 00:08	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125	1		02/11/16 00:08	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10337912

Sample: PMW-04	Lab ID: 10337912002	Collected: 02/08/16 09:00	Received: 02/08/16 11:13	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		02/11/16 00:35	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		02/11/16 00:35	107-05-1	
Benzene	ND	ug/L	1.0	1		02/11/16 00:35	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		02/11/16 00:35	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		02/11/16 00:35	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		02/11/16 00:35	75-27-4	
Bromoform	ND	ug/L	4.0	1		02/11/16 00:35	75-25-2	
Bromomethane	ND	ug/L	4.0	1		02/11/16 00:35	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		02/11/16 00:35	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		02/11/16 00:35	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		02/11/16 00:35	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		02/11/16 00:35	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		02/11/16 00:35	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		02/11/16 00:35	108-90-7	
Chloroethane	ND	ug/L	1.0	1		02/11/16 00:35	75-00-3	
Chloroform	ND	ug/L	1.0	1		02/11/16 00:35	67-66-3	
Chloromethane	ND	ug/L	4.0	1		02/11/16 00:35	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		02/11/16 00:35	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		02/11/16 00:35	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		02/11/16 00:35	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		02/11/16 00:35	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		02/11/16 00:35	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		02/11/16 00:35	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		02/11/16 00:35	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		02/11/16 00:35	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		02/11/16 00:35	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		02/11/16 00:35	75-71-8	
1,1-Dichloroethane	1.2	ug/L	1.0	1		02/11/16 00:35	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		02/11/16 00:35	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		02/11/16 00:35	75-35-4	
cis-1,2-Dichloroethene	23.8	ug/L	1.0	1		02/11/16 00:35	156-59-2	
trans-1,2-Dichloroethene	60.4	ug/L	1.0	1		02/11/16 00:35	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		02/11/16 00:35	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		02/11/16 00:35	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		02/11/16 00:35	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		02/11/16 00:35	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		02/11/16 00:35	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		02/11/16 00:35	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		02/11/16 00:35	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		02/11/16 00:35	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		02/11/16 00:35	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	2.0	1		02/11/16 00:35	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		02/11/16 00:35	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		02/11/16 00:35	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		02/11/16 00:35	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		02/11/16 00:35	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		02/11/16 00:35	1634-04-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10337912

Sample: PMW-04		Lab ID: 10337912002	Collected: 02/08/16 09:00	Received: 02/08/16 11:13	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		02/11/16 00:35	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		02/11/16 00:35	103-65-1	
Styrene	ND	ug/L	1.0	1		02/11/16 00:35	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		02/11/16 00:35	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		02/11/16 00:35	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		02/11/16 00:35	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		02/11/16 00:35	109-99-9	
Toluene	ND	ug/L	1.0	1		02/11/16 00:35	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		02/11/16 00:35	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		02/11/16 00:35	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		02/11/16 00:35	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		02/11/16 00:35	79-00-5	
Trichloroethene	21.6	ug/L	0.40	1		02/11/16 00:35	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		02/11/16 00:35	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		02/11/16 00:35	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		02/11/16 00:35	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		02/11/16 00:35	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		02/11/16 00:35	108-67-8	
Vinyl chloride	0.40	ug/L	0.40	1		02/11/16 00:35	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		02/11/16 00:35	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	97	%.	75-125	1		02/11/16 00:35	17060-07-0	
Toluene-d8 (S)	104	%.	75-125	1		02/11/16 00:35	2037-26-5	
4-Bromofluorobenzene (S)	105	%.	75-125	1		02/11/16 00:35	460-00-4	

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10337912

Sample: TRIP BLANK	Lab ID: 10337912003	Collected: 02/08/16 07:00	Received: 02/08/16 11:13	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		02/10/16 20:35	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		02/10/16 20:35	107-05-1	
Benzene	ND	ug/L	1.0	1		02/10/16 20:35	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		02/10/16 20:35	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		02/10/16 20:35	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		02/10/16 20:35	75-27-4	
Bromoform	ND	ug/L	4.0	1		02/10/16 20:35	75-25-2	
Bromomethane	ND	ug/L	4.0	1		02/10/16 20:35	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		02/10/16 20:35	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		02/10/16 20:35	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		02/10/16 20:35	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		02/10/16 20:35	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		02/10/16 20:35	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		02/10/16 20:35	108-90-7	
Chloroethane	ND	ug/L	1.0	1		02/10/16 20:35	75-00-3	
Chloroform	ND	ug/L	1.0	1		02/10/16 20:35	67-66-3	
Chloromethane	ND	ug/L	4.0	1		02/10/16 20:35	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		02/10/16 20:35	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		02/10/16 20:35	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		02/10/16 20:35	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		02/10/16 20:35	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		02/10/16 20:35	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		02/10/16 20:35	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		02/10/16 20:35	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		02/10/16 20:35	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		02/10/16 20:35	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		02/10/16 20:35	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		02/10/16 20:35	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		02/10/16 20:35	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		02/10/16 20:35	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		02/10/16 20:35	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		02/10/16 20:35	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		02/10/16 20:35	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		02/10/16 20:35	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		02/10/16 20:35	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		02/10/16 20:35	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		02/10/16 20:35	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		02/10/16 20:35	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		02/10/16 20:35	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		02/10/16 20:35	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		02/10/16 20:35	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	2.0	1		02/10/16 20:35	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		02/10/16 20:35	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		02/10/16 20:35	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		02/10/16 20:35	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		02/10/16 20:35	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		02/10/16 20:35	1634-04-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10337912

Sample: TRIP BLANK		Lab ID: 10337912003	Collected: 02/08/16 07:00	Received: 02/08/16 11:13	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		02/10/16 20:35	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		02/10/16 20:35	103-65-1	
Styrene	ND	ug/L	1.0	1		02/10/16 20:35	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		02/10/16 20:35	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		02/10/16 20:35	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		02/10/16 20:35	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		02/10/16 20:35	109-99-9	
Toluene	ND	ug/L	1.0	1		02/10/16 20:35	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		02/10/16 20:35	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		02/10/16 20:35	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		02/10/16 20:35	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		02/10/16 20:35	79-00-5	
Trichloroethene	ND	ug/L	0.40	1		02/10/16 20:35	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		02/10/16 20:35	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		02/10/16 20:35	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		02/10/16 20:35	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		02/10/16 20:35	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		02/10/16 20:35	108-67-8	
Vinyl chloride	ND	ug/L	0.40	1		02/10/16 20:35	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		02/10/16 20:35	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	101	%.	75-125	1		02/10/16 20:35	17060-07-0	
Toluene-d8 (S)	105	%.	75-125	1		02/10/16 20:35	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125	1		02/10/16 20:35	460-00-4	

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10337912

QC Batch: MSV/34593

Analysis Method: EPA 8260B

QC Batch Method: EPA 8260B

Analysis Description: 8260B MSV 465 W

Associated Lab Samples: 10337912001, 10337912002, 10337912003

METHOD BLANK: 2190025

Matrix: Water

Associated Lab Samples: 10337912001, 10337912002, 10337912003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	02/10/16 20:08	
1,1,1-Trichloroethane	ug/L	ND	1.0	02/10/16 20:08	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	02/10/16 20:08	
1,1,2-Trichloroethane	ug/L	ND	1.0	02/10/16 20:08	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	1.0	02/10/16 20:08	
1,1-Dichloroethane	ug/L	ND	1.0	02/10/16 20:08	
1,1-Dichloroethene	ug/L	ND	1.0	02/10/16 20:08	
1,1-Dichloropropene	ug/L	ND	1.0	02/10/16 20:08	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	02/10/16 20:08	
1,2,3-Trichloropropane	ug/L	ND	4.0	02/10/16 20:08	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	02/10/16 20:08	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	02/10/16 20:08	
1,2-Dibromo-3-chloropropane	ug/L	ND	4.0	02/10/16 20:08	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	02/10/16 20:08	
1,2-Dichlorobenzene	ug/L	ND	1.0	02/10/16 20:08	
1,2-Dichloroethane	ug/L	ND	1.0	02/10/16 20:08	
1,2-Dichloropropane	ug/L	ND	4.0	02/10/16 20:08	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	02/10/16 20:08	
1,3-Dichlorobenzene	ug/L	ND	1.0	02/10/16 20:08	
1,3-Dichloropropane	ug/L	ND	1.0	02/10/16 20:08	
1,4-Dichlorobenzene	ug/L	ND	1.0	02/10/16 20:08	
2,2-Dichloropropane	ug/L	ND	4.0	02/10/16 20:08	
2-Butanone (MEK)	ug/L	ND	5.0	02/10/16 20:08	
2-Chlorotoluene	ug/L	ND	1.0	02/10/16 20:08	
4-Chlorotoluene	ug/L	ND	1.0	02/10/16 20:08	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	02/10/16 20:08	
Acetone	ug/L	ND	20.0	02/10/16 20:08	
Allyl chloride	ug/L	ND	4.0	02/10/16 20:08	
Benzene	ug/L	ND	1.0	02/10/16 20:08	
Bromobenzene	ug/L	ND	1.0	02/10/16 20:08	
Bromochloromethane	ug/L	ND	1.0	02/10/16 20:08	
Bromodichloromethane	ug/L	ND	1.0	02/10/16 20:08	
Bromoform	ug/L	ND	4.0	02/10/16 20:08	
Bromomethane	ug/L	ND	4.0	02/10/16 20:08	
Carbon tetrachloride	ug/L	ND	1.0	02/10/16 20:08	
Chlorobenzene	ug/L	ND	1.0	02/10/16 20:08	
Chloroethane	ug/L	ND	1.0	02/10/16 20:08	
Chloroform	ug/L	ND	1.0	02/10/16 20:08	
Chloromethane	ug/L	ND	4.0	02/10/16 20:08	
cis-1,2-Dichloroethene	ug/L	ND	1.0	02/10/16 20:08	
cis-1,3-Dichloropropene	ug/L	ND	4.0	02/10/16 20:08	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10337912

METHOD BLANK: 2190025

Matrix: Water

Associated Lab Samples: 10337912001, 10337912002, 10337912003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/L	ND	1.0	02/10/16 20:08	
Dibromomethane	ug/L	ND	4.0	02/10/16 20:08	
Dichlorodifluoromethane	ug/L	ND	1.0	02/10/16 20:08	
Dichlorofluoromethane	ug/L	ND	1.0	02/10/16 20:08	
Diethyl ether (Ethyl ether)	ug/L	ND	4.0	02/10/16 20:08	
Ethylbenzene	ug/L	ND	1.0	02/10/16 20:08	
Hexachloro-1,3-butadiene	ug/L	ND	2.0	02/10/16 20:08	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	02/10/16 20:08	
Methyl-tert-butyl ether	ug/L	ND	1.0	02/10/16 20:08	
Methylene Chloride	ug/L	ND	4.0	02/10/16 20:08	
n-Butylbenzene	ug/L	ND	1.0	02/10/16 20:08	
n-Propylbenzene	ug/L	ND	1.0	02/10/16 20:08	
Naphthalene	ug/L	ND	4.0	02/10/16 20:08	
p-Isopropyltoluene	ug/L	ND	1.0	02/10/16 20:08	
sec-Butylbenzene	ug/L	ND	1.0	02/10/16 20:08	
Styrene	ug/L	ND	1.0	02/10/16 20:08	
tert-Butylbenzene	ug/L	ND	1.0	02/10/16 20:08	
Tetrachloroethene	ug/L	ND	1.0	02/10/16 20:08	
Tetrahydrofuran	ug/L	ND	10.0	02/10/16 20:08	
Toluene	ug/L	ND	1.0	02/10/16 20:08	
trans-1,2-Dichloroethene	ug/L	ND	1.0	02/10/16 20:08	
trans-1,3-Dichloropropene	ug/L	ND	4.0	02/10/16 20:08	
Trichloroethene	ug/L	ND	0.40	02/10/16 20:08	
Trichlorofluoromethane	ug/L	ND	1.0	02/10/16 20:08	
Vinyl chloride	ug/L	ND	0.40	02/10/16 20:08	
Xylene (Total)	ug/L	ND	3.0	02/10/16 20:08	
1,2-Dichloroethane-d4 (S)	%	103	75-125	02/10/16 20:08	
4-Bromofluorobenzene (S)	%	107	75-125	02/10/16 20:08	
Toluene-d8 (S)	%	102	75-125	02/10/16 20:08	

LABORATORY CONTROL SAMPLE: 2190026

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	20	20.3	102	75-125	
1,1,1-Trichloroethane	ug/L	20	20.0	100	73-125	
1,1,2,2-Tetrachloroethane	ug/L	20	19.3	96	75-128	
1,1,2-Trichloroethane	ug/L	20	19.2	96	75-129	
1,1,2-Trichlorotrifluoroethane	ug/L	20	20.9	105	69-125	
1,1-Dichloroethane	ug/L	20	19.2	96	75-131	
1,1-Dichloroethene	ug/L	20	20.4	102	72-125	
1,1-Dichloropropene	ug/L	20	20.4	102	74-125	
1,2,3-Trichlorobenzene	ug/L	20	21.6	108	68-127	
1,2,3-Trichloropropane	ug/L	20	18.2	91	75-125	
1,2,4-Trichlorobenzene	ug/L	20	22.2	111	70-125	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10337912

LABORATORY CONTROL SAMPLE: 2190026

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	23.4	117	75-130	
1,2-Dibromo-3-chloropropane	ug/L	50	50.1	100	74-125	
1,2-Dibromoethane (EDB)	ug/L	20	19.8	99	75-125	
1,2-Dichlorobenzene	ug/L	20	21.2	106	75-125	
1,2-Dichloroethane	ug/L	20	19.7	98	72-129	
1,2-Dichloropropane	ug/L	20	19.4	97	71-129	
1,3,5-Trimethylbenzene	ug/L	20	23.5	118	75-127	
1,3-Dichlorobenzene	ug/L	20	21.3	106	75-125	
1,3-Dichloropropane	ug/L	20	18.4	92	75-125	
1,4-Dichlorobenzene	ug/L	20	19.1	96	75-125	
2,2-Dichloropropane	ug/L	20	22.8	114	71-125	
2-Butanone (MEK)	ug/L	100	100	100	58-150	
2-Chlorotoluene	ug/L	20	21.6	108	75-125	
4-Chlorotoluene	ug/L	20	22.7	113	75-130	
4-Methyl-2-pentanone (MIBK)	ug/L	100	105	105	72-140	
Acetone	ug/L	100	110	110	69-137	
Allyl chloride	ug/L	20	19.8	99	68-132	
Benzene	ug/L	20	21.1	105	75-125	
Bromobenzene	ug/L	20	20.2	101	75-125	
Bromochloromethane	ug/L	20	19.0	95	75-125	
Bromodichloromethane	ug/L	20	19.8	99	69-128	
Bromoform	ug/L	20	19.2	96	75-125	
Bromomethane	ug/L	20	24.8	124	30-150	
Carbon tetrachloride	ug/L	20	20.5	102	74-125	
Chlorobenzene	ug/L	20	21.0	105	75-125	
Chloroethane	ug/L	20	19.1	95	60-150	
Chloroform	ug/L	20	20.8	104	75-126	
Chloromethane	ug/L	20	19.4	97	46-150	
cis-1,2-Dichloroethene	ug/L	20	19.7	99	75-126	
cis-1,3-Dichloropropene	ug/L	20	21.3	107	75-125	
Dibromochloromethane	ug/L	20	19.5	97	75-125	
Dibromomethane	ug/L	20	20.0	100	72-127	
Dichlorodifluoromethane	ug/L	20	16.8	84	58-135	
Dichlorofluoromethane	ug/L	20	19.2	96	68-149	
Diethyl ether (Ethyl ether)	ug/L	20	18.8	94	66-144	
Ethylbenzene	ug/L	20	22.1	111	75-125	
Hexachloro-1,3-butadiene	ug/L	20	22.0	110	73-125	
Isopropylbenzene (Cumene)	ug/L	20	22.2	111	69-140	
Methyl-tert-butyl ether	ug/L	20	19.6	98	75-126	
Methylene Chloride	ug/L	20	19.9	99	71-130	
n-Butylbenzene	ug/L	20	23.4	117	71-129	
n-Propylbenzene	ug/L	20	22.8	114	71-133	
Naphthalene	ug/L	20	18.5	93	59-137	
p-Isopropyltoluene	ug/L	20	24.1	120	74-127	
sec-Butylbenzene	ug/L	20	24.4	122	66-140	
Styrene	ug/L	20	22.7	114	75-125	
tert-Butylbenzene	ug/L	20	21.8	109	73-129	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10337912

LABORATORY CONTROL SAMPLE: 2190026

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethane	ug/L	20	19.5	98	75-125	
Tetrahydrofuran	ug/L	200	219	110	71-129	
Toluene	ug/L	20	19.1	95	75-125	
trans-1,2-Dichloroethene	ug/L	20	21.4	107	75-125	
trans-1,3-Dichloropropene	ug/L	20	20.3	101	75-125	
Trichloroethene	ug/L	20	19.8	99	75-125	
Trichlorofluoromethane	ug/L	20	19.2	96	74-128	
Vinyl chloride	ug/L	20	20.0	100	71-131	
Xylene (Total)	ug/L	60	66.1	110	75-125	
1,2-Dichloroethane-d4 (S)	%			97	75-125	
4-Bromofluorobenzene (S)	%			101	75-125	
Toluene-d8 (S)	%			97	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2190568 2190569

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10337311001 Result	Spike Conc.	Spike Conc.	MS Result						
1,1,1,2-Tetrachloroethane	ug/L	ND	20	20	28.2	28.4	141	142	75-125	1	30 M1
1,1,1-Trichloroethane	ug/L	ND	20	20	29.1	30.9	145	155	71-144	6	30 M1
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20	25.7	26.4	128	132	75-131	3	30 M1
1,1,2-Trichloroethane	ug/L	ND	20	20	25.6	26.5	128	132	75-125	3	30 M1
1,1,2-Trichlorotrifluoroethane	ug/L	ND	20	20	30.6	31.3	153	156	75-150	2	30 M1
1,1-Dichloroethane	ug/L	ND	20	20	26.4	29.2	132	146	64-150	10	30
1,1-Dichloroethene	ug/L	ND	20	20	28.8	31.6	144	158	68-150	9	30 M1
1,1-Dichloropropene	ug/L	ND	20	20	29.4	30.2	147	151	68-145	3	30 M1
1,2,3-Trichlorobenzene	ug/L	ND	20	20	27.6	26.8	138	134	57-142	3	30
1,2,3-Trichloropropane	ug/L	ND	20	20	24.8	25.4	124	127	75-125	3	30 M1
1,2,4-Trichlorobenzene	ug/L	ND	20	20	28.1	27.7	141	138	60-135	2	30 M1
1,2,4-Trimethylbenzene	ug/L	ND	20	20	29.6	29.1	148	145	67-148	2	30
1,2-Dibromo-3-chloropropane	ug/L	ND	50	50	65.8	65.9	132	132	32-137	0	30
1,2-Dibromoethane (EDB)	ug/L	ND	20	20	26.6	27.0	133	135	75-125	2	30 M1
1,2-Dichlorobenzene	ug/L	ND	20	20	26.1	26.1	130	130	75-125	0	30 M1
1,2-Dichloroethane	ug/L	ND	20	20	26.5	28.3	132	142	62-138	7	30 M1
1,2-Dichloropropane	ug/L	ND	20	20	25.7	27.4	128	137	62-144	6	30
1,3,5-Trimethylbenzene	ug/L	ND	20	20	30.2	29.9	151	149	67-148	1	30 M1
1,3-Dichlorobenzene	ug/L	ND	20	20	26.2	25.7	131	129	74-131	2	30
1,3-Dichloropropane	ug/L	ND	20	20	25.5	25.8	127	129	75-127	1	30 M1
1,4-Dichlorobenzene	ug/L	ND	20	20	24.1	23.3	120	117	74-126	3	30
2,2-Dichloropropane	ug/L	ND	20	20	28.5	30.7	143	153	56-146	7	30 M1
2-Butanone (MEK)	ug/L	ND	100	100	127	133	127	133	47-150	5	30
2-Chlorotoluene	ug/L	ND	20	20	27.5	27.9	138	139	74-137	1	30 M1
4-Chlorotoluene	ug/L	ND	20	20	28.0	27.8	140	139	72-138	1	30 M1
4-Methyl-2-pentanone (MIBK)	ug/L	ND	100	100	138	143	138	143	60-147	4	30
Acetone	ug/L	ND	100	100	139	131	139	131	61-150	6	30

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10337912

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2190568		2190569		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		10337311001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Allyl chloride	ug/L	ND	20	20	26.5	29.3	132	147	53-150	10	30		
Benzene	ug/L	ND	20	20	27.9	30.4	140	152	52-147	8	30	M1	
Bromobenzene	ug/L	ND	20	20	26.1	26.1	131	130	75-129	0	30	M1	
Bromochloromethane	ug/L	ND	20	20	24.8	26.3	124	131	72-128	6	30	M1	
Bromodichloromethane	ug/L	ND	20	20	27.6	28.6	138	143	65-137	3	30	M1	
Bromoform	ug/L	ND	20	20	26.1	27.1	131	136	59-133	4	30	M1	
Bromomethane	ug/L	ND	20	20	23.2	30.5	116	152	30-150	27	30	M1	
Carbon tetrachloride	ug/L	ND	20	20	30.3	30.5	151	152	73-144	1	30	M1	
Chlorobenzene	ug/L	ND	20	20	28.0	28.2	140	141	75-126	1	30	M1	
Chloroethane	ug/L	ND	20	20	20.8	27.7	104	139	55-150	28	30		
Chloroform	ug/L	ND	20	20	29.2	30.8	146	154	66-143	5	30	M1	
Chloromethane	ug/L	ND	20	20	21.2	27.7	106	139	42-150	27	30		
cis-1,2-Dichloroethene	ug/L	ND	20	20	26.8	29.7	134	149	65-143	10	30	M1	
cis-1,3-Dichloropropene	ug/L	ND	20	20	27.5	29.7	137	148	75-125	8	30	M1	
Dibromochloromethane	ug/L	ND	20	20	26.6	27.7	133	138	75-125	4	30	M1	
Dibromomethane	ug/L	ND	20	20	25.3	27.5	126	138	66-133	9	30	M1	
Dichlorodifluoromethane	ug/L	ND	20	20	19.8	26.2	99	131	74-150	28	30		
Dichlorofluoromethane	ug/L	ND	20	20	20.1	27.4	101	137	68-150	31	30	R1	
Diethyl ether (Ethyl ether)	ug/L	ND	20	20	25.1	27.0	126	135	57-148	7	30		
Ethylbenzene	ug/L	ND	20	20	30.4	29.7	152	149	67-149	2	30	M1	
Hexachloro-1,3-butadiene	ug/L	ND	20	20	30.4	30.9	152	155	65-143	2	30	M1	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	29.5	29.0	148	145	64-150	2	30		
Methyl-tert-butyl ether	ug/L	ND	20	20	26.6	28.7	133	144	71-130	8	30	M1	
Methylene Chloride	ug/L	ND	20	20	26.4	29.9	132	150	67-137	13	30	M1	
n-Butylbenzene	ug/L	ND	20	20	30.6	29.5	153	148	70-138	3	30	M1	
n-Propylbenzene	ug/L	ND	20	20	29.0	28.5	145	142	70-148	2	30		
Naphthalene	ug/L	ND	20	20	24.3	24.5	122	123	39-150	1	30		
p-Isopropyltoluene	ug/L	ND	20	20	31.0	31.0	155	155	74-138	0	30	M1	
sec-Butylbenzene	ug/L	ND	20	20	31.4	31.8	157	159	64-150	1	30	M1	
Styrene	ug/L	ND	20	20	30.4	30.5	152	152	75-132	0	30	M1	
tert-Butylbenzene	ug/L	ND	20	20	27.4	28.1	137	141	75-138	3	30	M1	
Tetrachloroethene	ug/L	ND	20	20	25.7	25.1	128	126	73-136	2	30		
Tetrahydrofuran	ug/L	ND	200	200	292	278	146	139	68-142	5	30	M1	
Toluene	ug/L	ND	20	20	25.5	26.5	127	132	69-139	4	30		
trans-1,2-Dichloroethene	ug/L	ND	20	20	30.8	32.0	154	160	75-135	4	30	M1	
trans-1,3-Dichloropropene	ug/L	ND	20	20	27.4	27.7	137	138	66-136	1	30	M1	
Trichloroethene	ug/L	ND	20	20	27.9	28.0	139	140	74-135	1	30	M1	
Trichlorofluoromethane	ug/L	ND	20	20	20.6	28.5	103	143	75-150	32	30	R1	
Vinyl chloride	ug/L	ND	20	20	22.3	30.2	111	151	69-150	30	30	M1	
Xylene (Total)	ug/L	ND	60	60	90.0	90.4	150	151	70-147	0	30	MS	
1,2-Dichloroethane-d4 (S)	%						99	98	75-125				
4-Bromofluorobenzene (S)	%						100	101	75-125				
Toluene-d8 (S)	%						97	97	75-125				

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: PS Beta-NIROP

Pace Project No.: 10337912

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

MS Analyte recovery in the matrix spike was outside QC limits for one or more of the constituent analytes used in the calculated result.

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PS Beta-NIROP

Pace Project No.: 10337912

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10337912001	PMW-03	EPA 8260B	MSV/34593		
10337912002	PMW-04	EPA 8260B	MSV/34593		
10337912003	TRIP BLANK	EPA 8260B	MSV/34593		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

Client Name: Regenesis Project #: _____

WO#: 10337912



10337912

Courier: Fed Ex UPS USPS Client
 Commercial Pace SpeeDee Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No

Packing Material: Bubble Wrap Bubble Bags None Other: _____ Temp Blank? Yes No

Thermometer 151401163 B88A912167504 B88A0143310098
 Used: 151401164 B88A0143310098 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temp Read (°C): 5.7 Cooler Temp Corrected (°C): 5.8 Biological Tissue Frozen? Yes No N/A
 Temp should be above freezing to 6°C Correction Factor: +0.1 Date and Initials of Person Examining Contents: CMB 2/8/14

USDA Regulated Soil (N/A, water sample)
 Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or WA (check maps)? Yes No
 Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

		COMMENTS:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	10. <u>1 Trip Blank rec'd broken</u>
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>water</u>		
All containers needing acid/base preservation have been checked?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> HNO ₃ <input type="checkbox"/> H ₂ SO ₄ <input type="checkbox"/> NaOH <input type="checkbox"/> HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Sample #
Exceptions: VOA/ Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): <u>012914-01</u>		

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review:

Date: 2/8/14

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

February 23, 2016

Melinda Pham
Regenesis
1011 Calle Sombra
San Clemente, CA 92673

RE: Project: PS Beta-NIROP
Pace Project No.: 10337913

Dear Melinda Pham:

Enclosed are the analytical results for sample(s) received by the laboratory on February 08, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,



Jennifer Anderson
jennifer.anderson@pacelabs.com
Project Manager

Enclosures

cc: Ryan Moore, Regenesis



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PS Beta-NIROP
Pace Project No.: 10337913

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
525 N 8th Street, Salina, KS 67401
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

Montana Certification IDs

150 N. 9th Street, Billings, MT 59101
Colorado Asbestos #: 17119
A2LA Certification #: 3590.01
EPA Region 8 Certification #: 8TMS-L
Idaho Certification #: MT00012

Minnesota Dept of Health Certification #: 030-999-442
Montana Certification #: MT CERT0040
North Dakota Dept. Of Health #: R-209
NVLAP Certification #: 101292-0
Washington Department of Ecology #: C993

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification #MN01084
Arizona Department of Health Certification #AZ0785
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203

Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007
Nevada DNR #MN010842015-1
Oklahoma Department of Environmental Quality

Ormond Beach Certification IDs

8 East Tower Circle, Ormond Beach, FL 32174
Alabama Certification #: 41320
Connecticut Certification #: PH-0216
Delaware Certification: FL NELAC Reciprocity
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Illinois Certification #: 200068
Indiana Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Louisiana Certification #: FL NELAC Reciprocity
Louisiana Environmental Certificate #: 05007
Maryland Certification: #346
Michigan Certification #: 9911
Mississippi Certification: FL NELAC Reciprocity

Missouri Certification #: 236
Montana Certification #: Cert 0074
Nebraska Certification: NE-OS-28-14
Nevada Certification: FL NELAC Reciprocity
New York Certification #: 11608
North Carolina Environmental Certificate #: 667
North Carolina Certification #: 12710
North Dakota Certification #: R-216
Oklahoma Certification #: D9947
Pennsylvania Certification #: 68-00547
Puerto Rico Certification #: FL01264
South Carolina Certification: #96042001
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity
US Virgin Islands Certification: FL NELAC Reciprocity
Virginia Environmental Certification #: 460165

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PS Beta-NIROP

Pace Project No.: 10337913

Ormond Beach Certification IDs

Wyoming Certification: FL NELAC Reciprocity

West Virginia Certification #: 9962C

Wisconsin Certification #: 399079670

Wyoming (EPA Region 8): FL NELAC Reciprocity

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: PS Beta-NIROP

Pace Project No.: 10337913

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10337913001	PMW-03	Water	02/08/16 10:30	02/08/16 11:13
10337913002	PMW-04	Water	02/08/16 09:00	02/08/16 11:13

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: PS Beta-NIROP

Pace Project No.: 10337913

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10337913001	PMW-03	RSK 175	DR1	3	PASI-M
		EPA 6010C	IP	1	PASI-M
		6010C Met	IP	1	PASI-M
		SM 4500-S2-D	CAC	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	KAM	1	PASI-O
		EPA 300.0	KEO	1	PASI-M
		EPA 353.2	MW	1	PASI-M
		SM 5220D	KEO	1	PASI-M
		SM 5310C	KRV	1	PASI-V
10337913002	PMW-04	RSK 175	DR1	3	PASI-M
		EPA 6010C	IP	1	PASI-M
		6010C Met	IP	1	PASI-M
		SM 4500-S2-D	CAC	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	KAM	1	PASI-O
		EPA 300.0	KEO	1	PASI-M
		EPA 353.2	MW	1	PASI-M
		SM 5220D	KEO	1	PASI-M
		SM 5310C	KRV	1	PASI-V

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10337913

Sample: PMW-03	Lab ID: 10337913001	Collected: 02/08/16 10:30	Received: 02/08/16 11:13	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace								
Analytical Method: RSK 175								
Ethane	ND	ug/L	10.0	1		02/09/16 18:03	74-84-0	
Ethene	ND	ug/L	10.0	1		02/09/16 18:03	74-85-1	
Methane	37.0	ug/L	10.0	1		02/09/16 18:03	74-82-8	
6010C MET ICP								
Analytical Method: EPA 6010C Preparation Method: EPA 3010								
Iron	8300	ug/L	50.0	1	02/11/16 09:32	02/11/16 15:25	7439-89-6	
6010C MET ICP, Dissolved								
Analytical Method: 6010C Met Preparation Method: EPA 3010								
Iron, Dissolved	6350	ug/L	50.0	1	02/12/16 12:03	02/12/16 15:24	7439-89-6	
4500S2D Sulfide Water								
Analytical Method: SM 4500-S2-D								
Sulfide	ND	mg/L	0.10	1		02/11/16 16:11		
2320B Alkalinity								
Analytical Method: SM 2320B								
Carbon Dioxide (SM4500CO2D)	55.8	mg/L	5.0	1		02/12/16 12:41	124-38-9	
Alkalinity, Total as CaCO3	343	mg/L	5.0	1		02/12/16 11:30		
Alkalinity,Bicarbonate (CaCO3)	343	mg/L	5.0	1		02/12/16 11:30		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	5.0	1		02/12/16 11:30		
300.0 IC Anions								
Analytical Method: EPA 300.0								
Sulfate	150	mg/L	2.4	2		02/09/16 16:14	14808-79-8	
353.2 Nitrate + Nitrite								
Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	ND	mg/L	0.020	1		02/10/16 08:45		
5220D COD								
Analytical Method: SM 5220D Preparation Method: SM 5220D								
Chemical Oxygen Demand	ND	mg/L	50.0	1	02/09/16 10:28	02/09/16 15:52		
5310C TOC								
Analytical Method: SM 5310C								
Total Organic Carbon	2.8	mg/L	1.0	1		02/10/16 22:22	7440-44-0	

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10337913

Sample: PMW-04	Lab ID: 10337913002	Collected: 02/08/16 09:00	Received: 02/08/16 11:13	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace								
Analytical Method: RSK 175								
Ethane	ND	ug/L	10.0	1		02/09/16 18:19	74-84-0	
Ethene	ND	ug/L	10.0	1		02/09/16 18:19	74-85-1	
Methane	ND	ug/L	10.0	1		02/09/16 18:19	74-82-8	
6010C MET ICP								
Analytical Method: EPA 6010C Preparation Method: EPA 3010								
Iron	3980	ug/L	50.0	1	02/11/16 09:32	02/11/16 15:43	7439-89-6	
6010C MET ICP, Dissolved								
Analytical Method: 6010C Met Preparation Method: EPA 3010								
Iron, Dissolved	3070	ug/L	50.0	1	02/12/16 12:03	02/12/16 15:40	7439-89-6	
4500S2D Sulfide Water								
Analytical Method: SM 4500-S2-D								
Sulfide	ND	mg/L	0.10	1		02/11/16 16:12		
2320B Alkalinity								
Analytical Method: SM 2320B								
Carbon Dioxide (SM4500CO2D)	30.6	mg/L	5.0	1		02/12/16 12:56	124-38-9	
Alkalinity, Total as CaCO3	241	mg/L	5.0	1		02/12/16 11:34		
Alkalinity,Bicarbonate (CaCO3)	241	mg/L	5.0	1		02/12/16 11:34		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	5.0	1		02/12/16 11:34		
300.0 IC Anions								
Analytical Method: EPA 300.0								
Sulfate	84.2	mg/L	2.4	2		02/09/16 14:33	14808-79-8	
353.2 Nitrate + Nitrite								
Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	ND	mg/L	0.020	1		02/10/16 08:46		
5220D COD								
Analytical Method: SM 5220D Preparation Method: SM 5220D								
Chemical Oxygen Demand	ND	mg/L	50.0	1	02/09/16 10:28	02/09/16 15:52		
5310C TOC								
Analytical Method: SM 5310C								
Total Organic Carbon	3.3	mg/L	1.0	1		02/10/16 23:01	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP
Pace Project No.: 10337913

QC Batch: AIR/25185 Analysis Method: RSK 175
QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE
Associated Lab Samples: 10337913001, 10337913002

METHOD BLANK: 2188335 Matrix: Water
Associated Lab Samples: 10337913001, 10337913002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	10.0	02/09/16 16:16	
Ethene	ug/L	ND	10.0	02/09/16 16:16	
Methane	ug/L	ND	10.0	02/09/16 16:16	

LABORATORY CONTROL SAMPLE & LCSD: 2188336

Parameter	Units	2188337					% Rec Limits	RPD	Max RPD	Qualifiers
		Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec				
Ethane	ug/L	114	110	108	96	95	85-115	2	20	
Ethene	ug/L	106	102	100	96	94	85-115	2	20	
Methane	ug/L	60.7	57.6	56.4	95	93	85-115	2	20	

SAMPLE DUPLICATE: 2189037

Parameter	Units	92285469001		RPD	Max RPD	Qualifiers
		Result	Dup Result			
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	1.5J	1J		20	

SAMPLE DUPLICATE: 2189038

Parameter	Units	10337913001		RPD	Max RPD	Qualifiers
		Result	Dup Result			
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	37.0	37.1	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP
Pace Project No.: 10337913

QC Batch: MPRP/61396 Analysis Method: EPA 6010C
QC Batch Method: EPA 3010 Analysis Description: 6010C Water
Associated Lab Samples: 10337913001, 10337913002

METHOD BLANK: 2189724 Matrix: Water
Associated Lab Samples: 10337913001, 10337913002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron	ug/L	ND	50.0	02/11/16 15:19	

LABORATORY CONTROL SAMPLE: 2189725

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	10000	9910	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2189726 2189727

Parameter	Units	10337913001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Iron	ug/L	8300	10000	10000	18400	18000	101	97	75-125	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10337913

QC Batch: MPRP/61409

Analysis Method: 6010C Met

QC Batch Method: EPA 3010

Analysis Description: 6010C Water Dissolved

Associated Lab Samples: 10337913001, 10337913002

METHOD BLANK: 2190346

Matrix: Water

Associated Lab Samples: 10337913001, 10337913002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron, Dissolved	ug/L	ND	50.0	02/12/16 15:18	

LABORATORY CONTROL SAMPLE: 2190347

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron, Dissolved	ug/L	10000	9110	91	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2190348 2190349

Parameter	Units	2190348		2190349		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Iron, Dissolved	ug/L	6350	10000	15600	17000	92	94	75-125	1	20	

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10337913

QC Batch: MT/22471

Analysis Method: SM 4500-S2-D

QC Batch Method: SM 4500-S2-D

Analysis Description: 4500S2D Sulfide Water

Associated Lab Samples: 10337913001, 10337913002

METHOD BLANK: 2190215

Matrix: Water

Associated Lab Samples: 10337913001, 10337913002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfide	mg/L	ND	0.10	02/11/16 16:07	

LABORATORY CONTROL SAMPLE: 2190216

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide	mg/L	.92	0.94	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2190218 2190219

Parameter	Units	10337959001 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	Max		Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	
Sulfide	mg/L	ND	.92	.92	0.90	0.91	98	99	80-120	1	20	

SAMPLE DUPLICATE: 2190217

Parameter	Units	10337913001 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide	mg/L	ND	.035J		20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP
Pace Project No.: 10337913

QC Batch: WET/35915 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 10337913001, 10337913002

METHOD BLANK: 1478518 Matrix: Water
Associated Lab Samples: 10337913001, 10337913002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Carbon Dioxide (SM4500CO2D)	mg/L	ND	5.0	02/12/16 12:25	

SAMPLE DUPLICATE: 1478520

Parameter	Units	10337913001 Result	Dup Result	RPD	Max RPD	Qualifiers
Carbon Dioxide (SM4500CO2D)	mg/L	55.8	50.5	10		

SAMPLE DUPLICATE: 1478521

Parameter	Units	35228919001 Result	Dup Result	RPD	Max RPD	Qualifiers
Carbon Dioxide (SM4500CO2D)	mg/L	37.4	34.2	9		

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QUALITY CONTROL DATA

Project: PS Beta-NIROP
Pace Project No.: 10337913

QC Batch: WET/46446 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 10337913001, 10337913002

METHOD BLANK: 2190647 Matrix: Water
Associated Lab Samples: 10337913001, 10337913002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	ND	5.0	02/12/16 10:08	
Alkalinity,Bicarbonate (CaCO ₃)	mg/L	ND	5.0	02/12/16 10:08	
Alkalinity,Carbonate (CaCO ₃)	mg/L	ND	5.0	02/12/16 10:08	

LABORATORY CONTROL SAMPLE & LCSD: 2190648 2190649

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO ₃	mg/L	40	41.2	41.1	103	103	90-110	0	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2190650 2190651

Parameter	Units	10337632004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO ₃	mg/L	313	40	40	357	356	110	108	80-120	0	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2190652 2190653

Parameter	Units	10337666001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO ₃	mg/L	87.8	40	40	128	128	99	101	80-120	1	30	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10337913

QC Batch: WETA/26289

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 10337913001, 10337913002

METHOD BLANK: 2188268

Matrix: Water

Associated Lab Samples: 10337913001, 10337913002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.2	02/09/16 10:02	

LABORATORY CONTROL SAMPLE: 2188269

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	12.5	11.8	94	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2188270 2188271

Parameter	Units	10337497001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result	MSD Conc.						
Sulfate	mg/L	533	250	250	727	727	78	78	90-110	0	20	M6

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2188606 2188607

Parameter	Units	10337980001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result	MSD Conc.						
Sulfate	mg/L	<0.60	12.5	12.5	11.8	11.9	92	93	90-110	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10337913

QC Batch: WETA/26306

Analysis Method: EPA 353.2

QC Batch Method: EPA 353.2

Analysis Description: 353.2 Nitrate + Nitrite, preserved

Associated Lab Samples: 10337913001, 10337913002

METHOD BLANK: 2188954

Matrix: Water

Associated Lab Samples: 10337913001, 10337913002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	ND	0.020	02/10/16 08:30	FS

LABORATORY CONTROL SAMPLE: 2188955

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	1	1.0	100	90-110	FS

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2188956 2188957

Parameter	Units	2188956		2188957		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10338022001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Nitrogen, NO2 plus NO3	mg/L	4.6	20	20	25.8	24.8	106	101	90-110	4	20

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10337913

QC Batch: WETA/26284 Analysis Method: SM 5220D
 QC Batch Method: SM 5220D Analysis Description: 5220D COD
 Associated Lab Samples: 10337913001, 10337913002

METHOD BLANK: 2188238 Matrix: Water

Associated Lab Samples: 10337913001, 10337913002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50.0	02/09/16 15:48	

LABORATORY CONTROL SAMPLE: 2188239

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	300	315	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2188240 2188241

Parameter	Units	2188240		2188241		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10337959001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Chemical Oxygen Demand	mg/L	ND	250	250	299	298	102	102	80-120	0	20

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10337913

QC Batch: WETA/15633 Analysis Method: SM 5310C
QC Batch Method: SM 5310C Analysis Description: 5310C TOC
Associated Lab Samples: 10337913001, 10337913002

METHOD BLANK: 287329 Matrix: Water

Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	02/10/16 17:51	

LABORATORY CONTROL SAMPLE: 287330

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	25	25.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 287331 287332

Parameter	Units	1260589001 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	Max		Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	
Total Organic Carbon	mg/L	1.5	25	25	26.3	26.5	99	100	80-120	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 287333 287334

Parameter	Units	10337913002 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	Max		Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	
Total Organic Carbon	mg/L	3.3	25	25	27.8	27.9	98	98	80-120	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: PS Beta-NIROP

Pace Project No.: 10337913

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

PASI-MT Pace Analytical Services - Montana

PASI-O Pace Analytical Services - Ormond Beach

PASI-V Pace Analytical Services - Virginia

ANALYTE QUALIFIERS

FS The sample was filtered in the laboratory prior to analysis.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PS Beta-NIROP
Pace Project No.: 10337913

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10337913001	PMW-03	RSK 175	AIR/25185		
10337913002	PMW-04	RSK 175	AIR/25185		
10337913001	PMW-03	EPA 3010	MPRP/61396	EPA 6010C	ICP/26780
10337913002	PMW-04	EPA 3010	MPRP/61396	EPA 6010C	ICP/26780
10337913001	PMW-03	EPA 3010	MPRP/61409	6010C Met	ICP/26786
10337913002	PMW-04	EPA 3010	MPRP/61409	6010C Met	ICP/26786
10337913001	PMW-03	SM 4500-S2-D	MT/22471		
10337913002	PMW-04	SM 4500-S2-D	MT/22471		
10337913001	PMW-03	SM 2320B	WET/35915		
10337913001	PMW-03	SM 2320B	WET/46446		
10337913002	PMW-04	SM 2320B	WET/35915		
10337913002	PMW-04	SM 2320B	WET/46446		
10337913001	PMW-03	EPA 300.0	WETA/26289		
10337913002	PMW-04	EPA 300.0	WETA/26289		
10337913001	PMW-03	EPA 353.2	WETA/26306		
10337913002	PMW-04	EPA 353.2	WETA/26306		
10337913001	PMW-03	SM 5220D	WETA/26284	SM 5220D	WETA/26302
10337913002	PMW-04	SM 5220D	WETA/26284	SM 5220D	WETA/26302
10337913001	PMW-03	SM 5310C	WETA/15633		
10337913002	PMW-04	SM 5310C	WETA/15633		

REPORT OF LABORATORY ANALYSIS


This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..

Sample Condition Upon Receipt **Client Name:** Regenesis **Project #:** _____

Courier: Fed Ex UPS USPS Client
 Commercial Pace SpeedDee Other: _____

Tracking Number: _____

WO# : 10337913



10337913

Custody Seal on Cooler/Box Present? Yes No **Seals Intact?** Yes No **Optional:** Proj. Due Date: _____ Proj. Name: _____

Packing Material: Bubble Wrap Bubble Bags None Other: _____ **Temp Blank?** Yes No

Thermometer Used: 151401163 B88A912167504 151401164 B88A0143310098 **Type of Ice:** Wet Blue None Samples on ice, cooling process has begun

Cooler Temp Read (°C): 5.7 **Cooler Temp Corrected (°C):** 5.8 **Biological Tissue Frozen?** Yes No N/A
Temp should be above freezing to 6°C **Correction Factor:** +0.1 **Date and Initials of Person Examining Contents:** AMB 2/8/14

USDA Regulated Soil (N/A, water sample)
Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or WA (check maps)? Yes No Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7. <u>2 days</u> <u>MA 2/8/14</u>
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>water</u>	
All containers needing acid/base preservation have been checked? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13. <input checked="" type="checkbox"/> HNO ₃ <input checked="" type="checkbox"/> H ₂ SO ₄ <input type="checkbox"/> NaOH <input type="checkbox"/> HCl
All containers needing preservation are found to be in compliance with EPA recommendation? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample # <u>4/4</u> <u>010</u> <u>AMB 2/8/14</u>
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH >12 Cyanide) Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____	

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** Yes No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: AM **Date:** 2/8/14

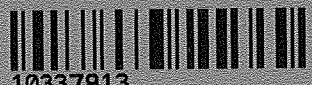
Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Sample Condition Upon Receipt

Client Name: Pace MN

Project #: _____

WO# : 10337913



10337913

Courier: Fed Ex UPS USPS Client
 Commercial Pace Other: _____

Tracking Number: 6484 8295 6531

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No Optional: Proj. Due Date: _____ Proj. Name: _____

Packing Material: Bubble Wrap Bubble Bags None Other: _____ Temp Blank? Yes No

Thermometer Used: 140821733 NA Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temp Read: 1.0

Date and Initials of Person Examining Contents: 2/9/10 CA

Cooler Temp Corrected: 0.8

Biological Tissue Frozen? Yes No

Temp should be above freezing to 6°C

Comments:

Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and Signature on COC?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container.
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>		
All containers needing acid/base preservation have been checked?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13. <input type="checkbox"/> HNO ₃ <input type="checkbox"/> H ₂ SO ₄ ^{3/2} <input checked="" type="checkbox"/> NaOH _{72NA} <input type="checkbox"/> HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>12 Cyanide)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample # <u>001-002</u> <u>pl'd in MN 2/9/10</u>
Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed: <u>MT</u> Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): <u>NA</u>		

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: [Signature]

Date: 2/12/10

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

MO#: 1260762

PM: KQH Due Date: 02/22/16
 CLIENT: PACE MPLS

iceAnalytical®
 www.iceclabs.com

Workorder: 10337913

Workorder Name: PS Beta-NIROP

Owner Received Date: 2/8/2016

Results Requested By: 2/22/2016

Report To: Jennifer Anderson
 Pace Analytical Services, Inc.
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone (612)607-1700
 Fax (612)607-6444

Subcontract To: Pace Analytical Virginia MN
 315 Chestnut Street
 Virginia, MN 55792
 Phone (218)742-1042

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers	Requested Analysis	Comments
1	PMW-03	PS	2/8/2016 10:30	10337913001	Water	1	TOC	
2	PMW-04	PS	2/8/2016 09:00	10337913002	Water	1	X	
3								
4								
5								


Transfers	Released By	Date/Time	Received By	Date/Time	Cooler Temperature on Receipt	Custody Seal	or	Received on Ice	or	Samples Intact	or
1	<i>[Signature]</i>	2/8/16 13:30	<i>[Signature]</i>	2/8/16 17:30	7.7 °C	<input checked="" type="checkbox"/>	N	<input checked="" type="checkbox"/>	N	<input checked="" type="checkbox"/>	N
2	<i>[Signature]</i>	2/8/16 21:00	<i>[Signature]</i>	2/9/16 09:00							
3											

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
 This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Condition Upon Receipt

Client Name: pare - ml

Project #: **WO#: 1260762**



1260762

Courier: Fed Ex UPS USPS Client
 Commercial Pace Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No Optional: Proj. Due Date: _____ Proj. Name: _____

Packing Material: Bubble Wrap Bubble Bags None Other: _____ Temp Blank? Yes No

Thermometer Used: 140792808 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temp Read °C: 0.7 Cooler Temp Corrected °C: 1.0 Biological Tissue Frozen? Yes No N/A
 Temp should be above freezing to 6°C Correction Factor: 0.3 Date and Initials of Person Examining Contents: JPK 2/8/19

Comments: 2-9-16 cf

Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and Signature on COC?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>		
All containers needing acid/base preservation will be checked and documented in the pH logbook.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

CLIENT NOTIFICATION/RESOLUTION Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: KAH Date: 2-9-16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

NO#: 35228774



35228774



Workorder: 10337913 Workorder Name: PS Beta-NIROP Owner Received Date: 2/8/2016 Results Requested By: 2/22/2016

Report To		Subcontract To		Requested Analysis													
Jennifer Anderson Pace Analytical Services, Inc. 1700 Elm Street, Suite 200 Minneapolis, MN 55414 Phone (612)607-1700 Fax (612)607-6444		Pace Analytical Ormond Beach 8 East Tower Circle Ormond Beach, FL 32174 Phone (386)672-5668															
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers		Requested Analysis			LAB USE ONLY						
1	PMW-03	PS	2/8/2016 10:30	10337913001	Water	1	1										
2	PMW-04	PS	2/8/2016 09:00	10337913002	Water	1	1										
3																	
4																	
5																	
Comments																	
Transfers		Released By	Date/Time	Received By	Date/Time												
1		JAC Pace	2/9/16 13:20	ORC	2-9-16 16:23												
2																	
3																	
Cooler Temperature on Receipt 1.4 °C Custody Seal <input checked="" type="checkbox"/> or N Received on Ice <input checked="" type="checkbox"/> or N Samples Intact Y or N																	

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
 This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Condition Upon Receipt Form (SCUR)

Project #
Project Manager:
Client:

WO# : 35228774
 PM: JJV Due Date: 02/15/16
 CLIENT: PACMIN

Date and Initials of person examining contents: 2-9-16 1123 DV
Label: DT
Deliver: DT
pH: _____

Courier: Fed Ex UPS USPS Client Commercial Pace Other
Shipping Method: First Overnight Priority Overnight Standard Overnight Ground
Billing: Recipient Sender Third Party Unkown **Cooler Size if Applicable:** _____
Tracking # 6484 8695 6553

Custody Seal on Cooler/Box Present: yes no **Seals Intact:** yes no
Packing Material: Bubble Wrap Bubble Bags None Other _____ **Biological Tissue is Frozen:** Yes No N/A
Thermometer Used T-129 **Type of Ice:** Wet Blue None Samples on ice, cooling process has begun
Cooler #1 Temperature°C 1.1 (Visual) 10.3 (Correction Factor) 1.4 (Actual)
Cooler #2 Temperature°C _____ (Visual) _____ (Correction Factor) _____ (Actual)
Cooler #3 Temperature°C _____ (Visual) _____ (Correction Factor) _____ (Actual) Temp should be above freezing to 6°C
Cooler #4 Temperature°C _____ (Visual) _____ (Correction Factor) _____ (Actual)
Cooler #5 Temperature°C _____ (Visual) _____ (Correction Factor) _____ (Actual)
Cooler #6 Temperature°C _____ (Visual) _____ (Correction Factor) _____ (Actual)

Comments:

Chain of Custody Present	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody Filled Out	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Relinquished Signature & Sampler Name COC	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples Arrived within Hold Time	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Rush TAT requested on COC	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient Volume	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct Containers Used	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Containers Used	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Sample Labels match COC (sample IDs & date/time of collection)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing acid/base preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	HNO3 pH<2 HCl pH<2
All Containers needing preservation are found to be in compliance with EPA recommendation: Exceptions: VOA, Coliform, TOC, O&G	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	H2SO4 pH<2 NaOH pH>12 NaOH/ZnOAc pH>9
No Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	

Client Notification/ Resolution:
 Person Contacted: _____ Date/Time: _____
 Comments/ Resolution (use back for additional comments): _____

Project Manager Review: _____ **Date:** 2/9



Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

February 22, 2016

Jennifer Anderson
Pace Analytical Services, Inc.
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: **PS BETA-NIROP / 10337913**

Pace Workorder: 18129

Dear Jennifer Anderson:

Enclosed are the analytical results for sample(s) received by the laboratory on Tuesday, February 09, 2016. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

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

Sincerely,

Ruth Welsh 02/22/2016
Ruth.Welsh@pacelabs.com

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email info@microseeps.com.

Total Number of Pages 12

Report ID: 18129 - 766143

Page 1 of 10



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LABORATORY ACCREDITATIONS & CERTIFICATIONS

Accreditor:	Pennsylvania Department of Environmental Protection, Bureau of Laboratories
Accreditation ID:	02-00538
Scope:	NELAP Non-Potable Water and Solid & Hazardous Waste
Accreditor:	South Carolina Department of Health and Environmental Control, Office of Environmental Laboratory Certification
Accreditation ID:	89009003
Scope:	Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: New Jersey, Department of Environmental Protection
Accreditation ID:	PA026
Scope:	Non-Potable Water; Solid and Chemical Materials
Accreditor:	NELAP: New York, Department of Health Wadsworth Center
Accreditation ID:	11815
Scope:	Non-Potable Water; Solid and Hazardous Waste
Accreditor:	State of Connecticut, Department of Public Health, Division of Environmental Health
Accreditation ID:	PH-0263
Scope:	Clean Water Act (CWA) Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: Texas, Commission on Environmental Quality
Accreditation ID:	T104704453-09-TX
Scope:	Non-Potable Water
Accreditor:	State of New Hampshire
Accreditation ID:	299409
Scope:	Non-potable water
Accreditor:	State of Georgia
Accreditation ID:	Chapter 391-3-26
Scope:	As per the Georgia EPD Rules and Regulations for Commercial Laboratories, PAES is accredited by the Pennsylvania Department of Environmental Protection Bureau of Laboratories under the National Environmental Laboratory Approval Program (NELAC).



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SAMPLE SUMMARY

Workorder: 18129 PS BETA-NIROP / 10337913

Lab ID	Sample ID	Matrix	Date Collected	Date Received
181290001	PMW-03	Water	2/8/2016 10:30	2/9/2016 10:45
181290002	PMW-04	Water	2/8/2016 09:00	2/9/2016 10:45



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ANALYTICAL RESULTS

Workorder: 18129 PS BETA-NIROP / 10337913

Lab ID: 181290001 Date Received: 2/9/2016 10:45 Matrix: Water
 Sample ID: PMW-03 Date Collected: 2/8/2016 10:30

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM23G			Analytical Method: AM23G					
Lactic Acid	0.20 U	mg/l	0.20	0.0080	1	2/18/2016 00:19	KB	
Acetic Acid	0.016J	mg/l	0.10	0.012	1	2/18/2016 00:19	KB	B
Propionic Acid	0.10 U	mg/l	0.10	0.0060	1	2/18/2016 00:19	KB	
Formic Acid	0.014J	mg/l	0.10	0.0070	1	2/18/2016 00:19	KB	B
Butyric Acid	0.10 U	mg/l	0.10	0.010	1	2/18/2016 00:19	KB	
Pyruvic Acid	0.10 U	mg/l	0.10	0.015	1	2/18/2016 00:19	KB	
i-Pentanoic Acid	0.10 U	mg/l	0.10	0.0070	1	2/18/2016 00:19	KB	
Pentanoic Acid	0.10 U	mg/l	0.10	0.012	1	2/18/2016 00:19	KB	
i-Hexanoic Acid	0.20 U	mg/l	0.20	0.014	1	2/18/2016 00:19	KB	
Hexanoic Acid	0.20 U	mg/l	0.20	0.0070	1	2/18/2016 00:19	KB	



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ANALYTICAL RESULTS

Workorder: 18129 PS BETA-NIROP / 10337913

Lab ID: 181290002
 Sample ID: PMW-04

Date Received: 2/9/2016 10:45 Matrix: Water
 Date Collected: 2/8/2016 09:00

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM23G			Analytical Method: AM23G					
Lactic Acid	0.20 U	mg/l	0.20	0.0080	1	2/18/2016 01:12	KB	
Acetic Acid	0.036J	mg/l	0.10	0.012	1	2/18/2016 01:12	KB	B
Propionic Acid	0.10 U	mg/l	0.10	0.0060	1	2/18/2016 01:12	KB	
Formic Acid	0.016J	mg/l	0.10	0.0070	1	2/18/2016 01:12	KB	B
Butyric Acid	0.10 U	mg/l	0.10	0.010	1	2/18/2016 01:12	KB	
Pyruvic Acid	0.10 U	mg/l	0.10	0.015	1	2/18/2016 01:12	KB	
i-Pentanoic Acid	0.10 U	mg/l	0.10	0.0070	1	2/18/2016 01:12	KB	
Pentanoic Acid	0.10 U	mg/l	0.10	0.012	1	2/18/2016 01:12	KB	
i-Hexanoic Acid	0.20 U	mg/l	0.20	0.014	1	2/18/2016 01:12	KB	
Hexanoic Acid	0.20 U	mg/l	0.20	0.0070	1	2/18/2016 01:12	KB	



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ANALYTICAL RESULTS QUALIFIERS

Workorder: 18129 PS BETA-NIROP / 10337913

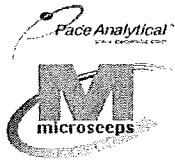
DEFINITIONS/QUALIFIERS

- Disclaimer : The Pennsylvania Department of Environmental Protection (PADEP) has decided to no longer recognize analyses that do not produce data for primary compliance, for NELAP accreditation. The methods affected by this decision are AM20Gax, AM21G, SW846 7199 and AM4.02. The laboratory shall continue to administer the NELAP/TNI standard requirements in the performance of these methods.
- MDL Method Detection Limit. Can be used synonymously with LOD; Limit Of Detection.
- PQL Practical Quantitation Limit. Can be used synonymously with LOQ; Limit Of Quantitation.
- ND Not detected at or above reporting limit.
- DF Dilution Factor.
- S Surrogate.
- RPD Relative Percent Difference.
- % Rec Percent Recovery.
- U Indicates the compound was analyzed for, but not detected at or above the noted concentration.
- J Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).
- B The analyte was detected in the associated blank.



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QUALITY CONTROL DATA

Workorder: 18129 PS BETA-NIROP / 10337913

QC Batch: EDON/2802 Analysis Method: AM23G
 QC Batch Method: AM23G
 Associated Lab Samples: 181290001, 181290002

METHOD BLANK: 40319

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
EDonors				
Lactic Acid	mg/l	0.20 U	0.20	
Acetic Acid	mg/l	0.022J	0.10	B
Propionic Acid	mg/l	0.10 U	0.10	
Formic Acid	mg/l	0.012J	0.10	B
Butyric Acid	mg/l	0.10 U	0.10	
Pyruvic Acid	mg/l	0.10 U	0.10	
i-Pentanoic Acid	mg/l	0.10 U	0.10	
Pentanoic Acid	mg/l	0.10 U	0.10	
i-Hexanoic Acid	mg/l	0.20 U	0.20	
Hexanoic Acid	mg/l	0.20 U	0.20	

LABORATORY CONTROL SAMPLE: 40320

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
EDonors						
Lactic Acid	mg/l	2	1.9	96	70-130	
Acetic Acid	mg/l	2	2.0	103	70-130	B
Propionic Acid	mg/l	2	2.0	100	70-130	
Formic Acid	mg/l	2	1.8	88	70-130	B
Butyric Acid	mg/l	2	2.0	98	70-130	
Pyruvic Acid	mg/l	2	2.0	98	70-130	
i-Pentanoic Acid	mg/l	2	2.0	98	70-130	
Pentanoic Acid	mg/l	2	2.0	100	70-130	
i-Hexanoic Acid	mg/l	2	2.0	101	70-130	
Hexanoic Acid	mg/l	2	2.0	98	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 40321 40322 Original: 182150001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	Max RPD	RPD	Qualifiers
EDonors											
Lactic Acid	mg/l	0	20	19	19	96	97	70-130	1	30	d

Report ID: 18129 - 766143

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QUALITY CONTROL DATA

Workorder: 18129 PS BETA-NIROP / 10337913

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 40321 40322 Original: 182150001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Acetic Acid	mg/l	0.23	20	22	21	106	104	70-130	1.9	30	d,B
Propionic Acid	mg/l	0	20	21	21	106	103	70-130	2.9	30	d
Formic Acid	mg/l	1	20	18	18	86	85	70-130	1.2	30	d,B
Butyric Acid	mg/l	0	20	22	21	108	103	70-130	4.7	30	d
Pyruvic Acid	mg/l	0	20	20	20	100	100	70-130	0	30	d
i-Pentanoic Acid	mg/l	0	20	22	21	110	104	70-130	5.6	30	d
Pentanoic Acid	mg/l	0	20	23	21	114	107	70-130	6.3	30	d
i-Hexanoic Acid	mg/l	0	20	24	22	118	109	70-130	7.9	30	d
Hexanoic Acid	mg/l	0.11	20	24	22	117	110	70-130	6.2	30	d



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QUALITY CONTROL DATA QUALIFIERS

Workorder: 18129 PS BETA-NIROP / 10337913

QUALITY CONTROL PARAMETER QUALIFIERS

- B The analyte was detected in the associated blank.
- d The analyte concentration was determined from a dilution.



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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 18129 PS BETA-NIROP / 10337913

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
181290001	PMW-03			AM23G	EDON/2802
181290002	PMW-04			AM23G	EDON/2802



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Chain of Custody

18129



Workerder: 10337913 Workerder Name: PS Beta-NIROP Results Requested 2/22/2016

Report / Invoice To: Jennifer Anderson
 Pace Analytical Minnesota
 1700 Elm Street
 Suite 200
 Minneapolis, MN 55414
 Phone (612)607-1700
 Email: jennifer.anderson@pacelabs.com

Subcontract To: MicroSeepsPac Energy P.O. 10337913

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers		Requested Analysis	Comments
					Unpreserved	Preserved		
1	PMW-03	2/8/2016 10:30	10337913001	Water	21	1	Volatile Fatty Acids	LAB USE ONLY
2	PMW-04	2/8/2016 09:00	10337913002	Water	42	1		
3								
4								
5								

Transfers		Date/Time	Received By	Date/Time	Received on Ice	Samples Intact
1	Released By: <i>[Signature]</i>	2/16/16	<i>[Signature]</i>	2.9.16	Y	Y
2						
3						

Cooler Temperature on Receipt 4.8 °C Custody Seal Y or N Received on Ice Y or N Samples Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
 This chain of custody is considered complete as is since this information is available in the owner laboratory.

Cooler Receipt Form

Client Name: Pace - MN Project: PS Beta - NIROP Lab Work Order: 18129

A. Shipping/Container Information (circle appropriate response)

Courier: FedEx UPS USPS Client Other: _____ Air bill Present: Yes No

Tracking Number: 648486956542

Custody Seal on Cooler/Box Present: Yes No Seals Intact: Yes No

Cooler/Box Packing Material: Bubble Wrap Absorbent Foam Other: _____

Type of Ice: Ice Blue None Ice Intact: Yes Melted

Cooler Temperature: 4.8°C Radiation Screened: Yes No Chain of Custody Present: Yes No

Comments: _____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non-conformance
Chain of Custody properly filled out	<input checked="" type="checkbox"/>			
Chain of Custody relinquished	<input checked="" type="checkbox"/>			
Sampler Name & Signature on CDC		<input checked="" type="checkbox"/>		
Containers intact	<input checked="" type="checkbox"/>			
Were samples in separate bags	<input checked="" type="checkbox"/>			
Sample container labels match CDC	<input checked="" type="checkbox"/>			
Sample name/date and time collected	<input checked="" type="checkbox"/>			
Sufficient volume provided	<input checked="" type="checkbox"/>			
PAES containers used	<input checked="" type="checkbox"/>			
Are containers properly preserved for the requested testing? (as labeled)				
If an unknown preservation state, were containers checked? Exception: VOA's coliform			<input checked="" type="checkbox"/>	If yes, see pH form.
Was volume for dissolved testing field filtered, as noted on the CDC? Was volume received in a preserved container?			<input checked="" type="checkbox"/>	

Comments: _____

Cooler contents examined/received by: CS Date: 2.9.16

Project Manager Review: RO Date: 2-10-16

April 21, 2016

Melinda Pham
Regenesis
1011 Calle Sombra
San Clemente, CA 92673

RE: Project: PS Beta-NIROP
Pace Project No.: 10343283

Dear Melinda Pham:

Enclosed are the analytical results for sample(s) received by the laboratory on March 31, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,



Jennifer Anderson
jennifer.anderson@pacelabs.com
Project Manager

Enclosures

cc: Ryan Moore, Regenesis



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PS Beta-NIROP

Pace Project No.: 10343283

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414

525 N 8th Street, Salina, KS 67401

A2LA Certification #: 2926.01

Alaska Certification #: UST-078

Alaska Certification #MN00064

Alabama Certification #40770

Arizona Certification #: AZ-0014

Arkansas Certification #: 88-0680

California Certification #: 01155CA

Colorado Certification #Pace

Connecticut Certification #: PH-0256

EPA Region 8 Certification #: 8TMS-L

Florida/NELAP Certification #: E87605

Guam Certification #: 14-008r

Georgia Certification #: 959

Georgia EPD #: Pace

Idaho Certification #: MN00064

Hawaii Certification #MN00064

Illinois Certification #: 200011

Indiana Certification#C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky Dept of Envi. Protection - DW #90062

Kentucky Dept of Envi. Protection - WW #:90062

Louisiana DEQ Certification #: 3086

Louisiana DHH #: LA140001

Maine Certification #: 2013011

Maryland Certification #: 322

Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: Pace

Montana Certification #: MT0092

Nevada Certification #: MN_00064

Nebraska Certification #: Pace

New Jersey Certification #: MN-002

New York Certification #: 11647

North Carolina Certification #: 530

North Carolina State Public Health #: 27700

North Dakota Certification #: R-036

Ohio EPA #: 4150

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Certification #: MN200001

Oregon Certification #: MN300001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification

Saipan (CNMI) #:MP0003

South Carolina #:74003001

Texas Certification #: T104704192

Tennessee Certification #: 02818

Utah Certification #: MN000642013-4

Virginia DGS Certification #: 251

Virginia/VELAP Certification #: Pace

Washington Certification #: C486

West Virginia Certification #: 382

West Virginia DHHR #:9952C

Wisconsin Certification #: 999407970

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: PS Beta-NIROP

Pace Project No.: 10343283

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10343283001	PMW-01	Water	03/31/16 09:42	03/31/16 15:38
10343283002	PMW-02	Water	03/31/16 11:00	03/31/16 15:38
10343283003	PMW-03	Water	03/31/16 12:30	03/31/16 15:38
10343283004	PMW-04	Water	03/31/16 13:50	03/31/16 15:38
10343283005	Trip Blank 1	Water	03/31/16 07:00	03/31/16 15:38
10343283006	Trip Blank 2	Water	03/31/16 07:05	03/31/16 15:38

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: PS Beta-NIROP

Pace Project No.: 10343283

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10343283001	PMW-01	EPA 8260B	PRD	70
10343283002	PMW-02	EPA 8260B	PRD	70
10343283003	PMW-03	EPA 8260B	PRD	70
10343283004	PMW-04	EPA 8260B	PRD	70
10343283005	Trip Blank 1	EPA 8260B	PRD	70
10343283006	Trip Blank 2	EPA 8260B	PRD	70

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10343283

Sample: PMW-01	Lab ID: 10343283001	Collected: 03/31/16 09:42	Received: 03/31/16 15:38	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		04/01/16 17:30	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		04/01/16 17:30	107-05-1	
Benzene	ND	ug/L	1.0	1		04/01/16 17:30	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		04/01/16 17:30	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		04/01/16 17:30	74-97-5	M1
Bromodichloromethane	ND	ug/L	1.0	1		04/01/16 17:30	75-27-4	
Bromoform	ND	ug/L	4.0	1		04/01/16 17:30	75-25-2	
Bromomethane	ND	ug/L	4.0	1		04/01/16 17:30	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		04/01/16 17:30	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		04/01/16 17:30	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		04/01/16 17:30	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		04/01/16 17:30	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		04/01/16 17:30	56-23-5	M1
Chlorobenzene	ND	ug/L	1.0	1		04/01/16 17:30	108-90-7	M1
Chloroethane	ND	ug/L	1.0	1		04/01/16 17:30	75-00-3	
Chloroform	ND	ug/L	1.0	1		04/01/16 17:30	67-66-3	
Chloromethane	ND	ug/L	4.0	1		04/01/16 17:30	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		04/01/16 17:30	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		04/01/16 17:30	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		04/01/16 17:30	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		04/01/16 17:30	124-48-1	M1
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		04/01/16 17:30	106-93-4	M1
Dibromomethane	ND	ug/L	4.0	1		04/01/16 17:30	74-95-3	M1
1,2-Dichlorobenzene	ND	ug/L	1.0	1		04/01/16 17:30	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		04/01/16 17:30	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		04/01/16 17:30	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		04/01/16 17:30	75-71-8	M1
1,1-Dichloroethane	ND	ug/L	1.0	1		04/01/16 17:30	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		04/01/16 17:30	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		04/01/16 17:30	75-35-4	M1
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		04/01/16 17:30	156-59-2	M1
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		04/01/16 17:30	156-60-5	M1
Dichlorofluoromethane	ND	ug/L	1.0	1		04/01/16 17:30	75-43-4	M1
1,2-Dichloropropane	ND	ug/L	4.0	1		04/01/16 17:30	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		04/01/16 17:30	142-28-9	M1
2,2-Dichloropropane	ND	ug/L	4.0	1		04/01/16 17:30	594-20-7	M1
1,1-Dichloropropene	ND	ug/L	1.0	1		04/01/16 17:30	563-58-6	M1
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		04/01/16 17:30	10061-01-5	M1
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		04/01/16 17:30	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		04/01/16 17:30	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		04/01/16 17:30	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		04/01/16 17:30	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		04/01/16 17:30	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		04/01/16 17:30	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		04/01/16 17:30	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		04/01/16 17:30	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		04/01/16 17:30	1634-04-4	M1

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10343283

Sample: PMW-01	Lab ID: 10343283001	Collected: 03/31/16 09:42	Received: 03/31/16 15:38	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		04/01/16 17:30	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		04/01/16 17:30	103-65-1	
Styrene	ND	ug/L	1.0	1		04/01/16 17:30	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		04/01/16 17:30	630-20-6	M1
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		04/01/16 17:30	79-34-5	M1
Tetrachloroethene	ND	ug/L	1.0	1		04/01/16 17:30	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		04/01/16 17:30	109-99-9	M1
Toluene	ND	ug/L	1.0	1		04/01/16 17:30	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		04/01/16 17:30	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		04/01/16 17:30	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		04/01/16 17:30	71-55-6	M1
1,1,2-Trichloroethane	ND	ug/L	1.0	1		04/01/16 17:30	79-00-5	M1
Trichloroethene	ND	ug/L	0.40	1		04/01/16 17:30	79-01-6	M1
Trichlorofluoromethane	ND	ug/L	1.0	1		04/01/16 17:30	75-69-4	M1
1,2,3-Trichloropropane	ND	ug/L	4.0	1		04/01/16 17:30	96-18-4	M1
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		04/01/16 17:30	76-13-1	M1
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		04/01/16 17:30	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		04/01/16 17:30	108-67-8	
Vinyl chloride	ND	ug/L	1.0	1		04/01/16 17:30	75-01-4	M1
Xylene (Total)	ND	ug/L	3.0	1		04/01/16 17:30	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	103	%.	75-125	1		04/01/16 17:30	17060-07-0	
Toluene-d8 (S)	100	%.	75-125	1		04/01/16 17:30	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125	1		04/01/16 17:30	460-00-4	

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10343283

Sample: PMW-02		Lab ID: 10343283002	Collected: 03/31/16 11:00	Received: 03/31/16 15:38	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	40.0	2		04/04/16 18:19	67-64-1	
Allyl chloride	ND	ug/L	8.0	2		04/04/16 18:19	107-05-1	
Benzene	ND	ug/L	2.0	2		04/04/16 18:19	71-43-2	
Bromobenzene	ND	ug/L	2.0	2		04/04/16 18:19	108-86-1	
Bromochloromethane	ND	ug/L	2.0	2		04/04/16 18:19	74-97-5	
Bromodichloromethane	ND	ug/L	2.0	2		04/04/16 18:19	75-27-4	
Bromoform	ND	ug/L	8.0	2		04/04/16 18:19	75-25-2	
Bromomethane	ND	ug/L	8.0	2		04/04/16 18:19	74-83-9	
2-Butanone (MEK)	ND	ug/L	10.0	2		04/04/16 18:19	78-93-3	
n-Butylbenzene	ND	ug/L	2.0	2		04/04/16 18:19	104-51-8	
sec-Butylbenzene	ND	ug/L	2.0	2		04/04/16 18:19	135-98-8	
tert-Butylbenzene	ND	ug/L	2.0	2		04/04/16 18:19	98-06-6	
Carbon tetrachloride	ND	ug/L	2.0	2		04/04/16 18:19	56-23-5	
Chlorobenzene	ND	ug/L	2.0	2		04/04/16 18:19	108-90-7	
Chloroethane	ND	ug/L	2.0	2		04/04/16 18:19	75-00-3	
Chloroform	ND	ug/L	2.0	2		04/04/16 18:19	67-66-3	
Chloromethane	ND	ug/L	8.0	2		04/04/16 18:19	74-87-3	
2-Chlorotoluene	ND	ug/L	2.0	2		04/04/16 18:19	95-49-8	
4-Chlorotoluene	ND	ug/L	2.0	2		04/04/16 18:19	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	8.0	2		04/04/16 18:19	96-12-8	
Dibromochloromethane	ND	ug/L	2.0	2		04/04/16 18:19	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	2.0	2		04/04/16 18:19	106-93-4	
Dibromomethane	ND	ug/L	8.0	2		04/04/16 18:19	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	2.0	2		04/04/16 18:19	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	2.0	2		04/04/16 18:19	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	2.0	2		04/04/16 18:19	106-46-7	
Dichlorodifluoromethane	ND	ug/L	2.0	2		04/04/16 18:19	75-71-8	
1,1-Dichloroethane	35.2	ug/L	2.0	2		04/04/16 18:19	75-34-3	
1,2-Dichloroethane	ND	ug/L	2.0	2		04/04/16 18:19	107-06-2	
1,1-Dichloroethene	23.6	ug/L	2.0	2		04/04/16 18:19	75-35-4	
cis-1,2-Dichloroethene	361	ug/L	2.0	2		04/04/16 18:19	156-59-2	
trans-1,2-Dichloroethene	309	ug/L	2.0	2		04/04/16 18:19	156-60-5	
Dichlorofluoromethane	ND	ug/L	2.0	2		04/04/16 18:19	75-43-4	
1,2-Dichloropropane	ND	ug/L	8.0	2		04/04/16 18:19	78-87-5	
1,3-Dichloropropane	ND	ug/L	2.0	2		04/04/16 18:19	142-28-9	
2,2-Dichloropropane	ND	ug/L	8.0	2		04/04/16 18:19	594-20-7	
1,1-Dichloropropene	ND	ug/L	2.0	2		04/04/16 18:19	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	8.0	2		04/04/16 18:19	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	8.0	2		04/04/16 18:19	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	8.0	2		04/04/16 18:19	60-29-7	
Ethylbenzene	ND	ug/L	2.0	2		04/04/16 18:19	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	2.0	2		04/04/16 18:19	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	2.0	2		04/04/16 18:19	98-82-8	
p-Isopropyltoluene	ND	ug/L	2.0	2		04/04/16 18:19	99-87-6	
Methylene Chloride	ND	ug/L	8.0	2		04/04/16 18:19	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10.0	2		04/04/16 18:19	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	2.0	2		04/04/16 18:19	1634-04-4	

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10343283

Sample: PMW-02		Lab ID: 10343283002	Collected: 03/31/16 11:00	Received: 03/31/16 15:38	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	8.0	2		04/04/16 18:19	91-20-3	
n-Propylbenzene	ND	ug/L	2.0	2		04/04/16 18:19	103-65-1	
Styrene	ND	ug/L	2.0	2		04/04/16 18:19	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	2.0	2		04/04/16 18:19	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	2.0	2		04/04/16 18:19	79-34-5	
Tetrachloroethene	ND	ug/L	2.0	2		04/04/16 18:19	127-18-4	
Tetrahydrofuran	ND	ug/L	20.0	2		04/04/16 18:19	109-99-9	
Toluene	ND	ug/L	2.0	2		04/04/16 18:19	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	2.0	2		04/04/16 18:19	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	2.0	2		04/04/16 18:19	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	2.0	2		04/04/16 18:19	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	2.0	2		04/04/16 18:19	79-00-5	
Trichloroethene	93.8	ug/L	0.80	2		04/04/16 18:19	79-01-6	
Trichlorofluoromethane	ND	ug/L	2.0	2		04/04/16 18:19	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	8.0	2		04/04/16 18:19	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	2.0	2		04/04/16 18:19	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	2.0	2		04/04/16 18:19	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	2.0	2		04/04/16 18:19	108-67-8	
Vinyl chloride	3.7	ug/L	2.0	2		04/04/16 18:19	75-01-4	
Xylene (Total)	ND	ug/L	6.0	2		04/04/16 18:19	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	105	%.	75-125	2		04/04/16 18:19	17060-07-0	
Toluene-d8 (S)	98	%.	75-125	2		04/04/16 18:19	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	2		04/04/16 18:19	460-00-4	

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10343283

Sample: PMW-03	Lab ID: 10343283003	Collected: 03/31/16 12:30	Received: 03/31/16 15:38	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		04/01/16 15:26	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		04/01/16 15:26	107-05-1	
Benzene	ND	ug/L	1.0	1		04/01/16 15:26	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		04/01/16 15:26	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		04/01/16 15:26	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		04/01/16 15:26	75-27-4	
Bromoform	ND	ug/L	4.0	1		04/01/16 15:26	75-25-2	
Bromomethane	ND	ug/L	4.0	1		04/01/16 15:26	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		04/01/16 15:26	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		04/01/16 15:26	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		04/01/16 15:26	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		04/01/16 15:26	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		04/01/16 15:26	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		04/01/16 15:26	108-90-7	
Chloroethane	ND	ug/L	1.0	1		04/01/16 15:26	75-00-3	
Chloroform	ND	ug/L	1.0	1		04/01/16 15:26	67-66-3	
Chloromethane	ND	ug/L	4.0	1		04/01/16 15:26	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		04/01/16 15:26	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		04/01/16 15:26	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		04/01/16 15:26	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		04/01/16 15:26	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		04/01/16 15:26	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		04/01/16 15:26	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		04/01/16 15:26	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		04/01/16 15:26	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		04/01/16 15:26	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		04/01/16 15:26	75-71-8	
1,1-Dichloroethane	2.7	ug/L	1.0	1		04/01/16 15:26	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		04/01/16 15:26	107-06-2	
1,1-Dichloroethene	1.6	ug/L	1.0	1		04/01/16 15:26	75-35-4	
cis-1,2-Dichloroethene	53.6	ug/L	1.0	1		04/01/16 15:26	156-59-2	
trans-1,2-Dichloroethene	91.0	ug/L	1.0	1		04/01/16 15:26	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		04/01/16 15:26	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		04/01/16 15:26	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		04/01/16 15:26	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		04/01/16 15:26	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		04/01/16 15:26	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		04/01/16 15:26	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		04/01/16 15:26	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		04/01/16 15:26	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		04/01/16 15:26	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		04/01/16 15:26	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		04/01/16 15:26	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		04/01/16 15:26	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		04/01/16 15:26	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		04/01/16 15:26	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		04/01/16 15:26	1634-04-4	

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10343283

Sample: PMW-03	Lab ID: 10343283003	Collected: 03/31/16 12:30	Received: 03/31/16 15:38	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		04/01/16 15:26	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		04/01/16 15:26	103-65-1	
Styrene	ND	ug/L	1.0	1		04/01/16 15:26	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		04/01/16 15:26	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		04/01/16 15:26	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		04/01/16 15:26	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		04/01/16 15:26	109-99-9	
Toluene	ND	ug/L	1.0	1		04/01/16 15:26	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		04/01/16 15:26	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		04/01/16 15:26	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		04/01/16 15:26	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		04/01/16 15:26	79-00-5	
Trichloroethene	13.9	ug/L	0.40	1		04/01/16 15:26	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		04/01/16 15:26	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		04/01/16 15:26	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		04/01/16 15:26	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		04/01/16 15:26	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		04/01/16 15:26	108-67-8	
Vinyl chloride	ND	ug/L	1.0	1		04/01/16 15:26	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		04/01/16 15:26	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%.	75-125	1		04/01/16 15:26	17060-07-0	
Toluene-d8 (S)	99	%.	75-125	1		04/01/16 15:26	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125	1		04/01/16 15:26	460-00-4	

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10343283

Sample: PMW-04		Lab ID: 10343283004	Collected: 03/31/16 13:50	Received: 03/31/16 15:38	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		04/01/16 15:56	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		04/01/16 15:56	107-05-1	
Benzene	ND	ug/L	1.0	1		04/01/16 15:56	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		04/01/16 15:56	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		04/01/16 15:56	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		04/01/16 15:56	75-27-4	
Bromoform	ND	ug/L	4.0	1		04/01/16 15:56	75-25-2	
Bromomethane	ND	ug/L	4.0	1		04/01/16 15:56	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		04/01/16 15:56	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		04/01/16 15:56	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		04/01/16 15:56	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		04/01/16 15:56	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		04/01/16 15:56	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		04/01/16 15:56	108-90-7	
Chloroethane	ND	ug/L	1.0	1		04/01/16 15:56	75-00-3	
Chloroform	ND	ug/L	1.0	1		04/01/16 15:56	67-66-3	
Chloromethane	ND	ug/L	4.0	1		04/01/16 15:56	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		04/01/16 15:56	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		04/01/16 15:56	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		04/01/16 15:56	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		04/01/16 15:56	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		04/01/16 15:56	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		04/01/16 15:56	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		04/01/16 15:56	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		04/01/16 15:56	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		04/01/16 15:56	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		04/01/16 15:56	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		04/01/16 15:56	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		04/01/16 15:56	107-06-2	
1,1-Dichloroethene	1.2	ug/L	1.0	1		04/01/16 15:56	75-35-4	
cis-1,2-Dichloroethene	23.8	ug/L	1.0	1		04/01/16 15:56	156-59-2	
trans-1,2-Dichloroethene	57.5	ug/L	1.0	1		04/01/16 15:56	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		04/01/16 15:56	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		04/01/16 15:56	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		04/01/16 15:56	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		04/01/16 15:56	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		04/01/16 15:56	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		04/01/16 15:56	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		04/01/16 15:56	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		04/01/16 15:56	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		04/01/16 15:56	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		04/01/16 15:56	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		04/01/16 15:56	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		04/01/16 15:56	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		04/01/16 15:56	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		04/01/16 15:56	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		04/01/16 15:56	1634-04-4	

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10343283

Sample: PMW-04	Lab ID: 10343283004	Collected: 03/31/16 13:50	Received: 03/31/16 15:38	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		04/01/16 15:56	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		04/01/16 15:56	103-65-1	
Styrene	ND	ug/L	1.0	1		04/01/16 15:56	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		04/01/16 15:56	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		04/01/16 15:56	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		04/01/16 15:56	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		04/01/16 15:56	109-99-9	
Toluene	ND	ug/L	1.0	1		04/01/16 15:56	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		04/01/16 15:56	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		04/01/16 15:56	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		04/01/16 15:56	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		04/01/16 15:56	79-00-5	
Trichloroethene	28.4	ug/L	0.40	1		04/01/16 15:56	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		04/01/16 15:56	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		04/01/16 15:56	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		04/01/16 15:56	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		04/01/16 15:56	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		04/01/16 15:56	108-67-8	
Vinyl chloride	ND	ug/L	1.0	1		04/01/16 15:56	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		04/01/16 15:56	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%.	75-125	1		04/01/16 15:56	17060-07-0	
Toluene-d8 (S)	99	%.	75-125	1		04/01/16 15:56	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125	1		04/01/16 15:56	460-00-4	

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10343283

Sample: Trip Blank 1	Lab ID: 10343283005	Collected: 03/31/16 07:00	Received: 03/31/16 15:38	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		04/01/16 12:57	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		04/01/16 12:57	107-05-1	
Benzene	ND	ug/L	1.0	1		04/01/16 12:57	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		04/01/16 12:57	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		04/01/16 12:57	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		04/01/16 12:57	75-27-4	
Bromoform	ND	ug/L	4.0	1		04/01/16 12:57	75-25-2	
Bromomethane	ND	ug/L	4.0	1		04/01/16 12:57	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		04/01/16 12:57	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		04/01/16 12:57	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		04/01/16 12:57	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		04/01/16 12:57	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		04/01/16 12:57	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		04/01/16 12:57	108-90-7	
Chloroethane	ND	ug/L	1.0	1		04/01/16 12:57	75-00-3	
Chloroform	ND	ug/L	1.0	1		04/01/16 12:57	67-66-3	
Chloromethane	ND	ug/L	4.0	1		04/01/16 12:57	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		04/01/16 12:57	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		04/01/16 12:57	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		04/01/16 12:57	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		04/01/16 12:57	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		04/01/16 12:57	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		04/01/16 12:57	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		04/01/16 12:57	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		04/01/16 12:57	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		04/01/16 12:57	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		04/01/16 12:57	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		04/01/16 12:57	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		04/01/16 12:57	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		04/01/16 12:57	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		04/01/16 12:57	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		04/01/16 12:57	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		04/01/16 12:57	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		04/01/16 12:57	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		04/01/16 12:57	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		04/01/16 12:57	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		04/01/16 12:57	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		04/01/16 12:57	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		04/01/16 12:57	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		04/01/16 12:57	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		04/01/16 12:57	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		04/01/16 12:57	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		04/01/16 12:57	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		04/01/16 12:57	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		04/01/16 12:57	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		04/01/16 12:57	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		04/01/16 12:57	1634-04-4	

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10343283

Sample: Trip Blank 1	Lab ID: 10343283005	Collected: 03/31/16 07:00	Received: 03/31/16 15:38	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC								
Analytical Method: EPA 8260B								
Naphthalene	ND	ug/L	4.0	1		04/01/16 12:57	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		04/01/16 12:57	103-65-1	
Styrene	ND	ug/L	1.0	1		04/01/16 12:57	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		04/01/16 12:57	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		04/01/16 12:57	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		04/01/16 12:57	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		04/01/16 12:57	109-99-9	
Toluene	ND	ug/L	1.0	1		04/01/16 12:57	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		04/01/16 12:57	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		04/01/16 12:57	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		04/01/16 12:57	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		04/01/16 12:57	79-00-5	
Trichloroethene	ND	ug/L	0.40	1		04/01/16 12:57	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		04/01/16 12:57	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		04/01/16 12:57	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		04/01/16 12:57	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		04/01/16 12:57	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		04/01/16 12:57	108-67-8	
Vinyl chloride	ND	ug/L	1.0	1		04/01/16 12:57	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		04/01/16 12:57	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	103	%.	75-125	1		04/01/16 12:57	17060-07-0	
Toluene-d8 (S)	100	%.	75-125	1		04/01/16 12:57	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125	1		04/01/16 12:57	460-00-4	

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10343283

Sample: Trip Blank 2	Lab ID: 10343283006	Collected: 03/31/16 07:05	Received: 03/31/16 15:38	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Acetone	ND	ug/L	20.0	1		04/01/16 13:12	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		04/01/16 13:12	107-05-1	
Benzene	ND	ug/L	1.0	1		04/01/16 13:12	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		04/01/16 13:12	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		04/01/16 13:12	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		04/01/16 13:12	75-27-4	
Bromoform	ND	ug/L	4.0	1		04/01/16 13:12	75-25-2	
Bromomethane	ND	ug/L	4.0	1		04/01/16 13:12	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		04/01/16 13:12	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		04/01/16 13:12	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	1		04/01/16 13:12	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	1		04/01/16 13:12	98-06-6	
Carbon tetrachloride	ND	ug/L	1.0	1		04/01/16 13:12	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		04/01/16 13:12	108-90-7	
Chloroethane	ND	ug/L	1.0	1		04/01/16 13:12	75-00-3	
Chloroform	ND	ug/L	1.0	1		04/01/16 13:12	67-66-3	
Chloromethane	ND	ug/L	4.0	1		04/01/16 13:12	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		04/01/16 13:12	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		04/01/16 13:12	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		04/01/16 13:12	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		04/01/16 13:12	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		04/01/16 13:12	106-93-4	
Dibromomethane	ND	ug/L	4.0	1		04/01/16 13:12	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		04/01/16 13:12	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		04/01/16 13:12	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		04/01/16 13:12	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		04/01/16 13:12	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		04/01/16 13:12	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		04/01/16 13:12	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		04/01/16 13:12	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		04/01/16 13:12	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		04/01/16 13:12	156-60-5	
Dichlorofluoromethane	ND	ug/L	1.0	1		04/01/16 13:12	75-43-4	
1,2-Dichloropropane	ND	ug/L	4.0	1		04/01/16 13:12	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		04/01/16 13:12	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	1		04/01/16 13:12	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		04/01/16 13:12	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		04/01/16 13:12	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		04/01/16 13:12	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		04/01/16 13:12	60-29-7	
Ethylbenzene	ND	ug/L	1.0	1		04/01/16 13:12	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		04/01/16 13:12	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		04/01/16 13:12	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		04/01/16 13:12	99-87-6	
Methylene Chloride	ND	ug/L	4.0	1		04/01/16 13:12	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		04/01/16 13:12	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		04/01/16 13:12	1634-04-4	

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ANALYTICAL RESULTS

Project: PS Beta-NIROP

Pace Project No.: 10343283

Sample: Trip Blank 2		Lab ID: 10343283006	Collected: 03/31/16 07:05	Received: 03/31/16 15:38	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260B VOC		Analytical Method: EPA 8260B						
Naphthalene	ND	ug/L	4.0	1		04/01/16 13:12	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	1		04/01/16 13:12	103-65-1	
Styrene	ND	ug/L	1.0	1		04/01/16 13:12	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		04/01/16 13:12	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		04/01/16 13:12	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		04/01/16 13:12	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		04/01/16 13:12	109-99-9	
Toluene	ND	ug/L	1.0	1		04/01/16 13:12	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		04/01/16 13:12	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		04/01/16 13:12	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		04/01/16 13:12	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		04/01/16 13:12	79-00-5	
Trichloroethene	ND	ug/L	0.40	1		04/01/16 13:12	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		04/01/16 13:12	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		04/01/16 13:12	96-18-4	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		04/01/16 13:12	76-13-1	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		04/01/16 13:12	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		04/01/16 13:12	108-67-8	
Vinyl chloride	ND	ug/L	1.0	1		04/01/16 13:12	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		04/01/16 13:12	1330-20-7	
Surrogates								
1,2-Dichloroethane-d4 (S)	103	%.	75-125	1		04/01/16 13:12	17060-07-0	
Toluene-d8 (S)	100	%.	75-125	1		04/01/16 13:12	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125	1		04/01/16 13:12	460-00-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10343283

QC Batch: MSV/35072 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV 465 W
Associated Lab Samples: 10343283001, 10343283003, 10343283004, 10343283005, 10343283006

METHOD BLANK: 2221638 Matrix: Water
Associated Lab Samples: 10343283001, 10343283003, 10343283004, 10343283005, 10343283006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	04/01/16 12:28	
1,1,1-Trichloroethane	ug/L	ND	1.0	04/01/16 12:28	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	04/01/16 12:28	
1,1,2-Trichloroethane	ug/L	ND	1.0	04/01/16 12:28	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	1.0	04/01/16 12:28	
1,1-Dichloroethane	ug/L	ND	1.0	04/01/16 12:28	
1,1-Dichloroethene	ug/L	ND	1.0	04/01/16 12:28	
1,1-Dichloropropene	ug/L	ND	1.0	04/01/16 12:28	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	04/01/16 12:28	
1,2,3-Trichloropropane	ug/L	ND	4.0	04/01/16 12:28	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	04/01/16 12:28	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	04/01/16 12:28	
1,2-Dibromo-3-chloropropane	ug/L	ND	4.0	04/01/16 12:28	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	04/01/16 12:28	
1,2-Dichlorobenzene	ug/L	ND	1.0	04/01/16 12:28	
1,2-Dichloroethane	ug/L	ND	1.0	04/01/16 12:28	
1,2-Dichloropropane	ug/L	ND	4.0	04/01/16 12:28	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	04/01/16 12:28	
1,3-Dichlorobenzene	ug/L	ND	1.0	04/01/16 12:28	
1,3-Dichloropropane	ug/L	ND	1.0	04/01/16 12:28	
1,4-Dichlorobenzene	ug/L	ND	1.0	04/01/16 12:28	
2,2-Dichloropropane	ug/L	ND	4.0	04/01/16 12:28	
2-Butanone (MEK)	ug/L	ND	5.0	04/01/16 12:28	
2-Chlorotoluene	ug/L	ND	1.0	04/01/16 12:28	
4-Chlorotoluene	ug/L	ND	1.0	04/01/16 12:28	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	04/01/16 12:28	
Acetone	ug/L	ND	20.0	04/01/16 12:28	
Allyl chloride	ug/L	ND	4.0	04/01/16 12:28	
Benzene	ug/L	ND	1.0	04/01/16 12:28	
Bromobenzene	ug/L	ND	1.0	04/01/16 12:28	
Bromochloromethane	ug/L	ND	1.0	04/01/16 12:28	
Bromodichloromethane	ug/L	ND	1.0	04/01/16 12:28	
Bromoform	ug/L	ND	4.0	04/01/16 12:28	
Bromomethane	ug/L	ND	4.0	04/01/16 12:28	
Carbon tetrachloride	ug/L	ND	1.0	04/01/16 12:28	
Chlorobenzene	ug/L	ND	1.0	04/01/16 12:28	
Chloroethane	ug/L	ND	1.0	04/01/16 12:28	
Chloroform	ug/L	ND	1.0	04/01/16 12:28	
Chloromethane	ug/L	ND	4.0	04/01/16 12:28	
cis-1,2-Dichloroethene	ug/L	ND	1.0	04/01/16 12:28	
cis-1,3-Dichloropropene	ug/L	ND	4.0	04/01/16 12:28	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10343283

METHOD BLANK: 2221638

Matrix: Water

Associated Lab Samples: 10343283001, 10343283003, 10343283004, 10343283005, 10343283006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/L	ND	1.0	04/01/16 12:28	
Dibromomethane	ug/L	ND	4.0	04/01/16 12:28	
Dichlorodifluoromethane	ug/L	ND	1.0	04/01/16 12:28	
Dichlorofluoromethane	ug/L	ND	1.0	04/01/16 12:28	
Diethyl ether (Ethyl ether)	ug/L	ND	4.0	04/01/16 12:28	
Ethylbenzene	ug/L	ND	1.0	04/01/16 12:28	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	04/01/16 12:28	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	04/01/16 12:28	
Methyl-tert-butyl ether	ug/L	ND	1.0	04/01/16 12:28	
Methylene Chloride	ug/L	ND	4.0	04/01/16 12:28	
n-Butylbenzene	ug/L	ND	1.0	04/01/16 12:28	
n-Propylbenzene	ug/L	ND	1.0	04/01/16 12:28	
Naphthalene	ug/L	ND	4.0	04/01/16 12:28	
p-Isopropyltoluene	ug/L	ND	1.0	04/01/16 12:28	
sec-Butylbenzene	ug/L	ND	1.0	04/01/16 12:28	
Styrene	ug/L	ND	1.0	04/01/16 12:28	
tert-Butylbenzene	ug/L	ND	1.0	04/01/16 12:28	
Tetrachloroethene	ug/L	ND	1.0	04/01/16 12:28	
Tetrahydrofuran	ug/L	ND	10.0	04/01/16 12:28	
Toluene	ug/L	ND	1.0	04/01/16 12:28	
trans-1,2-Dichloroethene	ug/L	ND	1.0	04/01/16 12:28	
trans-1,3-Dichloropropene	ug/L	ND	4.0	04/01/16 12:28	
Trichloroethene	ug/L	ND	0.40	04/01/16 12:28	
Trichlorofluoromethane	ug/L	ND	1.0	04/01/16 12:28	
Vinyl chloride	ug/L	ND	1.0	04/01/16 12:28	
Xylene (Total)	ug/L	ND	3.0	04/01/16 12:28	
1,2-Dichloroethane-d4 (S)	%	104	75-125	04/01/16 12:28	
4-Bromofluorobenzene (S)	%	119	75-125	04/01/16 12:28	
Toluene-d8 (S)	%	101	75-125	04/01/16 12:28	

LABORATORY CONTROL SAMPLE & LCSD: 2221639

2222246

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	20	21.6	21.1	108	105	75-125	3	20	
1,1,1-Trichloroethane	ug/L	20	20.5	19.5	103	98	73-125	5	20	
1,1,2,2-Tetrachloroethane	ug/L	20	20.4	20.6	102	103	75-128	1	20	
1,1,2-Trichloroethane	ug/L	20	20.2	20.0	101	100	75-129	1	20	
1,1,2-Trichlorotrifluoroethane	ug/L	20	22.5	22.0	113	110	69-125	2	20	
1,1-Dichloroethane	ug/L	20	19.6	19.4	98	97	75-131	1	20	
1,1-Dichloroethene	ug/L	20	23.6	22.9	118	115	72-125	3	20	
1,1-Dichloropropene	ug/L	20	21.5	21.6	108	108	74-125	0	20	
1,2,3-Trichlorobenzene	ug/L	20	20.5	19.7	103	99	68-127	4	20	
1,2,3-Trichloropropane	ug/L	20	20.8	21.1	104	105	75-125	2	20	
1,2,4-Trichlorobenzene	ug/L	20	20.8	18.9	104	95	70-125	9	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10343283

LABORATORY CONTROL SAMPLE & LCSD: 2221639		2222246									
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers	
1,2,4-Trimethylbenzene	ug/L	20	20.8	20.7	104	103	75-130	1	20		
1,2-Dibromo-3-chloropropane	ug/L	50	53.9	49.1	108	98	74-125	9	20		
1,2-Dibromoethane (EDB)	ug/L	20	21.5	21.4	108	107	75-125	1	20		
1,2-Dichlorobenzene	ug/L	20	19.3	19.8	96	99	75-125	2	20		
1,2-Dichloroethane	ug/L	20	18.3	19.3	92	96	72-129	5	20		
1,2-Dichloropropane	ug/L	20	20.9	20.9	104	104	71-129	0	20		
1,3,5-Trimethylbenzene	ug/L	20	20.9	20.9	104	104	75-127	0	20		
1,3-Dichlorobenzene	ug/L	20	19.7	19.9	99	100	75-125	1	20		
1,3-Dichloropropane	ug/L	20	20.2	20.4	101	102	75-125	1	20		
1,4-Dichlorobenzene	ug/L	20	19.1	19.2	96	96	75-125	0	20		
2,2-Dichloropropane	ug/L	20	21.4	18.7	107	94	71-125	13	20		
2-Butanone (MEK)	ug/L	100	97.5	103	98	103	58-150	6	20		
2-Chlorotoluene	ug/L	20	20.0	19.8	100	99	75-125	1	20		
4-Chlorotoluene	ug/L	20	20.2	19.9	101	100	75-130	1	20		
4-Methyl-2-pentanone (MIBK)	ug/L	100	107	107	107	107	72-140	0	20		
Acetone	ug/L	100	107	112	107	112	69-137	4	20		
Allyl chloride	ug/L	20	21.1	20.0	106	100	68-132	6	20		
Benzene	ug/L	20	20.8	20.9	104	105	75-125	1	20		
Bromobenzene	ug/L	20	19.9	19.8	99	99	75-125	0	20		
Bromochloromethane	ug/L	20	20.3	21.6	102	108	75-125	6	20		
Bromodichloromethane	ug/L	20	20.9	20.0	104	100	69-128	5	20		
Bromoform	ug/L	20	20.8	15.3	104	77	75-125	30	20	R1	
Bromomethane	ug/L	20	23.4	15.4	117	77	30-150	41	20	R1	
Carbon tetrachloride	ug/L	20	22.7	21.6	113	108	74-125	5	20		
Chlorobenzene	ug/L	20	20.5	20.6	102	103	75-125	1	20		
Chloroethane	ug/L	20	20.3	21.1	101	105	60-150	4	20		
Chloroform	ug/L	20	18.9	18.9	94	94	75-126	0	20		
Chloromethane	ug/L	20	21.2	19.0	106	95	46-150	11	20		
cis-1,2-Dichloroethene	ug/L	20	21.2	21.0	106	105	75-126	1	20		
cis-1,3-Dichloropropene	ug/L	20	21.8	20.9	109	104	75-125	4	20		
Dibromochloromethane	ug/L	20	20.7	18.2	104	91	75-125	13	20		
Dibromomethane	ug/L	20	21.7	21.4	108	107	72-127	1	20		
Dichlorodifluoromethane	ug/L	20	23.6	23.3	118	117	58-135	1	20		
Dichlorofluoromethane	ug/L	20	21.3	21.2	107	106	68-149	1	20		
Diethyl ether (Ethyl ether)	ug/L	20	19.5	20.3	97	101	66-144	4	20		
Ethylbenzene	ug/L	20	19.9	20.0	100	100	75-125	0	20		
Hexachloro-1,3-butadiene	ug/L	20	23.5	19.8	118	99	73-125	17	20		
Isopropylbenzene (Cumene)	ug/L	20	20.6	20.6	103	103	69-140	0	20		
Methyl-tert-butyl ether	ug/L	20	20.0	20.7	100	104	75-126	3	20		
Methylene Chloride	ug/L	20	19.5	20.0	97	100	71-130	3	20		
n-Butylbenzene	ug/L	20	21.6	20.2	108	101	71-129	7	20		
n-Propylbenzene	ug/L	20	20.0	20.1	100	100	71-133	0	20		
Naphthalene	ug/L	20	20.1	20.1	101	100	59-137	0	20		
p-Isopropyltoluene	ug/L	20	20.8	20.2	104	101	74-127	3	20		
sec-Butylbenzene	ug/L	20	20.3	19.9	102	100	66-140	2	20		
Styrene	ug/L	20	21.4	21.8	107	109	75-125	2	20		
tert-Butylbenzene	ug/L	20	19.7	19.1	98	96	73-129	3	20		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10343283

LABORATORY CONTROL SAMPLE & LCSD: 2221639		2222246								
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Tetrachloroethene	ug/L	20	21.2	19.9	106	99	75-125	6	20	
Tetrahydrofuran	ug/L	200	231	237	116	118	71-129	2	20	
Toluene	ug/L	20	20.9	20.7	104	104	75-125	1	20	
trans-1,2-Dichloroethene	ug/L	20	20.6	20.9	103	105	75-125	2	20	
trans-1,3-Dichloropropene	ug/L	20	21.5	20.6	107	103	75-125	4	20	
Trichloroethene	ug/L	20	21.2	20.1	106	100	75-125	5	20	
Trichlorofluoromethane	ug/L	20	22.9	22.5	115	112	74-128	2	20	
Vinyl chloride	ug/L	20	23.5	22.6	117	113	71-131	4	20	
Xylene (Total)	ug/L	60	61.2	61.5	102	103	75-125	0	20	
1,2-Dichloroethane-d4 (S)	%				101	99	75-125			
4-Bromofluorobenzene (S)	%				100	99	75-125			
Toluene-d8 (S)	%				102	100	75-125			

MATRIX SPIKE SAMPLE: 2222895		10343283001		Spike		MS		% Rec		Qualifiers
Parameter	Units	Result	Conc.	Result	% Rec	Limit	Qualifiers			
1,1,1,2-Tetrachloroethane	ug/L	ND	20	28.8	144	75-125	M1			
1,1,1-Trichloroethane	ug/L	ND	20	30.4	152	71-144	M1			
1,1,2,2-Tetrachloroethane	ug/L	ND	20	27.0	135	75-131	M1			
1,1,2-Trichloroethane	ug/L	ND	20	26.4	132	75-125	M1			
1,1,2-Trichlorotrifluoroethane	ug/L	ND	20	31.5	158	75-150	M1			
1,1-Dichloroethane	ug/L	ND	20	28.7	143	64-150				
1,1-Dichloroethene	ug/L	ND	20	32.0	160	68-150	M1			
1,1-Dichloropropene	ug/L	ND	20	30.5	152	68-145	M1			
1,2,3-Trichlorobenzene	ug/L	ND	20	22.0	109	57-142				
1,2,3-Trichloropropane	ug/L	ND	20	28.2	141	75-125	M1			
1,2,4-Trichlorobenzene	ug/L	ND	20	20.4	101	60-135				
1,2,4-Trimethylbenzene	ug/L	ND	20	24.6	123	67-148				
1,2-Dibromo-3-chloropropane	ug/L	ND	50	67.0	134	32-137				
1,2-Dibromoethane (EDB)	ug/L	ND	20	27.4	137	75-125	M1			
1,2-Dichlorobenzene	ug/L	ND	20	24.0	120	75-125				
1,2-Dichloroethane	ug/L	ND	20	25.2	126	62-138				
1,2-Dichloropropane	ug/L	ND	20	28.7	143	62-144				
1,3,5-Trimethylbenzene	ug/L	ND	20	25.5	128	67-148				
1,3-Dichlorobenzene	ug/L	ND	20	22.8	114	74-131				
1,3-Dichloropropane	ug/L	ND	20	27.2	136	75-127	M1			
1,4-Dichlorobenzene	ug/L	ND	20	22.2	111	74-126				
2,2-Dichloropropane	ug/L	ND	20	29.4	147	56-146	M1			
2-Butanone (MEK)	ug/L	ND	100	138	138	47-150				
2-Chlorotoluene	ug/L	ND	20	24.6	123	74-137				
4-Chlorotoluene	ug/L	ND	20	24.1	121	72-138				
4-Methyl-2-pentanone (MIBK)	ug/L	ND	100	141	141	60-147				
Acetone	ug/L	ND	100	143	140	61-150				
Allyl chloride	ug/L	ND	20	26.6	133	53-150				
Benzene	ug/L	ND	20	28.6	143	52-147				

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10343283

MATRIX SPIKE SAMPLE:		2222895					
Parameter	Units	10343283001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromobenzene	ug/L	ND	20	24.5	122	75-129	
Bromochloromethane	ug/L	ND	20	28.5	142	72-128	M1
Bromodichloromethane	ug/L	ND	20	26.7	134	65-137	
Bromoform	ug/L	ND	20	22.8	114	59-133	
Bromomethane	ug/L	ND	20	18.3	92	30-150	
Carbon tetrachloride	ug/L	ND	20	31.7	159	73-144	M1
Chlorobenzene	ug/L	ND	20	26.4	132	75-126	M1
Chloroethane	ug/L	ND	20	30.4	149	55-150	
Chloroform	ug/L	ND	20	26.1	131	66-143	
Chloromethane	ug/L	ND	20	24.2	121	42-150	
cis-1,2-Dichloroethene	ug/L	ND	20	29.2	146	65-143	M1
cis-1,3-Dichloropropene	ug/L	ND	20	25.7	129	75-125	M1
Dibromochloromethane	ug/L	ND	20	25.9	129	75-125	M1
Dibromomethane	ug/L	ND	20	28.2	141	66-133	M1
Dichlorodifluoromethane	ug/L	ND	20	32.3	162	74-150	M1
Dichlorofluoromethane	ug/L	ND	20	30.5	153	68-150	M1
Diethyl ether (Ethyl ether)	ug/L	ND	20	27.2	136	57-148	
Ethylbenzene	ug/L	ND	20	25.4	127	67-149	
Hexachloro-1,3-butadiene	ug/L	ND	20	27.3	136	65-143	
Isopropylbenzene (Cumene)	ug/L	ND	20	26.4	132	64-150	
Methyl-tert-butyl ether	ug/L	ND	20	28.2	141	71-130	M1
Methylene Chloride	ug/L	ND	20	26.4	132	67-137	
n-Butylbenzene	ug/L	ND	20	22.9	114	70-138	
n-Propylbenzene	ug/L	ND	20	24.8	124	70-148	
Naphthalene	ug/L	ND	20	23.1	115	39-150	
p-Isopropyltoluene	ug/L	ND	20	25.4	127	74-138	
sec-Butylbenzene	ug/L	ND	20	25.8	129	64-150	
Styrene	ug/L	ND	20	25.3	126	75-132	
tert-Butylbenzene	ug/L	ND	20	25.4	127	75-138	
Tetrachloroethene	ug/L	ND	20	26.8	134	73-136	
Tetrahydrofuran	ug/L	ND	200	298	149	68-142	M1
Toluene	ug/L	ND	20	27.6	138	69-139	
trans-1,2-Dichloroethene	ug/L	ND	20	27.8	139	75-135	M1
trans-1,3-Dichloropropene	ug/L	ND	20	25.2	126	66-136	
Trichloroethene	ug/L	ND	20	28.3	142	74-135	M1
Trichlorofluoromethane	ug/L	ND	20	33.1	165	75-150	M1
Vinyl chloride	ug/L	ND	20	30.8	154	69-150	M1
Xylene (Total)	ug/L	ND	60	77.7	129	70-147	
1,2-Dichloroethane-d4 (S)	%					99	75-125
4-Bromofluorobenzene (S)	%					100	75-125
Toluene-d8 (S)	%					100	75-125

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10343283

SAMPLE DUPLICATE: 2222896

Parameter	Units	10343283003 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,1-Trichloroethane	ug/L	ND	ND		30	
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		30	
1,1,2-Trichloroethane	ug/L	ND	ND		30	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	ND		30	
1,1-Dichloroethane	ug/L	2.7	3.0	10	30	
1,1-Dichloroethene	ug/L	1.6	1.7	7	30	
1,1-Dichloropropene	ug/L	ND	ND		30	
1,2,3-Trichlorobenzene	ug/L	ND	ND		30	
1,2,3-Trichloropropane	ug/L	ND	ND		30	
1,2,4-Trichlorobenzene	ug/L	ND	ND		30	
1,2,4-Trimethylbenzene	ug/L	ND	ND		30	
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		30	
1,2-Dibromoethane (EDB)	ug/L	ND	ND		30	
1,2-Dichlorobenzene	ug/L	ND	ND		30	
1,2-Dichloroethane	ug/L	ND	ND		30	
1,2-Dichloropropane	ug/L	ND	ND		30	
1,3,5-Trimethylbenzene	ug/L	ND	ND		30	
1,3-Dichlorobenzene	ug/L	ND	ND		30	
1,3-Dichloropropane	ug/L	ND	ND		30	
1,4-Dichlorobenzene	ug/L	ND	ND		30	
2,2-Dichloropropane	ug/L	ND	ND		30	
2-Butanone (MEK)	ug/L	ND	ND		30	
2-Chlorotoluene	ug/L	ND	ND		30	
4-Chlorotoluene	ug/L	ND	ND		30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		30	
Acetone	ug/L	ND	ND		30	
Allyl chloride	ug/L	ND	ND		30	
Benzene	ug/L	ND	ND		30	
Bromobenzene	ug/L	ND	ND		30	
Bromochloromethane	ug/L	ND	ND		30	
Bromodichloromethane	ug/L	ND	ND		30	
Bromoform	ug/L	ND	ND		30	
Bromomethane	ug/L	ND	ND		30	
Carbon tetrachloride	ug/L	ND	ND		30	
Chlorobenzene	ug/L	ND	ND		30	
Chloroethane	ug/L	ND	ND		30	
Chloroform	ug/L	ND	ND		30	
Chloromethane	ug/L	ND	ND		30	
cis-1,2-Dichloroethene	ug/L	53.6	54.4	2	30	
cis-1,3-Dichloropropene	ug/L	ND	ND		30	
Dibromochloromethane	ug/L	ND	ND		30	
Dibromomethane	ug/L	ND	ND		30	
Dichlorodifluoromethane	ug/L	ND	ND		30	
Dichlorofluoromethane	ug/L	ND	ND		30	
Diethyl ether (Ethyl ether)	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10343283

SAMPLE DUPLICATE: 2222896

Parameter	Units	10343283003 Result	Dup Result	RPD	Max RPD	Qualifiers
Hexachloro-1,3-butadiene	ug/L	ND	ND		30	
Isopropylbenzene (Cumene)	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Methylene Chloride	ug/L	ND	ND		30	
n-Butylbenzene	ug/L	ND	ND		30	
n-Propylbenzene	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
p-Isopropyltoluene	ug/L	ND	ND		30	
sec-Butylbenzene	ug/L	ND	ND		30	
Styrene	ug/L	ND	ND		30	
tert-Butylbenzene	ug/L	ND	ND		30	
Tetrachloroethene	ug/L	ND	ND		30	
Tetrahydrofuran	ug/L	ND	ND		30	
Toluene	ug/L	ND	.25J		30	
trans-1,2-Dichloroethene	ug/L	91.0	92.0	1	30	
trans-1,3-Dichloropropene	ug/L	ND	ND		30	
Trichloroethene	ug/L	13.9	13.6	3	30	
Trichlorofluoromethane	ug/L	ND	ND		30	
Vinyl chloride	ug/L	ND	.96J		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	102	105	3		
4-Bromofluorobenzene (S)	%	100	100	0		
Toluene-d8 (S)	%	99	99	0		

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10343283

QC Batch: MSV/35087

Analysis Method: EPA 8260B

QC Batch Method: EPA 8260B

Analysis Description: 8260B MSV 465 W

Associated Lab Samples: 10343283002

METHOD BLANK: 2223097

Matrix: Water

Associated Lab Samples: 10343283002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	04/04/16 15:25	
1,1,1-Trichloroethane	ug/L	ND	1.0	04/04/16 15:25	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	04/04/16 15:25	
1,1,2-Trichloroethane	ug/L	ND	1.0	04/04/16 15:25	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	1.0	04/04/16 15:25	
1,1-Dichloroethane	ug/L	ND	1.0	04/04/16 15:25	
1,1-Dichloroethene	ug/L	ND	1.0	04/04/16 15:25	
1,1-Dichloropropene	ug/L	ND	1.0	04/04/16 15:25	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	04/04/16 15:25	
1,2,3-Trichloropropane	ug/L	ND	4.0	04/04/16 15:25	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	04/04/16 15:25	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	04/04/16 15:25	
1,2-Dibromo-3-chloropropane	ug/L	ND	4.0	04/04/16 15:25	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	04/04/16 15:25	
1,2-Dichlorobenzene	ug/L	ND	1.0	04/04/16 15:25	
1,2-Dichloroethane	ug/L	ND	1.0	04/04/16 15:25	
1,2-Dichloropropane	ug/L	ND	4.0	04/04/16 15:25	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	04/04/16 15:25	
1,3-Dichlorobenzene	ug/L	ND	1.0	04/04/16 15:25	
1,3-Dichloropropane	ug/L	ND	1.0	04/04/16 15:25	
1,4-Dichlorobenzene	ug/L	ND	1.0	04/04/16 15:25	
2,2-Dichloropropane	ug/L	ND	4.0	04/04/16 15:25	
2-Butanone (MEK)	ug/L	ND	5.0	04/04/16 15:25	
2-Chlorotoluene	ug/L	ND	1.0	04/04/16 15:25	
4-Chlorotoluene	ug/L	ND	1.0	04/04/16 15:25	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	04/04/16 15:25	
Acetone	ug/L	ND	20.0	04/04/16 15:25	
Allyl chloride	ug/L	ND	4.0	04/04/16 15:25	
Benzene	ug/L	ND	1.0	04/04/16 15:25	
Bromobenzene	ug/L	ND	1.0	04/04/16 15:25	
Bromochloromethane	ug/L	ND	1.0	04/04/16 15:25	
Bromodichloromethane	ug/L	ND	1.0	04/04/16 15:25	
Bromoform	ug/L	ND	4.0	04/04/16 15:25	
Bromomethane	ug/L	ND	4.0	04/04/16 15:25	
Carbon tetrachloride	ug/L	ND	1.0	04/04/16 15:25	
Chlorobenzene	ug/L	ND	1.0	04/04/16 15:25	
Chloroethane	ug/L	ND	1.0	04/04/16 15:25	
Chloroform	ug/L	ND	1.0	04/04/16 15:25	
Chloromethane	ug/L	ND	4.0	04/04/16 15:25	
cis-1,2-Dichloroethene	ug/L	ND	1.0	04/04/16 15:25	
cis-1,3-Dichloropropene	ug/L	ND	4.0	04/04/16 15:25	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10343283

METHOD BLANK: 2223097

Matrix: Water

Associated Lab Samples: 10343283002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromochloromethane	ug/L	ND	1.0	04/04/16 15:25	
Dibromomethane	ug/L	ND	4.0	04/04/16 15:25	
Dichlorodifluoromethane	ug/L	ND	1.0	04/04/16 15:25	
Dichlorofluoromethane	ug/L	ND	1.0	04/04/16 15:25	
Diethyl ether (Ethyl ether)	ug/L	ND	4.0	04/04/16 15:25	
Ethylbenzene	ug/L	ND	1.0	04/04/16 15:25	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	04/04/16 15:25	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	04/04/16 15:25	
Methyl-tert-butyl ether	ug/L	ND	1.0	04/04/16 15:25	
Methylene Chloride	ug/L	ND	4.0	04/04/16 15:25	
n-Butylbenzene	ug/L	ND	1.0	04/04/16 15:25	
n-Propylbenzene	ug/L	ND	1.0	04/04/16 15:25	
Naphthalene	ug/L	ND	4.0	04/04/16 15:25	
p-Isopropyltoluene	ug/L	ND	1.0	04/04/16 15:25	
sec-Butylbenzene	ug/L	ND	1.0	04/04/16 15:25	
Styrene	ug/L	ND	1.0	04/04/16 15:25	
tert-Butylbenzene	ug/L	ND	1.0	04/04/16 15:25	
Tetrachloroethene	ug/L	ND	1.0	04/04/16 15:25	
Tetrahydrofuran	ug/L	ND	10.0	04/04/16 15:25	
Toluene	ug/L	ND	1.0	04/04/16 15:25	
trans-1,2-Dichloroethene	ug/L	ND	1.0	04/04/16 15:25	
trans-1,3-Dichloropropene	ug/L	ND	4.0	04/04/16 15:25	
Trichloroethene	ug/L	ND	0.40	04/04/16 15:25	
Trichlorofluoromethane	ug/L	ND	1.0	04/04/16 15:25	
Vinyl chloride	ug/L	ND	1.0	04/04/16 15:25	
Xylene (Total)	ug/L	ND	3.0	04/04/16 15:25	
1,2-Dichloroethane-d4 (S)	%	102	75-125	04/04/16 15:25	
4-Bromofluorobenzene (S)	%	99	75-125	04/04/16 15:25	
Toluene-d8 (S)	%	98	75-125	04/04/16 15:25	

LABORATORY CONTROL SAMPLE: 2223098

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	20	22.2	111	75-125	
1,1,1-Trichloroethane	ug/L	20	20.1	101	73-125	
1,1,2,2-Tetrachloroethane	ug/L	20	19.1	95	75-128	
1,1,2-Trichloroethane	ug/L	20	20.1	100	75-129	
1,1,2-Trichlorotrifluoroethane	ug/L	20	19.5	98	69-125	
1,1-Dichloroethane	ug/L	20	18.1	91	75-131	
1,1-Dichloroethene	ug/L	20	21.2	106	72-125	
1,1-Dichloropropene	ug/L	20	19.7	99	74-125	
1,2,3-Trichlorobenzene	ug/L	20	20.6	103	68-127	
1,2,3-Trichloropropane	ug/L	20	20.9	104	75-125	
1,2,4-Trichlorobenzene	ug/L	20	20.4	102	70-125	

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10343283

LABORATORY CONTROL SAMPLE: 2223098

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	20.7	104	75-130	
1,2-Dibromo-3-chloropropane	ug/L	50	55.7	111	74-125	
1,2-Dibromoethane (EDB)	ug/L	20	21.5	107	75-125	
1,2-Dichlorobenzene	ug/L	20	19.6	98	75-125	
1,2-Dichloroethane	ug/L	20	18.7	94	72-129	
1,2-Dichloropropane	ug/L	20	19.7	98	71-129	
1,3,5-Trimethylbenzene	ug/L	20	20.2	101	75-127	
1,3-Dichlorobenzene	ug/L	20	19.9	100	75-125	
1,3-Dichloropropane	ug/L	20	20.2	101	75-125	
1,4-Dichlorobenzene	ug/L	20	19.4	97	75-125	
2,2-Dichloropropane	ug/L	20	19.9	99	71-125	
2-Butanone (MEK)	ug/L	100	102	102	58-150	
2-Chlorotoluene	ug/L	20	19.5	97	75-125	
4-Chlorotoluene	ug/L	20	19.4	97	75-130	
4-Methyl-2-pentanone (MIBK)	ug/L	100	107	107	72-140	
Acetone	ug/L	100	104	104	69-137	
Allyl chloride	ug/L	20	20.1	101	68-132	
Benzene	ug/L	20	19.3	96	75-125	
Bromobenzene	ug/L	20	19.9	100	75-125	
Bromochloromethane	ug/L	20	21.1	105	75-125	
Bromodichloromethane	ug/L	20	22.1	110	69-128	
Bromoform	ug/L	20	23.6	118	75-125	
Bromomethane	ug/L	20	18.2	91	30-150	
Carbon tetrachloride	ug/L	20	22.5	113	74-125	
Chlorobenzene	ug/L	20	20.3	102	75-125	
Chloroethane	ug/L	20	19.1	96	60-150	
Chloroform	ug/L	20	19.0	95	75-126	
Chloromethane	ug/L	20	18.3	91	46-150	
cis-1,2-Dichloroethene	ug/L	20	20.2	101	75-126	
cis-1,3-Dichloropropene	ug/L	20	21.6	108	75-125	
Dibromochloromethane	ug/L	20	23.1	116	75-125	
Dibromomethane	ug/L	20	22.3	111	72-127	
Dichlorodifluoromethane	ug/L	20	21.9	109	58-135	
Dichlorofluoromethane	ug/L	20	20.7	103	68-149	
Diethyl ether (Ethyl ether)	ug/L	20	19.1	96	66-144	
Ethylbenzene	ug/L	20	19.6	98	75-125	
Hexachloro-1,3-butadiene	ug/L	20	21.7	108	73-125	
Isopropylbenzene (Cumene)	ug/L	20	20.8	104	69-140	
Methyl-tert-butyl ether	ug/L	20	19.9	99	75-126	
Methylene Chloride	ug/L	20	18.6	93	71-130	
n-Butylbenzene	ug/L	20	20.6	103	71-129	
n-Propylbenzene	ug/L	20	19.6	98	71-133	
Naphthalene	ug/L	20	20.3	101	59-137	
p-Isopropyltoluene	ug/L	20	20.1	101	74-127	
sec-Butylbenzene	ug/L	20	19.6	98	66-140	
Styrene	ug/L	20	21.6	108	75-125	
tert-Butylbenzene	ug/L	20	18.6	93	73-129	

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10343283

LABORATORY CONTROL SAMPLE: 2223098

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethane	ug/L	20	20.8	104	75-125	
Tetrahydrofuran	ug/L	200	213	107	71-129	
Toluene	ug/L	20	20.4	102	75-125	
trans-1,2-Dichloroethene	ug/L	20	19.0	95	75-125	
trans-1,3-Dichloropropene	ug/L	20	21.8	109	75-125	
Trichloroethene	ug/L	20	20.2	101	75-125	
Trichlorofluoromethane	ug/L	20	22.6	113	74-128	
Vinyl chloride	ug/L	20	20.3	102	71-131	
Xylene (Total)	ug/L	60	60.3	101	75-125	
1,2-Dichloroethane-d4 (S)	%			103	75-125	
4-Bromofluorobenzene (S)	%			97	75-125	
Toluene-d8 (S)	%			98	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2223099 2223100

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10342716001 Result	Spike Conc.	Spike Conc.	MS Result						
1,1,1,2-Tetrachloroethane	ug/L	ND	20	20	20.9	21.7	105	109	75-125	4	30
1,1,1-Trichloroethane	ug/L	ND	20	20	22.3	21.9	112	109	71-144	2	30
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20	18.2	18.8	91	94	75-131	4	30
1,1,2-Trichloroethane	ug/L	ND	20	20	19.0	19.8	95	99	75-125	4	30
1,1,2-Trichlorotrifluoroethane	ug/L	ND	20	20	24.4	23.9	122	120	75-150	2	30
1,1-Dichloroethane	ug/L	ND	20	20	20.0	19.7	100	98	64-150	2	30
1,1-Dichloroethene	ug/L	ND	20	20	21.2	21.1	106	106	68-150	0	30
1,1-Dichloropropene	ug/L	ND	20	20	20.7	20.9	103	104	68-145	1	30
1,2,3-Trichlorobenzene	ug/L	ND	20	20	18.0	18.7	90	93	57-142	4	30
1,2,3-Trichloropropane	ug/L	ND	20	20	19.3	19.5	96	98	75-125	1	30
1,2,4-Trichlorobenzene	ug/L	ND	20	20	17.5	18.4	87	92	60-135	5	30
1,2,4-Trimethylbenzene	ug/L	ND	20	20	18.2	18.6	91	93	67-148	2	30
1,2-Dibromo-3-chloropropane	ug/L	ND	50	50	46.5	47.0	93	94	32-137	1	30
1,2-Dibromoethane (EDB)	ug/L	ND	20	20	19.5	19.2	97	96	75-125	1	30
1,2-Dichlorobenzene	ug/L	ND	20	20	18.5	18.6	92	93	75-125	1	30
1,2-Dichloroethane	ug/L	ND	20	20	19.1	18.7	95	93	62-138	2	30
1,2-Dichloropropane	ug/L	ND	20	20	19.4	19.7	97	99	62-144	2	30
1,3,5-Trimethylbenzene	ug/L	ND	20	20	18.7	18.8	93	94	67-148	1	30
1,3-Dichlorobenzene	ug/L	ND	20	20	17.9	18.3	90	92	74-131	2	30
1,3-Dichloropropane	ug/L	ND	20	20	18.8	19.2	94	96	75-127	2	30
1,4-Dichlorobenzene	ug/L	ND	20	20	17.1	17.7	85	88	74-126	3	30
2,2-Dichloropropane	ug/L	ND	20	20	20.4	20.3	102	101	56-146	1	30
2-Butanone (MEK)	ug/L	ND	100	100	97.1	95.8	97	96	47-150	1	30
2-Chlorotoluene	ug/L	ND	20	20	18.1	18.6	91	93	74-137	2	30
4-Chlorotoluene	ug/L	ND	20	20	18.3	18.5	92	92	72-138	1	30
4-Methyl-2-pentanone (MIBK)	ug/L	ND	100	100	98.2	100	98	100	60-147	2	30
Acetone	ug/L	ND	100	100	98.5	105	97	104	61-150	7	30

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QUALITY CONTROL DATA

Project: PS Beta-NIROP

Pace Project No.: 10343283

Parameter	Units	10342716001		2223099		2223100		% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec						
Allyl chloride	ug/L	ND	20	20	18.8	18.6	94	93	53-150	1	30		
Benzene	ug/L	ND	20	20	19.3	18.9	96	95	52-147	2	30		
Bromobenzene	ug/L	ND	20	20	17.8	18.2	89	91	75-129	2	30		
Bromochloromethane	ug/L	ND	20	20	20.6	19.6	103	98	72-128	5	30		
Bromodichloromethane	ug/L	ND	20	20	21.4	21.5	107	107	65-137	0	30		
Bromoform	ug/L	ND	20	20	19.6	19.6	98	98	59-133	0	30		
Bromomethane	ug/L	ND	20	20	14.9	12.9	75	65	30-150	15	30		
Carbon tetrachloride	ug/L	ND	20	20	24.6	24.1	123	121	73-144	2	30		
Chlorobenzene	ug/L	ND	20	20	19.1	19.2	96	96	75-126	1	30		
Chloroethane	ug/L	ND	20	20	21.2	20.5	106	103	55-150	3	30		
Chloroform	ug/L	ND	20	20	19.2	19.3	96	97	66-143	1	30		
Chloromethane	ug/L	ND	20	20	16.6	16.7	83	84	42-150	1	30		
cis-1,2-Dichloroethene	ug/L	ND	20	20	20.5	20.3	102	101	65-143	1	30		
cis-1,3-Dichloropropene	ug/L	ND	20	20	17.9	18.8	90	94	75-125	5	30		
Dibromochloromethane	ug/L	ND	20	20	20.5	20.2	103	101	75-125	2	30		
Dibromomethane	ug/L	ND	20	20	20.0	20.1	100	101	66-133	1	30		
Dichlorodifluoromethane	ug/L	ND	20	20	22.4	22.8	112	114	74-150	2	30		
Dichlorofluoromethane	ug/L	ND	20	20	21.3	21.0	107	105	68-150	1	30		
Diethyl ether (Ethyl ether)	ug/L	ND	20	20	18.6	18.9	93	95	57-148	2	30		
Ethylbenzene	ug/L	ND	20	20	18.2	18.2	91	91	67-149	0	30		
Hexachloro-1,3-butadiene	ug/L	ND	20	20	19.7	20.2	98	101	65-143	3	30		
Isopropylbenzene (Cumene)	ug/L	ND	20	20	20.2	20.0	101	100	64-150	1	30		
Methyl-tert-butyl ether	ug/L	ND	20	20	19.9	19.5	99	98	71-130	2	30		
Methylene Chloride	ug/L	ND	20	20	18.0	17.7	90	88	67-137	2	30		
n-Butylbenzene	ug/L	ND	20	20	18.6	19.6	93	98	70-138	5	30		
n-Propylbenzene	ug/L	ND	20	20	18.7	18.8	93	94	70-148	0	30		
Naphthalene	ug/L	ND	20	20	17.4	18.2	87	90	39-150	4	30		
p-Isopropyltoluene	ug/L	ND	20	20	18.8	19.1	94	96	74-138	2	30		
sec-Butylbenzene	ug/L	ND	20	20	19.2	19.7	96	98	64-150	3	30		
Styrene	ug/L	ND	20	20	19.0	19.3	95	96	75-132	1	30		
tert-Butylbenzene	ug/L	ND	20	20	18.7	19.0	93	95	75-138	2	30		
Tetrachloroethene	ug/L	ND	20	20	19.6	19.4	98	97	73-136	1	30		
Tetrahydrofuran	ug/L	ND	200	200	201	210	101	105	68-142	4	30		
Toluene	ug/L	ND	20	20	18.6	18.6	93	93	69-139	0	30		
trans-1,2-Dichloroethene	ug/L	ND	20	20	18.2	17.7	91	89	75-135	3	30		
trans-1,3-Dichloropropene	ug/L	ND	20	20	18.6	19.8	93	99	66-136	6	30		
Trichloroethene	ug/L	ND	20	20	19.7	19.8	99	99	74-135	0	30		
Trichlorofluoromethane	ug/L	ND	20	20	24.5	25.5	122	128	75-150	4	30		
Vinyl chloride	ug/L	ND	20	20	20.9	20.6	105	103	69-150	1	30		
Xylene (Total)	ug/L	ND	60	60	56.7	56.5	95	94	70-147	0	30		
1,2-Dichloroethane-d4 (S)	%						106	107	75-125				
4-Bromofluorobenzene (S)	%						99	99	75-125				
Toluene-d8 (S)	%						100	100	75-125				

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: PS Beta-NIROP

Pace Project No.: 10343283

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PS Beta-NIROP

Pace Project No.: 10343283

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10343283001	PMW-01	EPA 8260B	MSV/35072		
10343283002	PMW-02	EPA 8260B	MSV/35087		
10343283003	PMW-03	EPA 8260B	MSV/35072		
10343283004	PMW-04	EPA 8260B	MSV/35072		
10343283005	Trip Blank 1	EPA 8260B	MSV/35072		
10343283006	Trip Blank 2	EPA 8260B	MSV/35072		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

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

10313283

Section A Required Client Information: Company: Regenesis Address: 1011 Calle Sombra San Clemente, CA 92673 Email To: Mpham@regenesis.com Phone: 949-366-8000 Fax: 343-366-8090 Requested Due Date/TAT: 2 days		Section B Required Project Information: Report To: Melinda Pham Copy To: Purchase Order No.: Project Name: PS Beta - NIROP Project Number: PS Beta - NIROP		Section C Invoice Information: Attention: Bahar Naderi Company Name: Regenesis Address: 1011 Calle Sombra Pace Quote Reference: 21466 Pace Project Manager: JENNIFER ANDERSON Pace Profile #: 35495	
Regulatory Agency: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER <input type="checkbox"/> UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER		Site Location: STATE: MN			

Page: 2 of 2

# ITEM	Section D Required Client Information	Valid Matrix Codes	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives	Analysis Test	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
					COMPOSITE START	COMPOSITE END/GRAB						
1	PMW-01	DRINKING WATER	DW	WT 6	3/31/16	0942		3	HCl	3		001
2	PMW-02	WASTE WATER	WW	WT 6	3/31/16	1100		3	NaOH	3		002
3	PMW-03	WASTE WATER	WW	WT 6	3/31/16	1230		3	HCl	3		003
4	PMW-04	WASTE WATER	WW	WT 6	3/31/16	1550		3	HCl	3		004
5	Trip Blank 1	WASTE WATER	WW	WT -	3/31/16	0700		2	HCl	2		005
6	Trip Blank 2	WASTE WATER	WW	WT -	3/31/16	0705		2	HCl	2		006
7												
8												
9												
10												
11												
12												

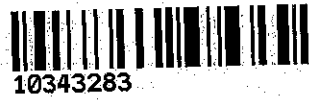
Section E ADDITIONAL COMMENTS MELISSA MEEHAN/400 3/31/16 1538 CALIFORNIA PACE 0.2 Y N 4 1.0	RELINQUISHED BY / AFFILIATION DATE TIME	ACCEPTED BY / AFFILIATION DATE TIME	SAMPLE CONDITIONS Received on Ice (Y/N) Custody Sealed (Y/N) Samples Intact (Y/N)
SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: MELISSA MEEHAN SEN SIGNATURE of SAMPLER: <i>Melissa Meehan</i> DATE Signed (MM/DD/YY): 3/31/16			

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

Sample Condition Upon Receipt

Client Name: Regensis

Project #: **WO# : 10343283**



Courier: Fed Ex UPS USPS Client
 Commercial Pace Speedee Other: _____
 Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No Optional: Proj. Due Date: _____ Proj. Name: _____

Packing Material: Bubble Wrap Bubble Bags None Other: _____ Temp Blank? Yes No

Thermometer 151401163 B88A912167504 Type of Ice: Wet Blue None Samples on ice, cooling process has begun
 Used: 151401164 B88A0143310098

Cooler Temp Read (°C): 0.2, 1.6 Cooler Temp Corrected (°C): 0.2, 1.6 Biological Tissue Frozen? Yes No N/A

Temp should be above freezing to 6°C Correction Factor: the Date and Initials of Person Examining Contents: 3-31-16/AS

USDA Regulated Soil (N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, IA, MS, NC, NM, NY, OK, OR, SC, TN, TX or WA (check maps)? Yes No Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>W1</u>	
All containers needing acid/base preservation have been checked? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13. <input checked="" type="checkbox"/> HNO ₃ <input checked="" type="checkbox"/> H ₂ SO ₄ <input checked="" type="checkbox"/> NaOH <input type="checkbox"/> HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl < 2; NaOH > 9 Sulfide, NaOH > 12 Cyanide) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample # <u>1-4</u> <u>4/2</u> <u>4/2</u> <u>1</u> <u>2N</u>
Exceptions: <u>VOA</u> , Coliform, <u>FOC</u> Oil and Grease, DRO/8015 (water) DOC <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): <u>030716-382A</u>	

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____
 Comments/Resolution: _____

Project Manager Review: [Signature]

Date: 04/01/2016

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).



Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

April 21, 2016

Jennifer Anderson
Pace Analytical Services, Inc.
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: **PS BETA - NIROP / 10343283**

Pace Workorder: 18663

Dear Jennifer Anderson:

Enclosed are the analytical results for sample(s) received by the laboratory on Monday, April 04, 2016.

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

Sincerely,

Ruth Welsh 04/21/2016
Ruth.Welsh@pacelabs.com

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email info@microseeps.com.

Total Number of Pages 12

Report ID: 18663 - 785745

CERTIFICATE OF ANALYSIS

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Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

SAMPLE SUMMARY

Workorder: 18663 PS BETA - NIROP / 10343283

Lab ID	Sample ID	Matrix	Date Collected	Date Received
186630001	PMW-01	Water	3/31/2016 09:42	4/4/2016 08:30
186630002	PMW-02	Water	3/31/2016 11:00	4/4/2016 08:30
186630003	PMW-03	Water	3/31/2016 12:30	4/4/2016 08:30
186630004	PMW-04	Water	3/31/2016 13:50	4/4/2016 08:30

Report ID: 18663 - 785745

CERTIFICATE OF ANALYSIS

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Client Pace MN
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Project PS Beta Nirop
 Project # 10343283
 Report to Jennifer Anderson
 Tel: 612.607.1700
 Email: jennifer.anderson @ pacelabs.com

Pace Analytical CSIA Center
 220 William Pitt Way
 Pittsburgh, PA 15238
 Tel: 412.826.5245
 Report by: Dr. Yi Wang
 Director, CSIA Center of Excellence
 Cell: 609.721.2843
 Email: yi.wang@pacelabs.com

REPORT OF ENVIRONMENTAL FORENSICS ISOTOPE ANALYSES

Date Received: 4/4/2016
 Date Reported: 4/20/2016

Water sample submitted for $\delta^{13}\text{C}$ (‰ VPDB) stable carbon isotope forensics of chlorinated solvents

Pace CSIA Lab ID	Client's Sample ID Description	$\delta^{13}\text{C}$ TCE	$\delta^{13}\text{C}$ cDCE	$\delta^{13}\text{C}$ tDCE	$\delta^{13}\text{C}$ 11DCE	$\delta^{13}\text{C}$ 11DCA	$\delta^{13}\text{C}$ VC
18663-1	PMW-01	U -	U -	U -	U -	U -	U -
18663-2	PMW-02	6.28	-19.24	-37.86	-18.67	-26.40	-23.79
18663-3	PMW-03	-0.26	-19.77	-23.10	U -	-23.01	U -
18663-4	PMW-04	4.39	-25.88	-29.16	U -	U -	U -

cDCE & tDCE: *cis* & *trans*-1,2-dichloroethene
 TCE: trichloroethene

11DCA: 1,1-dichloroethane
 11DCE: 1,1-dichloroethene

VC: vinyl chloride

^d-Target analyte produced a low peak signal and the result is considered usable to $\pm 2\%$, but not the standard $\pm 0.5\%$
^u-Either there was no peak corresponding to the target analyte or that such a peak did not produce a reliable CSIA result

Method: Compound Specific Isotope Analysis for ^{13}C and ^2H by GC-IRMS, for ^{37}Cl by GC-qMS

	$\delta^{13}\text{C}$ TCE	$\delta^{13}\text{C}$ cDCE	$\delta^{13}\text{C}$ tDCE	$\delta^{13}\text{C}$ 11DCE	$\delta^{13}\text{C}$ 11DCA	$\delta^{13}\text{C}$ VC
Quality Control STDs						
QC-1	-26.34	-11.63	-22.45	-30.57	-33.00	-25.87
QC-2	-26.30	-12.01	-22.38	-30.64	-32.79	-26.18
Mean	-26.32	-11.82	-22.42	-30.61	-32.90	-26.03
Analytical precision (1 σ)	0.03	0.27	0.05	0.05	0.15	0.22

Pace CSIA Forensic Isotope Services

Product or Dissolved Organics: Chlorinated Solvents, Oil, Extract, Fraction and Kerogen

CSIA of ^{13}C , ^{37}Cl , and ^2H for PCE, TCE, DCE, MTBE, BTEX, 1,4-Dioxane, Alkanes, Gasoline and Oil; Bulk ^{13}C , ^2H , ^{18}O , ^{34}S , and ^{15}N

Gas Sample

Gas Composition and 2D-CSIA of ^{13}C and ^2H of C1 to C5; ^{13}C of CO_2 ; ^{14}C of C1 and CO_2 ; ^{34}S of H_2S ; ^{15}N and ^{18}O of N_2O gas

Water and Dissolved Inorganics

^2H , ^3H and ^{18}O ; ^{34}S and ^{18}O of dissolved sulfate; ^{34}S of dissolved H_2S

^{15}N and ^{18}O of dissolved Nitrate; ^{15}N of Ammonia; ^{13}C of dissolved CO_2 and Carbonate/Bicarbonate

Soil and Minerals

^{13}C , ^{18}O , ^{15}N , ^{34}S , D/H; ^{14}C of carbonate or organics

Post-Analysis Forensic Isotope Data Interpretation

Pace Analytical Energy Services
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report Carbon

18663
 Pace-MN
 Client Project Name: PS Beta Nitrop
 Client Project #: 10343283

Vinyl Chloride		Concentration (ug/l)				CSIA (Carbon)				
		Sample	PQL	Date	Area Sample	PQL	Co-elution	Analysis	Date	Delta (%)
Lab ID	Client ID									
186630001	PMW-01	<1 (U)	1	4/1/16	<1 (U)	1	No	2114	4/19/16	-
186630002	PMW-02	4	2	4/4/16	14.0	1	No	2123	4/19/16	-23.79
186630003	PMW-03	<1 (U)	1	4/1/16	<1 (U)	1	No	2122	4/19/16	-
186630004	PMW-04	<1 (U)	1	4/1/16	<1 (U)	1	No	2121	4/19/16	-
Duplicate	PMW-02 (DF-10)	4	2	4/4/16	<1 (U)	1	No	2116	4/19/16	-
Blank	-	0	-	-	<1 (U)	1	No	2111	4/19/16	-
LCS_Lo	-	10	-	-	12.0	1	No	2129	4/20/16	-25.87
LCS_Hi	-	20	-	-	22.6	1	No	2130	4/20/16	-26.18
LCS acceptance range								-27.87	<=>	-26.87
Method		8260B						AM-24-AR_C		AM-24-DL_C
Units		ug/l						Vs		% VPDB
Analyst		NA						CJS		CJS

Pace Analytical Energy Services
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report Carbon

18663
 Pace-MN
 Client Project Name: PS Beta Nirrop
 Client Project #: 10343283

1,1-Dichloroethene		Concentration (ug/l)				CSIA (Carbon)				Delta (%)
		Sample	PQL	Date	Area	Co-elution	Analysis	Date		
Lab ID	Client ID									
186630001	PMW-01	<1 (U)	1	4/1/16	Sample < 5 (U)	No	2114	4/19/16		-
186630002	PMW-02	24	2	4/4/16	36.4	No	2123	4/19/16		-18.67
186630003	PMW-03	2	1	4/1/16	< 5 (U)	No	2122	4/19/16		-
186630004	PMW-04	1	1	4/1/16	< 5 (U)	No	2121	4/19/16		-
Duplicate	PMW-02 (DF10)	24	2	4/4/16	< 5 (U)	No	2116	4/19/16		-
Blank	-	0	-	-	< 5 (U)	No	2111	4/19/16		-
LCS_Lo	-	5	-	-	5.88	No	2112	4/19/16		-30.57
LCS_HI	-	25	-	-	24.8	No	2113	4/19/16		-30.64
LCS acceptance range							-30.36	<=>		-31.36

Method	8260B	AM-24-AR_C	AM-24-DL_C
Units	ug/l	Vs	%_VPDB
Analyst	NA	CJS	CJS

Pace Analytical Energy Services
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-828-5245

CSIA Report Carbon

18663
 Pace-MN
 Client Project Name: PS Beta Nirrop
 Client Project #: 10343283

trans-Dichloroethene		Concentration				CSIA (Carbon)			
		Sample	PQL	Date	Area	Co-elution	Analysis	Date	Delta (%)
Lab ID	Client ID	Sample	PQL	Date	Area	Co-elution	Analysis	Date	Delta (%)
186630001	PMW-01	<1 (U)	1	4/1/16	<1 (U)	No	2114	4/19/16	-
186630002	PMW-02	309	2	4/4/16	28.5	No	2115	4/19/16	-37.86
186630003	PMW-03	91	1	4/1/16	22.5	No	2117	4/19/16	-23.10
186630004	PMW-04	58	1	4/1/16	11.7	No	2118	4/19/16	-29.16
Duplicate	PMW-02 (DF-10)	309	2	4/4/16	32.2	No	2116	4/19/16	-37.82
Blank	-	0	-	-	<1 (U)	No	2111	4/19/16	-
LCS_Lo	-	5	-	-	7.30	No	2129	4/20/16	-22.45
LCS_HI	-	25	-	-	28.2	No	2113	4/19/16	-22.38
LCS acceptance range									
-22.29 <=>									

Method	8260B	AM-24-AR_C	AM-24-DL_C
Units	ug/l	Vs	%_VPDB
Analyst	NA	CJS	CJS

Pace Analytical Energy Services
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report Carbon

18663
 Pace-MN
 Client Project Name: PS Beta Nirrop
 Client Project #: 10343283

1,1-Dichloroethane		Concentration				CSIA (Carbon)				
		(ug/l)		Area		Co-elution	Analysis	Date	Delta (%)	
		Sample	PQL	Sample	PQL					
Lab ID	Client ID									
186630001	PMW-01	<1 (U)	1	4/1/16	<3 (U)	3	No	2114	4/19/16	-
186630002	PMW-02	35	2	4/4/16	3.49	3	No	2115	4/19/16	-26.40
186630003	PMW-03	3	1	4/1/16	4.28	3	No	2122	4/19/16	-23.01
186630004	PMW-04	<1 (U)	1	4/1/16	<3 (U)	3	No	2121	4/19/16	-
Duplicate	PMW-02 (DF10)	35	2	4/4/16	3.90	3	No	2116	4/19/16	-26
Blank	-	0	-	-	<3 (U)	3	No	2111	4/19/16	-
LCS Lo	-	5	-	-	5.10	3	No	2112	4/19/16	-33.00
LCS_Hi	-	25	-	-	23.3	3	No	2113	4/19/16	-32.79
LCS acceptance range								-32.67	<=>	-33.67

Method	8260B	AM-24-AR_C	AM-24-DL_C
Units	ug/l	Vs	% _{sp} , VPDB
Analyst	NA	CJS	CJS

Pace Analytical Energy Services
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report Carbon

18663
 Pace-MN
 Client Project Name: PS Beta Nirop
 Client Project #: 10343283

cis-Dichloroethene		Concentration (ug/l)				CSIA (Carbon)					
		Sample	PQL	Date	Area	Co-elution	Analysis	Date	Delta (‰)		
Lab ID	Client ID	Sample	PQL	Date	Sample	PQL	Area	Co-elution	Analysis	Date	Delta (‰)
186630001	PMW-01	<1 (U)	1	4/1/16	<1 (U)	1	1	No	2114	4/19/16	-
186630002	PMW-02	361	2	4/4/16	29.2	1	1	No	2115	4/19/16	-19.24
186630003	PMW-03	54	1	4/1/16	12.9	1	1	No	2117	4/19/16	-19.77
186630004	PMW-04	24	1	4/1/16	25.5	1	1	No	2121	4/19/16	-25.88
Duplicate	PMW-02 (DF10)	361	2	4/4/16	33.1	1	1	No	2116	4/19/16	-19.62
Blank	-	0	-	-	<1 (U)	1	1	No	2111	4/19/16	-
LCS_Lo	-	5	-	-	4.69	1	1	No	2112	4/19/16	-11.63
LCS_Hi	-	25	-	-	22.3	1	1	No	2113	4/19/16	-12.01
LCS acceptance range										-12.22 <=>	

Method	8260B	AM-24-AR_C	AM-24-DL_C
Units	ug/l	Vs	%o, VPDB
Analyst	NA	CJS	CJS

Pace Analytical Energy Services
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report Carbon

18663
 Pace-MN
 Client Project Name: PS Beta Nirop
 Client Project #: 10343283

Trichloroethene		Concentration (ug/l)				CSIA (Carbon)				
		Sample	PQL	Date	Sample	Area	Co-elution	Analysis	Date	Delta (‰)
Lab ID	Client ID									
186630001	PMW-01	<1 (U)	1	4/1/16	<1 (U)	1	No	2114	4/19/16	-
186630002	PMW-02	94	0.8	4/4/16	6.16	1	No	2115	4/19/16	6.28
186630003	PMW-03	14	0.4	4/1/16	15.9	1	No	2122	4/19/16	-0.26
186630004	PMW-04	28	0.4	4/1/16	21.0	1	No	2121	4/19/16	4.39
Duplicate	PMW-02 (DF10)	94	0.8	4/4/16	7.43	1	No	2116	4/19/16	5.93
Blank	-	0	-	-	<1 (U)	1	No	2111	4/19/16	-
LCS_Lo	-	5	-	-	3.09	1	No	2112	4/19/16	-26.34
LCS_Hi	-	25	-	-	15.3	1	No	2113	4/19/16	-26.30
LCS acceptance range		-26.48 <=> -25.48								
Method	8260B		AM-24-AR_C		AM-24-DL_C					
Units	ug/l		Vs		% VPDB					
Analyst	NA		CJS		CJS					

Pace Analytical Energy Services
 220 William Pitt Way
 Pittsburgh, PA 15238
 phone: 412-826-5245

CSIA Report Carbon

18663
 Pace-MN
 Client Project Name: PS Beta Nirrop
 Client Project #: 10343283

1CP (Surr.)		CSIA (Carbon)							
Lab ID	Client ID	Sample Collection	Area	Dilution	PQL	Co-elution	Analysis	Date	Delta (‰)
186630001	PMW-01	03/31/16	18.9	1	1	No	2114	04/19/16	-36.60
186630002	PMW-02	03/31/16	26.7	10	1	No	2115	04/19/16	-36.92
186630002	PMW-02	03/31/16	33.0	1	1	No	2123	04/19/16	-37.08
186630003	PMW-03	03/31/16	33.1	5	1	No	2117	04/19/16	-36.73
186630003	PMW-03	03/31/16	21.3	1	1	No	2122	04/19/16	-36.77
186630004	PMW-04	03/31/16	23.8	5	1	No	2118	04/19/16	-36.69
186630004	PMW-04	03/31/16	13.1	1	1	No	2121	04/19/16	-36.62
Duplicate	PMW-02 (DF10)	03/31/16	10.9	10	1	No	2116	04/19/16	-36.55
Blank	-	-	25.7	1	1	No	2111	04/19/16	-36.53
LCS Lo	-	-	42.3	1	1	No	2112	04/19/16	-37.05
LCS Hi	-	-	13.0	1	1	No	2113	04/19/16	-36.91
Surrogate acceptance range							-37.49	<=>	-36.49

Method	AM-24-AR_C	AM-24-DL_C
Units	Vs	% VPDB
Analyst	CJS	CJS

Case Narrative: The blank, LCS's, duplicate and surrogates were all close to or within the acceptance range and the data is reported as valid and representative of the samples as received.

Chain of Custody

18663



Workorder: 10343283

Workorder Name: PS Beta-NIROP

Results Requested 4/29/16

4/29/16 JMA 4/11/16

Report / Invoice To		Subcontract To		Requested Analysis															
Jennifer Anderson Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-1700 Email: jennifer.anderson@pacelabs.com		Microseeps Pace Energy P.O. 10343283																	
Item	Sample ID	Collect Date/Time	Lab ID	Matrix	TH	Preserved Containers				LAB USE ONLY									
1	PMW-01	3/31/2016 09:42	10343283001	Water	16					X									
2	PMW-02	3/31/2016 11:00	10343283002	Water	16					X									
3	PMW-03	3/31/2016 12:30	10343283003	Water	16					X									
4	PMW-04	3/31/2016 13:50	10343283004	Water	16					X									
5																			
Transfers	Released By	Date/Time	Received By	Date/Time	Comments														
1	J Pace	4/11/2016	Jason PACE	4.4.16	08:30														
2																			
3																			
Cooler Temperature on Receipt		3.6 °C		Custody Seal	Y	or	N	Received on Ice	Y	or	N	Samples Intact	Y	or	N				

Cooler Receipt Form

Client Name: Parce - MN Project: PS Beta - N/RDP Lab Work Order: 18663

A. Shipping/Container Information (circle appropriate response)

Courier: FedEx UPS USPS Client Other: _____ Air bill Present: Yes No

Tracking Number: 648486965823

Custody Seal on Cooler/Box Present: Yes No Seals Intact: Yes No

Cooler/Box Packing Material: Bubble Wrap Absorbent Foam Other: _____

Type of Ice: Wet Blue None Ice Intact: Yes Melted

Cooler Temperature: 3.6°C Radiation Screened: Yes No Chain of Custody Present: Yes No

Comments: _____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non-Conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished	✓			
Sample: Name & Signature on COC		✓		
Containers intact	✓			
Were samples in separate bags	✓			
Sample container labels match COC	✓			
Sample name/date and time collected	✓			
Sufficient volume provided	✓			
PAES containers used		✓		
Are containers properly preserved for the requested testing? (as labeled)	✓			
If an unknown preservation state, were containers checked? Exception: VOA's coliform			✓	If yes, see pH form.
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			✓	

Comments: _____

Cooler contents examined/received by: LY Date: 4.4.16

Project Manager Review: _____ Date: _____

April 13, 2016

Melinda Pham
Regenesis
1011 Calle Sombra
San Clemente, CA 92673

RE: Project: PS Beta - NIROP
Pace Project No.: 10343262

Dear Melinda Pham:

Enclosed are the analytical results for sample(s) received by the laboratory on March 31, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

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

Sincerely,



Jennifer Anderson
jennifer.anderson@pacelabs.com
Project Manager

Enclosures

cc: Ryan Moore, Regenesis



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PS Beta - NIROP
Pace Project No.: 10343262

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
525 N 8th Street, Salina, KS 67401
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Alabama Certification #40770
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #:14-008r
Georgia Certification #: 959
Georgia EPD #: Pace
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
West Virginia Certification #: 382
West Virginia DHHR #:9952C
Wisconsin Certification #: 999407970

Montana Certification IDs

150 N. 9th Street, Billings, MT 59101
Colorado Asbestos #: 17119
A2LA Certification #: 3590.01
EPA Region 8 Certification #: 8TMS-L
Idaho Certification #: MT00012

Minnesota Dept of Health Certification #: 030-999-442
Montana Certification #: MT CERT0040
North Dakota Dept. Of Health #: R-209
NVLAP Certification #: 101292-0
Washington Department of Ecology #: C993

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Alaska Certification #MN01084
Arizona Department of Health Certification #AZ0785
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203

Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007
Nevada DNR #MN010842015-1
Oklahoma Department of Environmental Quality

Ormond Beach Certification IDs

8 East Tower Circle, Ormond Beach, FL 32174
Alabama Certification #: 41320
Connecticut Certification #: PH-0216
Delaware Certification: FL NELAC Reciprocity
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Illinois Certification #: 200068
Indiana Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Louisiana Certification #: FL NELAC Reciprocity
Louisiana Environmental Certificate #: 05007
Maryland Certification: #346
Michigan Certification #: 9911
Mississippi Certification: FL NELAC Reciprocity

Missouri Certification #: 236
Montana Certification #: Cert 0074
Nebraska Certification: NE-OS-28-14
Nevada Certification: FL NELAC Reciprocity
New York Certification #: 11608
North Carolina Environmental Certificate #: 667
North Carolina Certification #: 12710
North Dakota Certification #: R-216
Oklahoma Certification #: D9947
Pennsylvania Certification #: 68-00547
Puerto Rico Certification #: FL01264
South Carolina Certification: #96042001
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity
US Virgin Islands Certification: FL NELAC Reciprocity
Virginia Environmental Certification #: 460165

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PS Beta - NIROP

Pace Project No.: 10343262

Ormond Beach Certification IDs

Wyoming Certification: FL NELAC Reciprocity

West Virginia Certification #: 9962C

Wisconsin Certification #: 399079670

Wyoming (EPA Region 8): FL NELAC Reciprocity

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: PS Beta - NIROP

Pace Project No.: 10343262

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10343262001	PMW-01	Water	03/31/16 09:42	03/31/16 15:38
10343262002	PMW-02	Water	03/31/16 11:00	03/31/16 15:38
10343262003	PMW-03	Water	03/31/16 12:30	03/31/16 15:38
10343262004	PMW-04	Water	03/31/16 13:50	03/31/16 15:38

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: PS Beta - NIROP

Pace Project No.: 10343262

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10343262001	PMW-01	RSK 175	MLS	3	PASI-M
		EPA 6010C	IP	1	PASI-M
		6010C Met	IP	1	PASI-M
		SM 4500-S2-D	WT1	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	KAM	1	PASI-O
		EPA 300.0	KEO	1	PASI-M
		EPA 353.2	MW	1	PASI-M
		SM 5220D	DCL	1	PASI-M
		SM 5310C	JP1	1	PASI-V
10343262002	PMW-02	RSK 175	MLS	3	PASI-M
		EPA 6010C	IP	1	PASI-M
		6010C Met	IP	1	PASI-M
		SM 4500-S2-D	WT1	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	KAM	1	PASI-O
		EPA 300.0	KEO	1	PASI-M
		EPA 353.2	MW	1	PASI-M
		SM 5220D	DCL	1	PASI-M
		SM 5310C	JP1	1	PASI-V
10343262003	PMW-03	RSK 175	MLS	3	PASI-M
		EPA 6010C	IP	1	PASI-M
		6010C Met	IP	1	PASI-M
		SM 4500-S2-D	WT1	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	KAM	1	PASI-O
		EPA 300.0	KEO	1	PASI-M
		EPA 353.2	MW	1	PASI-M
		SM 5220D	DCL	1	PASI-M
		SM 5310C	JP1	1	PASI-V
10343262004	PMW-04	RSK 175	MLS	3	PASI-M
		EPA 6010C	IP	1	PASI-M
		6010C Met	IP	1	PASI-M
		SM 4500-S2-D	WT1	1	PASI-MT
		SM 2320B	MW	3	PASI-M
		SM 2320B	KAM	1	PASI-O
		EPA 300.0	KEO	1	PASI-M

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: PS Beta - NIROP

Pace Project No.: 10343262

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 353.2	MW	1	PASI-M
		SM 5220D	DCL	1	PASI-M
		SM 5310C	JP1	1	PASI-V

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta - NIROP
Pace Project No.: 10343262

Sample: PMW-01	Lab ID: 10343262001	Collected: 03/31/16 09:42	Received: 03/31/16 15:38	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace								
Analytical Method: RSK 175								
Ethane	ND	ug/L	10.0	1		04/01/16 10:20	74-84-0	
Ethene	ND	ug/L	10.0	1		04/01/16 10:20	74-85-1	
Methane	1710	ug/L	10.0	1		04/01/16 10:20	74-82-8	
6010C MET ICP								
Analytical Method: EPA 6010C Preparation Method: EPA 3010								
Iron	12100	ug/L	50.0	1	04/01/16 10:14	04/01/16 14:20	7439-89-6	
6010C MET ICP, Dissolved								
Analytical Method: 6010C Met Preparation Method: EPA 3010								
Iron, Dissolved	7240	ug/L	50.0	1	04/01/16 10:14	04/06/16 14:26	7439-89-6	
4500S2D Sulfide Water								
Analytical Method: SM 4500-S2-D								
Sulfide	0.25	mg/L	0.10	1		04/04/16 14:02		
2320B Alkalinity								
Analytical Method: SM 2320B								
Carbon Dioxide (SM4500CO2D)	100	mg/L	5.0	1		04/04/16 14:12	124-38-9	
Alkalinity, Total as CaCO3	519	mg/L	5.0	1		04/11/16 09:49		
Alkalinity,Bicarbonate (CaCO3)	519	mg/L	5.0	1		04/11/16 09:49		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	5.0	1		04/11/16 09:49		
300.0 IC Anions								
Analytical Method: EPA 300.0								
Sulfate	102	mg/L	2.4	2		04/08/16 03:14	14808-79-8	
353.2 Nitrate + Nitrite								
Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	ND	mg/L	0.020	1		04/08/16 11:52		
5220D COD								
Analytical Method: SM 5220D Preparation Method: SM 5220D								
Chemical Oxygen Demand	ND	mg/L	50.0	1	04/01/16 10:14	04/01/16 12:55		
5310C TOC								
Analytical Method: SM 5310C								
Total Organic Carbon	14.5	mg/L	1.0	1		04/08/16 14:38	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta - NIROP

Pace Project No.: 10343262

Sample: PMW-02	Lab ID: 10343262002	Collected: 03/31/16 11:00	Received: 03/31/16 15:38	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace								
Analytical Method: RSK 175								
Ethane	ND	ug/L	10.0	1		04/01/16 10:36	74-84-0	
Ethene	ND	ug/L	10.0	1		04/01/16 10:36	74-85-1	
Methane	18.6	ug/L	10.0	1		04/01/16 10:36	74-82-8	
6010C MET ICP								
Analytical Method: EPA 6010C Preparation Method: EPA 3010								
Iron	9170	ug/L	50.0	1	04/01/16 10:14	04/01/16 14:23	7439-89-6	
6010C MET ICP, Dissolved								
Analytical Method: 6010C Met Preparation Method: EPA 3010								
Iron, Dissolved	6320	ug/L	50.0	1	04/01/16 10:14	04/06/16 14:29	7439-89-6	
4500S2D Sulfide Water								
Analytical Method: SM 4500-S2-D								
Sulfide	0.13	mg/L	0.10	1		04/04/16 14:04		
2320B Alkalinity								
Analytical Method: SM 2320B								
Carbon Dioxide (SM4500CO2D)	60.7	mg/L	5.0	1		04/04/16 14:34	124-38-9	
Alkalinity, Total as CaCO3	499	mg/L	5.0	1		04/11/16 09:54		
Alkalinity,Bicarbonate (CaCO3)	499	mg/L	5.0	1		04/11/16 09:54		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	5.0	1		04/11/16 09:54		
300.0 IC Anions								
Analytical Method: EPA 300.0								
Sulfate	128	mg/L	2.4	2		04/07/16 22:11	14808-79-8	
353.2 Nitrate + Nitrite								
Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	ND	mg/L	0.020	1		04/08/16 11:59		
5220D COD								
Analytical Method: SM 5220D Preparation Method: SM 5220D								
Chemical Oxygen Demand	ND	mg/L	50.0	1	04/01/16 10:14	04/01/16 12:55		
5310C TOC								
Analytical Method: SM 5310C								
Total Organic Carbon	5.3	mg/L	1.0	1		04/08/16 14:51	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta - NIROP

Pace Project No.: 10343262

Sample: PMW-03	Lab ID: 10343262003	Collected: 03/31/16 12:30	Received: 03/31/16 15:38	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace								
Analytical Method: RSK 175								
Ethane	ND	ug/L	10.0	1		04/01/16 10:44	74-84-0	
Ethene	ND	ug/L	10.0	1		04/01/16 10:44	74-85-1	
Methane	27.3	ug/L	10.0	1		04/01/16 10:44	74-82-8	
6010C MET ICP								
Analytical Method: EPA 6010C Preparation Method: EPA 3010								
Iron	8680	ug/L	50.0	1	04/01/16 10:14	04/01/16 14:39	7439-89-6	
6010C MET ICP, Dissolved								
Analytical Method: 6010C Met Preparation Method: EPA 3010								
Iron, Dissolved	7600	ug/L	50.0	1	04/01/16 10:14	04/06/16 14:45	7439-89-6	
4500S2D Sulfide Water								
Analytical Method: SM 4500-S2-D								
Sulfide	ND	mg/L	0.10	1		04/04/16 14:07		
2320B Alkalinity								
Analytical Method: SM 2320B								
Carbon Dioxide (SM4500CO2D)	41.3	mg/L	5.0	1		04/04/16 14:42	124-38-9	
Alkalinity, Total as CaCO3	356	mg/L	5.0	1		04/11/16 09:57		
Alkalinity,Bicarbonate (CaCO3)	356	mg/L	5.0	1		04/11/16 09:57		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	5.0	1		04/11/16 09:57		
300.0 IC Anions								
Analytical Method: EPA 300.0								
Sulfate	151	mg/L	2.4	2		04/07/16 22:35	14808-79-8	
353.2 Nitrate + Nitrite								
Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	ND	mg/L	0.020	1		04/08/16 12:00		
5220D COD								
Analytical Method: SM 5220D Preparation Method: SM 5220D								
Chemical Oxygen Demand	ND	mg/L	50.0	1	04/01/16 10:14	04/01/16 12:55		
5310C TOC								
Analytical Method: SM 5310C								
Total Organic Carbon	3.1	mg/L	1.0	1		04/08/16 15:04	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PS Beta - NIROP
Pace Project No.: 10343262

Sample: PMW-04	Lab ID: 10343262004	Collected: 03/31/16 13:50	Received: 03/31/16 15:38	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace								
Analytical Method: RSK 175								
Ethane	ND	ug/L	10.0	1		04/01/16 10:52	74-84-0	
Ethene	ND	ug/L	10.0	1		04/01/16 10:52	74-85-1	
Methane	ND	ug/L	10.0	1		04/01/16 10:52	74-82-8	
6010C MET ICP								
Analytical Method: EPA 6010C Preparation Method: EPA 3010								
Iron	6310	ug/L	50.0	1	04/01/16 10:14	04/01/16 14:56	7439-89-6	
6010C MET ICP, Dissolved								
Analytical Method: 6010C Met Preparation Method: EPA 3010								
Iron, Dissolved	3350	ug/L	50.0	1	04/01/16 10:14	04/06/16 14:48	7439-89-6	
4500S2D Sulfide Water								
Analytical Method: SM 4500-S2-D								
Sulfide	ND	mg/L	0.10	1		04/04/16 14:07		
2320B Alkalinity								
Analytical Method: SM 2320B								
Carbon Dioxide (SM4500CO2D)	22.7	mg/L	5.0	1		04/04/16 14:49	124-38-9	
Alkalinity, Total as CaCO3	231	mg/L	5.0	1		04/11/16 10:01		
Alkalinity,Bicarbonate (CaCO3)	231	mg/L	5.0	1		04/11/16 10:01		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	5.0	1		04/11/16 10:01		
300.0 IC Anions								
Analytical Method: EPA 300.0								
Sulfate	90.5	mg/L	2.4	2		04/07/16 22:53	14808-79-8	
353.2 Nitrate + Nitrite								
Analytical Method: EPA 353.2								
Nitrogen, NO2 plus NO3	ND	mg/L	0.020	1		04/08/16 12:01		
5220D COD								
Analytical Method: SM 5220D Preparation Method: SM 5220D								
Chemical Oxygen Demand	ND	mg/L	50.0	1	04/01/16 10:14	04/01/16 12:55		
5310C TOC								
Analytical Method: SM 5310C								
Total Organic Carbon	3.6	mg/L	1.0	1		04/08/16 15:16	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10343262

QC Batch: AIR/25586 Analysis Method: RSK 175
 QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE
 Associated Lab Samples: 10343262001, 10343262002, 10343262003, 10343262004

METHOD BLANK: 2221533 Matrix: Water
 Associated Lab Samples: 10343262001, 10343262002, 10343262003, 10343262004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	10.0	04/01/16 07:01	
Ethene	ug/L	ND	10.0	04/01/16 07:01	
Methane	ug/L	ND	10.0	04/01/16 07:01	

LABORATORY CONTROL SAMPLE & LCSD: 2221534

Parameter	Units	2221535								
		Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Ethane	ug/L	114	109	112	96	99	85-115	3	20	
Ethene	ug/L	106	102	104	96	99	85-115	2	20	
Methane	ug/L	60.7	58.4	59.4	96	98	85-115	2	20	

SAMPLE DUPLICATE: 2223990

Parameter	Units	10343262001		Dup Result		Max RPD	Qualifiers
		Result	Dup Result	RPD	RPD		
Ethane	ug/L	ND	ND			20	
Ethene	ug/L	ND	ND			20	
Methane	ug/L	1710	104		177	20 R1	

SAMPLE DUPLICATE: 2223991

Parameter	Units	92291781003		Max RPD	Qualifiers
		Result	Dup Result		
Ethane	ug/L	ND	ND	20	
Ethene	ug/L	ND	ND	20	
Methane	ug/L	1.7J	1.8J	20	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10343262

QC Batch: MPRP/62354 Analysis Method: EPA 6010C
 QC Batch Method: EPA 3010 Analysis Description: 6010C Water
 Associated Lab Samples: 10343262001, 10343262002, 10343262003, 10343262004

METHOD BLANK: 2221459 Matrix: Water
 Associated Lab Samples: 10343262001, 10343262002, 10343262003, 10343262004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron	ug/L	ND	50.0	04/01/16 14:13	

LABORATORY CONTROL SAMPLE: 2221460

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	10000	9320	93	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2221461 2221462

Parameter	Units	10343262002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Iron	ug/L	9170	10000	10000	17900	18400	88	92	75-125	2	20	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10343262

QC Batch: MT/23071 Analysis Method: SM 4500-S2-D
 QC Batch Method: SM 4500-S2-D Analysis Description: 4500S2D Sulfide Water
 Associated Lab Samples: 10343262001, 10343262002, 10343262003, 10343262004

METHOD BLANK: 2222793 Matrix: Water
 Associated Lab Samples: 10343262001, 10343262002, 10343262003, 10343262004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfide	mg/L	ND	0.10	04/04/16 13:53	

LABORATORY CONTROL SAMPLE: 2222794

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide	mg/L	.94	0.81	85	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2222795 2222796

Parameter	Units	10342808001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfide	mg/L	ND	.94	.94	0.67	0.67	70	71	80-120	0	20	M1

SAMPLE DUPLICATE: 2222797

Parameter	Units	10343262003 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide	mg/L	ND	.016J		20	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10343262

QC Batch: WET/47339 Analysis Method: SM 2320B
 QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
 Associated Lab Samples: 10343262001, 10343262002, 10343262003, 10343262004

METHOD BLANK: 2228411 Matrix: Water
 Associated Lab Samples: 10343262001, 10343262002, 10343262003, 10343262004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	ND	5.0	04/11/16 08:44	
Alkalinity,Bicarbonate (CaCO3)	mg/L	ND	5.0	04/11/16 08:44	
Alkalinity,Carbonate (CaCO3)	mg/L	ND	5.0	04/11/16 08:44	

LABORATORY CONTROL SAMPLE & LCSD: 2228412 2228413

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	40	43.0	43.1	107	108	90-110	0	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2228414 2228415

Parameter	Units	10343048013 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	334	40	40	372	374	93	100	80-120	1	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2228416 2228417

Parameter	Units	10343221003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	301	40	40	350	347	121	114	80-120	1	30	M1

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10343262

QC Batch: WETA/26787 Analysis Method: EPA 300.0
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
 Associated Lab Samples: 10343262001, 10343262002, 10343262003, 10343262004

METHOD BLANK: 2226222 Matrix: Water
 Associated Lab Samples: 10343262001, 10343262002, 10343262003, 10343262004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	1.2	04/08/16 10:41	

LABORATORY CONTROL SAMPLE: 2226223

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	12.5	12.5	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2226224 2226225

Parameter	Units	10342403001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	12.4	12.5	12.5	24.1	24.1	94	94	90-110	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2226226 2226227

Parameter	Units	10343221003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	76.6	12.5	12.5	80.0	78.0	27	11	90-110	2	20	M1

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10343262

QC Batch: WETA/26794 Analysis Method: EPA 353.2
 QC Batch Method: EPA 353.2 Analysis Description: 353.2 Nitrate + Nitrite, preserved
 Associated Lab Samples: 10343262001, 10343262002, 10343262003, 10343262004

METHOD BLANK: 2227194 Matrix: Water
 Associated Lab Samples: 10343262001, 10343262002, 10343262003, 10343262004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	ND	0.020	04/08/16 11:44	

LABORATORY CONTROL SAMPLE: 2227195

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	1	1.0	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2227196 2227197

Parameter	Units	10343330001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	0.39	1	1	1.4	1.3	98	95	90-110	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2227198 2227199

Parameter	Units	10343330002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	0.39	1	1	1.4	1.4	96	102	90-110	4	20	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10343262

QC Batch: WETA/26740 Analysis Method: SM 5220D
QC Batch Method: SM 5220D Analysis Description: 5220D COD
Associated Lab Samples: 10343262001, 10343262002, 10343262003, 10343262004

METHOD BLANK: 2221504 Matrix: Water
Associated Lab Samples: 10343262001, 10343262002, 10343262003, 10343262004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50.0	04/01/16 12:50	

LABORATORY CONTROL SAMPLE: 2221505

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	300	312	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2221506 2221507

Parameter	Units	10342472001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chemical Oxygen Demand	mg/L	21900	25000	25000	49500	48100	110	105	80-120	3	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2221508 2221509

Parameter	Units	10342811001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chemical Oxygen Demand	mg/L	12500	2500	2500	14800	15200	92	105	80-120	2	20	

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QUALITY CONTROL DATA

Project: PS Beta - NIROP

Pace Project No.: 10343262

QC Batch: WETA/16222 Analysis Method: SM 5310C
 QC Batch Method: SM 5310C Analysis Description: 5310C TOC
 Associated Lab Samples: 10343262001, 10343262002, 10343262003, 10343262004

METHOD BLANK: 304454 Matrix: Water

Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	04/08/16 14:00	

LABORATORY CONTROL SAMPLE: 304455

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	25	24.8	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 304456 304457

Parameter	Units	1263443001 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.								
Total Organic Carbon	mg/L	4.3	25	25	29.4	29.6	100	101	80-120	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 304458 304459

Parameter	Units	1263693001 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.								
Total Organic Carbon	mg/L	3.2	25	25	28.3	28.7	100	102	80-120	2	20	

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QUALIFIERS

Project: PS Beta - NIROP

Pace Project No.: 10343262

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

PASI-MT Pace Analytical Services - Montana

PASI-O Pace Analytical Services - Ormond Beach

PASI-V Pace Analytical Services - Virginia

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PS Beta - NIROP

Pace Project No.: 10343262

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10343262001	PMW-01	RSK 175	AIR/25586		
10343262002	PMW-02	RSK 175	AIR/25586		
10343262003	PMW-03	RSK 175	AIR/25586		
10343262004	PMW-04	RSK 175	AIR/25586		
10343262001	PMW-01	EPA 3010	MPRP/62354	EPA 6010C	ICP/27285
10343262002	PMW-02	EPA 3010	MPRP/62354	EPA 6010C	ICP/27285
10343262003	PMW-03	EPA 3010	MPRP/62354	EPA 6010C	ICP/27285
10343262004	PMW-04	EPA 3010	MPRP/62354	EPA 6010C	ICP/27285
10343262001	PMW-01	EPA 3010	MPRP/62353	6010C Met	ICP/27286
10343262002	PMW-02	EPA 3010	MPRP/62353	6010C Met	ICP/27286
10343262003	PMW-03	EPA 3010	MPRP/62353	6010C Met	ICP/27286
10343262004	PMW-04	EPA 3010	MPRP/62353	6010C Met	ICP/27286
10343262001	PMW-01	SM 4500-S2-D	MT/23071		
10343262002	PMW-02	SM 4500-S2-D	MT/23071		
10343262003	PMW-03	SM 4500-S2-D	MT/23071		
10343262004	PMW-04	SM 4500-S2-D	MT/23071		
10343262001	PMW-01	SM 2320B	WET/36890		
10343262001	PMW-01	SM 2320B	WET/47339		
10343262002	PMW-02	SM 2320B	WET/36890		
10343262002	PMW-02	SM 2320B	WET/47339		
10343262003	PMW-03	SM 2320B	WET/36890		
10343262003	PMW-03	SM 2320B	WET/47339		
10343262004	PMW-04	SM 2320B	WET/36890		
10343262004	PMW-04	SM 2320B	WET/47339		
10343262001	PMW-01	EPA 300.0	WETA/26787		
10343262002	PMW-02	EPA 300.0	WETA/26787		
10343262003	PMW-03	EPA 300.0	WETA/26787		
10343262004	PMW-04	EPA 300.0	WETA/26787		
10343262001	PMW-01	EPA 353.2	WETA/26794		
10343262002	PMW-02	EPA 353.2	WETA/26794		
10343262003	PMW-03	EPA 353.2	WETA/26794		
10343262004	PMW-04	EPA 353.2	WETA/26794		
10343262001	PMW-01	SM 5220D	WETA/26740	SM 5220D	WETA/26747
10343262002	PMW-02	SM 5220D	WETA/26740	SM 5220D	WETA/26747
10343262003	PMW-03	SM 5220D	WETA/26740	SM 5220D	WETA/26747
10343262004	PMW-04	SM 5220D	WETA/26740	SM 5220D	WETA/26747
10343262001	PMW-01	SM 5310C	WETA/16222		
10343262002	PMW-02	SM 5310C	WETA/16222		
10343262003	PMW-03	SM 5310C	WETA/16222		
10343262004	PMW-04	SM 5310C	WETA/16222		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

Client Name: Regensis Project #: WO# : 10343262

WO# : 10343262



Courier: Fed Ex UPS USPS Client
 Commercial Pace Speedee Other: _____
 Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No

Optional: Proj. Due Date: _____ Proj. Name: _____

Packing Material: Bubble Wrap Bubble Bags None Other: _____ Temp Blank? Yes No

Thermometer Used: 151401163 151401164 B88A912167504 B88A0143310098
 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temp Read (°C): 0.2, 1.6 Cooler Temp Corrected (°C): 0.2, 1.6 Biological Tissue Frozen? Yes No N/A

Temp should be above freezing to 6°C Correction Factor: The Date and Initials of Person Examining Contents: 3-31-16/AS

USDA Regulated Soil (N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, AZ, CA, FL, GA, ID, IA, MS, NC, NM, NY, OK, OR, SC, TN, TX or WA (check maps)? Yes No
 Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>	
All containers needing acid/base preservation have been checked? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13. <input checked="" type="checkbox"/> HNO ₃ <input checked="" type="checkbox"/> H ₂ SO ₄ <input checked="" type="checkbox"/> NaOH <input checked="" type="checkbox"/> CN <input type="checkbox"/> HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample # <u>14 42 42 1</u>
Exceptions: <input checked="" type="checkbox"/> VOA, <input checked="" type="checkbox"/> Coliform, <input checked="" type="checkbox"/> Oil and Grease, DRO/8015 (water) DOC <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): <u>030716382A</u>	

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Andrew

Date: 04/01/2016

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Sample Condition Upon Receipt

Client Name: Pace MN Project #: 1034326 2

Courier: Fed Ex UPS USPS Client
 Commercial Pace Other: _____

Tracking Number: 6484 8096 5801

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No
 Optional: Proj. Due Date: _____ Proj. Name: _____

Packing Material: Bubble Wrap Bubble Bags None Other: _____ Temp Blank? Yes No

Thermometer Used: 13830045 NA Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temp Read: 1.8

Date and Initials of Person Examining Contents: 4/2 MT

Cooler Temp Corrected: 1.9

Biological Tissue Frozen? Yes No

Temp should be above freezing to 6°C

Comments:

Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and Signature on COC?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container.
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>		
All containers needing acid/base preservation have been checked?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13. <input type="checkbox"/> HNO ₃ <input type="checkbox"/> H ₂ SO ₄ <u>4/4</u> <input checked="" type="checkbox"/> NaOH <input type="checkbox"/> HCl Sample # <u>001-004</u> <u>+ZnAc</u>
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed: <u>MT</u> Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): <u>NA</u>		

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? Yes No


Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: [Signature]

Date: 04/04/2016

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

	Document Name: Sample Condition Upon Receipt Form	Document Revised: 23Feb2015 Page 1 of 1
	Document No.: F-VM-C-001-Rev.09	Issuing Authority: Pace Virginia, Minnesota Quality Office

Sample Condition Upon Receipt

Client Name:

Pace MIV

Project #:

WO#: 1263451



Courier: Fed Ex UPS USPS Client
 Commercial Pace Other: _____

Tracking Number: _____

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No Optional: Proj. Due Date: _____ Proj. Name: _____

Packing Material: Bubble Wrap Bubble Bags None Other: _____ Temp Blank? Yes No

Thermometer Used: 140792808 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temp Read °C: 1.9 Cooler Temp Corrected °C: 1.2 Biological Tissue Frozen? Yes No N/A
 Temp should be above freezing to 6°C Correction Factor: 0.3 Date and Initials of Person Examining Contents: JPK 4/4/16

Comments: 4-4-16 J

Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and Signature on COC?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>		
All containers needing acid/base preservation will be checked and documented in the pH logbook.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	See pH log for results and additional preservation documentation
Headspace in Methyl Mercury Container	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

FECAL WAIVER ON FILE Y N

TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: KAH

Date: 3 4-4-16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

NO#: 35236982



35236982

Chain of Custody



Pace Analytical
www.pacelabs.com

Workorder: 10343262 Workorder Name: PS Beta - NIROP Owner Received Date: 3/31/2016 Results Requested By: 4/14/2016

Report To: Subcontract To: Requested Analysis: Comments:

Jennifer Anderson
Pace Analytical Minnesota
1700 Elm Street
Suite 200
Minneapolis, MN 55414
Phone (612)607-1700

Pace Analytical Ormond Beach
8 East Tower Circle
Ormond Beach, FL 32174
Phone (386)672-5668

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers		LAB USE ONLY
						Unpreserved	Preserved	
1	PMW-01	PS	3/31/2016 09:42	10343262001	Water	1		
2	PMW-02	PS	3/31/2016 11:00	10343262002	Water	1		
3	PMW-03	PS	3/31/2016 12:30	10343262003	Water	1		
4	PMW-04	PS	3/31/2016 13:50	10343262004	Water	1		
5								

Carbon Dioxide in Water

Transfers	Released By	Date/Time	Received By	Date/Time
1	J. Pace	4/11/16 10:20	[Signature]	4/13/16 10:00
2				
3				

Cooler Temperature on Receipt 5.7 °C Custody Seal Y or (N) Received on Ice (Y) or N Samples Intact Y or N



Document Name
Sample Condition Upon Receipt Form
Document No.:
F-FL-C-007 rev. 07

Document Revised:
December 28, 2015
Issuing Authority:
Pace Florida Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #
Project Manager:
Client:

WO# : 35236982
PM: JJV Due Date: 04/08/16
CLIENT: PACMIN

Date and Initials of person examining contents: 4/2/16 1000
Label: [Signature]
Deliver: _____
pH: _____

Courier: Fed Ex UPS USPS Client Commercial Pace Other
Shipping Method: First Overnight Priority Overnight Standard Overnight Ground
Billing: Recipient Sender Third Party Unknown Cooler Size if Applicable: _____
Tracking # (Master #) 6484 8696 5591

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no
Packing Material: Bubble Wrap Bubble Bags None Other _____ Biological Tissue is Frozen: Yes No N/A
Thermometer Used 222 Type of Ice Wet Blue None Samples on ice, cooling process has begun
Cooler #1 Temperature °C 0.0 (Visual) +6.1 (Correction Factor) 0.1 (Actual)
Cooler #2 Temperature °C 5.6 (Visual) +0.1 (Correction Factor) 5.7 (Actual)
Cooler #3 Temperature °C _____ (Visual) _____ (Correction Factor) _____ (Actual)
Cooler #4 Temperature °C _____ (Visual) _____ (Correction Factor) _____ (Actual)
Cooler #5 Temperature °C _____ (Visual) _____ (Correction Factor) _____ (Actual)
Cooler #6 Temperature °C _____ (Visual) _____ (Correction Factor) _____ (Actual)
Temp should be above freezing to 6°C

Comments:

Chain of Custody Present	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody Filled Out	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Relinquished Signature & Sampler Name COC	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples Arrived within Hold Time	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Rush TAT requested on COC	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient Volume	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct Containers Used	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Containers Used	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Sample Labels match COC (sample IDs & date/time of collection)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing acid/base preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	HNO3 pH<2 HCl pH<2
All Containers needing preservation are found to be in compliance with EPA recommendation: Exceptions: VOA, Coliform, TOC, O&G	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	H2SO4 pH<2 NaOH pH>12 NaOH/ZnOAc pH>9
No Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____
Comments/ Resolution (use back for additional comments):

Project Manager Review: _____ Date: 4/2



Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

April 8, 2016

Jennifer Anderson
Pace Analytical Services, Inc.
1700 Elm Street
Suite 200
Minneapolis, MN 55414

RE: **PS BETA - NIROP / 10343262**

Pace Workorder: 18665

Dear Jennifer Anderson:

Enclosed are the analytical results for sample(s) received by the laboratory on Monday, April 04, 2016. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

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

Sincerely,

Ruth Welsh 04/08/2016
Ruth.Welsh@pacelabs.com

Customer Service Representative

Enclosures.

As a valued client we would appreciate your comments on our service.
Please email info@microseeps.com.

Total Number of Pages 15

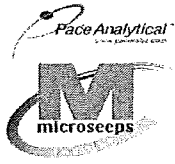
Report ID: 18665 - 782308

Page 1 of 13



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LABORATORY ACCREDITATIONS & CERTIFICATIONS

Accreditor:	Pennsylvania Department of Environmental Protection, Bureau of Laboratories
Accreditation ID:	02-00538
Scope:	NELAP Non-Potable Water and Solid & Hazardous Waste
Accreditor:	South Carolina Department of Health and Environmental Control, Office of Environmental Laboratory Certification
Accreditation ID:	89009003
Scope:	Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: New Jersey, Department of Environmental Protection
Accreditation ID:	PA026
Scope:	Non-Potable Water; Solid and Chemical Materials
Accreditor:	NELAP: New York, Department of Health Wadsworth Center
Accreditation ID:	11815
Scope:	Non-Potable Water; Solid and Hazardous Waste
Accreditor:	State of Connecticut, Department of Public Health, Division of Environmental Health
Accreditation ID:	PH-0263
Scope:	Clean Water Act (CWA) Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: Texas, Commission on Environmental Quality
Accreditation ID:	T104704453-09-TX
Scope:	Non-Potable Water
Accreditor:	State of New Hampshire
Accreditation ID:	299409
Scope:	Non-potable water
Accreditor:	State of Georgia
Accreditation ID:	Chapter 391-3-26
Scope:	As per the Georgia EPD Rules and Regulations for Commercial Laboratories, PAES is accredited by the Pennsylvania Department of Environmental Protection Bureau of Laboratories under the National Environmental Laboratory Approval Program (NELAC).



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Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

SAMPLE SUMMARY

Workorder: 18665 PS BETA - NIROP / 10343262

Lab ID	Sample ID	Matrix	Date Collected	Date Received
186650001	PMW-01	Water	3/31/2016 09:42	4/4/2016 08:30
186650002	PMW-02	Water	3/31/2016 11:00	4/4/2016 08:30
186650003	PMW-03	Water	3/31/2016 12:30	4/4/2016 08:30
186650004	PMW-04	Water	3/31/2016 13:50	4/4/2016 08:30



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 Phone: (412) 826-5245
 Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 18665 PS BETA - NIROP / 10343262

Lab ID: 186650001 Date Received: 4/4/2016 08:30 Matrix: Water
 Sample ID: PMW-01 Date Collected: 3/31/2016 09:42

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM23G			Analytical Method: AM23G					
Lactic Acid	0.10J	mg/l	0.20	0.0080	1	4/6/2016 02:14	MD	
Acetic Acid	17	mg/l	1.0	0.12	10	4/6/2016 17:23	MD	d
Propionic Acid	10	mg/l	1.0	0.060	10	4/6/2016 17:23	MD	d
Formic Acid	0.044J	mg/l	0.10	0.0070	1	4/6/2016 02:14	MD	B
Butyric Acid	1.4	mg/l	0.10	0.010	1	4/6/2016 02:14	MD	
Pyruvic Acid	0.066J	mg/l	0.10	0.015	1	4/6/2016 02:14	MD	
i-Pentanoic Acid	0.054J	mg/l	0.10	0.0070	1	4/6/2016 02:14	MD	
Pentanoic Acid	0.10	U mg/l	0.10	0.012	1	4/6/2016 02:14	MD	
i-Hexanoic Acid	0.20	U mg/l	0.20	0.014	1	4/6/2016 02:14	MD	
Hexanoic Acid	0.20	U mg/l	0.20	0.0070	1	4/6/2016 02:14	MD	



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ANALYTICAL RESULTS

Workorder: 18665 PS BETA - NIROP / 10343262

Lab ID: 186650002

Date Received: 4/4/2016 08:30 Matrix: Water

Sample ID: PMW-02

Date Collected: 3/31/2016 11:00

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
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EDonors - MICR

Analysis Desc: AM23G

Analytical Method: AM23G

Lactic Acid	0.043J	mg/l	0.20	0.0080	1	4/6/2016 03:08	MD	
Acetic Acid	2.7	mg/l	0.10	0.012	1	4/6/2016 03:08	MD	
Propionic Acid	2.2	mg/l	0.10	0.0060	1	4/6/2016 03:08	MD	
Formic Acid	0.10 U	mg/l	0.10	0.0070	1	4/6/2016 03:08	MD	B
Butyric Acid	0.10 U	mg/l	0.10	0.010	1	4/6/2016 03:08	MD	
Pyruvic Acid	0.10 U	mg/l	0.10	0.015	1	4/6/2016 03:08	MD	
i-Pentanoic Acid	0.10 U	mg/l	0.10	0.0070	1	4/6/2016 03:08	MD	
Pentanoic Acid	0.10 U	mg/l	0.10	0.012	1	4/6/2016 03:08	MD	
i-Hexanoic Acid	0.20 U	mg/l	0.20	0.014	1	4/6/2016 03:08	MD	
Hexanoic Acid	0.20 U	mg/l	0.20	0.0070	1	4/6/2016 03:08	MD	



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ANALYTICAL RESULTS

Workorder: 18665 PS BETA - NIROP / 10343262

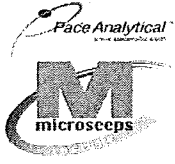
Lab ID: **186650003** Date Received: 4/4/2016 08:30 Matrix: Water
 Sample ID: **PMW-03** Date Collected: 3/31/2016 12:30

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM23G			Analytical Method: AM23G					
Lactic Acid	0.20 U	mg/l	0.20	0.0080	1	4/6/2016 04:01	MD	
Acetic Acid	0.035J	mg/l	0.10	0.012	1	4/6/2016 04:01	MD	
Propionic Acid	0.10 U	mg/l	0.10	0.0060	1	4/6/2016 04:01	MD	
Formic Acid	0.028J	mg/l	0.10	0.0070	1	4/6/2016 04:01	MD	B
Butyric Acid	0.10 U	mg/l	0.10	0.010	1	4/6/2016 04:01	MD	
Pyruvic Acid	0.10 U	mg/l	0.10	0.015	1	4/6/2016 04:01	MD	
i-Pentanoic Acid	0.10 U	mg/l	0.10	0.0070	1	4/6/2016 04:01	MD	
Pentanoic Acid	0.10 U	mg/l	0.10	0.012	1	4/6/2016 04:01	MD	
i-Hexanoic Acid	0.20 U	mg/l	0.20	0.014	1	4/6/2016 04:01	MD	
Hexanoic Acid	0.20 U	mg/l	0.20	0.0070	1	4/6/2016 04:01	MD	



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 220 William Pitt Way
 Pittsburgh, PA 15238
 Phone: (412) 826-5245
 Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 18665 PS BETA - NIROP / 10343262

Lab ID: **186650004** Date Received: 4/4/2016 08:30 Matrix: Water
 Sample ID: **PMW-04** Date Collected: 3/31/2016 13:50

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
EDonors - MICR								
Analysis Desc: AM23G		Analytical Method: AM23G						
Lactic Acid	0.20 U	mg/l	0.20	0.0080	1	4/6/2016 04:55	MD	
Acetic Acid	0.049J	mg/l	0.10	0.012	1	4/6/2016 04:55	MD	
Propionic Acid	0.10 U	mg/l	0.10	0.0060	1	4/6/2016 04:55	MD	
Formic Acid	0.016J	mg/l	0.10	0.0070	1	4/6/2016 04:55	MD	B
Butyric Acid	0.10 U	mg/l	0.10	0.010	1	4/6/2016 04:55	MD	
Pyruvic Acid	0.10 U	mg/l	0.10	0.015	1	4/6/2016 04:55	MD	
i-Pentanoic Acid	0.10 U	mg/l	0.10	0.0070	1	4/6/2016 04:55	MD	
Pentanoic Acid	0.10 U	mg/l	0.10	0.012	1	4/6/2016 04:55	MD	
i-Hexanoic Acid	0.20 U	mg/l	0.20	0.014	1	4/6/2016 04:55	MD	
Hexanoic Acid	0.20 U	mg/l	0.20	0.0070	1	4/6/2016 04:55	MD	



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ANALYTICAL RESULTS QUALIFIERS

Workorder: 18665 PS BETA - NIROP / 10343262

DEFINITIONS/QUALIFIERS

- Disclaimer : The Pennsylvania Department of Environmental Protection (PADEP) has decided to no longer recognize analyses that do not produce data for primary compliance, for NELAP accreditation. The methods affected by this decision are AM20Gax, AM21G, SW846 7199 and AM4.02. The laboratory shall continue to administer the NELAP/TNI standard requirements in the performance of these methods.
- MDL Method Detection Limit. Can be used synonymously with LOD; Limit Of Detection.
- PQL Practical Quantitation Limit. Can be used synonymously with LOQ; Limit Of Quantitation.
- ND Not detected at or above reporting limit.
- DF Dilution Factor.
- S Surrogate.
- RPD Relative Percent Difference.
- % Rec Percent Recovery.
- U Indicates the compound was analyzed for, but not detected at or above the noted concentration.
- J Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).
- B The analyte was detected in the associated blank.
- d The analyte concentration was determined from a dilution.



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QUALITY CONTROL DATA

Workorder: 18665 PS BETA - NIROP / 10343262

QC Batch: EDON/2850 Analysis Method: AM23G
 QC Batch Method: AM23G
 Associated Lab Samples: 186650001, 186650002, 186650003, 186650004

METHOD BLANK: 41201

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
EDonors				
Lactic Acid	mg/l	0.20 U	0.20	
Acetic Acid	mg/l	0.10 U	0.10	
Propionic Acid	mg/l	0.10 U	0.10	
Formic Acid	mg/l	0.0078J	0.10	B
Butyric Acid	mg/l	0.10 U	0.10	
Pyruvic Acid	mg/l	0.10 U	0.10	
i-Pentanoic Acid	mg/l	0.10 U	0.10	
Pentanoic Acid	mg/l	0.10 U	0.10	
i-Hexanoic Acid	mg/l	0.20 U	0.20	
Hexanoic Acid	mg/l	0.20 U	0.20	

LABORATORY CONTROL SAMPLE: 41202

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
EDonors						
Lactic Acid	mg/l	2	2.0	99	70-130	
Acetic Acid	mg/l	2	2.0	98	70-130	
Propionic Acid	mg/l	2	2.0	102	70-130	
Formic Acid	mg/l	2	1.9	93	70-130	
Butyric Acid	mg/l	2	2.0	101	70-130	B
Pyruvic Acid	mg/l	2	2.0	102	70-130	
i-Pentanoic Acid	mg/l	2	2.0	100	70-130	
Pentanoic Acid	mg/l	2	2.0	99	70-130	
i-Hexanoic Acid	mg/l	2	1.9	95	70-130	
Hexanoic Acid	mg/l	2	1.8	88	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 41203 41204 Original: 186770001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	Max RPD	Qualifiers
EDonors										
Lactic Acid	mg/l	0.37	20	20	20	99	98	70-130	1 30	d



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QUALITY CONTROL DATA

Workorder: 18665 PS BETA - NIROP / 10343262

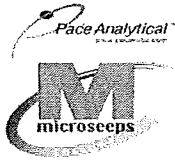
MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 41203 41204 Original: 186770001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	Max RPD	RPD	Qualifiers
Acetic Acid	mg/l	17	20	36	36	97	97	70-130	0	30	d
Propionic Acid	mg/l	3.4	20	25	24	107	106	70-130	0.94	30	d
Formic Acid	mg/l	0.1	20	19	19	94	94	70-130	0	30	d,B
Butyric Acid	mg/l	0.75	20	22	22	106	105	70-130	0.95	30	d
Pyruvic Acid	mg/l	0.67	20	21	20	100	100	70-130	0	30	d
i-Pentanoic Acid	mg/l	0.53	20	22	21	105	104	70-130	0.96	30	d
Pentanoic Acid	mg/l	0.14	20	22	22	110	109	70-130	0.91	30	d
i-Hexanoic Acid	mg/l	0	20	22	22	110	111	70-130	0.9	30	d
Hexanoic Acid	mg/l	0	20	21	22	106	109	70-130	2.8	30	d



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QUALITY CONTROL DATA

Workorder: 18665 PS BETA - NIROP / 10343262

QC Batch: EDON/2854 Analysis Method: AM23G
 QC Batch Method: AM23G
 Associated Lab Samples: 186650001

METHOD BLANK: 41241

Parameter	Units	Blank Result	Reporting Limit Qualifiers
EDonors			
Acetic Acid	mg/l	0.10 U	0.10
Propionic Acid	mg/l	0.10 U	0.10

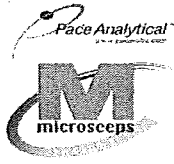
LABORATORY CONTROL SAMPLE: 41242

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
EDonors						
Acetic Acid	mg/l	2	2.0	99	70-130	
Propionic Acid	mg/l	2	2.1	104	70-130	



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QUALITY CONTROL DATA QUALIFIERS

Workorder: 18665 PS BETA - NIROP / 10343262

QUALITY CONTROL PARAMETER QUALIFIERS

- B The analyte was detected in the associated blank.
- d The analyte concentration was determined from a dilution.

Report ID: 18665 - 782308

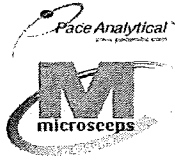
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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 18665 PS BETA - NIROP / 10343262

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
186650001	PMW-01			AM23G	EDON/2850
186650002	PMW-02			AM23G	EDON/2850
186650003	PMW-03			AM23G	EDON/2850
186650004	PMW-04			AM23G	EDON/2850
186650001	PMW-01			AM23G	EDON/2854

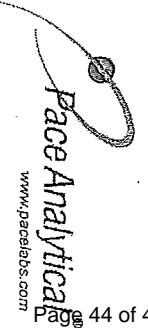


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Chain of Custody

18665



Workorder: 10343262 Workorder Name: PS Beta - NIROP Results Requested 4/14/2016

Report/Invoice To: Jennifer Anderson
 Pace Analytical Minnesota
 1700 Elm Street
 Suite 200
 Minneapolis, MN 55414
 Phone (612)607-1700
 Email: jennifer.anderson@pacelabs.com

MicroSeps/Pace Energy P.O. 10343262102

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers		Requested Analysis	Comments
					Unpreserved	Preserved		
1	PMW-01	3/31/2016 09:42	10343262001	Water	2			
2	PMW-02	3/31/2016 11:00	10343262002	Water	2			
3	PMW-03	3/31/2016 12:30	10343262003	Water	2			
4	PMW-04	3/31/2016 13:50	10343262004	Water	2			
5								

Transfers	Released By	Date/Time	Received By	Date/Time	Received on Ice	Samples Intact
1	J Pace	4/11/16	J Pace	4/4/16	Y	Y
2						
3						

Cooler Temperature on Receipt	3.1 °C	Custody Seal	Y or N	Received on Ice	Y or N	Samples Intact	Y or N
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Volatile Fatty Acids

LAB USE ONLY

Cooler Receipt Form

Client Name: Pace - MN Project: PS Beta NIRDOP Lab Work Order: 18665

A. Shipping/Container Information (circle appropriate response)

Courier: FedEx UPS USPS Client Other: _____ Air bill Present: Yes No

Tracking Number: 6484 8696 5823

Custody Seal on Cooler/Box Present: Yes No Seals Intact: Yes No

Cooler/Box Packing Material: Bubble Wrap Absorbent Foam Other: _____

Type of Ice: Wet Blue None Ice Intact: Yes Melted

Cooler Temperature: 3.6°C Radiation Screened: Yes No Chain of Custody Present: Yes No

Comments: _____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non-Conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished	✓			
Sample: Name & Signature on COC		✓		
Containers intact	✓			
Were samples in separate bags	✓			
Sample container labels match COC Sample name/date and time collected	✓			
Sufficient volume provided	✓			
PAES containers used	✓			
Are containers properly preserved for the requested testing? (as labeled)	✓			
If an unknown preservation state, were containers checked? Exception: VOA's coliform			✓	If yes, see pH form.
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			✓	

Comments: _____

Cooler contents examined/received by: LY Date: 4.4.16

Project Manager Review: LD Date: 4-5-16

Appendix I
Description of Laboratory and Field
Parameters Related to Reductive
Dechlorination

Description of Laboratory and Field Parameters Related to Reductive Dechlorination

Field Tests:	
pH	Various species of dechlorinating bacteria survive in a pH range of 6 to 9, but will not completely dechlorinate chlorinated ethenes. Optimum range for <i>Dehalococcoides spp</i> to dechlorinate completely dechlorinate chlorinated ethenes.
Dissolved Oxygen	≤0.5 mg/L is tolerated. Anaerobic biodegradation is suppressed at higher concentrations
Oxidation Reduction Potential (ORP)	At <50 millivolts (mV) anaerobic biodegradation is possible, at <-100mV a strong reductive pathway is likely
Laboratory Tests:	
CVOCs	Primary analytical test of interest. The goal of the study is a reduction in the concentrations of CVOCs within the vicinity of injections by approximately one order of magnitude (from baseline sample concentration). Further, the presence of daughter products can indicate dechlorination is occurring.
Ethane/Ethene	The presence of ethane/ethene provides evidence of complete dechlorination of chlorinated ethanes and ethenes.
Methane	The presence of methane in groundwater indicates that that hydrogen from oxidation of electron donor being used by methanogenic bacteria to generate methane.
Total and Dissolved Iron	Ferric iron is used as an electron acceptor during anaerobic biodegradation of organic carbon (electron donor) and converted to ferrous iron (assumed to be dissolved iron).
Sulfate	Sulfate is used as an electron acceptor for anaerobic biodegradation and reduced to sulfide. Sulfide can combine with metals such as iron to form iron sulfide. Concentrations of sulfate greater than 20 mg/L cause competitive exclusion of dechlorination. However, plumes with high concentrations of sulfate can still have reductive dechlorination.
Carbon Dioxide	Carbon dioxide is a byproduct of naturally occurring aerobic and anaerobic biodegradation processes that naturally occur in groundwater.

Total Alkalinity	There is a positive correlation between zones of microbial activity and increased alkalinity. Increases in alkalinity result from the dissolution of rock driven by the production of carbon dioxide produced by the metabolism of microorganisms. Increases in alkalinity may indicate elevated microbial activity.
Sulfide	The presence of sulfide likely provides evidence of sulfate reduction. However, sulfide might not be detected even if sulfate-reducing bacteria are active because it can react with various oxygenated chemical species and metals.
Nitrate and Nitrite	Nitrate is used as an electron acceptor by denitrifying bacteria once the dissolved oxygen is depleted. Under anaerobic conditions, nitrate is reduced to nitrite which is further reduced to nitrogen under anaerobic conditions. In order for reductive dechlorination to occur, nitrate concentrations in the contaminated portion of the aquifer must be less than 1.0 mg/L.
COD	COD is an indication of organic carbon or reduced minerals or both. High values of COD may indicate effective distribution of HRC, biological growth, and/or the presence of reduced iron or manganese.
TOC	TOC serves as a carbon and energy source that drives anaerobic dechlorination. The presence of TOC indicates potential availability of general growth substrates for microorganisms and would be a favorable indicator for enhanced reductive dechlorination.
CSIA	CSIA provides the ability to quantify the ratio of atomic isotopes within sampled molecules (e.g. TCE). Changes to the ratio of atomic isotopes within sampled molecules (e.g. TCE) and comparison to established standards of the ratio can differentiate between biological (e.g. enhanced reductive dechlorination (ERD)) and non-biological (e.g. sorption) processes.
Volatile Fatty Acids	Volatile fatty acids such as acetic acid, lactic acid, etc. provides a breakdown of organic carbon (e.g., HRC) by microbial community which are further broken down to hydrogen which serves as an electron donor for reductive dechlorination of chlorinated solvents..
Microorganism Data	Microbial population density between impacted and non-impacted areas of a site can be compared to assess whether microbial populations are responsible for the observed degradation and provide insight into the progress of natural attenuation processes.

Notes:

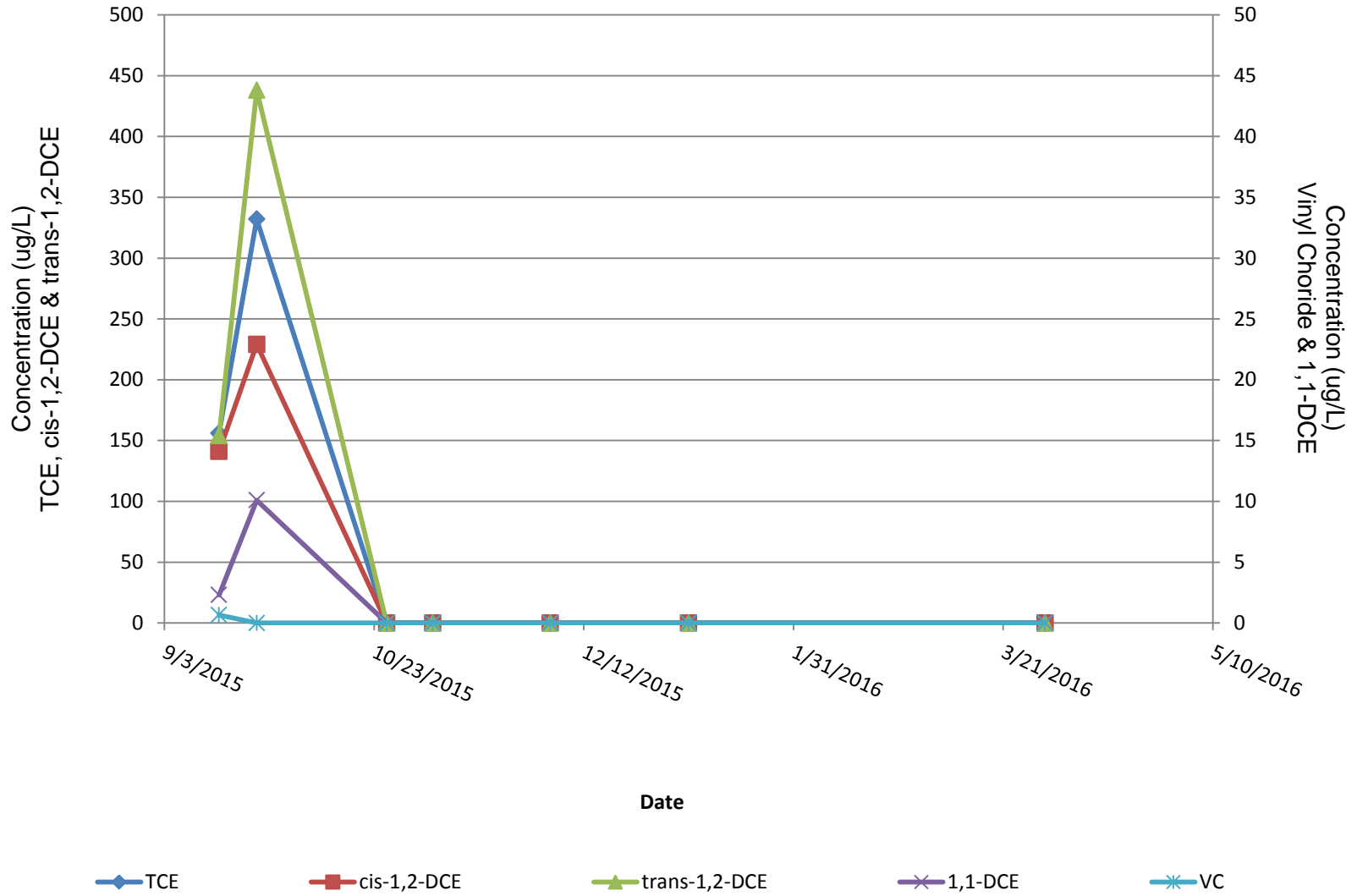
Specified concentrations are in the most contaminated zone.

Sources: ITRC, 1999 and EPA 1998

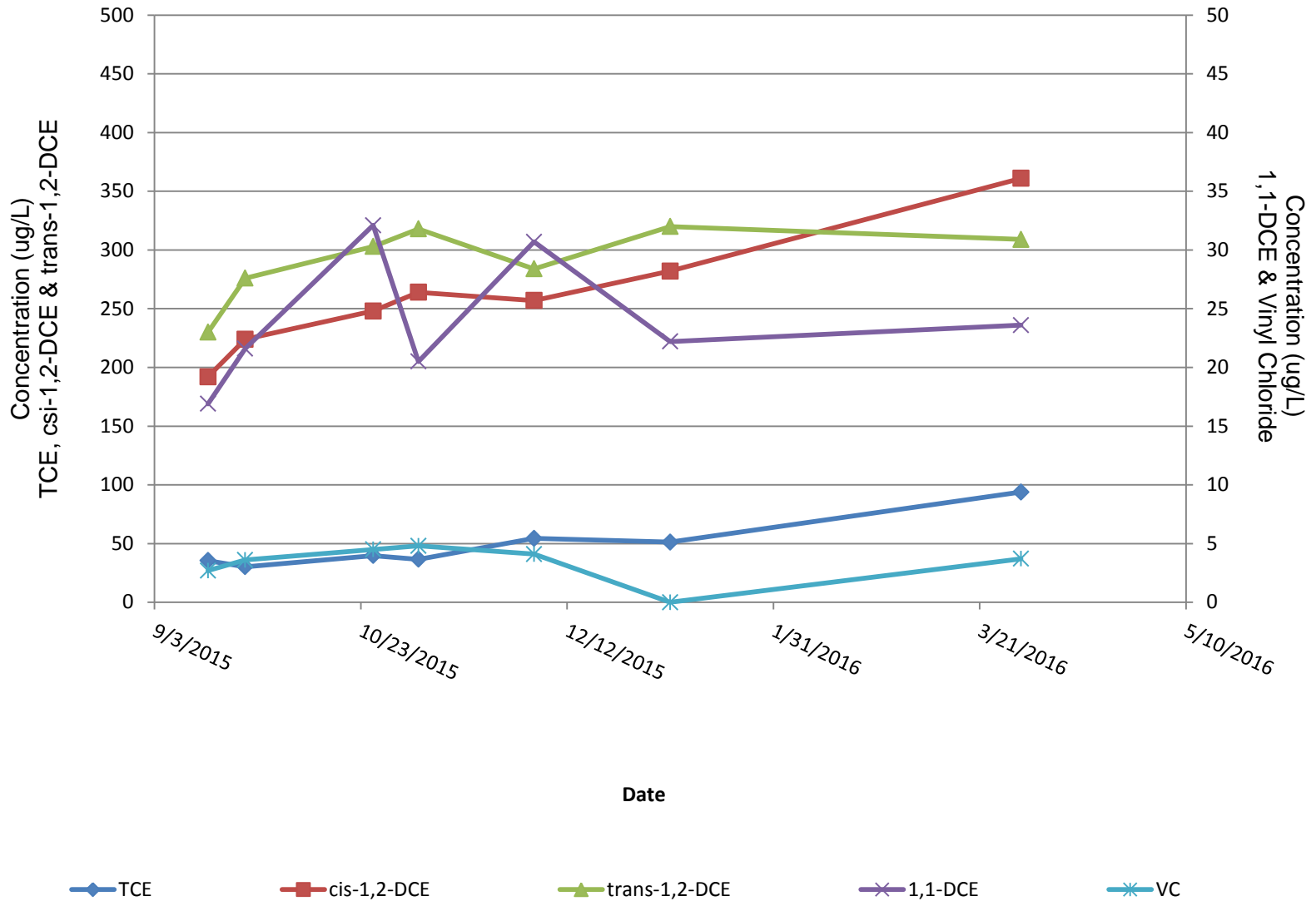
Appendix J

Concentration vs. Time Graphs

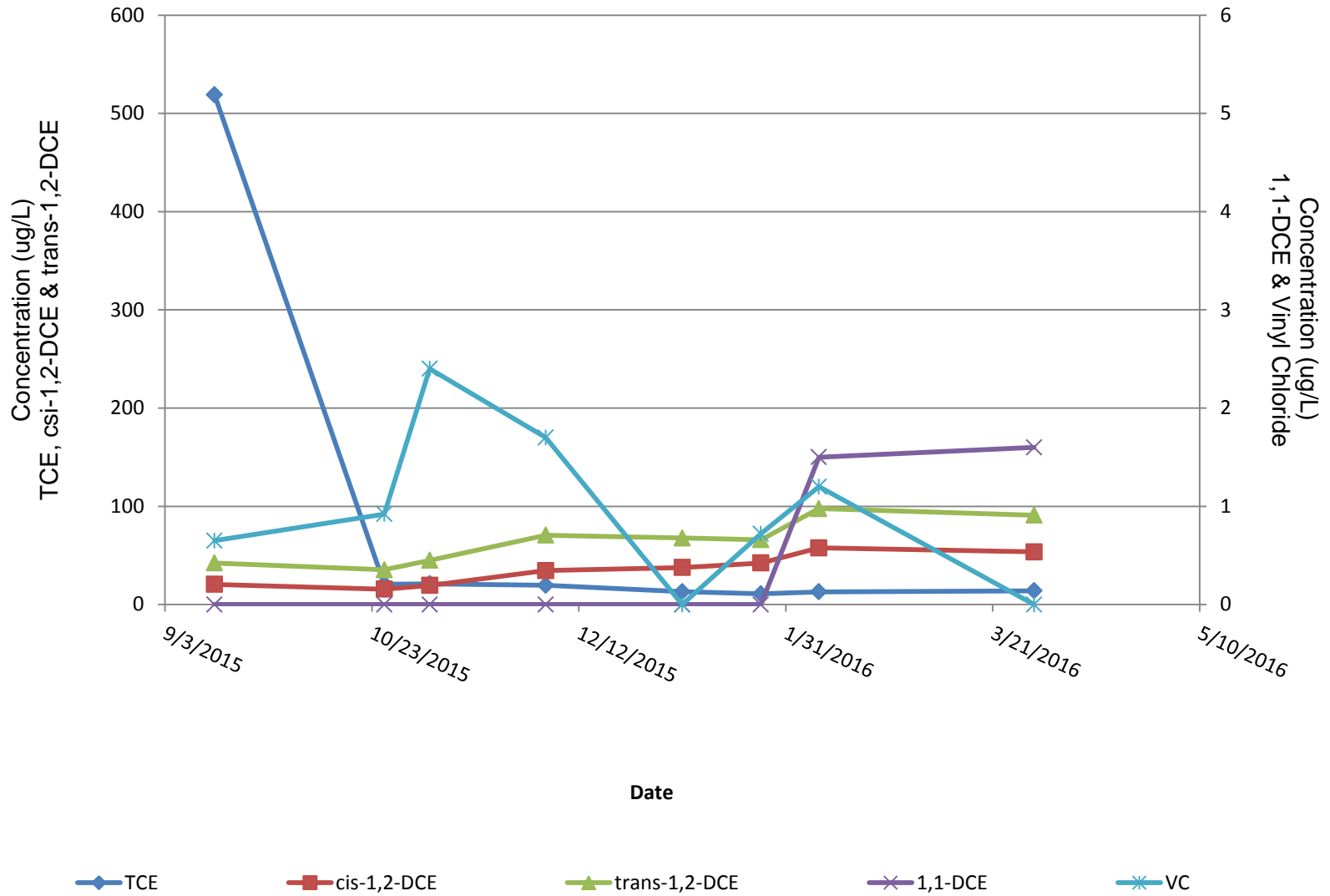
Concentration vs. Time Well PMW-1



Concentration vs. Time Well PMW-2



Concentration vs. Time Well PMW-3



Concentration vs. Time Well PMW-4

