2004 NPDES PROGRESS REPORT

CEDAR-GREEN, ISLAND-SNOHOMISH, AND SOUTH PUGET SOUND WATER QUALITY MANAGEMENT AREAS

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM MS4 PERMITS WASM10001, WASM20001, AND WASM30001

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SECTION 1.0
OVERVIEW

Pursuant to the National Pollutant Discharge Elimination System (NPDES) requirements for Multiple Separate Storm Sewer Systems (MS4), the Washington State Department of Transportation (WSDOT) prepared a Stormwater Management Plan (SWMP), which was approved by the Washington State Department of Ecology (Ecology) on 3 July 1997 [WSDOT 1997(a)]. The plan was prepared in response to the issuance of NPDES and State Waste Discharge General Permits on 5 July 1995. The permits became effective on 4 August 1995, and designated WSDOT as a co-permittee for discharges from municipal separate storm sewers within the following water quality management areas:

- The Cedar-Green Water Quality Management Area (and the portion of the Kitsap Water Quality Management Area located in King County).

- The Island Snohomish Water Quality Management Area (and the portion of the Skagit-Stillaguamish Water Quality Area located in Snohomish County).

- The South Puget Sound Water Quality Management Area (and the portion of the Kitsap Water Quality Management Area located in Pierce County).

As it was initially presumed that Clark County would also require a permit, WSDOT has also been reporting on stormwater-related activities in Clark County, for example BMP construction.

The WSDOT SWMP was prepared to address the requirements specified under Section 122.26 of Title 40 of the Code of Federal Regulations (40 CFR 122.26), the Water Pollution Control requirements stipulated in Chapter 90.48 of the Revised Code of Washington (RCW 90.48), and the regulatory requirements for the NPDES permit program in Washington State as delineated in Chapter 173-220 of the Washington Administrative Code (WAC 173-220). The SWMP outlines WSDOT's plan to comply with federal and state standards for stormwater discharges including compliance with the state and federal NPDES programs. The SWMP and associated permits cover large and medium MS4 discharges for the Cedar-Green, Island-Snohomish, and South Puget Sound management areas. As initially drafted, the three referenced NPDES MS4 permits were to expire on 5 July 2000. At this time, permit revisions are still

being drafted by Ecology in cooperation with the permittees with the intent to re-issue the permit. Meanwhile, WSDOT with Ecology concurrence has applied, on March 24, 2003, for its own statewide NPDES municipal stormwater permit, which will fulfill Phase I and II permitting requirements. Ecology has extended the above referenced permits, continuing current permit requirements until the next permit(s) is (are) issued. Therefore, the 1995 permit requirements and associated 1997 SWMP remain in effect at this time.

One of the conditions of WSDOT's NPDES permit is that an annual report be prepared summarizing WSDOT's efforts to comply with the permits and SWMP, and evaluating the effectiveness of the stormwater program. The purpose of this 2004 Annual Report is to document stormwater-related activities for the period from 5 July 2003 through 4 July 2004, within the three NPDES MS4 permit areas. This report has been developed to reflect WSDOT activities based on the suite of commitments established in the SWMP.

In addition to the requirements placed on WSDOT by the NPDES program, the agency is striving to meet stormwater management needs associated with the Endangered Species Act (ESA). Implementation of stormwater management practices relating to ESA considerations is defined in WSDOT *Highway Runoff Manual* (HRM, WSDOT March 2004).

This report has been organized to provide an overview and status of the priority elements for the stormwater management program as outlined in the SWMP. Section 2 provides a summary of activities within the current reporting period for the six high priority elements identified in the SWMP. Section 3 provides an overview of the status of NPDES-related funding and resource allocations for the period. Section 4 includes an overview of maintenance practices and a general discussion of the status of stormwater facility management, and summarizes retrofit program planning activities during the current reporting period. Section 5 summarizes activities relating to the construction site controls and training program, and Section 6 addresses activities relating to watershed-level management and planning, as well as an update on WSDOT cost/benefit analysis efforts. Monitoring activities relating to the NPDES program are summarized in Section 7, along with the status of the research program over the past year. The certification statement for the document is provided in Section 8. The references cited in the report are provided in Section 9. Unless otherwise specified, the references cited throughout this report are available through WSDOT's Environmental Services Office (ESO) Water Quality Program, and can be obtained upon request.

SECTION 2.0
STATUS OF STORMWATER PROGRAM PRIORITIES

Six elements were identified in the 1997 Stormwater Management Plan as having the highest priority: (1) construction of structural stormwater best management practice (BMP) facilities; (2) monitoring and research related to stormwater BMPs; (3) erosion and sediment control programs; (4) attaining full funding for operations and maintenance programs; (5) watershed-based mitigation strategies; and (6) water quality-related training. These elements continue to be high priorities for WSDOT. Construction of structural controls at new outfall sites continues to receive increased emphasis due to the federal listings associated with salmon and other salmonids under the ESA.

As detailed in Section 3.0, during the 2003/2004 permit period, WSDOT spent an estimated $12.4 million dollars on construction of structural stormwater controls at new outfalls and $216,000 on retrofitting existing stormwater outfalls as a stand-alone project. Overall expenditures decreased, primarily due to the decrease in construction of highway improvement projects. This drop in expenditures for construction was offset by the significant increase in retrofit projects.

Stormwater-related monitoring and research efforts continued. Section 7 of this report presents projects related to stormwater characterization and/or BMP performance-related monitoring and research. These projects have either recently been completed or are in progress. They include a wide range of previously identified research needs, including: characterizing general stormwater runoff and pollutant levels in Western Washington through evaluating the effectiveness of BMPs constructed using existing technology; evaluating innovative technologies; and evaluating appropriate and effective maintenance practices. Approximately $170,000 was spent on these activities (refer to Table 3-1) during the current reporting period.

The Erosion and Sediment Control Program (ECP) continues to improve its training, technical assistance, and compliance assurance activities in an effort to minimize construction site impacts.

During the reporting period, a total of 728 people received training through WSDOT's *Construction Site Erosion & Sediment Control Certification* course. Of those trained, 66 were WSDOT employees and the remainder was a mix of private sector and non-WSDOT public sector personnel.

The ECP continues to update its existing resources used for Temporary Erosion and Sediment Control (TESC) planning and budgeting, namely it's Qualified Products List Database. The ECP also participates on Ecology's Technical Review Committee for evaluating and approving new technologies.

The expenditures for WSDOT's Erosion Control Program decreased by $110,000 compared to the 2002/2003 reporting period. This is a result of 1) completion of major program development tasks, 2) reduced training needs from overall expansion of the knowledge base (for both WSDOT employees and contractors), and 3) improved efficiencies due to increased integration and implementation of erosion control policies by the design and construction programs.

The funding level for Maintenance and Operations increased significantly, primarily in response to system additions, inflation, and seasonal factors. The emphasis on stormwater remains unchanged from the previous reporting period.

WSDOT has continued to participate in watershed-based planning programs, including working in cooperation with other state and local agencies and planning groups, to provide watershed-scale technical support when appropriate. WSDOT is continuing with implementation of watershed assessment based on direction from the Transportation Permit Efficiency and Accountability Committee (TPEAC). This approach focuses on increasing environmental benefits, streamlining the permitting process, reducing mitigation costs, and enhancing the public participation process. WSDOT has also focused available resources on assessing the costs and benefits of implementing the various elements of the stormwater management program, and deriving a better understanding of life cycle maintenance costs for BMPs.

WSDOT also continues to sponsor conferences and workshops related to water quality topics and to provide specific training to employees and outside personnel. Examples include the Temporary Erosion and Sediment Control Program, Adopt-A-Highway Program, Trip Reduction Program, and wetland mitigation workshops. In addition, WSDOT offers opportunities to the public to be involved in transportation planning activities.

Medium and low priority activities that were identified in the SWMP included: supporting public education programs; determining maintenance requirements for BMPs; developing a tracking system for structural BMPs; identifying illicit discharges; developing a tracking system for operations and maintenance activities; monitoring operations and maintenance practices relative to water quality impacts;

and developing budgetary mechanisms to fund maintenance activities associated with water quality improvements. Progress continues to be made in most of the above categories, subject to the availability of resources and funding. Some milestones have been reached in the area of stormwater facilities inventory and prioritization. The Stormwater Outfall Inventory Database has undergone revisions that enable it to manage large amounts of data and provide a convenient means for WSDOT user groups to obtain outfall information from one location, as described in Section 4.2.3. A pilot Stormwater Facility Inventory program was also completed using the database.

In summary, WSDOT has continued to focus on previously defined priority needs, and is striving to meet requirements related to the suite of commitments identified in the SWMP. Substantial progress has been made during the current reporting period in defining the key stormwater program management elements that require enhancement to support future funding, prioritization, and program implementation. Additional efforts have been made to ensure that WSDOT's efforts are well coordinated with the individual programs involved in the various aspects of the NPDES compliance and implementation program.

SECTION 3.0
FINANCIAL AND RESOURCE ASSESSMENT

Stormwater related expenditures for the 9-year period in which the current NPDES MS4 permits have been in place are shown in Table 3-1. These numbers were generated to reflect expenditures within the general NPDES Phase I permit areas. The table is provided for comparison with Table 25 in the Stormwater Management Plan [WSDOT 1997(a)], which projected budget estimates for the listed budgetary and activity areas through the 1999/2000 permit period.

TABLE 3-1. WSDOT STORMWATER MANAGEMENT PLAN BUDGET ELEMENTS AND STORMWATER EXPENDITURES OCCURRING WITHIN THE NPDES PHASE I PERMIT AREA (IN THOUSANDS OF DOLLARS)

Program Element	1995/1996	1996/1997	1997/1998	1998/1999	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004
Stormwater BMP Construction in Highway Improvement Projects	$20,000(1)	$20,00(1)	$20,000(1)	$20,000(1)	$15,22(1)	$15,333(1)	$15,313(1)	$25,877(1)	$12,445(1)
Stormwater Characterization and BMP Monitoring	$94	$94	$100	$100	$25	$79	$53	$110	$116
NPDES Permit Fees	$46	$46	$48	$50	$52	$52	$60	$36	$33
NPDES/ESA Erosion Control and Spill Prevention Training	$0	$0	$0	$0	$148	$194	$229	$165	$55
Highway Runoff Manual and Eastern Washington Stormwater Design Manual Development	$0	$0	$0	$0	$138	$0	$43	$520	$200
Stormwater and BMP Research Programs	$143	$143	$83	$83	$262	$370	$85	$125	$25
I-4 Stormwater BMP Retrofit Projects	$0	$0	$0	$0	$65	$1,141	$200	$396	$216
Stormwater Research Implementation	$0	$0	$98	$138	$140	$125	$26	$5	$27
Stormwater Utility Fees	$886	$886	$886	$886	$886	$886	$886	$1,901	$153

(1) Estimated at 5 percent of total project cost.

Spending on stand-alone retrofit projects, which included high-ranking outfalls at milepost 122 on Interstate 5 to protect Murray Creek, decreased over the previous reporting period (WSDOT 2003). Expenditures increased for stormwater and BMP research programs. Spending on erosion control and spill prevention training decreased in 2003-2004, due largely to the fact that WSDOT has caught up with

the statewide demand. WSDOT's active support in development of the Ecology *Stormwater Management Manual for Eastern Washington* and revision to WSDOT's *Highway Runoff Manual* are reflected in the budget elements for the current reporting period. The *Highway Runoff Manual* was completed in April 2004 and the projected completion date for the *Stormwater Management Manual for Eastern Washington* during is November of 2004.

SECTION 4.0
OPERATIONS AND MAINTENANCE

This section includes an overview of maintenance practices for operating highways, information on the annual maintenance of structural controls and BMPs, research developments in ice and snow control, summary information pertaining to de-icer quantities and expenditures, use of pesticides and fertilizers, roadway sweeping, and the process of tracking hazardous material incidents. Also included is a general discussion of stormwater facility management practices that covers newly constructed facilities, illicit discharge, the revised outfall inventory, and the stormwater outfall retrofit program.

4.1 MAINTENANCE PRACTICES FOR OPERATING HIGHWAYS

Commitments to maintenance practices described in the SWMP include: (1) tracking maintenance and repairs to structural controls and BMPs; (2) estimating volumes of ice and snow control material, pesticides and fertilizers applied to roadsides and research activities associated with those materials; (3) implementing an Integrated Vegetation Management Plan; (4) reporting highway sweeping activities; and (5) tracking hazardous material spills.

Proper road maintenance reduces impacts of vehicle use and road wear, providing at least three benefits: (1) helping to ensure the safety of the traveling public; (2) preserving the infrastructure; and (3) serving as mitigation for environmental impacts associated with road construction, preservation, and maintenance during the life of the roadway.

4.1.1 Sensitive Area Mapping

To identify environmentally sensitive roadsides potentially impacted by maintenance activities, WSDOT completed the marking and mapping of environmentally sensitive areas in the field. This mapping project identifies all sensitive area locations and provides guidance to WSDOT maintenance crews so that BMPs can be applied to eliminate or reduce impacts of maintenance activities on streams, wetlands, and water bodies. This effort was identified and summarized in the 6th Year NPDES Annual Report (WSDOT 2001). An update on the status and schedule is provided as the following:

- **Sensitive Area Identification:** North Central and Southwest Regions were completed in 2000; South Central, Northwest, Olympic, and Eastern Regions were completed in 2001.

- **Mapping of Sensitive Areas:** North Central and South Central Region atlases completed in 2002; Northwest, Eastern, Southwest, and Olympic Region atlases completed April 2003.

  Each maintenance shed has received an atlas for their respective area. All sensitive priority areas within 300 feet of the roadway have been marked statewide. A Best Management Practice (BMP) Field Guide for Endangered Species Act (ESA) § 4(d) Habitat Protection (March 2004) has been developed and distributed to every maintenance worker and vehicle. The guide is intended for WSDOT maintenance crews and regional maintenance environmental coordinators who work within sensitive priority areas. The guide was developed to train and alert staff as to when and where to apply and report implementation of the Regional Road Maintenance Endangered Species Act Program Guidelines (RRMP) Best Management Practices (BMPs).

  Knowing the location of aquatic habitat within the Right-of-way (ROW) and using BMPs during maintenance activities in these sensitive priority areas will conserve listed ESA threatened salmonids species habitat. The BMPs are not prescriptive but are outcome based. The best professional judgment of trained maintenance personnel is instrumental in meeting the BMP outcomes (minimize erosion and sedimentation, contain pollutants and minimize impacts to vegetation root zone).

  This guide provides instructions for filling out the Personal Data Assistant (PDA) checklist documenting WSDOT compliance with ESA § 4(d) take limits for the RRMP. This checklist constitutes proof of compliance with RRMP.

  Following the guide will not only help conserve listed salmonids, but help protect water quality and quantity, aquatic and shoreline habitats, and the traveling public's safety.

- **Process for Updating Atlases and Tabular Data:** Maintenance personnel are marking up maps and tabular data as they find discrepancies. These discrepancies

are forwarded to a biologist for review and concurrence. Once the edits are identified and the database is updated, tabular data is easily generated.

The goal is higher accuracy and constant improvement. The objective is to have GPS coordinates of sensitive areas incorporated into the PDA systems, thus eliminating the need for reproducing and reprinting of hardcopy atlases. However, in the interim, WSDOT will put out a new generation of maps and tabular data (and continue annually until problems come to light less frequently) once this data is received. A usable and uniform product will then be deployed to the crews in a timely manner.

4.1.2 Maintenance of Structural Controls and BMPs

Overall expenditures and time commitments increased over two-fold for stormwater-related operations and maintenance activities in the 2003/2004 reporting period compared to the 2002/2003 reporting period. The most significant changes in expenditures occurred for sweeping and cleaning pavement. Expenditures in the categories of sand clean-up, sanding, anti-icing and de-icing chemical application, and manhole, catch basin, and grate maintenance also increased considerably. These differences are more a reflection of day-to-day operations and maintenance needs than a change in priorities.

4.1.3 Ice and Snow Control

WSDOT belongs to a consortium of transportation agencies in northwest states and Canadian provinces known as the Pacific Northwest Snowfighters (PNS). One of PNS's functions is to develop anti-icing chemical specifications for use by all member organizations. One goal for these specifications is that the chemicals are environmentally safe, and a number of criteria must be met before a chemical is approved for use, including heavy metal content and toxicity to fish. These specifications also help to standardize the market for anti-icing chemicals, resulting in better pricing and product availability for road maintenance organizations. The PNS specification for corrosion is that a corrosion-inhibited anti-icing chemical must be at least 70 percent less corrosive than sodium chloride to a given type of metal. The reduced level of corrosion is determined by a laboratory test. All current products used for winter maintenance meet these specifications.

Table 4-1 provides a breakdown of maintenance expenditures and personnel allocated to snow and ice maintenance activities; including: (1) winter sand clean-up; (2) sanding; (3) anti-icing and de-icing

chemical applications; and (4) winter drainage maintenance. Table 4-2 provides details on the quantities and costs of de-icer materials used in the current reporting period.

TABLE 4-1. BUDGET AND PERSONNEL HOURS ALLOCATED TO STORMWATER FACILITY O&M ACTIVITIES IN THE NPDES PERMIT AREA AS TRACKED THROUGH THE TRANSPORTATION REPORTING AND ACCOUNTING INFORMATION SYSTEM

O&M Activity Type	Dollars Spent in 2001/2002	Personnel Hours 2001/2002	Dollars Spent in 2002/2003	Personnel Hours 2002/2003	Dollars Spent in 2003/2004	Personnel Hours 2003/2004
Grade/Reshape Shoulder	$99,448	1,620	$92,172	1,831	$284,816	4,647
Sweeping and Cleaning Pavement	$513,468	9,761	$628,035	11,958	$1,642,592	24,492
Ditching and Channel Maintenance	$185,329	3,878	$168,549	3,273	$432,186	6,470
Culvert Maintenance	$99,340	2,023	$114,315	2,523	$352,339	6,856
Manhole, Catch Basin, and Grate Maintenance	$517,979	5,171	$228,966	5,502	$838,612	18,149
Detention/Retention Maintenance	$ 31,541	65	$40,232	306	$9,189	237
Miscellaneous Drainage Maintenance	$136,162	980	$138,876	580	$138,204	490
Weed Control Fertilizing and Liming	$300	8	$291	8	$2,522	79
Residual Herbicide Application	$93,577	1,641	$103,514	1,806	$200,806	3,415
Landscape Fertilizer and Liming	$91	2	$39	0	$10,236	160
Litter/Litter Bag Clean-up	$203,197	4,211	$252,048	5,419	$214,097	2,849
Winter Sand Clean-up	$103,029	2,274	$34,506	693	$514,503	9,737
Sanding	$323,368	3,264	$166,704	1,098	$749,606	5,482
Anti-icing and De-icing Chemical Application	$324,396	1,877	$260,902	1,699	$593,344	4,581
Winter Drainage Maintenance	$5,352	117	$5,053	111	$33,548	807
Hazardous Waste/Spill/Debris Clean-up	$40,847	818	$49,054	969	$159,113	3,025
Total	**$2,677,427**	**37,709**	**$2,283,256.00**	**37,776**	**$6,175,713**	**91,476**

TABLE 4-2. DE-ICER QUANTITIES FOR THE WINTER OF 2003-2004

De-Icer	Quantity	Expenditure
Sand	195,325 Tons	$1,677,138.00
Solid Deicer	29,043 Tons	$3,672,881.00
Liquid Deicer	4,412,224 Gallons	$2,544,039.00
Total Dollars Statewide		$7,894,058.00

4.1.4 Integrated Vegetation Management

WSDOT uses herbicides along with mechanical and horticultural methods to control undesirable roadside vegetation and to establish stable, low maintenance plant communities. Undesirable vegetation includes vegetation at the edge of pavement, noxious and nuisance weeds, and trees and brush that encroach on traffic operations and/or create safety hazards.

Herbicide use is tracked through a record of application that includes: (1) location and date; (2) herbicide used (by trade name); (3) total amount used; and (4) number of acres treated. Table 4-3 is a summary of the acres of right of way treated and quantities (pounds of active ingredient) used, by county.

TABLE 4-3. SUMMARY OF HERBICIDE PRODUCTS USED AND THE NUMBER OF ACRES TREATED IN NPDES PERMIT COUNTIES

County	Number of Products Used	Quantity Used Pounds of Active Ingredient	Acres Treated Approximate Number
Clark	13	197.78	84.2
King	20	1,885.39	1325
Pierce	13	981.57	299
Snohomish	11	659.38	433

The quantity of herbicides used by WSDOT for the reporting period in the counties listed has decreased from the 2002/2003 reporting period.

WSDOT area maintenance managers continue to use WSDOT's guidance for Integrated Vegetation Management (IVM) for all roadsides to guide and train field operators in roadside maintenance (WSDOT 1997b). To facilitate implementation of IVM and to better account for results, WSDOT has begun to develop and implement area-specific integrated roadside vegetation management (IRVM) plans for highways throughout the state. These plans serve as information management tools to be used in the field to: (1) plan consistent routine maintenance activities; (2) identify and prioritize vegetation problem areas and environmentally sensitive areas; (3) develop and implement site-specific long-term treatment strategies; (4) document actions taken to carry out treatments; and (5) monitor the effectiveness of maintenance treatments.

The IRVM plans have been prioritized so that areas with more significant stormwater management issues are the first to be implemented. Areas covering all counties listed in the NPDES permit will be completed

and implemented by the 2006 growing season. Plans will be implemented statewide beginning in 2007. The objective of the IRVM plans is to identify and implement revised maintenance practices that improve the health and aesthetics of the roadside while reducing long-term maintenance costs and minimizing herbicide use. The plans will document agreed-upon parameters for roadside vegetation maintenance activities and outcomes by milepost, and establish a data management system for follow-through, tracking costs and assessing the effectiveness of treatment measures. An additional component of the system currently under development is a database of plant-specific BMPs and IVM treatment prescriptions. More information about WSDOT's use of IVM and the development of IRVM plans can be found at: http://www.wsdot.wa.gov/maintenance/ivm.htm.

4.1.5 Roadway Sweeping

Approximately 24,500 hours of personnel time and just over $1,642,000 were spent sweeping the highways within NPDES permit areas to remove large particulate matter that would otherwise have entered stormwater systems. WSDOT acknowledges Ecology's request for more information on sweeping in the March 19, 2004 comments on the 2003 Annual NPDES report. As the request came near the end of the reporting period and there were no mechanisms in place to collect such data, the existing reporting methods had to be used. WSDOT is working, however, to develop more detailed tracking tools for future reports.

4.1.6 Hazardous Material Tracking

A summary of collision data involving hazardous materials and the release of hazardous materials was obtained from Collision Data and Analysis Branch of WSDOT. This summary is presented in Appendix A, and includes a breakdown of collisions that occurred within Clark, King, Pierce, and Snohomish counties. Collision data is used to prioritize safety improvements to help future accidents.

4.2 STORMWATER FACILITY MANAGEMENT

Commitments to stormwater facility management in WSDOT's Stormwater Management Plan include: (1) reporting the numbers and types of permanent stormwater control BMPs constructed; (2) inventorying illicit discharge connections and monitoring corrective actions; (3) identifying stormwater outfalls that need retrofits; and (4) continuing to modify/upgrade the retrofit prioritization index, as needed.

4.2.1 New Facilities

The SWMP identified construction of permanent structural stormwater BMPs as its highest priority. Facilitating construction of BMPs to treat WSDOT's highway runoff, either through transportation improvement (for safety or capacity expansion) projects or by stand-alone retrofits, is believed to be the most efficient way to promote compliance with state water quality standards. WSDOT regional offices are required to investigate the feasibility of upgrading stormwater facilities during a highway improvement project. Determining feasibility is dependent on the level of available funding and right of way to construct stormwater BMPs.

As specified and required under WSDOT's Highway Runoff Manual (WSDOT 2004) and the *Stormwater Management Manual for Western Washington* (Ecology 2001), whenever a roadway is expanded by more than 5,000 square feet of impervious surface, WSDOT oversees the construction of permanent structural BMPs to treat runoff for both water quality and quantity for the added impervious, or an equivalent area of impervious surface. Table 4-4 provides a summary of BMPs constructed within the general permit areas between July 2003 and July 2004. A description of each BMP type with milepost, offset direction, and facility size (where available) is provided in Appendix B.

A total of 196 BMPs were constructed within the general permit areas during the current reporting period, this is 158 more than were constructed during 2002/2003 (WSDOT 2003). In addition to these BMPs, there are also numerous vegetated conveyances, filter strips, and buffer zones existing along state highways which, while not engineered specifically for that purpose, are essentially functioning as structural stormwater BMPs.

TABLE 4-4. STRUCTURAL STORMWATER BEST MANAGEMENT PRACTICES COMPLETED IN THE NPDES PERMIT AREAS DURING THE 2003/2004 CONSTRUCTION SEASON

Project Designation	Number and Type of Structural BMPs Constructed			
	Open Water Detention (1)	Detention Vaults (2)	Infiltration BMP (3)	Linear Treatments (4)
SR 9 / SR 528 Intersection Signal				3
SR 2 / Reiter Road Vicinity Rechannelize			1	
SR 20 / South March Point Road				4
SR 20 / Sapp Road to Reed Street Channelization		2		
SR 90 / Sunset Way I/C Retaining Wall				1
Vicinity BR 167/125E Drainage Modification				2
SR 520 Bike Path Bellevue to Redmond				1
SR 99 to SR 526 Russell Rd. Vic. To PFB	1	1		
SR 539 King Tut Road and Bartlett Road			1	5

TABLE 4-4. STRUCTURAL STORMWATER BEST MANAGEMENT PRACTICES COMPLETED IN THE NPDES PERMIT AREAS DURING THE 2003/2004 CONSTRUCTION SEASON				
Project Designation	**Number and Type of Structural BMPs Constructed**			
	Open Water Detention (1)	**Detention Vaults (2)**	**Infiltration BMP (3)**	**Linear Treatments (4)**
SR 5 / Northgate Way To 175th Street SB Ramps				1
Pierce County Line To Tukwila I/C Stage 2S				1
Federal Way - S. 317th Street HOV Direct Access	4			1
Federal Way Park And Ride Lot #2	2			1
EB Off Ramp To Weyerhaeuser Way To SR 167				2
US-2 Interchange I/C Modification				8
SR 5 Blaine Vicinity Ramps	3			3
North Of Lakeway I/C Phase 1A Noise Walls and Safety Improvements	1			
NE 124th/ Novelty Road Vicinity Roundabout				4
SR 20 Oak Harbor NCL To Frostad Road	2		1	4
SR 18 Maple Valley To Issaquah/Hobart Road	12			
Bridges 529/20 E&W, 529/20 Elec/Mech, Seismic/Painting	2			
132nd St. SE To 112th St. SE Widen To Five Lanes	4	1		2
SR 525 / I-5 To SR 99	11			
SR 522 Paradise Lake Road To Snohomish River Interchange and Drainage				2
SR 900 Newport Way To I-90 Widening	2			
SR 9 To 84th St. NE Vicinity Channelization & Safety Improvement	1		1	3
SR 167 15th NW To 84th Ave. So. HOV and SC & DI-Stage 2				10
SR 18 Issaquah-Hobart Rd. I/C And Raging River Bridge	4			33
Tukwila To Lucile Street HOV And SC&DI Stage-1	1			
Bothell To Swamp Creek I/C HOV Lane Stage 2	4	3		23
I-5 Murray Creek - Stormwater Retrofit	1			
McCleary Interchange	3			1
Voights Creek Bridge 162/11 Vicinity				1
SR5 to Pacific Avenue	3			
SR 500 NE 112th Ave./Gher Rd. I/C (metric)	3			
I-5 Salmon Creek to I-205	1			
I 205 Stormwater System Retrofit				4
Totals	**65**	**7**	**4**	**120**

(1) Open water detention includes detention ponds, wet and dry ponds, and combination ponds.
(2) Detention vaults include drywells, wet vaults, swirl concentrator vaults, and oil/water separators.
(3) Infiltration BMP includes infiltration ponds and trenches.
(4) Linear treatments include biofiltration swales, and vegetated ditches.

4.2.2 Illicit Discharge

Over the current reporting period, outfalls with suspected illicit discharges were identified as part of the outfall inventory effort and entered into the Stormwater Outfall Inventory Database (refer to Section 4.2.3, Outfall Inventory and Retrofits). The database has been upgraded with querying capabilities, so that information about outfalls with suspected illicit discharges can be extracted and reports can be generated that tie this information to more than 200 additional data fields including location, prioritization, and numerous environmental data. WSDOT has been working with the Attorney General's Office to develop assurances that WSDOT has sufficient legal authority to prohibit discharges that originate off of its right-of-way, or to initiate enforcement actions if those discharges create a problem that is not related to the safety or integrity of the state highway. Accordingly, the Attorney General's office is preparing a statement regarding legal authority for the upcoming permit.

4.2.3 Outfall Inventory and Retrofits

WSDOT's program to identify and prioritize outfalls for retrofit made significant gains during the current reporting period. Field inventory work resumed in December of 2002; and an additional 285 outfalls were inventoried as part of the pilot program described in the 2002 NPDES Annual Report. Data was collected within King, Snohomish, and Clark counties and entered into the Stormwater Outfall Inventory Database for prioritization. The new effort brings the total number of prioritized outfalls to more than 900, mostly located in the Puget Sound area. The database contains information on an additional 3,100 outfalls that were identified during the original 1993-95 inventory effort but for which there is not enough information to generate a prioritization score based on the new prioritization index and ranking system. This information will be distributed to WSDOT regional offices for continued implementation of the stormwater retrofit planning and programming process.

For the next reporting period, WSDOT intends to inventory and prioritize more outfalls within the permit areas, especially in Clark County, contingent upon available funding. Additionally, a system to track post-inventory retrofits will continue to be explored and refined. This will require close cooperation with regional offices to identify improvements from recent stormwater retrofit projects.

The Stormwater Outfall Inventory Database has undergone significant revisions in order to manage large amounts of data in a user-friendly format, and to provide a convenient means for numerous WSDOT program functions to obtain outfall information. During the recent reporting period, new features were added to the database, including: 1) automatic generation of prioritization scores based on the

prioritization index and criteria; 2) stormwater structure information; 3) display of photos and sketches with zoom capability; 4) water quality data importing tools; and 5) tools for facilitating data queries and exporting data for reports. These added features provide all known information for individual outfalls in one location for WSDOT user groups (e.g., maintenance, design, program management, and environmental offices). Changes to the database for the next reporting period include: 1) adding quality assurance procedures to ensure the accuracy of inventory data; 2) developing a methodology for tracking changes in the built environment; and 3) on-going modifications to increase user-friendliness based on input from inventory crews and database users.

Training on how to navigate the database to obtain information and generate standard reports to assist in decision-making has been developed for the user groups defined above. For the next reporting period, training efforts will focus on field inventory data collection for select WSDOT users in each region. It will include consistent interpretation of observed field conditions, consistent selection of effective mitigation technologies, and accuracy in the development of preliminary cost estimates for BMP implementation.

SECTION 5.0
CONSTRUCTION SITE CONTROLS AND TRAINING

The Erosion Control Program (ECP) provides technical assistance, training, and compliance assurance for WSDOT's construction projects. The mission of the ECP is to aid in timely and cost-effective project delivery while minimizing environmental degradation caused by erosion. The following discussion outlines WSDOT's erosion control activities related to NPDES permit requirements for the current reporting period.

5.1 TECHNICAL ASSISTANCE

Technical assistance includes support to the WSDOT Design and Construction Offices, as well as writing or updating statewide policies. WSDOT's designers are responsible for preparing Temporary Erosion and Sediment Control (TESC) plans. The ECP worked with the HQ Design Office to improve the tool used for creating TESC plans. This improvement is expected to assist WSDOT with preparing better TESC plans, and thus improve contracts and increase future TESC performance. The ECP also worked with HQ Construction Office to update WSDOT's Standard Specifications to facilitate contract implementation of TESC plans. The ECP contributed significantly to the revision of the Highway Runoff Manual during this reporting period.

The ECP is a member of the Department of Ecology's Technical Review Committee, which is responsible for evaluating and approving new technologies using both passive and chemical methods. Through WSDOT's New Products Committee, the ECP evaluates new erosion/sediment control products for use on WSDOT for effectiveness in a highway setting or compliance with WSDOT specifications. Products that meet agency specifications are automatically added to the Qualified Products List (QPL), which drastically simplifies the product selection, acceptance, and installation process allowing project offices to more quickly respond to changing field conditions. Products that appear beneficial to WSDOT, but where no corresponding specification exists, are evaluated and a determination is made on acceptance and conditions of use. Standard specifications are prepared for such products.

5.2 TRAINING

Keeping contractors and WSDOT employees abreast of new methods, products, and procedures is a key responsibility of the ECP. This training is accomplished through the *Construction Site Erosion and Sediment Control Certification Course*, which is required for WSDOT Design and Construction staff who either write or implement a TESC plan, and for contractors' Erosion and Sediment Control (ESC) Leads. During the 2003/2004 reporting period, 728 people took the certification course; of which 66 were WSDOT employees. During the reporting period, 95% of WSDOT projects visited by the ECP had contractors with currently certified ESC Leads. Contractors without current certifications were required to attend training.

The ECP updated the *Construction Site Erosion and Sediment Control Certification Course* to reflect revisions in the approved 2004 Highway Runoff Manual. In addition, the ECP also participated on a Department of Ecology committee tasked with establishing a statewide curriculum for meeting the erosion/sediment control training requirements for NPDES Phase II.

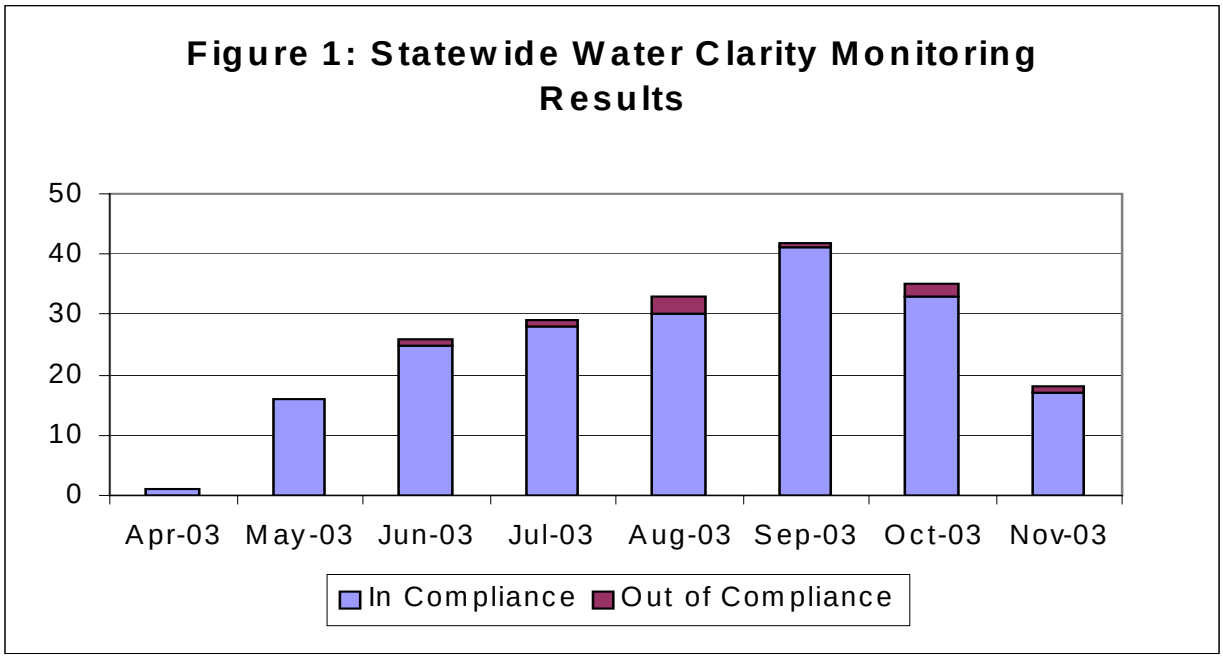
5.3 COMPLIANCE ASSURANCE

The ECP's compliance assurance program continued its' Fall Assessment in October of 2003. The Fall Assessment included an evaluation of 20 moderate and high-risk WSDOT projects and an analysis of erosion control activities for the entire construction program. Assessed parameters include all of the minimum requirements in the Department of Ecology's 2001 *Stormwater Management Manual for Western Washington* (SMMWW) and other measures created by WSDOT to track and improve performance. Table 5-1 outlines how well prepared WSDOT projects were during the fall of 2003 compared to their level of preparation in 2002. Performance increased in three areas, while it remained the same or had little change in seven others. WSDOT's preparedness in the remaining eight areas decreased substantially creating an elevated risk to increased erosion when compared to 2002. The decrease in the bottom five areas in the "Poor" category are directly attributed to one or both of the following reasons: (1) the extremely dry weather last fall extended large earthwork activities into the "wet season," delaying soil cover practices and (2) drought conditions reduced effectiveness of late spring and early fall seeding applications. WSDOT plans to improve performance on issues in the "Poor" to "Fair" ranges by improving technical assistance, contract enforcement, and training.

	TABLE 5-1. EROSION & SEDIMENT CONTROL MINIMUM REQUIREMENTS	2002	2003	Status
Excellent	Clearing limits/sensitive area boundaries identified and respected by contractor	100%	100%	stable
	Utility trenches excavated in manner to reduce erosion risk	100%	100%	stable
	Remove temporary erosion and sediment control measures when not needed	81%	100%	improved
Good	Contractor trained in proper use of erosion/sediment control measures	100%	95%	decreased
	Sediment trapping measures installed prior to soil disturbing activities	90%	90%	stable
	Control offsite erosion using flow controls	87%	84%	decreased
	Protect storm drains from sediment	74%	82%	improved
Fair	If a storm hit at time of site visit, water would meet state water quality standards	86%	80%	decreased
	If a storm hit at time of site visit, adjacent property would be protected	83%	80%	decreased
	Effectiveness of measures installed to trap sediment	96%	78%	decreased
	Erosion control plans are on site and up to date for all WSDOT projects	56%	75%	improved
Poor	Manage construction site water in manner reducing sediment deposition risk	100%	71%	decreased
	Perform maintenance on temporary erosion and sediment control measures	70%	70%	stable
	Construction access routes stabilized to prevent tracking of mud onto streets	98%	69%	decreased
	Effectiveness of measures installed to prevent erosion	91%	67%	decreased
	Temporary stormwater conveyance channels stabilized	90%	64%	decreased
	Protect cut and fill slopes from concentrated runoff	67%	50%	decreased
	Amount of disturbed soil actually covered with erosion control measures	65%	45%	decreased

The ECP furthered its' compliance assurance activities by completing its first full year of construction site water quality sampling under a new statewide monitoring policy. The policy requires sampling on at least 20 percent of all projects with substantial potential for water quality impacts. Figure 1 summarizes sampling results that compare water quality upstream and downstream from 12 projects. Ninety-five percent of the samples met water quality standards for turbidity.

Of the 200 samples collected, nine failed to meet standards. The water became turbid on five occasions when work had to be conducted in the water or very near the shore. The other four turbid samples were collected during rain storms ranging from ¾ to 3 inches, which overwhelmed the design capacities of approved treatment facilities. In all cases, monitoring results prompted immediate corrective actions to regain compliance with water quality standards.



The ECP actively assesses WSDOT's projects, trains employees and contractors, monitors water quality, and has established reporting protocols to be followed if water quality is violated. Excluding problems associated with the 100-year, 24-hour storm event on October 20, 2004, WSDOT experienced minor problems with erosion control during the reporting period, which is a significant improvement. As a result of recently implemented policies, procedures, and tools, WSDOT anticipates continued improvement in the future.

SECTION 6.0
OTHER PROGRAM COMPONENTS

This section of the WSDOT 2004 NPDES Annual Report contains information on other aspects of the Stormwater Management Program that have not been addressed in the Operations and Maintenance or Construction Site Controls and Training sections. It includes information on watershed planning and inter-agency coordination efforts, and status and progress on cost-benefit analyses for BMP selection and implementation.

6.1 PLANNING AND TMDL PARTICIPATION

WSDOT's watershed-based efforts continued to be focused on advancing the watershed-based mitigation approach using watershed characterization methodology. This work is being accomplished as part of the efforts of the Transportation Permit Efficiency and Accountability Committee (TPEAC) and is mandated by the legislature. This process could occur well in advance of project planning or concurrent with the planning, and shows promise to provide significant benefits to the environment while reducing mitigation costs and strengthening the National and State Environmental Policy Act (NEPA/SEPA) documentation and public participation process. The new evaluation process and underlying assumptions were tested on projects on SR 522 and in North Renton on a segment of I-405 in WRIA 8. The results of this test are available for review on the Internet at:
http://www.wsdot.wa.gov/environment/watershed/watershed_charcter.htm

After completing that test, the draft methodology was updated to reflect what had been learned in the test. The "Operational Draft Methodology" document is available at this address:
http://www.wsdot.wa.gov/environment/watershed/docs/methods.pdf

Currently, the methodology is being applied to six major transportation projects within a 300 square mile study area associated with the I-405 corridor and SR 520 east of Lake Washington in WRIA 8. This study will address potential impacts of the projects and identify and prioritize potential mitigation sites for those impacts. The new methodology continues to generate interest from local governments, other state agencies, other states, and the federal government.

WSDOT continues to participate on committees associated with the Salmon Recovery Act (ESHB 2496), the Watershed Management Act (ESHB 2514), non-point pollution (Clean Water Act Section 319) and numerous other state and local agency forums related to watershed governance and planning structures. WSDOT also continues to provide outreach and shares data with other watershed groups and planning entities when working on transportation projects.

WSDOT is also currently working cooperatively with Ecology to identify water resources that have been assigned TMDL and waste load allocations, in order to determine mitigation strategies. Discussions are on-going to define appropriate TMDL areas for further research and evaluate impacts from state highways.

SECTION 7.0
MONITORING

This section of the document includes a description and summary of findings from monitoring activities that have occurred within the past year.

7.1 STORMWATER MONITORING

Monitoring commitments described in WSDOT's SWMP include: routine monitoring of stormwater for total and dissolved solids, metals, nitrates, phosphates, petroleum products, and polynuclear aromatic hydrocarbons (PAHs); annual priority pollutant and pesticide scans; and wet and dry season testing of toxicity using Microtox (BBT) assays. Based on data collected for the 2002/2003 stormwater characterization monitoring, it was determined that WSDOT would focus its limited resources monitoring the parameters that past data indicate warrant the most attention. Those parameters for subsequent monitoring include: total suspended solids, metals, phosphates and petroleum. Dissolved solids and nitrates were consistently low or found to be in compliance with State standards, and therefore monitoring was not continued. As total petroleum hydrocarbon (TPH) was not detectable during the last reporting period when there was no visible sheen, TPH monitoring was limited to instances when a visible sheen was observed. Compliance monitoring of PAH's, pesticides, and Microtox toxicity testing, were not performed during the 2003/2004 reporting period, but WSDOT is working to identify a variety tests to more thoroughly evaluate stormwater runoff during the under the next NPDES permit period.

7.1.1 BMP Effectiveness Monitoring

The focus of monitoring for this reporting period was to evaluate the effectiveness of BMPs in reducing concentrations of the parameters of most concern as described above. WSDOT collected samples at recently installed water quality treatment BMPs that were designed to meet the Department of Ecology's treatment standards. In addition to evaluating BMP effectiveness, control samples of untreated stormwater runoff were collected for comparison with previous data.

Monitoring sites were selected to represent the spectrum of BMP types ranging from vegetated shoulders and ditches to vaults. Seven sampling locations within the Island-Snohomish and South Puget Sound

permit areas were selected. Sampling locations were selected along high volume average daily travel (ADT) roadways (90,000 to 160,000 ADT). The ADT levels at these sites tend to be higher than the average for State highways because recent construction activities have largely focused on reducing congestion on highly traveled routes. Sites were given preference for 1) proximity to Seattle or Olympia, 2) accessibility and security for maintaining sampling equipment, and 3) reliability of defining a highway specific source area. Narrow, low ADT highways were avoided because past sampling efforts indicate that they are unreliable generators of runoff. The sites were selected to improve monitoring efficiency by minimizing travel times and identifying sites with potentially consistent runoff. Sampling sites were also selected to provide data for high ADT areas representing the "worst case scenario," with automated samplers installed at the inlets and outlets of stormwater treatment BMPs. General characterization data was collected as background samples from the BMP inlets or nearby control sites. Both pre-treated and treated runoff was monitored to evaluate BMP effectiveness in 1) reducing pollutant concentrations, 2) reducing stormwater volumes and peak flows when possible and 3) reducing pollutant loads. The monitoring targeted the latest BMPs to determine the effectiveness of facilities built in accordance with the design criteria in WSDOT's 1995 Highway Runoff Manual.

The monitoring sites that were selected for monitoring included the following:

Site 1: Wet Pond. This structure is located on the shoulder of southbound SR 5 at MP 96.2 south of Tumwater. The surface drainage area is approximately 8 acres with untreated runoff from six lanes of traffic, road edge, and median shoulders directed via a series of catch basins and cross-culverts to the pond inlet located on the west side of the highway. The ADT for this location is 90,000. The wet pond inlet is sampled for stormwater characterization, and the wet pond outlet is monitored to evaluate the effectiveness of this BMP.

Site 2: Compost Amended Shoulder and Ditch. This structure is located on the shoulder of southbound SR 5 at MP 109, just south of the Martin Way on-ramp in Olympia. The surface drainage area is approximately 1 acre with untreated runoff from two lanes of traffic and a road edge shoulder sheet flowing onto the composted and vegetated shoulder and ditch. One automated sampler is installed at the catch basin and collects samples through a 45-degree v-notched flume, prior to flowing into a grate inlet. A 60-foot long composted and vegetated slope also drains to the structure but neither runoff or offsite flow has ever been observed or is expected from this area. The compost amended shoulder and ditch are monitored for BMP evaluation. Stormwater characterization (control) samples for this location are

collected at the inlet pipe to a treatment pond, referred to as the Indian Creek facility, located on northbound SR 5 at MP 106. The ADT for this location is 130,000.

Site 3: Unimproved Grass Ditch. This structure is located on the shoulder of northbound SR 405 at MP 27.7 to 28. The ditch inlet begins immediately downstream of the catch basin at MP 28. The ditch outlet (for the study) is located approximately 1500 feet south of the inlet at MP 27.7. The surface drainage area is approximately 0.75 acre with untreated runoff from two lanes of traffic and the road edge shoulder sheet flowing into the ditch. One automated sampler is installed to collect samples through a 45-degree v-notched flume to evaluate this BMP. The stormwater characterization samples (control) for this site are collected at an inlet pipe to a wet vault, located to the north at MP 29.5 (Wet Vault Site). The ADT for this location is 90,000.

Site 4: Dry Pond. This structure is located in the median off southbound SR 5 at MP 188.1 in Everett. The surface drainage area is approximately 3 acres. The pond has two inlets that empty into a primary cell. One inlet is a hardpan ditch that drains untreated water from two lanes of traffic and a road shoulder of southbound SR 5. The other inlet is a cross culvert from a ditch that drains four lanes of traffic plus a road shoulder of northbound SR 5. The stormwater characterization samples for this site are collected at the cross culvert inlet after runoff has been largely treated within the vegetated ditch. Dry pond effectiveness samples are collected at the pond outlet. The ADT at this location is 160,000.

Site 5: Closed Wet Vault. This structure is located in the median of SR 405 at MP 26, approximately mid-way between the Canyon Creek and NE 195th (Beardslee Boulevard) exits on SR 405. The closed wet vault is located under the median and road shoulder. The surface drainage area is approximately 1 acre, with untreated runoff from 3 lanes of traffic, median, and road edge shoulder, directed via sheet runoff to the ditch, and via a series of catch basins and cross-culverts to the vault inlet. Stormwater characterization samples are collected at the grate and cross-culvert inlet to the wet vault, and BMP effectiveness monitoring samples are collected at the vault outlet pipe. The ADT for this location is 90,000.

Site 6: Bioswale. This treatment facility is located in the center median of SR 405 at MP 26, south of the closed wet vault. The surface drainage area is approximately 0.75 acres with untreated runoff from 3 lanes of traffic and a road edge shoulder directed via sheet flow to the side of the swale. BMP effectiveness monitoring samples are collected through a 45-degree v-notched flume at the swale outlet, south of the closed wet vault. The ADT for this location is 90,000.

Site 7: Open Wet Vault. This structure is located on northbound SR 405 at MP 29.5, behind a jersey barrier, approximately 400 feet south of the Filbert Road underpass location in Lynnwood. The surface drainage area is approximately 7 acres, with untreated runoff from 6 lanes of traffic directed via a series of catch basins and cross-culverts to the vault inlet. The BMP effectiveness monitoring samples are collected from the vault outlet pipe. Stormwater characterization samples are collected at a catch basin located approximately 300 feet north, along the embankment to SR 405 from Filbert Road. The catch basin directs stormwater runoff from SR 405 to a wet vault located along the south side of Filbert Road. The ADT for this location is 90,000.

A monitoring and quality assurance/quality control (QA/QC) plan (Tetra Tech 2003) was prepared for this general characterization monitoring and remains on file with the WSDOT ESO Water Quality Program. Samplers were installed at Site 1, 3, 4, 5, 6, and 7 in August and September of 2003. The automatic sampler at Site 2 was installed in April of 2002. A compact disc with copies of the original laboratory reports is also provided in Appendix C or is available on request from the WSDOT ESO Water Quality Program. Samples collected from the referenced sampling sites were analyzed at the laboratory for total suspended solids (TSS), hardness, total phosphorous, and for the dissolved and total forms of inorganic elements cadmium, copper, lead, and zinc. In accordance with the referenced monitoring plan, grab samples were collected and analyzed for the presence of total petroleum hydrocarbons (TPH) when a sheen was observed in the stormwater runoff at the sampling site.

The data presented in Table 7-1 provide a summary of the pre-treated stormwater characterization samples from the Wet Pond inlet (Site 1), Indian Creek facility (associated with Site 2), Dry Pond inlet (Site 4), Closed Wet Vault inlet (Site 5), and Open Wet Vault inlet (Site 7) in comparison to previous years data. The stormwater characterization data is presented in Table 7-2. A comparison of the current year characterization data with the previous years (curb) data showed that maximum concentrations for total phosphorus, TSS, and total metals (cadmium, copper, lead, and zinc) that were greater than previous years. However, all of the maximum values were from a single sample. Similarly, total cadmium, total lead, and total zinc mean concentrations were greater than previous years, primarily as a result of the exceptionally high concentrations in the one sample. Monitoring data confirms that untreated runoff from WSDOT highways is comparable to highways elsewhere (Strecker et. al. 2004)

Also included with the stormwater characterization data in Table 7-2 is a comparison to Surface Water Quality Standards (Chapter 173-201A WAC). The standards presented for comparison are the freshwater

acute concentrations calculated for dissolved toxic substances (WAC 173-201A-040). The toxic substances water quality criteria are levels in water above which there is a potential to adversely affect characteristic water uses, cause acute or chronic toxicity to the most sensitive biota dependent upon those waters, or adversely affect public health.

TABLE 7-1. SUMMARY
STORMWATER QUALITY PRIOR TO TREATMENT

Parameters	Current Year			Curb Data		
	Range [a]	Number of Samples	Mean[b]	Range [a]	Number of Samples	Mean[b]
TPH[c] (mg/L)[d]	ND - 0.33	6	NA [e]	NA	0	NA
T. Phosphorus (mg/L)	0.014 - 2.05	41	0.18	ND – 0.92	34	0.21
TSS (mg/L)	ND - 1,416	41	121	3.0 – 580	34	123
Hardness (mg/L)	10-94	41	27.0	5.3 – 160	34	28.6
Total Cadmium (μg/L)[f]	ND - 5.6	41	0.96	ND - 1.8	11	0.76
Dissolved Cadmium (μg/L)	ND - 0.48	41	0.22	ND - 0.76	11	0.33
Total Copper (μg/L)	3.9 - 220	41	27.2	ND – 58	11	28.2
Dissolved Copper (μg/L)	2.0 - 18	41	6.12	ND – 21	11	7.14
Total Lead (μg/L)	ND - 260	41	17.6	ND – 22	11	12.6
Dissolved Lead (μg/L)	ND	41	NA	ND	11	NA
Total Zinc (μg/L)	17 - 1,200	41	154	7.3 – 587	34	146
Dissolved Zinc (μg/L)	8.9 - 100	41	52.8	ND – 493	34	77.9

Current year data includes samples collected from inlets to Sites 1 (Wet Pond), 2 (Indian Creek), 4 (Dry Pond), 5 (Closed Wet Vault), and 7 (Open Wet Vault). The ADT for these sites ranged from 90,000 to 160,000.

Curb Data includes samples collected from 2001 through 2003 at the Indian Creek site (WSDOT 2003), SR 405 (Vortechs™ monitoring [Taylor and Associates, Inc. 2002(a)]), and SR 167 Ecology Embankment site [Taylor and Associates, Inc. 2002(b)]. ADT for the Curb Data sites ranged from 100,000 to 150,000.

Notes:

a Range in measured concentration. (ND denotes parameter was not detected at the practical quantitation limit.)

b Mean for all sampling dates. Samples that were non-detect were included in calculation of the mean by dividing the practical quantitation limit by 0.5.

c TPH = total petroleum hydrocarbons by method NWTPH-Dx

d mg/L = milligrams per liter.

e NA - not applicable, no samples were collected for analysis or all samples were non-detect.

f (μg/L) = micrograms per liter.

TABLE 7-2. STORMWATER QUALITY PRIOR TO TREATMENT (Page 1 of 2)											
Site Name	Site Location	Parameter	TPH	TSS	T Phos-phorus	Cadmium			Copper		
						Total	Dissolved	Freshwater (Acute) WQS	Total	Dissolved	Fresh water (Acute) WQS
		Units	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
		Sample Date									
Wet Pond - Inlet	SR 5 M.P. 96.2	11/16/03	ND	NS	NS	NS	NS	NS	NS	NS	NS
Wet Pond - Inlet	SR 5 M.P. 96.2	11/17/03	NS	12	0.07	0.26	ND	0.58	7.4	3.6	3.38
Wet Pond - Inlet	SR 5 M.P. 96.2	11/25/03	ND	49	0.13	3.4	0.28	0.51	20	3.9	3.03
Wet Pond - Inlet	SR 5 M.P. 96.2	11/28/03	NS	42	0.077	0.39	ND	0.30	17	4.2	1.94
Wet Pond - Inlet	SR 5 M.P. 96.2	12/05/03	NS	72	0.116	0.94	0.26	0.82	17	3.5	4.61
Wet Pond - Inlet	SR 5 M.P. 96.2	12/13/03	NS	47	0.081	1.2	ND	0.47	14	2.8	2.85
Wet Pond - Inlet	SR 5 M.P. 96.2	01/23/04	NS	37	0.123	0.85	0.34	1.75	18	5	8.86
Wet Pond - Inlet	SR 5 M.P. 96.2	01/28/04	NS	160	0.24	1.0	0.25	0.93	42	3.5	5.13
Wet Pond - Inlet	SR 5 M.P. 96.2	02/14/04	ND	NS	NS	NS	NS	NS	NS	NS	NS
Wet Pond - Inlet	SR 5 M.P. 96.2	03/05/04	NS	88	0.177	0.85	0.39	1.26	29	5.6	6.67
Wet Pond - Inlet	SR 5 M.P. 96.2	03/19/04	NS	110	0.09	1.1	0.43	1.48	38	14	7.68
Wet Pond - Inlet	SR 5 M.P. 96.2	03/24/04	NS	81	0.23	0.9	ND	0.89	27	5.6	4.96
Indian Creek - Inlet	SR 5 M.P. 109	11/16/03	ND	NS	NS	NS	NS	NS	NS	NS	NS
Indian Creek - Inlet	Milepost 109	11/23/03	NS	58	0.11	5.6	0.28	0.51	29	5.6	3.03
Indian Creek - Inlet	Milepost 109	12/05/03	NS	90	0.214	1.9	0.42	0.89	38	6.7	4.96
Indian Creek - Inlet	Milepost 109	12/13/03	NS	120	0.179	1.6	ND	0.37	28	4.1	2.31
Indian Creek - Inlet	Milepost 109	01/23/04	NS	342	0.411	1.8	0.42	1.15	62	5.7	6.16
Indian Creek - Inlet	Milepost 109	01/28/04	NS	170	0.227	0.8	0.21	0.79	38	3.8	4.44
Indian Creek - Inlet	Milepost 109	02/13/04	0.33	100	0.219	0.97	0.48	1.26	40	10	6.67
Indian Creek - Inlet	Milepost 109	03/05/04	ND	190	0.299	1.1	0.31	0.93	45	5.4	5.13
Indian Creek - Inlet	Milepost 109	03/19/04	NS	280	0.084	1.3	0.39	1.11	59	12	5.99
Indian Creek - Inlet	Milepost 109	03/24/04	NS	190	0.36	1.0	0.23	0.65	36	7.2	3.74
Dry Pond – Inlet	SR 5 M.P. 188.1	12/05/03	NS	3	0.022	0.47	ND	0.30	4.4	3.3	1.94
Dry Pond - Inlet	SR 5 M.P. 188.1	12/13/03	NS	1.8	0.015	ND	ND	0.51	6.2	4	3.03
Dry Pond - Inlet	SR 5 M.P. 188.1	12/16/03	NS	3.2	0.025	0.3	0.1	0.68	6	4.1	3.91
Dry Pond - Inlet	SR 5 M.P. 188.1	12/20/03	NS	1.7	0.016	0.21	0.25	0.58	5.9	4.8	3.38
Dry Pond - Inlet	SR 5 M.P. 188.1	01/08/04	NS	33	0.199	0.84	0.35	1.19	19	7.5	6.33
Dry Pond - Inlet	SR 5 M.P. 188.1	01/15/04	NS	4.8	0.019	ND	ND	0.47	6.7	6.9	2.85
Dry Pond - Inlet	SR 5 M.P. 188.1	01/26/04	NS	0.75	0.014	ND	ND	0.30	4	3.6	1.94
Dry Pond - Inlet	SR 5 M.P. 188.1	02/05/04	NS	ND	0.018	ND	ND	0.47	4.4	3.9	2.85
Dry Pond - Inlet	SR 5 M.P. 188.1	03/04/04	NS	1	0.033	0.26	0.21	0.40	6.8	4.6	2.49
Dry Pond - Inlet	SR 5 M.P. 188.1	03/10/04	NS	2	0.034	ND	ND	0.30	7.6	5.7	1.94
Dry Pond - Inlet	SR 5 M.P. 188.1	05/24/04	NS	5.2	0.067	0.41	0.35	0.68	20	18	3.91
Dry Pond - Inlet	SR 5 M.P. 188.1	05/26/04	NS	4	0.02	0.23	0.26	0.51	14	12	3.03
Closed Wet Vault - Inlet	SR 405 M.P. 26	12/13/03	NS	0.87	0.017	0.24	ND	1.26	4.6	2.7	6.67
Closed Wet Vault - Inlet	SR 405 M.P. 26	12/16/03	NS	1.2	0.021	0.4	ND	1.26	3.9	3.2	6.67
Closed Wet Vault - Inlet	SR 405 M.P. 26	01/08/04	NS	4.5	0.048	ND	ND	1.56	5.5	3.8	8.02
Closed Wet Vault - Inlet	SR 405 M.P. 26	01/15/04	NS	3.6	0.019	ND	ND	1.15	4.4	3.5	6.16
Closed Wet Vault - Inlet	SR 405 M.P. 26	01/26/04	NS	3.3	0.028	ND	ND	0.93	4.5	4.4	5.13
Open Wet Vault - Inlet	SR 405 M.P. 29.5	01/08/04	NS	1416	2.05	5.2	0.35	3.46	220	18	16.1
Open Wet Vault - Inlet	SR 405 M.P. 29.5	01/15/04	NS	86	0.146	0.96	0.25	2.48	38	9.4	12.0
Open Wet Vault - Inlet	SR 405 M.P. 29.5	01/26/04	NS	792	0.664	1.3	ND	0.54	61	2	3.20
Open Wet Vault - Inlet	SR 405 M.P. 29.5	01/30/04	NS	290	0.259	0.46	ND	0.58	35	4.7	3.38
Open Wet Vault - Inlet	SR 405 M.P. 29.5	03/04/04	NS	83	0.127	0.47	0.23	1.00	28	8.5	5.47

TABLE 7-2. STORMWATER QUALITY PRIOR TO TREATMENT (Page 2 of 2)									
Site Name	Site Location	Parameter	Lead			Zinc			Hardness
			Total	Dissolved	Fresh water (Acute) WQS	Total	Dissolved	Fresh water (Acute) WQS	
		units	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)
		Sample Date							
Wet Pond - Inlet	SR 5 M.P. 96.2	11/16/03	NS	NS	NS	NS	NS	NS	NS
Wet Pond - Inlet	SR 5 M.P. 96.2	11/17/03	1.7	ND	9.58	86	64	26.8	18
Wet Pond - Inlet	SR 5 M.P. 96.2	11/25/03	5.9	ND	8.38	130	64	24.2	16
Wet Pond - Inlet	SR 5 M.P. 96.2	11/28/03	4.8	ND	4.91	84	44	16.3	10
Wet Pond - Inlet	SR 5 M.P. 96.2	12/05/03	7.6	ND	13.9	130	61	35.4	25
Wet Pond - Inlet	SR 5 M.P. 96.2	12/13/03	5.9	ND	7.79	98	57	22.9	15
Wet Pond - Inlet	SR 5 M.P. 96.2	01/23/04	6.3	ND	30.1	140	63	63.6	50
Wet Pond - Inlet	SR 5 M.P. 96.2	01/28/04	19	ND	15.8	180	54	38.9	28
Wet Pond - Inlet	SR 5 M.P. 96.2	02/14/04	NS	NS	NS	NS	NS	NS	NS
Wet Pond - Inlet	SR 5 M.P. 96.2	03/05/04	11	ND	21.6	180	72	49.3	37
Wet Pond - Inlet	SR 5 M.P. 96.2	03/19/04	12	ND	25.5	230	100	56.0	43
Wet Pond - Inlet	SR 5 M.P. 96.2	03/24/04	11	ND	15.1	160	59	37.7	27
Indian Creek - Inlet	SR 5 M.P. 109	11/16/03	NS	NS	NS	NS	NS	NS	NS
Indian Creek - Inlet	Milepost 109	11/23/03	10	ND	8.38	140	53	24.2	16
Indian Creek - Inlet	Milepost 109	12/05/03	14	ND	15.1	200	94	37.7	27
Indian Creek - Inlet	Milepost 109	12/13/03	15	ND	6.04	150	60	19.0	12
Indian Creek - Inlet	Milepost 109	01/23/04	40	ND	19.6	310	63	45.9	34
Indian Creek - Inlet	Milepost 109	01/28/04	21	ND	13.3	190	51	34.2	24
Indian Creek - Inlet	Milepost 109	02/13/04	13	ND	21.6	200	88	49.3	37
Indian Creek - Inlet	Milepost 109	03/05/04	23	ND	15.8	240	70	38.9	28
Indian Creek - Inlet	Milepost 109	03/19/04	29	ND	19.0	290	90	44.7	33
Indian Creek - Inlet	Milepost 109	03/24/04	19	ND	10.8	190	69	29.3	20
Dry Pond – Inlet	SR 5 M.P. 188.1	12/05/03	1.1	ND	4.91	37	31	16.3	10
Dry Pond - Inlet	SR 5 M.P. 188.1	12/13/03	ND	ND	8.38	52	44	24.2	16
Dry Pond - Inlet	SR 5 M.P. 188.1	12/16/03	1.8	ND	11.4	58	49	30.5	21
Dry Pond - Inlet	SR 5 M.P. 188.1	12/20/03	1.2	ND	9.58	61	53	26.8	18
Dry Pond - Inlet	SR 5 M.P. 188.1	01/08/04	14	ND	20.3	200	95	47.0	35
Dry Pond - Inlet	SR 5 M.P. 188.1	01/15/04	1.1	ND	7.79	49	39	22.9	15
Dry Pond - Inlet	SR 5 M.P. 188.1	01/26/04	ND	ND	4.91	33	28	16.3	10
Dry Pond - Inlet	SR 5 M.P. 188.1	02/05/04	ND	ND	7.79	52	37	22.9	15
Dry Pond - Inlet	SR 5 M.P. 188.1	03/04/04	ND	ND	6.62	53	33	20.3	13
Dry Pond - Inlet	SR 5 M.P. 188.1	03/10/04	ND	ND	4.91	31	20	16.3	10
Dry Pond - Inlet	SR 5 M.P. 188.1	05/24/04	1.3	ND	11.4	58	54	30.5	21
Dry Pond - Inlet	SR 5 M.P. 188.1	05/26/04	ND	ND	8.38	47	43	24.2	16
Closed Wet Vault - Inlet	SR 405 M.P. 26	12/13/03	1.8	ND	21.6	18	8.9	49.3	37
Closed Wet Vault - Inlet	SR 405 M.P. 26	12/16/03	1.3	ND	21.6	24	20	49.3	37
Closed Wet Vault - Inlet	SR 405 M.P. 26	01/08/04	2.1	ND	26.8	42	38	58.2	45
Closed Wet Vault - Inlet	SR 405 M.P. 26	01/15/04	1	ND	19.6	29	18	45.9	34
Closed Wet Vault - Inlet	SR 405 M.P. 26	01/26/04	1.3	ND	15.8	17	16	38.9	28
Open Wet Vault - Inlet	SR 405 M.P. 29.5	01/08/04	260	ND	60.4	1200	68	109	94
Open Wet Vault - Inlet	SR 405 M.P. 29.5	01/15/04	28	ND	43.0	250	74	83.6	69
Open Wet Vault - Inlet	SR 405 M.P. 29.5	01/26/04	92	ND	8.98	350	27	25.5	17
Open Wet Vault - Inlet	SR 405 M.P. 29.5	01/30/04	30	ND	9.58	190	45	26.8	18
Open Wet Vault - Inlet	SR 405 M.P. 29.5	03/04/04	10	ND	17.0	130	46	41.3	30

Notes: TSS = total suspended solids; mg/L = milligrams per liter; (µg/L) = micrograms per liter. ND indicates Not Detected at Practical Quantitation Limit. NS indicates no sample was collected. The Freshwater Acute WQS (Water Quality Standard) is calculated per the procedures in Chapter 173-201A-040 WAC, and is presented for comparison purposes. This column has been added for perspective only. It simply compares the concentration of a dissolved metal in stormwater to state standards given the stormwater hardness. A runoff concentration exceeding standards does not mean that a violation of standards has occurred or is even likely. Runoff exceeding standards, however, does indicate that runoff could potentially lead to problems in the receiving water.

The BMP monitoring data for each of the sampling sites is presented in Table 7-3. Also included is a summary of the calculated concentrations for the freshwater acute water quality standards for toxic substances (WAC 173-201A-040). Table 7-4 presents a BMP effectiveness summary that compares the average pollutant concentrations in stormwater before and after treatment by the BMPs at the monitoring sites. The load reductions calculated in Table 7-4 represent only the effectiveness of the BMPs in reducing the pollutant concentrations. Additional load reductions for stormwater runoff are realized through infiltration. Though not easily quantified, load reductions associated with stormwater infiltration were estimated to range between zero and approximately 80 percent for the different BMPs.

The data confirms that WSDOT's SWMP was correct in identifying TSS and metals as parameters of concern, and that phosphorus may sometimes be a concern when untreated runoff is discharged to phosphorus-sensitive water bodies. A discussion of the BMP performance relative to different parameters is presented below. The data also indicates that WSDOT's treatment facilities perform comparably or better than BMPs tested elsewhere (Strecker et. al. 2004) (Caltrans 2004).

Total Suspended Solids (TSS): Characterization monitoring shows that TSS concentrations in WSDOT runoff are comparable to concentrations observed in highway runoff from previous years and elsewhere across the country. Although not a regulated parameter, TSS is of concern because it can be roughly correlated to sediment loading and turbidity, and sediment can gradually decrease treatment facility effectiveness and impact receiving waters. The stormwater treatment BMPs removed from 95-99 percent of the TSS in stormwater runoff. The tested BMPs exceeded the performance goal of 80% TSS removal set in the Department of Ecology's 2001 Stormwater Management Manual for Western Washington (SMMWW). The unimproved grass-lined ditch and bioswale reduced TSS concentrations more (99%) than all engineered BMPs.

Metals: Concentrations of total and dissolved metals in stormwater runoff showed variable reductions with the BMPs. Lead concentrations were much lower than previously observed, due largely to the elimination of leaded fuels, and dissolved lead was rarely detected. Cadmium concentrations were consistently low and often below detection limits. The decrease in average total metals concentrations in stormwater runoff through the use of BMPs varied from 36 to 85 percent for cadmium, 72 to 91 percent for copper, 86 to 96 percent for lead, and 55 to 86 percent for zinc. As expected, the removal rates were lower for dissolved metals than total metals. Average dissolved metals concentrations decreased from 8 to 60 percent for copper and 0 to 80 percent for zinc. Dissolved lead was rarely detected, and removal

TABLE 7-3. BMP EFFECTIVENESS MONITORING - STORMWATER QUALITY AFTER TREATMENT
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		Parameter	TSS	T Phos-phorus	Cadmium			Copper		
					Total Cadmium	Dissolved Cadmium	Freshwater (Acute) WQS	Total Copper	Dissolved Copper	Freshwater (Acute) WQS
Site Name	Site Location	Units	(mg/L)	(mg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
		Sample Date								
Wet Pond – Outlet	SR 5 M.P. 96.2	11/17/03	6	ND	0.27	ND	0.68	6.6	4.7	3.91
Wet Pond – Outlet	SR 5 M.P. 96.2	11/25/03	4	0.12	1.6	ND	0.75	8.1	3.6	4.26
Wet Pond – Outlet	SR 5 M.P. 96.2	11/28/03	3.8	0.022	0.24	ND	0.79	9	3.4	4.44
Wet Pond – Outlet	SR 5 M.P. 96.2	12/05/03	2.5	0.022	0.65	ND	0.75	5.2	2.7	4.26
Wet Pond – Outlet	SR 5 M.P. 96.2	12/13/03	2	0.02	1.7	ND	0.89	4.8	3.6	4.96
Wet Pond – Outlet	SR 5 M.P. 96.2	01/23/04	4	0.024	0.3	0.21	1.41	6.4	3.8	7.35
Wet Pond – Outlet	SR 5 M.P. 96.2	01/28/04	1.2	0.023	ND	ND	1.22	4.8	3.2	6.50
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	01/01/03	9	NS	NS	NS	NS	NS	NS	NS
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	02/14/03	12	0.3	ND	ND	0.61	8.2	5.8	3.56
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	03/21/03	12	NS	ND	ND	0.86	6.8	ND	NA
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	03/21/03	14	0.2	ND	ND	0.51	8.5	6	3.03
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	03/25/03	10	0.21	ND	ND	0.68	7.2	5.4	3.91
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	04/04/03	100	0.26	0.2	0.2	0.61	17.0	5.8	3.56
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	04/07/03	11	0.28	0.2	0.2	0.68	8.1	5.8	3.91
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	11/16/03	9	0.4	ND	*	0.58	7.9	*	NA
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	11/17/03	6	0.34	ND	ND	0.75	7.3	6.6	4.26
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	11/28/03	2.8	0.2	ND	ND	0.51	7.6	5.4	3.03
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	12/05/03	6.5	0.307	0.76	ND	0.61	6.9	4.5	3.56
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	12/13/03	5.2	0.262	1.5	ND	0.54	5.7	4.9	3.20
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	01/01/04	12	0.28	ND	ND	0.61	8.3	4.8	3.56
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	02/13/04	6.8	0.243	0.23	ND	0.58	6.3	4.8	3.38
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	03/05/04	34	0.286	ND	ND	0.75	14	7.5	4.26
Unimproved Grass Ditch	SR 405 M.P. 27.7	12/05/03	0.25	0.048	0.96	0.1	0.89	6.7	5.8	4.96
Unimproved Grass Ditch	SR 405 M.P. 27.7	12/13/03	0.5	0.044	0.51	0.1	0.97	6.1	5.7	5.30
Unimproved Grass Ditch	SR 405 M.P. 27.7	12/16/03	2.3	0.053	0.54	0.1	0.89	6.7	5.6	4.96
Unimproved Grass Ditch	SR 405 M.P. 27.7	12/20/03	0.25	0.031	0.24	0.84	1.00	7.4	6.2	5.47
Dry Pond – Outlet	SR 5 M.P. 188.1	12/05/03	1.5	0.017	0.61	ND	0.51	3.2	2.5	3.03
Dry Pond – Outlet	SR 5 M.P. 188.1	12/13/03	2.3	0.018	0.33	ND	0.40	4.4	2.8	2.49
Dry Pond – Outlet	SR 5 M.P. 188.1	12/16/03	2.5	0.019	ND	ND	0.44	3.2	2.7	2.67
Dry Pond – Outlet	SR 5 M.P. 188.1	01/08/04	5.5	0.045	0.64	ND	0.44	6.4	2.9	2.67
Dry Pond – Outlet	SR 5 M.P. 188.1	01/15/04	2	0.02	ND	ND	0.58	2	2.5	3.38
Dry Pond – Outlet	SR 5 M.P. 188.1	01/26/04	6	0.034	ND	ND	0.58	3.4	2.8	3.38
Dry Pond – Outlet	SR 5 M.P. 188.1	01/30/04	2	0.02	ND	ND	0.47	2.7	2.6	2.85
Dry Pond – Outlet	SR 5 M.P. 188.1	02/05/04	2	0.018	ND	ND	0.54	3.1	2.2	3.20
Dry Pond – Outlet	SR 5 M.P. 188.1	02/09/04	2.4	0.018	ND	ND	0.58	2.7	2.3	3.38
Dry Pond – Outlet	SR 5 M.P. 188.1	02/17/04	9.2	0.062	1.4	0.72	0.54	4.2	2.8	3.20
Dry Pond – Outlet	SR 5 M.P. 188.1	02/27/04	8	0.033	ND	ND	0.47	4.2	2.5	2.85
Dry Pond – Outlet	SR 5 M.P. 188.1	03/04/04	8	0.046	ND	ND	0.40	4.5	3.1	2.49
Dry Pond – Outlet	SR 5 M.P. 188.1	03/10/04	4.4	0.035	ND	ND	0.37	4.2	3.2	2.31

TABLE 7-3. BMP EFFECTIVENESS MONITORING - STORMWATER QUALITY AFTER TREATMENT
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		Parameter	TSS	T Phos-phorus	Cadmium			Copper		
					Total Cadmium	Dissolved Cadmium	Freshwater (Acute) WQS	Total Copper	Dissolved Copper	Freshwater (Acute) WQS
Site Name	Site Location	units	(mg/L)	(mg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
		Sample Date								
Closed Wet Vault – Outlet	SR 405 M.P. 26	12/16/03	1.5	0.026	0.3	ND	1.26	4.4	3.8	6.67
Closed Wet Vault – Outlet	SR 405 M.P. 26	01/08/04	5	0.048	0.21	ND	1.30	4.4	3.7	6.84
Closed Wet Vault – Outlet	SR 405 M.P. 26	01/15/04	2.9	0.01	ND	ND	1.11	3.2	2.8	5.99
Closed Wet Vault – Outlet	SR 405 M.P. 26	01/26/04	14	0.053	ND	ND	0.72	5.4	5	4.09
Closed Wet Vault – Outlet	SR 405 M.P. 26	01/30/04	12	0.048	ND	ND	0.72	4.1	3.3	4.09
Closed Wet Vault – Outlet	SR 405 M.P. 26	02/17/04	1.8	0.027	0.67	ND	1.08	3.9	2.9	5.82
Bioswale	SR 405 M.P. 26	12/05/03	4.5	0.056	0.81	ND	1.19	7.4	4.8	6.33
Bioswale	SR 405 M.P. 26	12/20/03	0.8	0.045	0.22	0.41	1.45	6.2	5.9	7.51
Bioswale	SR 405 M.P. 26	01/15/04	3.2	NS	ND	ND	1.33	6.7	5.1	7.01
Bioswale	SR 405 M.P. 26	01/26/04	2.3	0.043	ND	ND	1.19	6.0	5.8	6.33
Bioswale	SR 405 M.P. 26	01/30/04	3	0.053	ND	ND	0.65	4.5	4.3	3.74
Bioswale	SR 405 M.P. 26	02/09/04	15	0.057	ND	ND	0.97	8.3	6.3	5.30
Bioswale	SR 405 M.P. 26	02/16/04	1.9	0.051	1.1	ND	1.00	6.0	5.2	5.47
Bioswale	SR 405 M.P. 26	02/17/04	6.8	0.027	0.84	ND	0.97	6.3	4.9	5.30
Bioswale	SR 405 M.P. 26	02/27/04	3.3	0.045	ND	ND	1.41	9.0	5.5	7.35
Bioswale	SR 405 M.P. 26	03/04/04	2.4	0.051	ND	ND	1.30	7.9	6.2	6.84
Open Wet Vault – Outlet	SR 405 M.P. 29.5	12/16/03	7.5	0.044	0.5	0.24	1.19	12	7.1	6.33
Open Wet Vault – Outlet	SR 405 M.P. 29.5	12/20/03	15	0.047	0.33	0.24	1.19	11	6.2	6.33
Open Wet Vault – Outlet	SR 405 M.P. 29.5	02/09/04	12	0.044	0.29	ND	1.41	12	8.5	7.35
Open Wet Vault – Outlet	SR 405 M.P. 29.5	02/16/04	6.4	0.035	1.2	0.34	1.45	10	7.8	7.51
Open Wet Vault – Outlet	SR 405 M.P. 29.5	02/17/04	9.7	0.052	1.4	0.39	1.45	12	7.8	7.51
Open Wet Vault – Outlet	SR 405 M.P. 29.5	02/27/04	18	0.073	0.3	0.3	1.67	13	7	8.52
Open Wet Vault – Outlet	SR 405 M.P. 29.5	03/04/04	14	0.081	0.26	ND	1.52	11	6.9	7.85

Notes: TSS = total suspended solids; mg/L = milligrams per liter; (µg/L) = micrograms per liter.
* indicates samples were not preserved properly.
ND indicates Not Detected at Practical Quantitation Limit
NA - indicates not applicable.
NS indicates no sample was collected.
The Freshwater Acute WQS (Water Quality Standard) is calculated per the procedures in Chapter 173-201A-040 WAC, and is presented for comparison purposes. This column has been added for perspective only. It simply compares the concentration of a dissolved metal in stormwater to state standards given the stormwater hardness. A runoff concentration exceeding standards does not mean that a violation of standards has occurred or is even likely. Runoff exceeding standards, however, does indicate that runoff could potentially lead to problems in the receiving water.

TABLE 7-3. BMP EFFECTIVENESS MONITORING - STORMWATER QUALITY AFTER TREATMENT
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		Parameter	Lead			Zinc			Hardness
			Total Lead	Dissolved Lead	Freshwater (Acute) WQS	Total Zinc	Dissolved Zinc	Freshwater (Acute) WQS	
Site Name	Site Location	units	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)
		Sample Date							
Wet Pond – Outlet	SR 5 M.P. 96.2	11/17/03	ND	ND	11.4	50	41	30.5	21
Wet Pond – Outlet	SR 5 M.P. 96.2	11/25/03	1.4	ND	12.6	74	44	32.9	23
Wet Pond – Outlet	SR 5 M.P. 96.2	11/28/03	1.2	ND	13.3	55	38	34.2	24
Wet Pond – Outlet	SR 5 M.P. 96.2	12/05/03	ND	ND	12.6	51	36	32.9	23
Wet Pond – Outlet	SR 5 M.P. 96.2	12/13/03	0.64	ND	15.1	36	30	37.7	27
Wet Pond – Outlet	SR 5 M.P. 96.2	01/23/04	1.2	ND	24.2	66	40	53.8	41
Wet Pond – Outlet	SR 5 M.P. 96.2	01/28/04	ND	ND	20.9	38	28	48.2	36
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	01/01/03	NS	NS	NS	NS	NS	NS	NS
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	02/14/03	ND	ND	10.2	32	24	28.0	19
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	03/21/03	ND	ND	14.5	24	16	36.6	26
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	03/21/03	ND	ND	8.38	29	19	24.2	16
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	03/25/03	ND	ND	11.4	27	25	30.5	21
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	04/04/03	1	1	10.2	52	20	28.0	19
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	04/07/03	1	1	11.4	25	17	30.5	21
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	11/16/03	1.5	*	9.58	33	*	26.8	18
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	11/17/03	1.2	ND	12.6	30	23	32.9	23
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	11/28/03	1.1	ND	8.38	33	18	24.2	16
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	12/05/03	1.5	ND	10.2	36	15	28.0	19
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	12/13/03	1.5	ND	8.98	69	22	25.5	17
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	01/01/04	1.8	ND	10.2	30	18	28.0	19
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	02/13/04	1.2	ND	9.58	29	20	26.8	18
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	03/05/04	4.1	ND	12.6	58	29	32.9	23
Unimproved Grass Ditch	SR 405 M.P. 27.7	12/05/03	2.1	1.5	15.1	62	55	37.7	27
Unimproved Grass Ditch	SR 405 M.P. 27.7	12/13/03	1.9	1.4	16.4	68	59	40.1	29
Unimproved Grass Ditch	SR 405 M.P. 27.7	12/16/03	2.4	1.2	15.1	64	70	37.7	27
Unimproved Grass Ditch	SR 405 M.P. 27.7	12/20/03	2.7	2.2	17.0	75	72	41.3	30
Dry Pond – Outlet	SR 5 M.P. 188.1	12/05/03	ND	ND	8.38	29	22	24.2	16
Dry Pond – Outlet	SR 5 M.P. 188.1	12/13/03	ND	ND	6.62	33	21	20.3	13
Dry Pond – Outlet	SR 5 M.P. 188.1	12/16/03	ND	ND	7.20	25	21	21.6	14
Dry Pond – Outlet	SR 5 M.P. 188.1	01/08/04	1.5	ND	7.20	41	21	21.6	14
Dry Pond – Outlet	SR 5 M.P. 188.1	01/15/04	ND	ND	9.58	38	32	26.8	18
Dry Pond – Outlet	SR 5 M.P. 188.1	01/26/04	ND	ND	9.58	29	24	26.8	18
Dry Pond – Outlet	SR 5 M.P. 188.1	01/30/04	ND	ND	7.79	22	24	22.9	15
Dry Pond – Outlet	SR 5 M.P. 188.1	02/05/04	ND	ND	8.98	24	20	25.5	17
Dry Pond – Outlet	SR 5 M.P. 188.1	02/09/04	ND	ND	9.58	30	20	26.8	18
Dry Pond – Outlet	SR 5 M.P. 188.1	02/17/04	ND	ND	8.98	16	12	25.5	17
Dry Pond – Outlet	SR 5 M.P. 188.1	02/27/04	ND	ND	7.79	13	2.5	22.9	15
Dry Pond – Outlet	SR 5 M.P. 188.1	03/04/04	ND	ND	6.62	27	16	20.3	13
Dry Pond – Outlet	SR 5 M.P. 188.1	03/10/04	2	ND	6.04	20	12	19.0	12

TABLE 7-3. BMP EFFECTIVENESS MONITORING - WATER QUALITY AFTER TREATMENT
(Page 4 of 4)

		Parameter	Lead			Zinc			Hardness
			Total Lead	Dissolved Lead	Freshwater (Acute) WQS	Total Zinc	Dissolved Zinc	Freshwater (Acute) WQS	
Site Name	Site Location	units	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)
		Sample Date							
Closed Wet Vault – Outlet	SR 405 M.P. 26	12/16/03	1.2	ND	21.6	33	18	49.3	37
Closed Wet Vault – Outlet	SR 405 M.P. 26	01/08/04	2.3	ND	22.2	47	47	50.4	38
Closed Wet Vault – Outlet	SR 405 M.P. 26	01/15/04	ND	ND	19.0	23	16	44.7	33
Closed Wet Vault – Outlet	SR 405 M.P. 26	01/26/04	3	ND	12.0	26	19	31.7	22
Closed Wet Vault – Outlet	SR 405 M.P. 26	01/30/04	1.5	ND	12.0	19	13	31.7	22
Closed Wet Vault – Outlet	SR 405 M.P. 26	02/17/04	1.3	ND	18.3	17	11	43.6	32
Bioswale	SR 405 M.P. 26	12/05/03	1.8	ND	20.3	23	10	47.0	35
Bioswale	SR 405 M.P. 26	12/20/03	1.0	ND	24.8	16	15	54.9	42
Bioswale	SR 405 M.P. 26	01/15/04	1.6	ND	22.9	26	16	51.5	39
Bioswale	SR 405 M.P. 26	01/26/04	1.5	ND	20.3	16	13	47.0	35
Bioswale	SR 405 M.P. 26	01/30/04	1.3	ND	10.8	14	12	29.3	20
Bioswale	SR 405 M.P. 26	02/09/04	4.2	ND	16.4	24	12	40.1	29
Bioswale	SR 405 M.P. 26	02/16/04	1.8	ND	17.0	17	11	41.3	30
Bioswale	SR 405 M.P. 26	02/17/04	2.8	ND	16.4	20	9.3	40.1	29
Bioswale	SR 405 M.P. 26	02/27/04	2.4	ND	24.2	24	15	53.8	41
Bioswale	SR 405 M.P. 26	03/04/04	2.0	ND	22.2	25	16	50.4	38
Open Wet Vault – Outlet	SR 405 M.P. 29.5	12/16/03	3.3	ND	20.3	67	52	47.0	35
Open Wet Vault – Outlet	SR 405 M.P. 29.5	12/20/03	4.2	ND	20.3	74	48	47.0	35
Open Wet Vault – Outlet	SR 405 M.P. 29.5	02/09/04	3.6	ND	24.2	71	47	53.8	41
Open Wet Vault – Outlet	SR 405 M.P. 29.5	02/16/04	2.5	ND	24.8	57	41	54.9	42
Open Wet Vault – Outlet	SR 405 M.P. 29.5	02/17/04	3.8	ND	24.8	64	41	54.9	42
Open Wet Vault – Outlet	SR 405 M.P. 29.5	02/27/04	3.6	ND	28.8	73	44	61.4	48
Open Wet Vault – Outlet	SR 405 M.P. 29.5	03/04/04	2.8	ND	26.1	59	39	57.1	44

Notes: TSS = total suspended solids; mg/L = milligrams per liter; (µg/L) = micrograms per liter.
* indicates samples were not preserved properly.
ND indicates Not Detected at Practical Quantitation Limit
NA - indicates not applicable.
NS indicates no sample was collected.
The Freshwater Acute WQS (Water Quality Standard) is calculated per the procedures in Chapter 173-201A-040 WAC, and is presented for comparison purposes. This column has been added for perspective only. It simply compares the concentration of a dissolved metal in stormwater to state standards given the stormwater hardness. A runoff concentration exceeding standards does not mean that a violation of standards has occurred or is even likely. Runoff exceeding standards, however, does indicate that runoff could potentially lead to problems in the receiving water.

TABLE 7-4. CALCULATED CONCENTRATION AND QUANTIFIABLE LOAD REDUCTIONS BY BMP

Site Name	Site Location	Parameter	TSS	T. Phos-phorus	Cadmium		Copper		Lead		Zinc		Hardness
					Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	
		Units	(mg/L)	(mg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)
Wet Pond – Inlet	SR 5 M.P. 96.2	Average Concentration	69.8	0.13	1.09	0.24	22.9	5.17	8.52	ND	142	63.8	26.9
Wet Pond – Outlet	SR 5 M.P. 96.2	Average Concentration	3.36	0.04	0.69	0.12	6.41	3.57	0.85	ND	52.9	36.7	27.9
		Percent Reduction	95%	73%	36%	51%	72%	31%	90%	NA	63%	42%	-4%
Indian Creek – Inlet	SR 5 M.P. 109	Average Concentration	171	0.23	1.79	0.32	41.7	6.72	20.4	ND	212	70.9	25.7
Compost Amended Shoulder and Ditch	SR 5 M.P. 109	Average Concentration	16.4	0.28	0.26	0.12	8.53	5.26	1.23	0.57	35.9	20.7	19.6
		Percent Reduction	90%	-18%	85%	62%	80%	22%	94%	NA	83%	71%	24%
Stormwater Characterization	Varies	Average Concentration	122	0.19	0.92	0.24	27.4	6.34	16.5	ND	150	64.2	27.7
Unimproved Grass Ditch	SR 405 M.P. 27.7	Average Concentration	0.83	0.04	0.56	0.29	6.73	5.83	2.28	1.58	67.3	64.0	28.3
		Percent Reduction	99%	77%	39%	-17%	75%	8%	86%	NA	55%	0%	-2%
Dry Pond – Inlet	SR 5 M.P. 188.1	Average Concentration	171	0.23	1.79	0.32	41.7	6.72	20.4	ND	212	70.9	25.7
Dry Pond – Outlet	SR 5 M.P. 188.1	Average Concentration	4.29	0.03	0.30	0.15	3.71	2.68	0.69	ND	26.7	19.0	15.4
		Percent Reduction	97%	87%	83%	53%	91%	60%	97%	NA	87%	73%	40%
Stormwater Characterization	Varies	Average Concentration	122	0.19	0.92	0.24	27.4	6.34	16.5	ND	150	64.2	27.7
Closed Wet Vault – Outlet	SR 405 M.P. 26	Average Concentration	6.20	0.04	0.25	0.10	4.23	3.58	1.63	ND	27.5	20.7	30.7
		Percent Reduction	95%	82%	73%	59%	85%	43%	90%	NA	82%	68%	-11%
Stormwater Characterization	Varies	Average Concentration	122	0.19	0.92	0.24	27.4	6.34	16.5	ND	150	64.2	27.7
Bioswale	SR 405 M.P. 26	Average Concentration	4.32	0.05	0.36	0.13	6.83	5.40	2.04	ND	20.5	12.9	33.8
		Percent Reduction	96%	75%	61%	46%	75%	15%	88%	NA	86%	80%	-22%
Open Wet Vault – Inlet	SR 405 M.P. 29.5	Average Concentration	533	0.65	1.68	0.21	76.4	8.52	84.0	ND	424	52.0	45.6
Open Wet Vault – Outlet	SR 405 M.P. 29.5	Average Concentration	11.8	0.05	0.61	0.24	11.6	7.33	3.40	ND	66.4	44.6	41.0
		Percent Reduction	98%	92%	64%	-19%	85%	14%	96%	NA	84%	14%	10%

Notes: Load reductions calculated as the inlet concentration divided by the outlet concentration, assuming equal volumes. Field observations indicate that water volume losses due to infiltration greatly increases load reductions for several of the BMPs
TSS = total suspended solids; mg/L = milligrams per liter; (µg/L) = micrograms per liter.
ND indicates Not Detected at Practical Quantitation Limit.
NA - indicates not applicable.
Stormwater characterization data from current and previous years (see Table 7-1).

rates could not be calculated. Dissolved cadmium concentrations showed increases at the Unimproved Grass Ditch and Open Wet Vault sites, with decreases in average concentrations at the other sites ranging from 46 to 62 percent. With treatment 52% of runoff samples met state standards for dissolved copper and 77% of samples met standards for dissolved zinc. Likewise, 98% and 100% of samples met state standards for dissolved cadmium and lead.

As the Department of Ecology's 2001 SMMWW does not define quantifiable performance goals for basic or enhanced metals removal, it is not possible to state whether or not any of the BMPs are meeting performance goals. The ditches and dry pond treatment, however, removed 60% of dissolved copper and 73% percent of dissolved zinc, which should meet the performance goal of "a higher rate of removal of dissolved metals than Basic Treatment Facilities".

Phosphorus: Phosphorus data parallel other studies, indicating that phosphorus levels in highway runoff are generally low. All of the BMPs were effective (73-92%) in reducing the phosphorus concentration in stormwater runoff with the exception of the compost amended shoulder and ditch. All tested BMPs exceed the performance goal of 50% phosphorus removal set in the Department of Ecology's 2001 SMMWW.

Total Petroleum Hydrocarbons: Total petroleum hydrocarbon samples were only collected when a visible sheen was detected. Only one out of a total of 12 samples collected for total petroleum hydrocarbons analysis reported a detected concentration. All observed runoff (treated and untreated) met the BMP performance goal of "no recurring visible sheen, and to have a 24-hour average Total Petroleum Hydrocarbons concentration no greater than 10 mg/L, and a maximum of 15 mg/L for a discrete sample" set in the 2001 SMMWW.

7.2 RESEARCH AND BMP EFFECTIVENESS MONITORING

The following section describes WSDOT's stormwater and water quality research projects that are currently underway or have been completed during the 2003-2004 NPDES permit cycle. Most of the projects were originally included in the Stormwater Management Program plan (SWMP) (WSDOT 1997a) that was developed to meet permit conditions. Table 7-5 summarizes the active and recently completed WSDOT monitoring projects as of August 2004.

Table 7-5. ACTIVE AND RECENTLY COMPLETED WSDOT RESEARCH PROJECTS (AS OF AUGUST 2004) (Page 1 of 2)		
Project Name	**Status**	**Project Description**
Research and Design Guidance for Sizing Infiltration Galleries	Reports completed in October 2003. PI: Dr. Joel Massman, UW • WA-RD 578.1 – Implementation of Infiltration Ponds Research • WA-RD 578.2 – A Design Manual for Sizing Infiltration Ponds	This project attempts to improve estimates of saturated infiltration rates prior to construction. The major change was the realization that infiltration rates are a product of both hydraulic conductivity and hydraulic gradient. Hydraulic conductivity was estimated using air conductivity measurements of disturbed soil samples. Hydraulic gradient was estimated using an empirical equation derived from computer simulations based on the Green-Ampt equation. The research culminated in recommendations for improving approaches used to design infiltration facilities, with particular emphasis on infiltration ponds. The research involved two main components: a data-collection component and a numerical modeling component. Saturated hydraulic conductivity was compared to full-scale infiltration rates for 15 sites in western Washington. Computer models were compared to identify the flow systems for which saturated models provide reasonable approximations.
Estimating Infiltration Rates for Stormwater Infiltration Dry Wells	Report completed in April 2004. PI: Dr. Joel Massman, UW	Research, focusing on dry wells located in unconsolidated geologic materials, resulted in an approach for estimating infiltration rates for dry wells that are constructed using standard configurations developed by the WSDOT. The approach recognizes that the performance of these dry wells depends upon a combination of subsurface geology, groundwater conditions, and dry well geometry.
Field and Laboratory Investigation of Natural Dispersion Low Impact Stormwater Treatment Methods	In Progress	Determine runoff flow balance for highway sheet flow along vegetated fill slopes using simulated rainfall events at various locations and actual rainfall events at three static locations.
Benefit/Cost Research	In Progress PI: Dr. Gardner Brown, UW Survey design completed. Contract ended prior to survey and subsequent analysis.	Stormwater retrofit projects historically have not been funded because of a lack of a credible methodology to determine the monetary benefits of the retrofits. This research was investigating whether valuation of stormwater treatment is possible and/or credible.
Ultra-Urban Stormwater Treatment Testing (I-5 Ship Canal Bridge) This location also serves as characterization site for ultra-high volume >200,000 ADT	In Progress • Stormfilter testing with modified media commenced in August 2003. • Testing continued through the '03–'04 wet season. • Secured agreement by which WSDOT will support the City of Tacoma's evaluation of several stormwater treatment technologies at the Ship Canal Research facility. This research will also be supported by in-kind services and support from Seattle Public Utilities. The final report is expected in August 2006.	Stormfilter is a stormwater treatment system based on media filtration/sorption using a patented self-cleaning canister. The tests will evaluate 2 untested media combinations: a zeolite/perlite mixture and a zeolite/perlite/granular activated carbon (GAC) mixture. The media are radially stratified such that the perlite (used for solids removal) is the outermost layer while zeolite (used for dissolved metals removal) or a zeolite/GAC (used for organics removal) mixture is the inner layer. The goal of the research is to evaluate stormwater treatment technologies' effectiveness, applicability and reasonableness for use of these technologies within Thea Foss Basin. Technologies to be evaluated include • Stormwater Management, Inc. - StormFilter. • AquaShield, Inc. - AquaFilterä model AF-4.5.

Table 7-5. ACTIVE AND RECENTLY COMPLETED WSDOT RESEARCH PROJECTS (AS OF AUGUST 2004) (Page 2 of 2)		
Project Name	**Status**	**Project Description**
		The treatment effectiveness of these BMPs will be tested at design flow rates and several other flow rates below and above the design flowrate. Treatment effectiveness will be evaluated for solids, metals, phthalates and polyaromatic hydrocarbons (PAHs) removal.
Ecology Embankment Monitoring – Phase 2	Phase 1 of this project was completed in 2001. Phase 2 will commence in Fall 2004.	The EE was given conditional approval for use as a basic and enhanced BMP. Phase 2 will evaluate maintenance and life-cycle performance of the Ecology Mix media as well as provide enough samples to satisfy the TAPE protocol for Basic and Enhanced Treatment.
Western Washington Flow Control Exemption Investigation	In progress. PI: Herrera Environmental and Northwest Hydraulic Consultants. • Phase I, completed October 2003, presented the theory and justification for stormwater exemptions. • Phase II, completed April 2004, developed the methodologies necessary to produce acceptable analysis for seeking those exemptions. • Phase III, with an expected completion date of Fall 2004, applies the methodology developed under Phase II to identify specific river segments that warrant an exemption	WSDOT, working in consultation with the Department of Ecology, is exploring whether additional large-river flow control exemptions are warranted in western Washington.
Compost-Amended Vegetative Filter Strips (CAVFS) Performance Monitoring Project	Monitoring at the SR 5 – Martin Way stormwater monitoring site was completed in spring 2004. Pilot systems will be constructed along I-5 in Snohomish County during the summer of 2004, with monitoring beginning in October 2004. The study will be conducted on glacial till soils, to represent a worst-case infiltration condition. • Conceptual Monitoring Plan developed in Spring '04 • QAPP developed in Summer 2004	CAVFS, a Low Impact Development (LID) technique, has Ecology approval as a stormwater BMP for basic and enhanced (i.e., dissolved metals) water quality treatment. A key objective of this research is to thoroughly document flow control performance characteristics and design criteria of CAVFS to support acceptance of this technology for flow control by Ecology. The study is expected to help achieve WSDOT's and Ecology's efforts in model calibration for application of amended compost flow control BMPs. A secondary objective is to collect data to support the issuance of a general use level designation from Ecology for CAVFS with regard to phosphorus treatment and oil control.

7.2.1 Ultra-Urban Stormwater Technology Test Facility

This test facility was constructed to allow for ongoing testing and evaluation of new stormwater treatment technologies for potential use in highway applications. A summary of the facility design was provided in the NPDES Phase I permit 5th year report [WSDOT 2000], and a summary of the first four technologies selected for evaluation was provided in the 6th year report [WSDOT 2001].

The test facility is located underneath the I-5 Lake Union Ship Canal Bridge in downtown Seattle, and represents ultra-high ADT conditions. It is designed to collect highway runoff from the north half of the bridge and route it to four test bays through the use of flow splitters and pipe.

See Table 7-5, for details on on-going research at the facility.

7.2.2 Vegetated/Compost Amended Filter Strip

Samples were collected from a site on I-5 near the Martin Way exit in Olympia, Washington to assess runoff conditions from a compost amended vegetated filter strip. Due to the high infiltration rates associated with Low Impact Development (LID) BMPs, two years of monitoring data were required to gather information on 15 storms. Table 7-3 indicates that the effectiveness of this BMP in reducing pollutant concentrations is comparable to that of traditional BMPs when infiltration is not considered. An estimated 45% of the runoff that entered the BMP, however, infiltrated. When load reductions are adjusted to account for infiltration, this BMP outperformed most traditional BMPs. As underlying soils greatly affect infiltration, however, additional load reductions based on infiltration will vary based on soils. Further research into this technology is being conducted, as described in Table 7-5.

SECTION 8.0
CERTIFICATIONS

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
MUNICIPAL STORMWATER PERMIT PROGRAM

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for willful violations.

Megan White

Megan White, P.E.
Environmental Services Office Director
Washington State Department of Transportation

9/29/04

Date

SECTION 9.0
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APPENDIX A

HAZARDOUS MATERIALS STANDARD COLLISION SUMMARY

Hazardousmaterial Not Is Null
County Name = Clark, King, Pierce, Snohomish
Date Range: 01/01/03 to 12/31/03

*UNDER 23 UNITED STATES CODE - SECTION 409, THIS
*DATA CANNOT BE USED IN DISCOVERY OR AS EVIDENCE
*AT TRIAL IN ANY ACTION FOR DAMAGES AGAINST THE
*WSDOT OR THE STATE OF WASHINGTON

Snohomish
County Road
Hazmat Transported - Released

YEAR	TOTAL COLS	PROP DMAG COLS	POSS INJ COLS	EVID INJ COLS	DSABL INJ COLS	TOTAL INJ COLS	FATAL COLS	# OF INJS	# OF FTLS	# OF VEHS	ALC REL COLS	FIXD OBJ COLS	REAR END COLS	OPP DIR COLS	ENTR AT ANGLE	OVER TURN COLS	PEDL CYC COLS	PEDES COLS
2003	1	0	0	1	0	1	0	2	0	2	0	0	0	0	0	0	0	0
	1	**0**	**0**	**1**	**0**	**1**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Snohomish
State Route
Hazmat Transported - Released

YEAR	TOTAL COLS	PROP DMAG COLS	POSS INJ COLS	EVID INJ COLS	DSABL INJ COLS	TOTAL INJ COLS	FATAL COLS	# OF INJS	# OF FTLS	# OF VEHS	ALC REL COLS	FIXD OBJ COLS	REAR END COLS	OPP DIR COLS	ENTR AT ANGLE	OVER TURN COLS	PEDL CYC COLS	PEDES COLS
2003	1	0	1	0	0	1	0	1	0	1	0	1	0	0	0	0	0	0
	1	**0**	**1**	**0**	**0**	**1**	**0**	**1**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**

Snohomish
State Route
Hazmat Transported - Not Released

YEAR	TOTAL COLS	PROP DMAG COLS	POSS INJ COLS	EVID INJ COLS	DSABL INJ COLS	TOTAL INJ COLS	FATAL COLS	# OF INJS	# OF FTLS	# OF VEHS	ALC REL COLS	FIXD OBJ COLS	REAR END COLS	OPP DIR COLS	ENTR AT ANGLE	OVER TURN COLS	PEDL CYC COLS	PEDES COLS
2003	14	6	6	2	0	8	0	8	0	27	1	1	9	0	1	1	0	0
	14	**6**	**6**	**2**	**0**	**8**	**0**	**8**	**0**	**27**	**1**	**1**	**9**	**0**	**1**	**1**	**0**	**0**

Hazardousmaterial Not Is Null
County Name = Clark, King, Pierce, Snohomish
Date Range: 01/01/03 to 12/31/03

*UNDER 23 UNITED STATES CODE - SECTION 409, THIS
*DATA CANNOT BE USED IN DISCOVERY OR AS EVIDENCE
*AT TRIAL IN ANY ACTION FOR DAMAGES AGAINST THE
*WSDOT OR THE STATE OF WASHINGTON

Snohomish
City Street
Hazmat Transported - Released

YEAR	TOTAL COLS	PROP DMAG COLS	POSS INJ COLS	EVID INJ COLS	DSABL INJ COLS	TOTAL INJ COLS	FATAL COLS	# OF INJS	# OF FTLS	# OF VEHS	ALC REL COLS	FIXD OBJ COLS	REAR END COLS	OPP DIR COLS	ENTR AT ANGLE	OVER TURN COLS	PEDL CYC COLS	PEDES COLS
2003	3	3	0	0	0	0	0	0	0	5	0	0	1	0	0	0	1	0
	3	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**

Snohomish
City Street
Hazmat Transported - Not Released

YEAR	TOTAL COLS	PROP DMAG COLS	POSS INJ COLS	EVID INJ COLS	DSABL INJ COLS	TOTAL INJ COLS	FATAL COLS	# OF INJS	# OF FTLS	# OF VEHS	ALC REL COLS	FIXD OBJ COLS	REAR END COLS	OPP DIR COLS	ENTR AT ANGLE	OVER TURN COLS	PEDL CYC COLS	PEDES COLS
2003	5	4	0	1	0	1	0	1	0	8	0	1	1	0	1	1	0	0
	5	**4**	**0**	**1**	**0**	**1**	**0**	**1**	**0**	**8**	**0**	**1**	**1**	**0**	**1**	**1**	**0**	**0**

Snohomish
County Road
Hazmat Transported - Not Released

YEAR	TOTAL COLS	PROP DMAG COLS	POSS INJ COLS	EVID INJ COLS	DSABL INJ COLS	TOTAL INJ COLS	FATAL COLS	# OF INJS	# OF FTLS	# OF VEHS	ALC REL COLS	FIXD OBJ COLS	REAR END COLS	OPP DIR COLS	ENTR AT ANGLE	OVER TURN COLS	PEDL CYC COLS	PEDES COLS
2003	7	3	3	1	0	4	0	4	0	12	1	3	3	0	0	0	0	0
	7	**3**	**3**	**1**	**0**	**4**	**0**	**4**	**0**	**12**	**1**	**3**	**3**	**0**	**0**	**0**	**0**	**0**

Hazardousmaterial Not Is Null
County Name = Clark, King, Pierce, Snohomish
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Pierce
County Road
Hazmat Transported - Not Released

YEAR	TOTAL COLS	PROP DMAG COLS	POSS INJ COLS	EVID INJ COLS	DSABL INJ COLS	TOTAL INJ COLS	FATAL COLS	# OF INJS	# OF FTLS	# OF VEHS	ALC REL COLS	FIXD OBJ COLS	REAR END COLS	OPP DIR COLS	ENTR AT ANGLE	OVER TURN COLS	PEDL CYC COLS	PEDES COLS
2003	4	4	0	0	0	0	0	0	0	8	0	0	2	1	0	0	0	0
	4	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**0**

Pierce
State Route
Hazmat Transported - Not Released

YEAR	TOTAL COLS	PROP DMAG COLS	POSS INJ COLS	EVID INJ COLS	DSABL INJ COLS	TOTAL INJ COLS	FATAL COLS	# OF INJS	# OF FTLS	# OF VEHS	ALC REL COLS	FIXD OBJ COLS	REAR END COLS	OPP DIR COLS	ENTR AT ANGLE	OVER TURN COLS	PEDL CYC COLS	PEDES COLS
2003	3	2	0	1	0	1	0	2	0	5	1	1	1	1	0	0	0	0
	3	**2**	**0**	**1**	**0**	**1**	**0**	**2**	**0**	**5**	**1**	**1**	**1**	**1**	**0**	**0**	**0**	**0**

Pierce
City Street
Hazmat Transported - Released

YEAR	TOTAL COLS	PROP DMAG COLS	POSS INJ COLS	EVID INJ COLS	DSABL INJ COLS	TOTAL INJ COLS	FATAL COLS	# OF INJS	# OF FTLS	# OF VEHS	ALC REL COLS	FIXD OBJ COLS	REAR END COLS	OPP DIR COLS	ENTR AT ANGLE	OVER TURN COLS	PEDL CYC COLS	PEDES COLS
2003	4	4	0	0	0	0	0	0	0	8	0	0	0	2	0	0	0	0
	4	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**

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YEAR	TOTAL COLS	PROP DMAG COLS	POSS INJ COLS	EVID INJ COLS	DSABL INJ COLS	TOTAL INJ COLS	FATAL COLS	# OF INJS	# OF FTLS	# OF VEHS	ALC REL COLS	FIXD OBJ COLS	REAR END COLS	OPP DIR COLS	ENTR AT ANGLE	OVER TURN COLS	PEDL CYC COLS	PEDES COLS
2003	19	13	5	1	0	6	0	10	0	37	0	1	7	3	2	0	0	0
	19	**13**	**5**	**1**	**0**	**6**	**0**	**10**	**0**	**37**	**0**	**1**	**7**	**3**	**2**	**0**	**0**	**0**

King
City Street
Hazmat Transported - Not Released

YEAR	TOTAL COLS	PROP DMAG COLS	POSS INJ COLS	EVID INJ COLS	DSABL INJ COLS	TOTAL INJ COLS	FATAL COLS	# OF INJS	# OF FTLS	# OF VEHS	ALC REL COLS	FIXD OBJ COLS	REAR END COLS	OPP DIR COLS	ENTR AT ANGLE	OVER TURN COLS	PEDL CYC COLS	PEDES COLS
2003	66	45	15	6	0	21	0	27	0	135	4	3	14	5	10	0	1	1
	66	**45**	**15**	**6**	**0**	**21**	**0**	**27**	**0**	**135**	**4**	**3**	**14**	**5**	**10**	**0**	**1**	**1**

King
County Road
Hazmat Transported - Released

YEAR	TOTAL COLS	PROP DMAG COLS	POSS INJ COLS	EVID INJ COLS	DSABL INJ COLS	TOTAL INJ COLS	FATAL COLS	# OF INJS	# OF FTLS	# OF VEHS	ALC REL COLS	FIXD OBJ COLS	REAR END COLS	OPP DIR COLS	ENTR AT ANGLE	OVER TURN COLS	PEDL CYC COLS	PEDES COLS
2003	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	1	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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YEAR	TOTAL COLS	PROP DMAG COLS	POSS INJ COLS	EVID INJ COLS	DSABL INJ COLS	TOTAL INJ COLS	FATAL COLS	# OF INJS	# OF FTLS	# OF VEHS	ALC REL COLS	FIXD OBJ COLS	REAR END COLS	OPP DIR COLS	ENTR AT ANGLE	OVER TURN COLS	PEDL CYC COLS	PEDES COLS
2003	1	1	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0
	1	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**

King
State Route
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YEAR	TOTAL COLS	PROP DMAG COLS	POSS INJ COLS	EVID INJ COLS	DSABL INJ COLS	TOTAL INJ COLS	FATAL COLS	# OF INJS	# OF FTLS	# OF VEHS	ALC REL COLS	FIXD OBJ COLS	REAR END COLS	OPP DIR COLS	ENTR AT ANGLE	OVER TURN COLS	PEDL CYC COLS	PEDES COLS
2003	3	2	1	0	0	1	0	2	0	5	0	1	2	0	0	0	0	0
	3	**2**	**1**	**0**	**0**	**1**	**0**	**2**	**0**	**5**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**0**

King
State Route
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YEAR	TOTAL COLS	PROP DMAG COLS	POSS INJ COLS	EVID INJ COLS	DSABL INJ COLS	TOTAL INJ COLS	FATAL COLS	# OF INJS	# OF FTLS	# OF VEHS	ALC REL COLS	FIXD OBJ COLS	REAR END COLS	OPP DIR COLS	ENTR AT ANGLE	OVER TURN COLS	PEDL CYC COLS	PEDES COLS
2003	7	3	2	1	0	3	1	4	1	15	0	2	2	0	1	0	0	1
	7	**3**	**2**	**1**	**0**	**3**	**1**	**4**	**1**	**15**	**0**	**2**	**2**	**0**	**1**	**0**	**0**	**1**

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YEAR	TOTAL COLS	PROP DMAG COLS	POSS INJ COLS	EVID INJ COLS	DSABL INJ COLS	TOTAL INJ COLS	FATAL COLS	# OF INJS	# OF FTLS	# OF VEHS	ALC REL COLS	FIXD OBJ COLS	REAR END COLS	OPP DIR COLS	ENTR AT ANGLE	OVER TURN COLS	PEDL CYC COLS	PEDES COLS
2003	16	12	3	1	0	4	0	4	0	36	3	0	4	0	2	0	0	0
	16	**12**	**3**	**1**	**0**	**4**	**0**	**4**	**0**	**36**	**3**	**0**	**4**	**0**	**2**	**0**	**0**	**0**

Clark
State Route
Hazmat Transported - Not Released

YEAR	TOTAL COLS	PROP DMAG COLS	POSS INJ COLS	EVID INJ COLS	DSABL INJ COLS	TOTAL INJ COLS	FATAL COLS	# OF INJS	# OF FTLS	# OF VEHS	ALC REL COLS	FIXD OBJ COLS	REAR END COLS	OPP DIR COLS	ENTR AT ANGLE	OVER TURN COLS	PEDL CYC COLS	PEDES COLS
2003	3	3	0	0	0	0	0	0	0	8	0	0	3	0	0	0	0	0
	3	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**

Clark
City Street
Hazmat Transported - Released

YEAR	TOTAL COLS	PROP DMAG COLS	POSS INJ COLS	EVID INJ COLS	DSABL INJ COLS	TOTAL INJ COLS	FATAL COLS	# OF INJS	# OF FTLS	# OF VEHS	ALC REL COLS	FIXD OBJ COLS	REAR END COLS	OPP DIR COLS	ENTR AT ANGLE	OVER TURN COLS	PEDL CYC COLS	PEDES COLS
2003	1	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
	1	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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City Street
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YEAR	TOTAL COLS	PROP DMAG COLS	POSS INJ COLS	EVID INJ COLS	DSABL INJ COLS	TOTAL INJ COLS	FATAL COLS	# OF INJS	# OF FTLS	# OF VEHS	ALC REL COLS	FIXD OBJ COLS	REAR END COLS	OPP DIR COLS	ENTR AT ANGLE	OVER TURN COLS	PEDL CYC COLS	PEDES COLS
2003	5	4	0	0	1	1	0	1	0	11	0	0	0	1	0	0	0	0
	5	**4**	**0**	**0**	**1**	**1**	**0**	**1**	**0**	**11**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**

Clark
State Route
Hazmat Transported - Released

YEAR	TOTAL COLS	PROP DMAG COLS	POSS INJ COLS	EVID INJ COLS	DSABL INJ COLS	TOTAL INJ COLS	FATAL COLS	# OF INJS	# OF FTLS	# OF VEHS	ALC REL COLS	FIXD OBJ COLS	REAR END COLS	OPP DIR COLS	ENTR AT ANGLE	OVER TURN COLS	PEDL CYC COLS	PEDES COLS
2003	1	1	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0
	1	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**

Clark
County Road
Hazmat Transported - Not Released

YEAR	TOTAL COLS	PROP DMAG COLS	POSS INJ COLS	EVID INJ COLS	DSABL INJ COLS	TOTAL INJ COLS	FATAL COLS	# OF INJS	# OF FTLS	# OF VEHS	ALC REL COLS	FIXD OBJ COLS	REAR END COLS	OPP DIR COLS	ENTR AT ANGLE	OVER TURN COLS	PEDL CYC COLS	PEDES COLS
2003	1	0	0	1	0	1	0	1	0	1	0	1	0	0	0	0	0	0
	1	**0**	**0**	**1**	**0**	**1**	**0**	**1**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**

APPENDIX B

WSDOT 2004 BMP CONSTRUCTION ACTIVITIES SUMMARY

TABLE B-1. NEW BMPs CONSTRUCTED IN THE NORTHWEST REGION DURING THE 2003/2004 REPORTING PERIOD						
State Route	**Project Name**	**Milepost or Station**	**Offset Direction**	**County**	**BMP Type**	**Facility Size**
9	SR 528 Intersection Signal	Sta. 441+69 To Sta. 442+69	Rt	Snohomish	Biofiltration Swale	100 L.F.
9	SR 528 Intersection Signal	Sta. 449+20 To Sta. 450+20	Rt	Snohomish	Biofiltration Swale	100 L.F.
9	SR 528 Intersection Signal	SR 528 Sta. 202+63 To Sta. 203+86	Rt	Snohomish	Biofiltration Swale	123 L.F.
2	Reiter Road Vicinity Rechannelize	Sta. C1004+16 To Sta. C1008+00	Lt	Snohomish	Infiltration Trench	300 L.F.
20	South March Point Road	Sta. 1+440 To Sta. 1+487	Lt	Skagit	Boiswale	47 m
20	South March Point Road	Sta. 1+520 To Sta. 1+550	Lt	Skagit	Bioswale	30 m
20	South March Point Road	Sta. 1+570 To Sta. 1+610	Lt	Skagit	Bioswale	40 m
20	South March Point Road	Sta. 1+808 To Sta. 1+872	Lt	Skagit	Bioswale	42 m
20	Sapp Rd to Reed Street Channelization	Sta. 105+43 To Sta. 107+66	Lt	Skagit	Detention Structure	216.5 L.F.
20	Sapp Rd to Reed Street Channelization	Sta. 106+50 To Sta. 108+62	Rt	Skagit	Detention Structure	216.5 L.F.
90	Sunset Way I/C Retaining Wall 16	Sta. 1+050 To Sta. 1+065	Rt	King	Chitosan Filtration System	15 m
90	Sunset Way I/C Retaining Wall 16	Sta. 1+138 To Sta. 1+288.90	Lt	King	Groundwater Interceptor Trench	150 m
167	Vicinity BR 167/125E Drainage Modification	Sta. 810+50 To Sta. 811+70	Lt	King	Trench Drain	120 L.F.
167	Vicinity BR 167/125E Drainage Modification	Sta. 848+55 To Sta. 849+75	Lt	King	Trench Drain	120 L.F.
520	SR 520 Bike Path Bellevue to Redmond	Sta. B1 60+00 To Sta. B1 62+00	Lt	King	Biofiltration Swale	200 L.F.
525	SR 99 to SR 526 Phase 1 Russell Rd. Vic. To PFB	Sta. 8+394.65 To Sta. 8+445.00	Rt	Snohomish	Detention Vault	50.35 m

TABLE B-1. NEW BMPs CONSTRUCTED IN THE NORTHWEST REGION DURING THE 2003/2004 REPORTING PERIOD						
State Route	**Project Name**	**Milepost or Station**	**Offset Direction**	**County**	**BMP Type**	**Facility Size**
525	SR 99 to SR 526 Phase 1 Russell Rd. Vic. To PFB	Sta. 1+055 To Sta. 1+200	Rt	Snohomish	Detention Pond	145 m
539	King Tut Road and Bartlett Rod	Sta. 339+39.82 To Sta. 344+55.45	Lt	Whatcom	Infiltration Trench	516 L.F.
539	King Tut Road and Bartlett Rod	Sta. 339+39.82 To Sta. 344+57.93	Lt	Whatcom	Vegetative Filter Strip	518 L.F.
539	King Tut Road and Bartlett Rod	Sta. 344+96.18 To Sta. 347+65.00	Lt	Whatcom	Vegetative Filter Strip	269 L.F.
539	King Tut Road and Bartlett Rod	Sta. 344+92.93 To Sta. 346+70.00	Rt	Whatcom	Vegetative Filter Strip	177 L.F.
539	King Tut Road and Bartlett Rod	Sta. 418+96.04 To Sta. 423+82.10	Rt	Whatcom	Vegetative Filter Strip	486 L.F.
539	King Tut Road and Bartlett Rod	Sta. 424+86.55 To Sta. 429+85.04	Rt	Whatcom	Vegetative Filter Strip	498.5 L.F.
5	Northgate Way To 175th Street SB Ramps	Sta. 220+34.54 To Sta. 222+18.05	Lt	King	Bioswale	183.5 L.F.
5	Pierce County Line To Tukwila I/C Stage 2S	Sta. 76+00 To Sta. 81+63	Rt	King	Bioswale	563 L.F.
5	Federal Way - S. 317th Street HOV Direct Access	Sta. 231+080 To Sta. 231+180	Rt	King	Detention Pond	100 m
5	Federal Way - S. 317th Street HOV Direct Access	Sta. 231+180 To Sta. 231+245	Lt	King	Bioswale	65 m
5	Federal Way - S. 317th Street HOV Direct Access	Sta. 231+580 To Sta. 231+695	Lt	King	Detention Pond	115 m
5	Federal Way - S. 317th Street HOV Direct Access	Sta. 231+720 To Sta. 231+865	Rt	King	Detention Pond	145 m
5	Federal Way - S. 317th Street HOV Direct Access	Sta. AR3 0+100 To Sta. AR3 0+205	Lt	King	Detention Pond	105 m
5	Federal Way Park And Ride Lot #2	Sta. T-Line 0+075 To Sta. T-Line 0+175	Rt	King	Wet/detention Pond	100 m
5	Federal Way Park And Ride Lot #2	Sta. 0+180 To Sta. 0+216	Rt	King	Wet/detention Pond	126 m

TABLE B-1. NEW BMPs CONSTRUCTED IN THE NORTHWEST REGION DURING THE 2003/2004 REPORTING PERIOD						
State Route	**Project Name**	**Milepost or Station**	**Offset Direction**	**County**	**BMP Type**	**Facility Size**
5	Federal Way Park And Ride Lot #2	Sta. 0+199 To Sta. 0+221	Rt	King	Biofiltration	92 m
18	EB Of Ramp To Weyer-haeuser Way To SR 167	Sta. 2+185.16 To Sta. 2+235.16	Lt	King	Bioswale	40 m
18	EB Of Ramp To Weyer-haeuser Way To SR 167	Sta. 5+095 To Sta. 5+175	Lt	King	Filter Strip	80 m
2	US-2 Interchange I/C Modification	Sta. SR9 83+00 To Sta. SR 9 84+50	Rt	Snohomish	Filter Strip	150 L.F.
2	US-2 Interchange I/C Modification	Sta. SR 9 85+50 To Sta. SR 9 87+50	Rt	Snohomish	Filter Strip	200 L.F.
2	US-2 Interchange I/C Modification	Sta. SR 9 85+40 To Sta. SR 9 88+40	Lt	Snohomish	Filter Strip	300 L.F.
2	US-2 Interchange I/C Modification	Sta. NS-W 61+00 To Sta. NS-W 64+50	Rt	Snohomish	Filter Strip	350 L.F.
2	US-2 Interchange I/C Modification	Sta. NS-W 60+60 To Sta. NS-W 62+50	Lt	Snohomish	Filter Strip	190 L.F.
2	US-2 Interchange I/C Modification	Sta. NBF 66+65 To Sta. NBF 71+60	Lt	Snohomish	Filter Strip	495 L.F.
2	US-2 Interchange I/C Modification	Sta. NBF 69+16 To Sta. NBF 71+20	Lt	Snohomish	Biofiltration Swale	204 L.F.
2	US-2 Interchange I/C Modification	Sta. RE-NS 70+42 To Sta. RE-NS 72+28	Lt	Snohomish	Biofiltration Swale	186 L.F.
5	Blaine Vicinity Ramps	Sta. 442+600.90 To Sta. 442+631.90	Rt	Whatcom	Detention Pond	31 m
5	Blaine Vicinity Ramps	Sta. 442+631.90 To Sta. 442+693.54	Rt	Whatcom	Biofiltration Swale	62 m
5	Blaine Vicinity Ramps	Sta. LM 443+050 To Sta. LM 443+145.4	Lt	Whatcom	Detention Pond	95.4 m
5	Blaine Vicinity Ramps	Sta. LM 442+940 To Sta. LM 443+050	Lt	Whatcom	Vegetative Filter Strip	110 m
5	Blaine Vicinity Ramps	Sta. LM 442+980 To Sta. LM 443+060	Rt	Whatcom	Biofiltration Swale	80 m

TABLE B-1. NEW BMPs CONSTRUCTED IN THE NORTHWEST REGION DURING THE 2003/2004 REPORTING PERIOD						
State Route	**Project Name**	**Milepost or Station**	**Offset Direction**	**County**	**BMP Type**	**Facility Size**
5	Blaine Vicinity Ramps	Sta. LM 443+060 To Sta. LM 443+140	Rt	Whatcom	Detention Pond	80 m
5	North Of Lakeway I/C Phase 1A Noise Walls And Safety Improvements	Sta. 2+515 To Sta. 2+575	Lt	Whatcom	Detention Pond	60 m
203	NE 124th/ Novelty Road Vicinity Roundabout	Sta. 9+280 To Sta. 9+405	Rt	King	Biofiltration Strip	125 m
203	NE 124th/ Novelty Road Vicinity Roundabout	Sta. 124th 2+220 To Sta. 9+660	Rt	King	Biofiltration Strip	140 m
203	NE 124th/ Novelty Road Vicinity Roundabout	Sta. 9+400 To Sta. 9+540	Lt	King	Biofiltration Strip	140 m
203	NE 124th/ Novelty Road Vicinity Roundabout	Sta. 9+560 To Sta. 9+660	Lt	King	Biofiltration Strip	100 m
20	Oak Harbor NCL To Frostad Road	Sta. 10+582.50 To Sta. 10+597.50	Rt	Island	Detention Pond	15 m
20	Oak Harbor NCL To Frostad Road	Sta. 10+580 To Sta. 10+600	Rt	Island	Vegetative Filter Strip	20 m
20	Oak Harbor NCL To Frostad Road	Sta. 10+620 To Sta. 10+681	Rt	Island	Biofiltration Swale	61 m
20	Oak Harbor NCL To Frostad Road	Sta. 11+875 To Sta. 12+000	Lt	Island	Infiltration Trench	125 m
20	Oak Harbor NCL To Frostad Road	Sta. 11+875 To Sta. 12+820	Lt	Island	Vegetative Filter Strip	945 m
20	Oak Harbor NCL To Frostad Road	Sta. 14+205 To Sta. 14+215	Lt	Island	Detention Pond	10 m
20	Oak Harbor NCL To Frostad Road	Sta. 15+555 To Sta. 15+616	Lt	Island	Biofiltration Swale	61 m
18	Maple Valley To Issaquah /Hobart Road	Sta. WB 1398+13.84 To Sta. WB 1400+07.91	Lt	King	Detention Pond	350 L.F.
18	Maple Valley To Issaquah /Hobart Road	Sta. Maxwell 100+58 To Sta. Maxwell 102+07	Lt	King	Wetpool	150 L.F.

TABLE B-1. NEW BMPs CONSTRUCTED IN THE NORTHWEST REGION DURING THE 2003/2004 REPORTING PERIOD						
State Route	**Project Name**	**Milepost or Station**	**Offset Direction**	**County**	**BMP Type**	**Facility Size**
18	Maple Valley To Issaquah /Hobart Road	Sta. Maxwell 107+15 To Sta. Maxwell 107+93	Lt	King	Wetpool	180 L.F.
18	Maple Valley To Issaquah /Hobart Road	Sta. EB 1415+50 To Sta. EB 1419+60	Rt	King	Detention Pond	350 L.F.
18	Maple Valley To Issaquah /Hobart Road	Sta. EB 1437+19 To Sta. EB 1439+45	Rt	King	Detention Pond	195 L.F.
18	Maple Valley To Issaquah /Hobart Road	Sta. WB 1446+67 To Sta. WB 1448+41	Lt	King	Detention Pond	175 L.F.
18	Maple Valley To Issaquah /Hobart Road	Sta. WB 1470+86 To Sta. WB 1473+37	Lt	King	Detention Pond	245 L.F.
18	Maple Valley To Issaquah /Hobart Road	Sta. WB 1480+61 To Sta. WB 1483+07	Lt	King	Detention Pond	250 L.F.
18	Maple Valley To Issaquah /Hobart Road	Sta. WB 1492+16 To Sta. WB 1494+63	Lt	King	Detention Pond	215 L.F.
18	Maple Valley To Issaquah /Hobart Road	Sta. EB 1493+84 To Sta. EB 1496+40	Rt	King	Detention Pond	202 L.F.
18	Maple Valley To Issaquah /Hobart Road	Sta. 200th 44+87 To Sta. 200th 45+52	Rt	King	Detention Pond	150 L.F.
18	Maple Valley To Issaquah /Hobart Road	Sta. WB 1525+91 To Sta. WB 1527+35	Lt	King	Wetpool	150 L.F.
529	Bridges 529/20 E&W, 529/20 Elec/Mech, Seismis/Painting	Sta. 13+35 To Sta. 14+15	Rt	Snohomish	Detention Pond	80 L.F.
529	Bridges 529/20 E&W, 529/20 Elec/Mech, Seismis/Painting	Sta. 10+35 To Sta. 11+15	Lt	Snohomish	Detention Pond	80 L.F.
527	132nd St. SE To 112th St. SE Widen To Five Lanes	Sta. 10+685 To Sta. 10+698	Lt	Snohomish	Wetpond	70 m
527	132nd St. SE To 112th St. SE Widen To Five Lanes	Sta. 10+650 To Sta. 10+677	Lt	Snohomish	Detention Pond	82 m
527	132nd St. SE To 112th St. SE Widen To Five Lanes	Sta. 11+418 To Sta. 11+450	Rt	Snohomish	Detention/Wet Pond	32 m
527	132nd St. SE To 112th St. SE Widen To Five Lanes	Sta. 11+433 To Sta. 11+468	Rt	Snohomish	Bioswale	52 m

TABLE B-1. NEW BMPs CONSTRUCTED IN THE NORTHWEST REGION DURING THE 2003/2004 REPORTING PERIOD						
State Route	**Project Name**	**Milepost or Station**	**Offset Direction**	**County**	**BMP Type**	**Facility Size**
527	132nd St. SE To 112th St. SE Widen To Five Lanes	Sta. 12+385 To Sta. 12+422	Lt	Snohomish	Bioswale	42 m
527	132nd St. SE To 112th St. SE Widen To Five Lanes	Sta. 12+400 To Sta. 12+422	Lt	Snohomish	Detention Pond	25 m
527	132nd St. SE To 112th St. SE Widen To Five Lanes	Sta. 12+417 To Sta. 12+435	Lt	Snohomish	Wet Vault	18.3 m
525	I-5 To SR 99	Sta. 1+008 To Sta. 1+035	Rt	Snohomish	Detention Pond	37 m
525	I-5 To SR 99	Sta. F 1+025 To Sta. F 1+044	Lt	Snohomish	Detention Pond	60 m
525	I-5 To SR 99	Sta. 1+443 To Sta. 1+528	Rt	Snohomish	Detention Pond	85 m
525	I-5 To SR 99	Sta. 1+793 To Sta. 1+847	Rt	Snohomish	Detention Pond	54 m
525	I-5 To SR 99	Sta. 1+950 To Sta. 2+038	Rt	Snohomish	Detention Pond	88 m
525	I-5 To SR 99	Sta. 2+491 To Sta. 2+550	Rt	Snohomish	Detention Pond	60 m
525	I-5 To SR 99	Sta. 2+792 To Sta. 2+874	Rt	Snohomish	Detention Pond	82 m
525	I-5 To SR 99	Sta. 3+200 To Sta. 3+265	Rt	Snohomish	Detention Pond	65 m
525	I-5 To SR 99	Sta. 3+320 To Sta. 3+377	Rt	Snohomish	Detention Pond	57 m
525	I-5 To SR 99	Sta. 3+500 To Sta. 3+575	Rt	Snohomish	Detention Pond	75 m
525	I-5 To SR 99	Sta. 3+600 To Sta. 3+670	Rt	Snohomish	Detention Pond	70 m
522	Paradise Lake Road To Snohomish River Interchange and Drainage	Sta. 666+61 To Sta. 669+13	Lt	Snohomish	Sand Filter	250 L.F.

TABLE B-1. NEW BMPs CONSTRUCTED IN THE NORTHWEST REGION DURING THE 2003/2004 REPORTING PERIOD						
State Route	**Project Name**	**Milepost or Station**	**Offset Direction**	**County**	**BMP Type**	**Facility Size**
522	Paradise Lake Road To Snohomish River Interchange	Sta. F 24+20 Sta. F 26+50	Lt	Snohomish	Biofiltration Swale	230 L.F.
900	Newport Way To I-90 Widening	Sta. SE 30+90 To Sta. SE 34+50	Rt	King	Wet/Detention Pond	360 L.F.
900	Newport Way To I-90 Widening	Sta. SE 24+30 To Sta. 28+70	Rt	King	Wet/Detention Pond	440 L.F.
92	SR 9 To 84th St. NE Vicinity Channelization & Safety Improvement	Sta. 41+35 To Sta. 43+40	Rt	Snohomish	Wet/Detention Pond	205 L.F.
92	SR 9 To 84th St. NE Vicinity Channelization & Safety	Sta. 43+40 To Sta. 45+30	Rt	Snohomish	Bioswale	190 L.F.
92	SR 9 To 84th St. NE Vicinity Channelization & Safety	Sta. 42+22 To Sta. 44+20	Lt	Snohomish	Bioswale	198 L.F.
92	SR 9 To 84th St. NE Vicinity Channelization & Safety	Sta. 147th 75+35 To Sta. 147th 76+35	Lt	Snohomish	Bioswale	100 L.F.
92	SR 9 To 84th St. NE Vicinity Channelization & Safety	Sta. 235+22 To Sta. 237+70	Lt	Snohomish	Infiltration Pond	480 L.F.
167	15th NW To 84th Ave. So. HOV And SC & DI-Stage 2	Sta. 599+00 To Sta. 602+40	Rt	King	Ecology Embankment	340 L.F.
167	15th NW To 84th Ave. So. HOV And SC & DI-Stage 2	Sta. 607+00 To Sta. 614+70	Rt	King	Ecology Embankment	770 L.F.
167	15th NW To 84th Ave. So. HOV And SC & DI-Stage 2	Sta. 616+55 To Sta. 649+00	Rt	King	Ecology Embankment	3,425 L.F.
167	15th NW To 84th Ave. So. HOV And SC & DI-Stage 2	Sta. 600+00 To Sta. 626+50		King	Ecology Ditch	2,650 L.F.
167	15th NW To 84th Ave. So. HOV And SC & DI-Stage 2	Sta. 637+00 To Sta. 644+00		King	Ecology Ditch	700 L.F.
167	15th NW To 84th Ave. So. HOV And SC & DI-Stage 2	Sta. 657+00 To Sta. 663+25		King	Ecology Ditch	625 L.F.
167	15th NW To 84th Ave. So. HOV And SC & DI-Stage 2	Sta. 599+20 To Sta. 606+00	Lt	King	Ecology Embankment	680 L.F.

TABLE B-1. NEW BMPs CONSTRUCTED IN THE NORTHWEST REGION DURING THE 2003/2004 REPORTING PERIOD						
State Route	**Project Name**	**Milepost or Station**	**Offset Direction**	**County**	**BMP Type**	**Facility Size**
167	15th NW To 84th Ave. So. HOV And SC & DI-Stage 2	Sta. 616+00 To Sta. 627+50	Lt	King	Ecology Embankment	1,150 L.F.
167	15th NW To 84th Ave. So. HOV And SC & DI-Stage 2	Sta. 638+20 To Sta. 661+00	Lt	King	Ecology Embankment	2,280 L.F.
167	15th NW To 84th Ave. So. HOV And SC & DI-Stage 2	Sta. 863+00 To Sta. 872+50	Lt	King	Ecology Embankment	950 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. WT 1533+64.33 To Sta. WB 1547+80	Lt	King	Swale	1,416 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. EB 1542+45 To Sta. EB 1554+92	Lt	King	Swale	1,247 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. WT 1535+50 To Sta. WT 1554+36	Lt	King	Swale	1,886 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. WB 1557+99.91 To WB 1561+59.84	Lt	King	Swale	360 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. EB 1556+58.63 To Sta. EB 1563+08.48	Lt	King	Swale	650 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. EB 1559+35.33 To Sta. EB 1564+57.25	Rt	King	Swale	522 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. EB 1568+35.38 To Sta. EB-EW 115+66.38	Rt	King	Swale	1,750 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. EB 1565+59.13 To Sta. EB 1582+96.00	Lt	King	Swale	1,737 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. WB 1567+54.79 To Sta. WB 1574+70.33	Lt	King	Swale	715 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. EB 1579+23.69 To Sta. EB 1583+43.73	Rt	King	Swale	420 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. EB-EW 108+22.81 To Sta. Eb-EW 113+39.50	Lt	King	Swale	516 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. EB-EW 115+21.88 To Sta. EB 1584+26.8	Lt Rt	King	Swale	350 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. EB 1583+19.59 To Sta. EB 1591+74.59	Lt	King	Swale	855 L.F.

TABLE B-1. NEW BMPs CONSTRUCTED IN THE NORTHWEST REGION DURING THE 2003/2004 REPORTING PERIOD						
State Route	**Project Name**	**Milepost or Station**	**Offset Direction**	**County**	**BMP Type**	**Facility Size**
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. EW-EB 117+50 To Sta. EW-EB 120+68.66	Lt	King	Swale	319 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. EW-EB 155+50.65 To Sta. EW-EB 120+88.54	Rt	King	Swale	538 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. EW-EB 115+50.39 To Sta. EB Ramp 126+81.62	Rt	King	Swale	660 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. EW-EB 128+16.09 To Sta. EW-EB 133+84.37	Rt	King	Swale	568 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. WB 1606+57.73 To Sta. WB 1617+50.49	Lt	King	Swale	1,093 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. WB 1618+18.85 To Sta. WB 1626+64.28	Lt	King	Swale	845 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. ET 622+43.46 To Sta. ET 626+50.12	Rt	King	Swale	407 L.F
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. WB 1627+07.0 To Sta. WB 1628+02.2	Lt	King	Swale	95 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. EW-EB 117+38.90 To Sta. EW-EB 119+72.38	Rt	King	Swale	233 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. WB-EW 101+22.85 To Sta. WB-EW 112+82.28	Rt	King	Swale	1,159 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. WB-EW 107+50.1 To Sta. WB-EW 118+11.92	Rt	King	Swale	1,062 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. EW-EB 113+43.82 To Sta. EW-EB 115+03.57	Lt	King	Swale	160 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. ACC 28+66.0 To Sta. ACC 33+27.53	Lt	King	Swale	462 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. ACC 66+65.13 To Sta. ACC 51+85.72	Lt	King	Swale	1,820 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. IHR 208+85.01 To Sta. IHR 215+35.44	Lt	King	Swale	650 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. IHR 222+50.52 To Sta . IHR 219+06.67	Lt	King	Swale	344 L.F.

TABLE B-1. NEW BMPs CONSTRUCTED IN THE NORTHWEST REGION DURING THE 2003/2004 REPORTING PERIOD						
State Route	**Project Name**	**Milepost or Station**	**Offset Direction**	**County**	**BMP Type**	**Facility Size**
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. IHR 227+16.12 To Sta. IHR 230+97.96	Lt	King	Swale	382 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. IHR 222+80.0 To Sta. IHR 227+00.43	Lt	King	Swale	420 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. SR18 1909+74.77 To Sta. SR18 1911+23.21	Rt	King	Swale	148 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. SR18 1909+78.58 To Sta. SR18 1911+47.36	Rt	King	Swale	168 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. EB 1556+51.14 To Sta. EB 1559+20.0	Rt	King	Detention Pond	269 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. WB 1566+11.95 To Sta. WB 1567+73.96	Lt	King	Detention Pond	162 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. EB 1585+02 To Sta. EB 1587+50	Rt	King	Detention Pond	248 L.F.
18	Issaqua-Hobart Rd. I/C And Raging River Bridge	Sta. IHR 216+50 To Sta. IHR 219+50	Lt	King	Detention Pond	300 L.F.
5	Tukwila To Lucile Street HOV And SC&DI Stage-1	Sta. 1825+12 to Sta. 1830+34	Lt	King	3-Cell Retention/Detention Pond	522 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1021+60 To Sta. 1024+40	Rt	King	Detention Pond	280 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1046+75 To Sta. 1048+75	Lt	King	Bioswale	200 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1055+20 To Sta. 1057+70	Lt	King	Bioswale	250 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 158+70 To Sta. 1060+70	Rt	King	Bioswale	200 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1063+00 To Sta. 1065+00	Rt	King	Ecology Ditch	200 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1069+20 To Sta. 1072+00	Lt	King	Ecology Ditch	280 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1072+40 To Sta. 1075+40	Rt	King	Vegetative Strip	300 L.F.

TABLE B-1. NEW BMPs CONSTRUCTED IN THE NORTHWEST REGION DURING THE 2003/2004 REPORTING PERIOD						
State Route	**Project Name**	**Milepost or Station**	**Offset Direction**	**County**	**BMP Type**	**Facility Size**
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1075+40 To Sta. 1077+40	Rt	King	Biofiltration Swale	200 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1074+30 To Sta. 1076+40	Lt	King	Vegetative Strip	210 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1075+10 To Sta. 1078+30	Lt	King	Vegetative Strip	290 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1079+30 to Sta. 1081+35	Lt	King	Biofiltration Swale	205 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1080+10 To Sta. 1082+15	Lt	King	Biofiltration Swale	205 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1082+75 To Sta. 1091+40	Rt	King	Vegetative Strip	865 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1083+15 To Sta. 1088+20	Lt	King	Vegetative Strip	505 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1083+30 To Sta. 1082+45	Lt	King	Detention Pond	215 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1089+50 To Sta. 1092+30	Rt	King	Vegetative Strip	280 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1091+35 To Sta. 1093+30	Lt	King	Biofiltration Swale	195 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1106+65 To Sta. 1110+40	Lt	King	Detention Pond	375 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1113+00 To Sta. 1115+15	Lt	King	Ecology Ditch	215 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1116+20 To Sta. 1121+10	Rt	King	Vegetative Strip	490 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1119+50 To Sta. 1120+50	Lt	King	Biofiltration Swale	100 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1120+15 To Sta. 1122+10	Rt	King	Biofiltration Swale	195 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1122+50 To Sta. 1124+50	Lt	King	Ecology Ditch	200 L.F.

TABLE B-1. NEW BMPs CONSTRUCTED IN THE NORTHWEST REGION DURING THE 2003/2004 REPORTING PERIOD						
State Route	**Project Name**	**Milepost or Station**	**Offset Direction**	**County**	**BMP Type**	**Facility Size**
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1124+70 To Sta. 1129+60	Rt	King	Vegetative Strip	490 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1125+15 To Sta. 1134+00	Lt	King	Vegetative Strip	885 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1134+00 To Sta. 1136+00	Rt	King	Biofiltration Swale	200 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1135+10 To Sta. 1135+80	Rt	King	Detention Tank	70 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 1168+00 To Sta. 1169+50	Rt	King	Vault	150 L.F
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 94+40 To Sta. 97+50	Rt	King	Detention Pond	310 L.F.
405	Bothell To Swamp Creek I/C HOV Lane Stage 2	Sta. 97+50 To Sta. 99+50	Rt	King	Vault	200 L.F.

TABLE B-2. NEW BMPs CONSTRUCTED IN THE OLYMPIC REGION DURING THE 2003/2004 REPORTING PERIOD							
State Route	**Project Name**	**Milepost or Station**	**Offset Direction**	**County**	**BMP Type**	**Facility Size**	**Puget Sound Basin?**
5	**I-5 Murray Creek - Stormwater Retrofit** *MP 122.43 to 122.70*	P4+14.00 to P7+18.90	Right	Pierce	Detention Pond	1.57 ac-ft	Yes
8	**McCleary Interchange** *MP 7.10 to 7.97*	**Pond B**: MC-N line 12+00 to 14+50 **Pond C**: NS-W line 10+55 to 15+55 **Pond D**: DB6 line 21+90 to 24+00 B**ioswales**:DB6, MC-N, MC-S, W-NS, NS-E, SR8, NS-W lines	Right Right Left Both sides	Grays Harbor	Detention Ponds (3); Bioswales	**Pond B:** 1250 cy **Pond C:** 1850 cy **Pond D:** 7000 cy **Bioswales:**.1.65 acres	No
162	**Voights Creek Bridge 162/11 Vicinity** *MP 11.37 to 11.81*	SR162 Sta 111+50 to 124+00 SR162 Sta 124+00 to 134+00 SR162 Sta 124+00 to 126+00 FH line 14+00 to 18+00	Left Right Left Right	Pierce	Vegetated Filter Strips	0.94 acres	Yes
510	**SR5 to Pacific Avenue** *MP 0.10 to 4.47*	**Pond A:** MAR line Sta 1+100 **Pond B:** MR3 line St 2+320 **Pond C:** PAC line 0+900	Left Right Left	Thurston	Infiltration Ponds (3)	**Pond A:** 5267 m3 **Pond B:** 5535 m3 **Pond C:** 7525 m3	Yes

TABLE B-3. NEW BMPs CONSTRUCTED IN THE SOUTHWEST REGION DURING THE 2003/2004 REPORTING PERIOD						
State Route	**Project Name**	**Milepost or Station**	**Offset Direction**	**County**	**BMP Type**	**Facility Size**
SR 500	NE 112th Ave./Gher Rd. I/C (metric)	NS 3+100 to NS 3+180	Right	Clark County	Combination Wet Pond / BMP CO.01	0.1635 ha-m
		NS 3+405 to NS 3+475	Right	Clark County	Combination Wet Pond / BMP CO.01	0.2435 ha-m
		NS-E 3+520 to NS-E 3+560	Right	Clark County	Combination Wet Pond / BMP CO.01	0.0948 ha-m
I-5	Salmon Creek to I-205	322+50 to 324+00	Left	Clark County	Combination Wet Pond / BMP CO.01	5.345 ac-ft
I-205	* I-205 Stormwater System Retrofit	MP 35.87 to MP 35.90	Left	Clark County	Biofiltration Swale / BMP RT.04	1.08 acres
		MP 35.95 to MP 35.99	Right	Clark County	Biofiltration Swale / BMP RT.04	1.92 acres
		MP 35.96 to MP 35.99	Left	Clark County	Biofiltration Swale / BMP RT.04	0.95 acres
		MP 36.07 TO MP 36.09	Left	Clark County	Biofiltration Swale / BMP RT.04	1.07 acres

APPENDIX C

LABORATORY ANALYTICAL DATA

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

December 2, 2003

David VanderMeuler
Envirovision
1220 East 4th Avenue
Olympia, WA 98506

Re: Analytical Data for Project WSDOT-Stormwater
Laboratory Reference No. 0311-143

Dear David:

Enclosed are the analytical results and associated quality control data for samples submitted on November 19, 2003.

Please note that the subcontracted data will follow in the final report.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 2, 2003
Samples Submitted: November 19, 2003
Laboratory Reference: 0311-143
Project: WSDOT-Stormwater

Case Narrative

Samples were collected on November 16, 2003, and received by the laboratory on November 19, 2003. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a footnote reference and will be included on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 2, 2003
Samples Submitted: November 19, 2003
Laboratory Reference: 0311-143
Project: WSDOT-Stormwater

NWTPH-Dx

Date Extracted: 11-21-03
Date Analyzed: 11-21-03

Matrix: Water
Units: mg/L (ppm)

Client ID:	**WP-1 Maytown Inlet**	**IC-1 Indian Creek**
Lab ID:	11-143-01	11-143-02
Diesel Range:	**ND**	**ND**
PQL:	0.27	0.26
Identification:	---	---
Lube Oil Range:	**2.6**	**4.9**
PQL:	0.43	0.42
Identification:	Lube Oil	Lube Oil
Surrogate Recovery		
o-Terphenyl:	92%	83%
Flags:	Y	Y

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 2, 2003
Samples Submitted: November 19, 2003
Laboratory Reference: 0311-143
Project: WSDOT-Stormwater

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	11-21-03
Date Analyzed:	11-21-03

Matrix:	Water
Units:	mg/L (ppm)

Lab ID:	MB1121W1

Diesel Range:	**ND**
PQL:	0.25
Identification:	---

Lube Oil Range:	**ND**
PQL:	0.40
Identification:	---

Surrogate Recovery	
o-Terphenyl:	93%

Flags:	Y

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 2, 2003
Samples Submitted: November 19, 2003
Laboratory Reference: 0311-143
Project: WSDOT-Stormwater

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted: 11-21-03
Date Analyzed: 11-21-03

Matrix: Water
Units: mg/L (ppm)

Lab ID:	11-143-01	11-143-01 DUP
Diesel Range:	**ND**	**ND**
PQL:	0.27	0.26
RPD:	N/A	
Surrogate Recovery		
o-Terphenyl:	92%	88%
Flags:	Y	Y

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 2, 2003
Samples Submitted: November 19, 2003
Laboratory Reference: 0311-143
Project: WSDOT-Stormwater

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 11-24-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 11-143-05
Client ID: Martin Way

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**18**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 2, 2003
Samples Submitted: November 19, 2003
Laboratory Reference: 0311-143
Project: WSDOT-Stormwater

HARDNESS
EPA 6010B/SM2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 11-24-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: MB1124H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**ND**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 2, 2003
Samples Submitted: November 19, 2003
Laboratory Reference: 0311-143
Project: WSDOT-Stormwater

HARDNESS
EPA 6010B/SM2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 11-24-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 11-143-05

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	**17.6**	**17.6**	0		2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 2, 2003
Samples Submitted: November 19, 2003
Laboratory Reference: 0311-143
Project: WSDOT-Stormwater

HARDNESS
EPA 6010B/SM2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 11-24-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 11-143-05

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	**152**	93	**153**	93	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 2, 2003
Samples Submitted: November 19, 2003
Laboratory Reference: 0311-143
Project: WSDOT-Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 11-25-03
Date Analyzed: 11-25,26&12-1-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-143-05
Client ID: Martin Way

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**7.9**	1.0
Lead	200.8	**1.5**	1.0
Zinc	200.8	**33**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 2, 2003
Samples Submitted: November 19, 2003
Laboratory Reference: 0311-143
Project: WSDOT-Stormwater

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 11-25-03
Date Analyzed: 11-25,26&12-1-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1125W1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 2, 2003
Samples Submitted: November 19, 2003
Laboratory Reference: 0311-143
Project: WSDOT-Stormwater

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 11-25-03
Date Analyzed: 11-25,26&12-1-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-133-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**0.298**	**ND**	NA	0.20	
Copper	**1.86**	**1.75**	6	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**73.3**	**79.7**	8	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 2, 2003
Samples Submitted: November 19, 2003
Laboratory Reference: 0311-143
Project: WSDOT-Stormwater

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 11-25-03
Date Analyzed: 11-25,26&12-1-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-133-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	**94.7**	86	**95.3**	86	1	
Copper	110	**96.9**	86	**96.4**	86	1	
Lead	110	**124**	113	**125**	114	1	
Zinc	110	**198**	113	**190**	106	4	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Chain of Custody

Laboratory Number: 11-143

Company: Envirovision Corporation
Project Number: WSDOT-
Project Name: STORMWATER
Project Manager: David VanderMeulen
Sampled by: David VanderMeulen

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days)
☐ _____ (other)

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	TSS	Hardness / Phosphorus	Total Metals *	Dissolved Metals	% Moisture
1	WP-1 Maytown Inlet	11/16/03	9:39AM		2			X																	
2	IC-1 Indian Creek	11/16/03	9:40AM		2			X																	
3	Martin Way	11/16/03	1:39PM		1																X				
4	Martin Way	11/16/03	1:39PM		1																	X			
5	Martin Way	11/16/03	1:39PM		1																		X		
6	Martin Way	11/16/03	1:39PM		1																			X Sample containers preserved.	

	Signature	Company	Date	Time
Relinquished by	David VanderMeulen	Envirovision Corp.	11/17/03	1:00 PM
Received by	[illegible]	OSE	11/19/03	1:40
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
* Cd, Cu, Pb, Zn

Chromatograms with final report ☐

DISTRIBUTION LEGEND White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

December 8, 2003

David VanderMeulen
Enviovision
1220 East 4th Avenue
Olympia, WA 98506

Re: Analytical Data for Project Stormwater
Laboratory Reference No. 0311-177

Dear David:

Enclosed are the analytical results and associated quality control data for samples submitted on November 25, 2003.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 8, 2003
Samples Submitted: November 25, 2003
Laboratory Reference: 0311-177
Project: Stormwater

Case Narrative

Samples were collected on November 17 and 18, 2003, and received by the laboratory on November 25, 2003. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 8, 2003
Samples Submitted: November 25, 2003
Laboratory Reference: 0311-177
Project: Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 11-25-03
Date Analyzed: 11-25,26 & 12-1-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-177-01
Client ID: Martin Way

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	7.3	1.0
Lead	200.8	1.2	1.0
Zinc	200.8	30	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 8, 2003
Samples Submitted: November 25, 2003
Laboratory Reference: 0311-177
Project: Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 11-25-03
Date Analyzed: 11-25,26 & 12-1-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-177-02
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Cadmium	200.8	0.26	0.20
Copper	200.8	7.4	1.0
Lead	200.8	1.7	1.0
Zinc	200.8	86	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 8, 2003
Samples Submitted: November 25, 2003
Laboratory Reference: 0311-177
Project: Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 11-25-03
Date Analyzed: 11-25,26 & 12-1-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-177-03
Client ID: Maytown Outlet

Analyte	Method	Result	PQL
Cadmium	200.8	0.27	0.20
Copper	200.8	6.6	1.0
Lead	200.8	ND	1.0
Zinc	200.8	50	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 8, 2003
Samples Submitted: November 25, 2003
Laboratory Reference: 0311-177
Project: Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 11-25-03
Date Analyzed: 11-25,26 & 12-1-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-177-04
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	10	1.0
Lead	200.8	1.1	1.0
Zinc	200.8	55	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 8, 2003
Samples Submitted: November 25, 2003
Laboratory Reference: 0311-177
Project: Stormwater

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 11-25-03
Date Analyzed: 11-25,26&12-1-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1125W1

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	ND	1.0
Lead	200.8	ND	1.0
Zinc	200.8	ND	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 8, 2003
Samples Submitted: November 25, 2003
Laboratory Reference: 0311-177
Project: Stormwater

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 11-25-03
Date Analyzed: 11-25,26 & 12-1-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-133-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	0.298	ND	NA	0.20	
Copper	1.86	1.75	6	1.0	
Lead	ND	ND	NA	1.0	
Zinc	73.3	79.7	8	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 8, 2003
Samples Submitted: November 25, 2003
Laboratory Reference: 0311-177
Project: Stormwater

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 11-25-03
Date Analyzed: 11-25,26&12-1-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-133-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	94.7	86	95.3	86	1	
Copper	110	96.9	86	96.4	86	1	
Lead	110	124	113	125	114	1	
Zinc	110	198	113	190	106	4	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 8, 2003
Samples Submitted: November 25, 2003
Laboratory Reference: 0311-177
Project: Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 11-25-03
Date Analyzed: 11-26-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-177-01
Client ID: Martin Way

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	6.6	5.0
Lead	200.8	ND	1.0
Zinc	200.8	23	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 8, 2003
Samples Submitted: November 25, 2003
Laboratory Reference: 0311-177
Project: Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 11-25-03
Date Analyzed: 11-26-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-177-02
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	3.6	5.0
Lead	200.8	ND	1.0
Zinc	200.8	64	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 8, 2003
Samples Submitted: November 25, 2003
Laboratory Reference: 0311-177
Project: Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 11-25-03
Date Analyzed: 11-26-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-177-03
Client ID: Maytown Outlet

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	4.7	5.0
Lead	200.8	ND	1.0
Zinc	200.8	41	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 8, 2003
Samples Submitted: November 25, 2003
Laboratory Reference: 0311-177
Project: Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 11-25-03
Date Analyzed: 11-26-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-177-04
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	4.2	5.0
Lead	200.8	ND	1.0
Zinc	200.8	39	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 8, 2003
Samples Submitted: November 25, 2003
Laboratory Reference: 0311-177
Project: Stormwater

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 11-25-03
Date Analyzed: 11-26-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1125D1

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	ND	5.0
Lead	200.8	ND	1.0
Zinc	200.8	ND	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 8, 2003
Samples Submitted: November 25, 2003
Laboratory Reference: 0311-177
Project: Stormwater

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 11-25-03
Date Analyzed: 11-26-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-177-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	ND	ND	NA	0.20	
Copper	6.62	6.59	0	5.0	
Lead	ND	ND	NA	1.0	
Zinc	23.2	22.7	2	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 8, 2003
Samples Submitted: November 25, 2003
Laboratory Reference: 0311-177
Project: Stormwater

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 11-25-03
Date Analyzed: 11-26-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-177-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	40	42.4	106	41.5	104	2	
Copper	40	46.7	100	47.5	102	2	
Lead	40	42.0	105	41.5	104	0	
Zinc	100	130	107	130	107	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 8, 2003
Samples Submitted: November 25, 2003
Laboratory Reference: 0311-177
Project: Stormwater

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 12-2-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 11-177-01
Client ID: Martin Way

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	23	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 8, 2003
Samples Submitted: November 25, 2003
Laboratory Reference: 0311-177
Project: Stormwater

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 12-2-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 11-177-02
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	18	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 8, 2003
Samples Submitted: November 25, 2003
Laboratory Reference: 0311-177
Project: Stormwater

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 12-2-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 11-177-03
Client ID: Maytown Outlet

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	21	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 8, 2003
Samples Submitted: November 25, 2003
Laboratory Reference: 0311-177
Project: Stormwater

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 12-2-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 11-177-04
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	21	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 8, 2003
Samples Submitted: November 25, 2003
Laboratory Reference: 0311-177
Project: Stormwater

HARDNESS
EPA 6010B/SM 2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 12-2-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: MB1202H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	ND	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 8, 2003
Samples Submitted: November 25, 2003
Laboratory Reference: 0311-177
Project: Stormwater

HARDNESS
EPA 6010B/SM 2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 12-2-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 11-177-01

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	23.2	23.2	0		2.0

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 8, 2003
Samples Submitted: November 25, 2003
Laboratory Reference: 0311-177
Project: Stormwater

HARDNESS
EPA 6010B/SM 2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 12-2-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 11-177-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	166	99	167	99	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical_____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Chain of Custody

Page 1 of 1

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Company: EnviroVision Corporation
Project Number: WSDOT
Project Name: STORMWATER
Project Manager: DAVID VANDER MEULEN
Sampled by:

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Day
- ☐ 3 Day
- ☒ Standard (7 working days)
- ☐ ___ (other)

Laboratory Number: 11-177

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	TSS	Total Metals (Cd, Cu, Pb, Zn)	Dissolved Metals (Cd, Cu, Pb, Zn)	Hardness (Ppm CaCO3)	% Moisture
1	Martin Way	11/17/03	7:35PM		4																X	X	X	X	
2	Maytown Inlet	11/18/03	3:31 AM		4																X	X	X	X	
3	Maytown Outlet	11/18/03	1:10 PM		4																X	X	X	X	
4	Field Duplicate	—	—		4																X	X	X	X	

	Signature	Company	Date	Time
Relinquished by	David VanderMeulen	EnviroVision Corp.	11/20/03	10:00 AM
Received by	Kathy Mapes	OSE	11/25/03	13:15
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

Please send more bottles (enough to sample at least 2 storm events w/ 4 samples). We have enough labels for now.
Thanks

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

SEVERN TRENT STL

STL Seattle
5755 8th Street East
Tacoma, WA 98424

Tel: 253 922 2310
Fax: 253 922 5047
www.stl-inc.com

TRANSMITTAL MEMORANDUM

DATE: December 5, 2003

TO: David Baumeister
OnSite Environmental, Inc.
14648 N E. 95th St.
Redmond, WA 98052

PROJECT: WSDOT Stormwater

REPORT NUMBER: 117957

TOTAL NUMBER OF PAGES: 7

Enclosed are the test results for four samples received at STL Seattle on November 26, 2003.

The report consists of this transmittal memo, analytical results, quality control reports, a copy of the chain-of-custody, a list of data qualifiers and analytical narrative when applicable, and a copy of any requested raw data.

Should there be any questions regarding this report, please contact me at (253) 922-2310.

Sincerely,

Stan Palmquist
Project Manager

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender immediately at 253-922-2310 and destroy this report immediately.

STL Seattle

Sample Identification:

Lab. No.	Client ID	Date/Time Sampled	Matrix
117957-1	Martin Way	11-17-03 *	Liquid
117957-2	Maytown Inlet	11-18-03 *	Liquid
117957-3	Maytown Outlet	11-18-03 *	Liquid
117957-4	Field Duplicate	11-18-03 *	Liquid

* - Sampling time not specified for this sample

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender immediately at 253-922-2310 and destroy this report immediately.

STL Seattle

Client Name	OnSite Environmental, Inc.
Project Name	WSDOT Stormwater
Date Received	11-26-03

General Chemistry Parameters

Client Sample ID	Martin Way				
Lab ID	117957-01				
Parameter	**Method**	**Date Analyzed**	**Units**	**Result**	**PQL**
Total Phosphorus	EPA 365.1	12-04-03	mg/L	0.34	0.05
Total Suspended Solids	EPA 160.2	12-01-03	mg/L	6	2

Client Sample ID	Maytown Inlet				
Lab ID	117957-02				
Parameter	**Method**	**Date Analyzed**	**Units**	**Result**	**PQL**
Total Phosphorus	EPA 365.1	12-04-03	mg/L	0.07	0.05
Total Suspended Solids	EPA 160.2	12-01-03	mg/L	12	2

Client Sample ID	Maytown Outlet				
Lab ID	117957-03				
Parameter	**Method**	**Date Analyzed**	**Units**	**Result**	**PQL**
Total Phosphorus	EPA 365.1	12-04-03	mg/L	ND	0.05
Total Suspended Solids	EPA 160.2	12-01-03	mg/L	6	2

Client Sample ID	Field Duplicate				
Lab ID	117957-04				
Parameter	**Method**	**Date Analyzed**	**Units**	**Result**	**PQL**
Total Phosphorus	EPA 365.1	12-04-03	mg/L	ND	0.05
Total Suspended Solids	EPA 160.2	12-01-03	mg/L	8	2

STL Seattle

QUALITY CONTROL REPORT

Client Sample ID: Batch QC
Lab ID: 117985-01
QC Batch Number: R3421

Method Blank

Parameter	Result (mg/L)	PQL
Total Phosphorus	ND	0.05

Duplicate

Parameter	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD (%)	Flag
Total Phosphorus	ND	ND	NC	

Matrix Spike

Parameter	Sample Result (mg/L)	Matrix Spike Result (mg/L)	Spike Amount (mg/L)	Recovery (%)	Flag
Total Phosphorus	ND	3.99	2.0	NC	X7

Blank Spike

Parameter	Matrix Spike Result (mg/L)	Spike Amount (mg/L)	Recovery (%)	Flag
Total Phosphorus	1.86	2.0	93	

STL Seattle

QUALITY CONTROL REPORT

Client Sample ID: Batch QC
Lab ID: 117961-02
QC Batch Number: 1187-118

Method Blank

Parameter	Result (mg/L)	PQL
Total Suspended Solids	ND	2

Duplicate

Parameter	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD (%)	Flag
Total Suspended Solids	16	18	13	

SEVERN TRENT STL

STL Seattle
5755 8th Street East
Tacoma, WA 98424

Tel: 253 922 2310
Fax: 253 922 5047
www.stl-inc.com

DATA QUALIFIERS AND ABBREVIATIONS

B1: This analyte was detected in the associated method blank. The analyte concentration was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).

B2: This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).

C1: Second column confirmation was performed. The relative percent difference value (RPD) between the results on the two columns was evaluated and determined to be < 40%.

C2: Second column confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be > 40%. The higher result was reported unless anomalies were noted.

C3: Second analysis confirmation was performed. The relative percent difference value (RPD) between the results on the two columns was evaluated and determined to be ≤ 30%.

C4: Second analysis confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be > 30%. The presence of this analyte was not verified per WAC 246-290-010. The original analysis was reported unless anomalies were noted.

M: GC/MS confirmation was performed. The result derived from the original analysis was reported.

D: The reported result for this analyte was calculated based on a secondary dilution factor.

E: The concentration of this analyte exceeded the instrument calibration range and should be considered an estimated quantity.

J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.

MCL: Maximum Contaminant Level

MDL: Method Detection Limit

MRL: Method Reporting Limit

N: See analytical narrative

ND: Not Detected

PQL: Practical Quantitation Limit

X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____.

X2: Contaminant does not appear to be "typical" product.

X3: Identification and quantitation of the analyte or surrogate was complicated by matrix interference.

X4: RPD for duplicates was outside advisory QC limits. The sample was re-analyzed with similar results. The sample matrix may be nonhomogeneous.

X4a: RPD for duplicates outside advisory QC limits due to analyte concentration near the method practical quantitation limit/detection limit.

X5: Matrix spike recovery was not determined due to the required dilution.

X6: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Sample was re-analyzed with similar results.

X7: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Matrix interference may be indicated based on acceptable blank spike recovery and/or RPD.

X7a: Recovery and/or RPD values for this spiked analyte outside advisory QC limits due to high concentration of the analyte in the original sample.

X8: Surrogate recovery was not determined due to the required dilution.

X9: Surrogate recovery outside advisory QC limits due to matrix interference.

117957

CHAIN OF CUSTODY RECORD

Page 1 of 1

7

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

Laboratory Reference #: 11-177

Subcontract Laboratory: Severn Trent Laboratories, Inc.

Phone #: 1 (253) 922-2310

Date/Time:

Contact Person:

Project Manager: David Baumeister

Project Number: WSDOT

Project Name: Stormwater

OSE #	Sample ID	Date Sampled	Matrix	# Jars	Analysis Requested	Comments/Special Instructions
1	Martin Way	11/17/03	Water	2	TSS, phosphorus	D.L.s please: TSS - 1.0 ppm PhoS - 0.03 ppm
2	Maytown Inlet	11/18/03	↓	↓	↓	
3	Maytown Outlet	↓	↓	↓	↓	
4	Field Duplicate	—	↓	↓	↓	

Relinquished by: [signature]	date: 11/26/03	Received by: [signature]	date: 11/26/03
Company: OSE	time: 10:20	Company: STL	time: 10:28
Relinquished by: [signature]	date: 11/26/03	Received by: [signature]	date: 11/26/03
Company: STL	time: [illegible]	Company: STL	time: 110p
Relinquished by:	date:	Received by:	date:
Company:	time:	Company:	time:

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

December 11, 2003

David VanderMeulen
Envirovision
1220 East 4th Avenue
Olympia, WA 98506

Re: Analytical Data for Project Stormwater
Laboratory Reference No. 0311-195

Dear David:

Enclosed are the analytical results and associated quality control data for samples submitted on November 26, 2003.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 11, 2003
Samples Submitted: November 26, 2003
Laboratory Reference: 0311-195
Project: Stormwater

Case Narrative

Samples were collected on November 23, 2003, and received by the laboratory on November 26, 2003. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 11, 2003
Samples Submitted: November 26, 2003
Laboratory Reference: 0311-195
Project: Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 12-5-03
Date Analyzed: 12-9&10-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-195-01
Client ID: Indian Creek

Analyte	Method	Result	PQL
Cadmium	200.8	**5.6**	0.20
Copper	200.8	**29**	1.0
Lead	200.8	**10**	1.0
Zinc	200.8	**140**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 11, 2003
Samples Submitted: November 26, 2003
Laboratory Reference: 0311-195
Project: Stormwater

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 12-5-03
Date Analyzed: 12-9&10-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1205W1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 11, 2003
Samples Submitted: November 26, 2003
Laboratory Reference: 0311-195
Project: Stormwater

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 12-5-03
Date Analyzed: 12-9&10-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-028-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**0.356**	NA	0.20	
Copper	**3.57**	**3.79**	6	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**9.91**	**8.27**	18	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 11, 2003
Samples Submitted: November 26, 2003
Laboratory Reference: 0311-195
Project: Stormwater

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 12-5-03
Date Analyzed: 12-9&10-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-028-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	**115**	104	**116**	105	1	
Copper	110	**107**	94	**110**	97	2	
Lead	110	**111**	101	**111**	101	0	
Zinc	110	**123**	103	**125**	105	2	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 11, 2003
Samples Submitted: November 26, 2003
Laboratory Reference: 0311-195
Project: Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 11-26-03
Date Analyzed: 12-8&9-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-195-01
Client ID: Indian Creek

Analyte	Method	Result	PQL
Cadmium	200.8	**0.28**	0.20
Copper	200.8	**5.6**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**53**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 11, 2003
Samples Submitted: November 26, 2003
Laboratory Reference: 0311-195
Project: Stormwater

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 11-26-03
Date Analyzed: 12-8&9-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1126D1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 11, 2003
Samples Submitted: November 26, 2003
Laboratory Reference: 0311-195
Project: Stormwater

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 11-26-03
Date Analyzed: 12-8&9-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-007-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**ND**	**ND**	NA	5.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**ND**	**ND**	NA	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 11, 2003
Samples Submitted: November 26, 2003
Laboratory Reference: 0311-195
Project: Stormwater

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 11-26-03
Date Analyzed: 12-8&9-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-007-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	40	**38.7**	97	**38.7**	97	0	
Copper	40	**37.7**	94	**38.4**	96	2	
Lead	40	**39.3**	98	**39.5**	99	0	
Zinc	40	**41.0**	103	**41.1**	103	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 11, 2003
Samples Submitted: November 26, 2003
Laboratory Reference: 0311-195
Project: Stormwater

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-2-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 11-195-01
Client ID: Indian Creek

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**16**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 11, 2003
Samples Submitted: November 26, 2003
Laboratory Reference: 0311-195
Project: Stormwater

HARDNESS
EPA 6010B/SM2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 12-2-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: MB1202H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**ND**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 11, 2003
Samples Submitted: November 26, 2003
Laboratory Reference: 0311-195
Project: Stormwater

HARDNESS
EPA 6010B/SM2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 12-2-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 11-177-01

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	**23.2**	**23.2**	0		2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 11, 2003
Samples Submitted: November 26, 2003
Laboratory Reference: 0311-195
Project: Stormwater

HARDNESS
EPA 6010B/SM2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 12-2-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 11-177-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	**166**	99	**167**	99	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone (425) 883-3881 • Fax (425) 885-4603

Laboratory Number: 11-195

Company: EnviroVision Corporation
Project Number: WSDOT
Project Name: Stormwater
Project Manager: David VanderMeulen
Sampled by: David VanderMeulen

Turnaround Request (in working days) (Check One)

- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Day
- ☐ 3 Day
- ☒ Standard (7 working days)
- ☐ ____ (other)

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	TSS	Total Metals (Cd, Cu, Pb, Zn)	Dissolved Metals (Cd, Cu, Pb, Zn)	Hardness / Phosphorus	% Moisture
1	Indian Creek	11/23/03	10:01AM		4																X	X	X	X	

	Signature	Company	Date	Time
Relinquished by	David VanderMeulen	EnviroVision Corp.	11/24/03	4:00 PM
Received by	[illegible]	OSE	11/24/03	1:30pm
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

SEVERN TRENT STL

STL Seattle
5755 8th Street East
Tacoma, WA 98424

Tel: 253 922 2310
Fax 253 922 5047
www.stl-inc.com

TRANSMITTAL MEMORANDUM

DATE: December 5, 2003

TO: David Baumeister
OnSite Environmental, Inc.
14648 N. E. 95th St.
Redmond, WA 98052

PROJECT: Stormwater

REPORT NUMBER: 117976

TOTAL NUMBER OF PAGES 7

Enclosed are the test results for one sample received at STL Seattle on December 1, 2003.

The report consists of this transmittal memo, analytical results, quality control reports, a copy of the chain-of-custody, a list of data qualifiers and analytical narrative when applicable, and a copy of any requested raw data.

Should there be any questions regarding this report, please contact me at (253) 922-2310.

Sincerely,

Stan Palmquist
Project Manager

STL Seattle is a part of Severn Trent Laboratories, Inc.

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender immediately at 253-922-2310 and destroy this report immediately

STL Seattle

Sample Identification:

Lab. No.	Client ID	Date/Time Sampled	Matrix
117976-1	Indian Creek	11-23-03 *	Liquid

* - Sampling time not specified for this sample

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender immediately at 253-922-2310 and destroy this report immediately.

STL Seattle

Client Name	OnSite Environmental, Inc
Project Name	Stormwater
Date Received	12-01-03

General Chemistry Parameters

	Client Sample ID		Indian Creek		
	Lab ID		117976-01		
Parameter	**Method**	**Date Analyzed**	**Units**	**Result**	**PQL**
Total Phosphorus	EPA 365.1	12-04-03	mg/L	0.11	0.05
Total Suspended Solids	EPA 160.2	12-02-03	mg/L	58	2

STL Seattle

QUALITY CONTROL REPORT

Client Sample ID: Batch QC
Lab ID: 117970-2
QC Batch Number: 1187-119

Method Blank

Parameter	Result (mg/L)	PQL
Total Suspended Solids	ND	2

Duplicate

Parameter	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD (%)	Flag
Total Suspended Solids	9	10	14	

STL Seattle

QUALITY CONTROL REPORT

Client Sample ID: Batch QC
Lab ID: 117985-01
QC Batch Number: R3421

Method Blank

Parameter	Result (mg/L)	PQL
Total Phosphorus	ND	0.05

Duplicate

Parameter	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD (%)	Flag
Total Phosphorus	ND	ND	NC	

Matrix Spike

Parameter	Sample Result (mg/L)	Matrix Spike Result (mg/L)	Spike Amount (mg/L)	Recovery (%)	Flag
Total Phosphorus	ND	3.99	2.0	NC	X7

Blank Spike

Parameter	Matrix Spike Result (mg/L)	Spike Amount (mg/L)	Recovery (%)	Flag
Total Phosphorus	1.86	2.0	93	

SEVERN TRENT STL

STL Seattle
5755 8th Street East
Tacoma, WA 98424

Tel: 253 922 2310
Fax: 253 922 5047
www.stl-inc.com

DATA QUALIFIERS AND ABBREVIATIONS

B1: This analyte was detected in the associated method blank. The analyte concentration was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).

B2: This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).

C1: Second column confirmation was performed. The relative percent difference value (RPD) between the results on the two columns was evaluated and determined to be < 40%.

C2: Second column confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be > 40%. The higher result was reported unless anomalies were noted.

C3: Second analysis confirmation was performed. The relative percent difference value (RPD) between the results on the two columns was evaluated and determined to be ≤ 30%.

C4: Second analysis confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be > 30%. The presence of this analyte was not verified per WAC 246-290-010. The original analysis was reported unless anomalies were noted.

M: GC/MS confirmation was performed. The result derived from the original analysis was reported.

D: The reported result for this analyte was calculated based on a secondary dilution factor.

E: The concentration of this analyte exceeded the instrument calibration range and should be considered an estimated quantity.

J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.

MCL: Maximum Contaminant Level

MDL: Method Detection Limit

MRL: Method Reporting Limit

N: See analytical narrative

ND: Not Detected

PQL: Practical Quantitation Limit

X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____.

X2: Contaminant does not appear to be "typical" product.

X3: Identification and quantitation of the analyte or surrogate was complicated by matrix interference.

X4: RPD for duplicates was outside advisory QC limits. The sample was re-analyzed with similar results. The sample matrix may be nonhomogeneous.

X4a: RPD for duplicates outside advisory QC limits due to analyte concentration near the method practical quantitation limit/detection limit.

X5: Matrix spike recovery was not determined due to the required dilution.

X6: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Sample was re-analyzed with similar results.

X7: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Matrix interference may be indicated based on acceptable blank spike recovery and/or RPD.

X7a: Recovery and/or RPD values for this spiked analyte outside advisory QC limits due to high concentration of the analyte in the original sample.

X8: Surrogate recovery was not determined due to the required dilution.

X9: Surrogate recovery outside advisory QC limits due to matrix interference.

4.4

CHAIN OF CUSTODY RECORD

Page 1 of 1

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

117978

Laboratory Reference #: 11-195

Subcontract Laboratory: Severn Trent Laboratories, Inc.

Phone #: 1 (253) 922 - 2310

Date/Time:

Contact Person:

Project Manager: David Baumeister

Project Number: WSDOT

Project Name: Stormwater

OSE #	Sample ID	Date Sampled	Matrix	# Jars	Analysis Requested	Comments/Special Instructions
1	Indian Creek	11/23/03	H_2O	2	TSS and phosporus	

Relinquished by: Kathy M. Spain	date: 12/1/03	Received by: C Leach	date: 12-1-03
Company: OSE	time: 10:50	Company: STL	time: 10:51
Relinquished by: C Leach	date: 12-1-03	Received by: [illegible]	date: 12:01
Company: STL	time: 12:46	Company: STL	time: 12:46
Relinquished by:	date	Received by:	date:
Company:	time:	Company:	time:

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

December 12, 2003

David VanderMeulen
Envirovision
1220 East 4th Avenue
Olympia, WA 98506

Re: Analytical Data for Project Stormwater
Laboratory Reference No. 0312-002

Dear David:

Enclosed are the analytical results and associated quality control data for samples submitted on December 1, 2003.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 1, 2003
Laboratory Reference: 0312-002
Project: Stormwater

Case Narrative

Samples were collected on November 25, 2003, and received by the laboratory on December 1, 2003. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 1, 2003
Laboratory Reference: 0312-002
Project: Stormwater

NWTPH-Dx

Date Extracted: 12-4-03
Date Analyzed: 12-5-03

Matrix: Water
Units: mg/L (ppm)

Client ID:	**Maytown Boom up**	**Maytown Boom down**
Lab ID:	12-002-04	12-002-05
Diesel Range:	**ND**	**ND**
PQL:	0.26	0.26
Identification:	---	---
Lube Oil Range:	**2.0**	**1.8**
PQL:	0.41	0.41
Identification:	Lube Oil	Lube Oil
Surrogate Recovery		
o-Terphenyl:	98%	87%
Flags:	Y	Y

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 1, 2003
Laboratory Reference: 0312-002
Project: Stormwater

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	12-4-03
Date Analyzed:	12-5-03

Matrix:	Water
Units:	mg/L (ppm)

Lab ID:	MB1204W1

Diesel Range:	**ND**
PQL:	0.25
Identification:	---

Lube Oil Range:	**ND**
PQL:	0.40
Identification:	---

Surrogate Recovery	
o-Terphenyl:	78%

Flags:	Y

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 1, 2003
Laboratory Reference: 0312-002
Project: Stormwater

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted: 12-4-03
Date Analyzed: 12-5-03

Matrix: Water
Units: mg/L (ppm)

Lab ID:	12-002-05	12-002-05 DUP
Diesel Range:	**ND**	**ND**
PQL:	0.26	0.26
RPD:	N/A	
Surrogate Recovery		
o-Terphenyl:	87%	84%
Flags:	Y	Y

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 1, 2003
Laboratory Reference: 0312-002
Project: Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 12-5-03
Date Analyzed: 12-9&10-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-002-01
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Cadmium	200.8	**3.4**	0.20
Copper	200.8	**20**	1.0
Lead	200.8	**5.9**	1.0
Zinc	200.8	**130**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 1, 2003
Laboratory Reference: 0312-002
Project: Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 12-5-03
Date Analyzed: 12-9&10-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-002-02
Client ID: Maytown Outlet

Analyte	Method	Result	PQL
Cadmium	200.8	**1.6**	0.20
Copper	200.8	**8.1**	1.0
Lead	200.8	**1.4**	1.0
Zinc	200.8	**74**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 1, 2003
Laboratory Reference: 0312-002
Project: Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 12-5-03
Date Analyzed: 12-9&10-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-002-03
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Cadmium	200.8	**2.2**	0.20
Copper	200.8	**17**	1.0
Lead	200.8	**6.0**	1.0
Zinc	200.8	**130**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 1, 2003
Laboratory Reference: 0312-002
Project: Stormwater

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 12-5-03
Date Analyzed: 12-9&10-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1205W1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 1, 2003
Laboratory Reference: 0312-002
Project: Stormwater

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 12-5-03
Date Analyzed: 12-9&10-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-028-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**0.356**	NA	0.20	
Copper	**3.57**	**3.79**	6	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**9.91**	**8.27**	18	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 1, 2003
Laboratory Reference: 0312-002
Project: Stormwater

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 12-5-03
Date Analyzed: 12-9&10-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-028-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	**115**	104	**116**	105	1	
Copper	110	**107**	94	**110**	97	2	
Lead	110	**111**	101	**111**	101	0	
Zinc	110	**123**	103	**125**	105	2	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 1, 2003
Laboratory Reference: 0312-002
Project: Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 11-26-03
Date Analyzed: 12-8&9-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-002-01
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Cadmium	200.8	**0.28**	0.20
Copper	200.8	**3.9**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**64**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 1, 2003
Laboratory Reference: 0312-002
Project: Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 11-26-03
Date Analyzed: 12-8&9-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-002-02
Client ID: Maytown Outlet

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**3.6**	5.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**44**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 1, 2003
Laboratory Reference: 0312-002
Project: Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 11-26-03
Date Analyzed: 12-8&9-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-002-03
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Cadmium	200.8	**0.35**	0.20
Copper	200.8	**3.0**	5.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**63**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 1, 2003
Laboratory Reference: 0312-002
Project: Stormwater

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 12-1-03
Date Analyzed: 12-8&9-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1201D1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 1, 2003
Laboratory Reference: 0312-002
Project: Stormwater

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 12-1-03
Date Analyzed: 12-8&9-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-007-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**ND**	**ND**	NA	5.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**ND**	**ND**	NA	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 1, 2003
Laboratory Reference: 0312-002
Project: Stormwater

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 12-1-03
Date Analyzed: 12-8&9-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-007-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	40	**38.7**	97	**38.7**	97	0	
Copper	40	**37.7**	94	**38.4**	96	2	
Lead	40	**39.3**	98	**39.5**	99	0	
Zinc	40	**41.0**	103	**41.1**	103	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 1, 2003
Laboratory Reference: 0312-002
Project: Stormwater

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-2-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-002-01
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**16**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 1, 2003
Laboratory Reference: 0312-002
Project: Stormwater

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-2-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-002-02
Client ID: Maytown Outlet

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**23**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 1, 2003
Laboratory Reference: 0312-002
Project: Stormwater

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-2-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-002-03
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**16**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 1, 2003
Laboratory Reference: 0312-002
Project: Stormwater

HARDNESS
EPA 6010B/SM2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 12-2-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: MB1202H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**ND**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 1, 2003
Laboratory Reference: 0312-002
Project: Stormwater

HARDNESS
EPA 6010B/SM2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 12-2-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 11-177-01

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	**23.2**	**23.2**	0		2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 1, 2003
Laboratory Reference: 0312-002
Project: Stormwater

HARDNESS
EPA 6010B/SM2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 12-2-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 11-177-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	**166**	99	**167**	99	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Chain of Custody

Laboratory Number: 12 002

Company: EnviroVision Corporation
Project Number: WSDOT
Project Name: Stormwater
Project Manager: David Vander Meulen
Sampled by: David Vander Meulen

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days)
☐ _____ (other)

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	TSS	Total Metals (Cd, Cu, Pb, Zn)	Dissolved Metals (Cd, Cu, Pb, Zn)	Hardness / Phosphorus	% Moisture
1	Maytown Inlet	11/25/03	8:31 AM		4																X	X	X	X	
2	Maytown Outlet	11/25/03	2:47 PM		4																X	X	X	X	
3	Field Duplicate	—	—		4																X	X	X	X	
4	Maytown Boom up	11/25/03	1:30 PM		2			X																	
5	Maytown Boom down	11/25/03	1:30 PM		2			X																	

	Signature	Company	Date	Time
Relinquished by	David Vander Meulen	EnviroVision Corp.	11/25/03	4:30 PM
Received by	Kathy M Speir	OSE	12/1/03	1:30 PM
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
Please send more bottles and coolers.
Thanks,
David Vander Meulen

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

SEVERN TRENT STL

STL Seattle
5755 8th Street East
Tacoma, WA 98424

Tel 253 922 2310
Fax 253 922 5047
www.stl-inc.com

TRANSMITTAL MEMORANDUM

DATE: December 5, 2003

TO: David Baumeister
OnSite Environmental, Inc.
14648 N. E. 95th St.
Redmond, WA 98052

PROJECT: WSDOT Stormwater

REPORT NUMBER: 118026

TOTAL NUMBER OF PAGES: 7

Enclosed are the test results for three samples received at STL Seattle on December 2, 2003.

The report consists of this transmittal memo, analytical results, quality control reports, a copy of the chain-of-custody, a list of data qualifiers and analytical narrative when applicable, and a copy of any requested raw data.

Should there be any questions regarding this report, please contact me at (253) 922-2310.

Sincerely,

Stan Palmquist
Project Manager

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender immediately at 253-922-2310 and destroy this report immediately.

STL Seattle

Sample Identification:

Lab. No.	Client ID	Date/Time Sampled	Matrix
118026-1	Maytown Inlet	11-25-03 *	Liquid
118026-2	Maytown Outlet	11-25-03 *	Liquid
118026-3	Field Duplicate	11-25-03 *	Liquid

* - Sampling time not specified for this sample

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender immediately at 253-922-2310 and destroy this report immediately.

STL Seattle

Client Name	OnSite Environmental, Inc.
Project Name	WSDOT Stormwater
Date Received	12-02-03

General Chemistry Parameters

Client Sample ID	Maytown Inlet
Lab ID	118026-01

Parameter	Method	Date Analyzed	Units	Result	PQL
Total Phosphorus	EPA 365.1	12-04-03	mg/L	0.13	0.05
Total Suspended Solids	EPA 160.2	12-02-03	mg/L	49	2

Client Sample ID	Maytown Outlet
Lab ID	118026-02

Parameter	Method	Date Analyzed	Units	Result	PQL
Total Phosphorus	EPA 365.1	12-04-03	mg/L	0.12	0.05
Total Suspended Solids	EPA 160.2	12-02-03	mg/L	4	2

Client Sample ID	Field Duplicate
Lab ID	118026-03

Parameter	Method	Date Analyzed	Units	Result	PQL
Total Phosphorus	EPA 365.1	12-04-03	mg/L	0.08	0.05
Total Suspended Solids	EPA 160.2	12-02-03	mg/L	50	2

STL Seattle

QUALITY CONTROL REPORT

Client Sample ID: Batch QC
Lab ID: 117970-12
QC Batch Number: 1187-120

Method Blank

Parameter	Result (mg/L)	PQL
Total Suspended Solids	ND	2

Duplicate

Parameter	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD (%)	Flag
Total Suspended Solids	11	12	5.31	

STL Seattle

QUALITY CONTROL REPORT

Client Sample ID: Batch QC
Lab ID. 117985-01
QC Batch Number R3421

Method Blank

Parameter	Result (mg/L)	PQL
Total Phosphorus	ND	0 05

Duplicate

Parameter	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD (%)	Flag
Total Phosphorus	ND	ND	NC	

Matrix Spike

Parameter	Sample Result (mg/L)	Matrix Spike Result (mg/L)	Spike Amount (mg/L)	Recovery (%)	Flag
Total Phosphorus	ND	3.99	2.0	NC	X7

Blank Spike

Parameter	Matrix Spike Result (mg/L)	Spike Amount (mg/L)	Recovery (%)	Flag
Total Phosphorus	1 86	2.0	93	

SEVERN TRENT STL

STL Seattle
5755 8th Street East
Tacoma, WA 98424

Tel: 253 922 2310
Fax: 253 922 5047
www.stl-inc.com

DATA QUALIFIERS AND ABBREVIATIONS

B1: This analyte was detected in the associated method blank. The analyte concentration was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).

B2: This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).

C1: Second column confirmation was performed. The relative percent difference value (RPD) between the results on the two columns was evaluated and determined to be < 40%.

C2: Second column confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be > 40%. The higher result was reported unless anomalies were noted.

C3: Second analysis confirmation was performed. The relative percent difference value (RPD) between the results on the two columns was evaluated and determined to be ≤ 30%.

C4: Second analysis confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be > 30%. The presence of this analyte was not verified per WAC 246-290-010. The original analysis was reported unless anomalies were noted.

M: GC/MS confirmation was performed. The result derived from the original analysis was reported.

D: The reported result for this analyte was calculated based on a secondary dilution factor.

E: The concentration of this analyte exceeded the instrument calibration range and should be considered an estimated quantity.

J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.

MCL: Maximum Contaminant Level

MDL: Method Detection Limit

MRL: Method Reporting Limit

N: See analytical narrative

ND: Not Detected

PQL: Practical Quantitation Limit

X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____.

X2: Contaminant does not appear to be "typical" product.

X3: Identification and quantitation of the analyte or surrogate was complicated by matrix interference.

X4: RPD for duplicates was outside advisory QC limits. The sample was re-analyzed with similar results. The sample matrix may be nonhomogeneous.

X4a: RPD for duplicates outside advisory QC limits due to analyte concentration near the method practical quantitation limit/detection limit.

X5: Matrix spike recovery was not determined due to the required dilution.

X6: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Sample was re-analyzed with similar results.

X7: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Matrix interference may be indicated based on acceptable blank spike recovery and/or RPD.

X7a: Recovery and/or RPD values for this spiked analyte outside advisory QC limits due to high concentration of the analyte in the original sample.

X8: Surrogate recovery was not determined due to the required dilution.

X9: Surrogate recovery outside advisory QC limits due to matrix interference.

CHAIN OF CUSTODY RECORD

Page 1 of 1

118026

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

Laboratory Reference #: 12-002

Subcontract Laboratory: Severn Trent Laboratories, Inc.

Phone #: 1 (253) 922 - 2310

Date/Time:

Contact Person:

Project Manager: David Baumeister

Project Number: WSDOT

Project Name: Stormwater

QSE #	Sample ID	Date Sampled	Matrix	# Jars	Analysis Requested	Comments/Special Instructions
1	Maytown Inlet	11/25/03	Water	2	TSS, Phosphorus	TSS = 1.0 ppm
2	Maytown Outlet	11/25/03	↓	↓	↓	Phos = 0.03 ppm
3	Field Duplicate	—	↓	↓	↓	

Relinquished by: [signature]	date: 12/2/03	Received by: C Leach	date: 12-2-03
Company: OSE Fin	time: 11:10	Company: STL	time: 1113
Relinquished by: C Leach	date: 12-2-03	Received by: [signature]	date: 12/2/03
Company: STL	time: 1300	Company: STL	time: 1P
Relinquished by:	date:	Received by:	date:
Company:	time:	Company:	time

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

December 12, 2003

David VanderMeulen
Envirovision
1220 East 4th Avenue
Olympia, WA 98506

Re: Analytical Data for Project WSDOT Stormwater
Laboratory Reference No. 0312-018

Dear David:

Enclosed are the analytical results and associated quality control data for samples submitted on December 2, 2003.

Please note that the subcontracted data will follow in the final report.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 2, 2003
Laboratory Reference: 0312-018
Project: WSDOT Stormwater

Case Narrative

Samples were collected on November 28, 2003 and received by the laboratory on December 2, 2003. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 2, 2003
Laboratory Reference: 0312-018
Project: WSDOT Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 12-5-03
Date Analyzed: 12-9&10-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-018-01
Client ID: Martin Way

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**7.6**	1.0
Lead	200.8	**1.1**	1.0
Zinc	200.8	**33**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: December 12, 2003
Samples Submitted: December 2, 2003
Laboratory Reference: 0312-018
Project: WSDOT Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 12-5-03
Date Analyzed: 12-9&10-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-018-02
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Cadmium	200.8	**0.39**	0.20
Copper	200.8	**17**	1.0
Lead	200.8	**4.8**	1.0
Zinc	200.8	**84**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: December 12, 2003
Samples Submitted: December 2, 2003
Laboratory Reference: 0312-018
Project: WSDOT Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 12-5-03
Date Analyzed: 12-9&10-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-018-03
Client ID: Maytown Outlet

Analyte	Method	Result	PQL
Cadmium	200.8	**0.24**	0.20
Copper	200.8	**9.0**	1.0
Lead	200.8	**1.2**	1.0
Zinc	200.8	**55**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: December 12, 2003
Samples Submitted: December 2, 2003
Laboratory Reference: 0312-018
Project: WSDOT Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 12-5-03
Date Analyzed: 12-9&10-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-018-04
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Cadmium	200.8	**0.35**	0.20
Copper	200.8	**17**	1.0
Lead	200.8	**4.8**	1.0
Zinc	200.8	**76**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 2, 2003
Laboratory Reference: 0312-018
Project: WSDOT Stormwater

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 12-5-03
Date Analyzed: 12-9&10-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1205W1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 2, 2003
Laboratory Reference: 0312-018
Project: WSDOT Stormwater

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 12-5-03
Date Analyzed: 12-9&10-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-028-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**0.356**	NA	0.20	
Copper	**3.57**	**3.79**	6	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**9.91**	**8.27**	18	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 2, 2003
Laboratory Reference: 0312-018
Project: WSDOT Stormwater

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 12-5-03
Date Analyzed: 12-9&10-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-028-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	**115**	104	**116**	105	1	
Copper	110	**107**	94	**110**	97	2	
Lead	110	**111**	101	**111**	101	0	
Zinc	110	**123**	103	**125**	105	2	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 2, 2003
Laboratory Reference: 0312-018
Project: WSDOT Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-2-03
Date Analyzed: 12-8,9&11-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-018-01
Client ID: Martin Way

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**5.4**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**18**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 2, 2003
Laboratory Reference: 0312-018
Project: WSDOT Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-2-03
Date Analyzed: 12-8,9&11-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-018-02
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**4.2**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**44**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 2, 2003
Laboratory Reference: 0312-018
Project: WSDOT Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-2-03
Date Analyzed: 12-8,9&11-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-018-03
Client ID: Maytown Outlet

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**3.4**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**38**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 2, 2003
Laboratory Reference: 0312-018
Project: WSDOT Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-2-03
Date Analyzed: 12-8,9&11-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-018-04
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**3.6**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**39**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 2, 2003
Laboratory Reference: 0312-018
Project: WSDOT Stormwater

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 12-2-03
Date Analyzed: 12-8,9&11-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1202D1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: December 12, 2003
Samples Submitted: December 2, 2003
Laboratory Reference: 0312-018
Project: WSDOT Stormwater

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 12-2-03
Date Analyzed: 12-8,9&11-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-007-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**ND**	**ND**	NA	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**ND**	**ND**	NA	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 2, 2003
Laboratory Reference: 0312-018
Project: WSDOT Stormwater

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 12-2-03
Date Analyzed: 12-8,9&11-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-007-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	40	**38.7**	97	**38.7**	97	0	
Copper	40	**37.7**	94	**38.4**	96	2	
Lead	40	**39.3**	98	**39.5**	99	0	
Zinc	40	**41.0**	103	**41.1**	103	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 2, 2003
Laboratory Reference: 0312-018
Project: WSDOT Stormwater

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-11-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-018-01
Client ID: Martin Way

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**16**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 2, 2003
Laboratory Reference: 0312-018
Project: WSDOT Stormwater

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-11-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-018-02
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**10**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 2, 2003
Laboratory Reference: 0312-018
Project: WSDOT Stormwater

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-11-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-018-03
Client ID: Maytown Outlet

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**24**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: December 12, 2003
Samples Submitted: December 2, 2003
Laboratory Reference: 0312-018
Project: WSDOT Stormwater

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-11-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-018-04
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**9.8**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: December 12, 2003
Samples Submitted: December 2, 2003
Laboratory Reference: 0312-018
Project: WSDOT Stormwater

HARDNESS
EPA 6010B/SM2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 12-11-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: MB1211H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**ND**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 2, 2003
Laboratory Reference: 0312-018
Project: WSDOT Stormwater

HARDNESS
EPA 6010B/SM2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 12-11-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-018-01

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	**16.3**	**16.3**	0		2.0

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and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 12, 2003
Samples Submitted: December 2, 2003
Laboratory Reference: 0312-018
Project: WSDOT Stormwater

HARDNESS
EPA 6010B/SM2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 12-11-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-018-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	**158**	98	**159**	98	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Chain of Custody

Page 1 of 1

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Laboratory Number: 12-018

Company: EnviroVision Corporation
Project Number: WSDOT
Project Name: Stormwater
Project Manager: David Vander Meulen
Sampled by: David Vander Meulen

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days)
☐ ____ (other)

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	TSS	Total Metals (Cd, Cu, Pb, Zn)	Dissolved Metals (Cd, Cu, Pb, Zn)	Hardness (Phosphorus)	% Moisture
1	Martin Way	11/26/03			4																X	X	X	X	
2	Maytown Inlet	11/26/03			4																X	X	X	X	
3	Maytown Outlet	11/26/03			4																X	X	X	X	
4	Field Duplicate	11/26/03			4																X	X	X	X	

	Signature	Company	Date	Time
Relinquished by	David Vander Meulen	EnviroVision Corp.	12/1/03	1100
Received by	Kathy Morgan	OSE	12/2/03	15:15
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

Chromatograms with final report ☐

DISTRIBUTION LEGEND White - OnSite Copy Yellow - Report Copy Pink - Client Copy

Chain of Custody

Page 1 of 1

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone (425) 883-3881 • Fax (425) 885-4603

Laboratory Number: 12-018

Company: EnviroVision Corporation
Project Number: WSDOT
Project Name: Stormwater
Project Manager: David Vander Meulen
Sampled by: David Vander Meulen

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days)
☐ ___ (other)

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	TSS	Total Metals (Cd, Cu, Pb, Zn)	Dissolved Metals (Cd, Cu, Pb, Zn)	Hardness/Phosphorus	% Moisture
1	Martin Way	11/28/03			4																X	X	X	X	
2	Maytown Inlet	11/28/03			4																X	X	X	X	
3	Maytown Outlet	11/28/03			4																X	X	X	X	
4	Field Duplicate	11/28/03			4																X	X	X	X	

	Signature	Company	Date	Time
Relinquished by	David Vander Meulen	EnviroVision Corp.	12/1/03	1100
Received by	Kathleen Morgan	OSE	12/2/03	15:15
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

December 17, 2003

John Virgin
Tetra Tech, Inc.
6100 219th Street S.W., Suite 550
Mountlake Terrace, WA 98043

Re: Analytical Data for Project 13455-02
Laboratory Reference No. 0312-089

Dear John :

Enclosed are the analytical results and associated quality control data for samples submitted on December 8, 2003.

Please note that the subcontracted data will follow in the final report.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

Case Narrative

Samples were collected on December 5, 2003, and received by the laboratory on December 8, 2003. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 12-15-03
Date Analyzed: 12-16-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-089-01
Client ID: SR5DP1-120503

Analyte	Method	Result	PQL
Cadmium	200.8	**0.47**	0.20
Copper	200.8	**4.4**	1.0
Lead	200.8	**1.1**	1.0
Zinc	200.8	**37**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 12-15-03
Date Analyzed: 12-16-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-089-02
Client ID: SR5DP2-120503

Analyte	Method	Result	PQL
Cadmium	200.8	**0.61**	0.20
Copper	200.8	**3.2**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**29**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 12-15-03
Date Analyzed: 12-16-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-089-03
Client ID: SR5DP3-120503

Analyte	Method	Result	PQL
Cadmium	200.8	**0.60**	0.20
Copper	200.8	**3.3**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**33**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 12-15-03
Date Analyzed: 12-16-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-089-04
Client ID: SR405BS-120503

Analyte	Method	Result	PQL
Cadmium	200.8	**0.81**	0.20
Copper	200.8	**7.4**	1.0
Lead	200.8	**1.8**	1.0
Zinc	200.8	**23**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 12-15-03
Date Analyzed: 12-16-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-089-05
Client ID: SR405UP-120503

Analyte	Method	Result	PQL
Cadmium	200.8	**0.96**	0.20
Copper	200.8	**6.7**	1.0
Lead	200.8	**2.1**	1.0
Zinc	200.8	**62**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 12-15-03
Date Analyzed: 12-16-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1215W2

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 12-15-03
Date Analyzed: 12-16-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-119-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**8.04**	**7.38**	9	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**8.00**	**ND**	NA	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 12-15-03
Date Analyzed: 12-16-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-119-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	**105**	95	**106**	96	1	
Copper	110	**98.9**	83	**99.6**	83	1	
Lead	110	**103**	94	**105**	95	1	
Zinc	110	**109**	91	**108**	91	1	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-9-03
Date Analyzed: 12-12-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-089-01
Client ID: SR5DP1-120503

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**3.3**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**31**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-9-03
Date Analyzed: 12-12-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-089-02
Client ID: SR5DP2-120503

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**2.5**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**22**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-9-03
Date Analyzed: 12-12-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-089-03
Client ID: SR5DP3-120503

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**2.5**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**23**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-9-03
Date Analyzed: 12-12-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-089-04
Client ID: SR405BS-120503

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**4.8**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**10**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-9-03
Date Analyzed: 12-12-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-089-05
Client ID: SR405UP-120503

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**5.8**	1.0
Lead	200.8	**1.5**	1.0
Zinc	200.8	**55**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 12-9-03
Date Analyzed: 12-12-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1209D2

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 12-9-03
Date Analyzed: 12-12-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-089-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**3.34**	**3.22**	4	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**31.0**	**30.6**	1	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 12-9-03
Date Analyzed: 12-12-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-089-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	40	**38.7**	97	**37.6**	94	3	
Copper	40	**41.0**	94	**43.1**	99	5	
Lead	40	**40.0**	100	**39.3**	98	2	
Zinc	40	**68.4**	94	**68.1**	93	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-11-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-089-01
Client ID: SR5DP1-120503

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**10**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-11-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-089-02
Client ID: SR5DP2-120503

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**16**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-11-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-089-03
Client ID: SR5DP3-120503

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**16**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-11-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-089-04
Client ID: SR405BS-120503

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**35**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-11-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-089-05
Client ID: SR405UP-120503

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**27**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 12-11-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: MB1211H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**ND**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 12-11-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-018-01

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	**16.3**	**16.3**	0		2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 8, 2003
Laboratory Reference: 0312-089
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 12-11-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-018-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	**158**	98	**159**	98	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Company: Tetra Tech, Inc.
Project Number: 134155-02
Project Name: WSDOT Stormwater
Project Manager: John Virgin
Sampled by: John Virgin

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days)
☐ ___ (other)

Laboratory Number: 12-088 12-089

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	Total Metals	Diss Metals *	Hardness/TSS/Total phosphorus	% Moisture
1	SR5DP1-120503	12/5/03	1030	W	4																X	X	X	
2	SR5DP2-120503	↓	1000	W	4																X	X	X	
3	SR5DP3-120503		1700	W	4																X	X	X	
4	SR405BS-120503		1100	W	4																X	X	X	
5	SR405UP-120503	✓	1330	W	4																X	X	X	

	Signature	Company	Date	Time
Relinquished by	[signature]	Tetra Tech	12/8/03	1200
Received by	[signature]	OnSite	12/8/03	12:00
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
metals = Cd, Cu, Pb, Zn
please filter dissolved metals

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow Report Copy Pink - Client Copy

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

December 17, 2003

David VanderMeulen
Envirovision
1220 East 4th Avenue
Olympia, WA 98506

Re: Analytical Data for Project Stormwater
Laboratory Reference No. 0312-109

Dear David:

Enclosed are the analytical results and associated quality control data for samples submitted on December 7, 2003.

Please note that the subcontracted data will follow in the final report.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

Case Narrative

Samples were collected on December 5 and 6, 2003, and received by the laboratory on December 7, 2003. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 12-15-03
Date Analyzed: 12-16-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-109-01
Client ID: Martin Way

Analyte	Method	Result	PQL
Cadmium	200.8	**0.76**	0.20
Copper	200.8	**6.9**	1.0
Lead	200.8	**1.5**	1.0
Zinc	200.8	**36**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 12-15-03
Date Analyzed: 12-16-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-109-02
Client ID: Indian Creek

Analyte	Method	Result	PQL
Cadmium	200.8	**1.9**	0.20
Copper	200.8	**38**	1.0
Lead	200.8	**14**	1.0
Zinc	200.8	**200**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 12-15-03
Date Analyzed: 12-16-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-109-03
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Cadmium	200.8	**0.94**	0.20
Copper	200.8	**17**	1.0
Lead	200.8	**7.6**	1.0
Zinc	200.8	**130**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 12-15-03
Date Analyzed: 12-16-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-109-04
Client ID: Maytown Outlet

Analyte	Method	Result	PQL
Cadmium	200.8	**0.65**	0.20
Copper	200.8	**5.2**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**51**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 12-15-03
Date Analyzed: 12-16-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-109-05
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Cadmium	200.8	**0.72**	0.20
Copper	200.8	**5.2**	1.0
Lead	200.8	**1.0**	1.0
Zinc	200.8	**50**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 12-15-03
Date Analyzed: 12-16-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1215W2

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 12-15-03
Date Analyzed: 12-16-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-119-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**8.04**	**7.38**	9	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**8.00**	**ND**	NA	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 12-15-03
Date Analyzed: 12-16-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-119-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	**105**	95	**106**	96	1	
Copper	110	**98.9**	83	**99.6**	83	1	
Lead	110	**103**	94	**105**	95	1	
Zinc	110	**109**	91	**108**	91	1	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-10-03
Date Analyzed: 12-12-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-109-01
Client ID: Martin Way

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**4.5**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**15**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-10-03
Date Analyzed: 12-12-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-109-02
Client ID: Indian Creek

Analyte	Method	Result	PQL
Cadmium	200.8	**0.42**	0.20
Copper	200.8	**6.7**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**94**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-10-03
Date Analyzed: 12-12-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-109-03
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Cadmium	200.8	**0.26**	0.20
Copper	200.8	**3.5**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**61**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-10-03
Date Analyzed: 12-12-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-109-04
Client ID: Maytown Outlet

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**2.7**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**36**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-10-03
Date Analyzed: 12-12-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-109-05
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**2.9**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**32**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 12-10-03
Date Analyzed: 12-12-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1210D1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 12-10-03
Date Analyzed: 12-12-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-089-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**3.34**	**3.22**	4	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**31.0**	**30.6**	1	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 12-10-03
Date Analyzed: 12-12-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-089-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	40	**38.7**	97	**37.6**	94	3	
Copper	40	**41.0**	94	**43.1**	99	5	
Lead	40	**40.0**	100	**39.3**	98	2	
Zinc	40	**68.4**	94	**68.1**	93	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-16-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-109-01
Client ID: Martin Way

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**19**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-16-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-109-02
Client ID: Indian Creek

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**27**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-16-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-109-03
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**25**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-16-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-109-04
Client ID: Maytown Outlet

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**23**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-16-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-109-05
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**24**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

HARDNESS
EPA 6010B/SM2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 12-16-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: MB1216H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**ND**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

HARDNESS
EPA 6010B/SM2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 12-16-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-109-01

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	**19.5**	**19.4**	1		2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 17, 2003
Samples Submitted: December 7, 2003
Laboratory Reference: 0312-109
Project: Stormwater

HARDNESS
EPA 6010B/SM2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 12-16-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-109-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	**159**	96	**160**	97	1	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Chain of Custody

Company: Envirovision Corporation
Project Number: WSDOT
Project Name: Stormwater
Project Manager: David VanderMeulen
Sampled by: David VanderMeulen

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days)
☐ _____ (other)

Laboratory Number: 12-109

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C	PCB's by 8082	Pesticides by 8081	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	TSS	Total Metals (Cd, Cu, Pb, Zn)	Dissolved Metals (Cd, Cu, Pb, Zn)	Hardness (Phosphorus)	% Moisture
1	Martin Way	12/6/03	0043		4																X	X	X	X	
2	Indian Creek	12/5/03	0615		4																X	X	X	X	
3	Maytown Inlet	12/6/03	0017		4																X	X	X	X	
4	Maytown Outlet	12/6/03	0429		4																X	X	X	X	
5	Field Duplicate	—	—		4																X	X	X	X	

	Signature	Company	Date	Time
Relinquished by	David VanderMeulen	Envirovision Corp	12/7/03	12:00
Received by	[illegible]	OSE Inc	12/7/03	1500
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

December 24, 2003

John Virgin
Tetra Tech, Inc.
6100 219th Street S.W., Suite 550
Mountlake Terrace, WA 98043

Re: Analytical Data for Project 13455-02
Laboratory Reference No. 0312-149

Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on December 15, 2003.

Please note that the subcontracted data will follow in the final report.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

Case Narrative

Samples were collected on December 12 and 13, 2003, and received by the laboratory on December 15, 2003. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-16-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-149-01
Client ID: SR5 DP1-121303

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**16**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-16-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-149-02
Client ID: SR5 DP2-121303

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**13**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-16-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-149-03
Client ID: SR405 CU1-121303

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**37**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-16-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-149-04
Client ID: SR405 CU3-121303

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**37**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-16-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-149-06
Client ID: SR405 UD-121303

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**29**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 12-16-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: MB1216H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**ND**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 12-16-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-109-01

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	**19.5**	**19.4**	1		2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 12-16-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-109-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	**159**	96	**160**	97	1	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-15-03
Date Analyzed: 12-18-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-149-01
Client ID: SR5DP1-121303

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**4.0**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**44**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-15-03
Date Analyzed: 12-18-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-149-02
Client ID: SR5DP2-121303

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**2.8**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**21**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-15-03
Date Analyzed: 12-18-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-149-03
Client ID: SR405CV1-121303

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**2.7**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**8.9**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-15-03
Date Analyzed: 12-18-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-149-04
Client ID: SR405CV3-121303

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**2.9**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**9.9**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-15-03
Date Analyzed: 12-18-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-149-06
Client ID: SR405UD-121303

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**5.7**	1.0
Lead	200.8	**1.4**	1.0
Zinc	200.8	**59**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 12-15-03
Date Analyzed: 12-18-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1215D1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 12-15-03
Date Analyzed: 12-18-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-149-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**3.96**	**3.96**	0	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**43.5**	**41.4**	5	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 12-15-03
Date Analyzed: 12-18-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-149-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	40	**38.1**	95	**39.1**	98	3	
Copper	40	**44.2**	101	**42.0**	95	5	
Lead	40	**39.1**	98	**40.5**	101	3	
Zinc	40	**79.3**	89	**81.5**	95	3	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 12-19-03
Date Analyzed: 12-19&22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-149-01
Client ID: SR5DP1-121303

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**6.2**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**52**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 12-19-03
Date Analyzed: 12-19&22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-149-02
Client ID: SR5DP2-121303

Analyte	Method	Result	PQL
Cadmium	200.8	**0.33**	0.20
Copper	200.8	**4.4**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**33**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 12-19-03
Date Analyzed: 12-19&22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-149-03
Client ID: SR405CV1-121303

Analyte	Method	Result	PQL
Cadmium	200.8	**0.24**	0.20
Copper	200.8	**4.6**	1.0
Lead	200.8	**1.8**	1.0
Zinc	200.8	**18**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 12-19-03
Date Analyzed: 12-19&22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-149-04
Client ID: SR405CV3-121303

Analyte	Method	Result	PQL
Cadmium	200.8	**0.31**	0.20
Copper	200.8	**3.6**	1.0
Lead	200.8	**1.2**	1.0
Zinc	200.8	**13**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 12-19-03
Date Analyzed: 12-19&22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-149-06
Client ID: SR405UD-121303

Analyte	Method	Result	PQL
Cadmium	200.8	**0.51**	0.20
Copper	200.8	**6.1**	1.0
Lead	200.8	**1.9**	1.0
Zinc	200.8	**68**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 12-19-03
Date Analyzed: 12-19&22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1219W1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 12-19-03
Date Analyzed: 12-19&22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-149-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**6.24**	**5.18**	19	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**52.2**	**45.9**	13	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 24, 2003
Samples Submitted: December 15, 2003
Laboratory Reference: 0312-149
Project: 13455-02

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 12-19-03
Date Analyzed: 12-19&22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-149-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	**113**	102	**113**	102	0	
Copper	110	**109**	94	**110**	94	1	
Lead	110	**114**	104	**113**	103	1	
Zinc	110	**165**	103	**162**	100	2	

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OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Laboratory Number: 12-149

Company: Tetra Tech, Inc.
Project Number: 13455-02
Project Name: WSDOT SW Monitoring
Project Manager: John Virgin
Sampled by: John Virgin

Turnaround Request (in working days)
(Check One)
- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Day
- ☐ 3 Day
- ☒ Standard (7 working days)
- ☐ ____ (other)

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	Total Phosphorus, TSS, Hardness	Metals-T, Metals-A			% Moisture
1	SR5DP1-121303	12/12	1300	W	4																X	X			
2	SR5DP2-121303	12/13	0030	W	4																X	X			
3	SR405CV1-121303	12/12	2300	W	4																X	X			
4	SR405CV3-121303	12/13	0100	W	4																X	X			
5	~~SR405CV2-121303~~	~~12/12~~	~~1230~~	~~W~~	~~4/3~~					Cancel 12/16/03											X	X			
6	SR405UD-121303	12/13	0200	W	4																X	X			

	Signature	Company	Date	Time
Relinquished by	[signature]	Tetra Tech	12/15/03	1500
Received by	[signature]	OSE	12.15.03	3:05p
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
* Dissolved metals need to be filtered
metals = Cd, Cu, Pb, Zn
no dissolved metals on SR405CV2-121303

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow Report Copy Pink - Client Copy

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

December 29, 2003

John Virgin
Tetra Tech, Inc.
6100 219th Street SW., Suite 550
Mountlake Terrace, WA 98043

Re: Analytical Data for Project 13455-02
Laboratory Reference No. 0312-166

Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on December 17, 2003.

Please note that the subcontracted data will follow in the final report.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

Case Narrative

Samples were collected on December 16 and 17, 2003, and received by the laboratory on December 17, 2003. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 12-19-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-166-01
Client ID: SR405UD-121603

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	27	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 12-19-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-166-02
Client ID: SR5DP1-121603

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	21	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 12-19-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-166-03
Client ID: SR405OV2-121603

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	35	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 12-19-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-166-04
Client ID: SR405CV1-121603

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	37	2.0

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 12-19-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-166-05
Client ID: SR405CV2-121603

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	37	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 12-19-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-166-06
Client ID: SR5DP2-121603

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	14	2.0

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Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 12-19-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-166-07
Client ID: SR5DP3-121603

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	14	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 12-19-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: MB1219H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	ND	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 12-19-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-166-01

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	27.0	26.9	0		2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 12-19-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-166-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	166	96	166	96	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 12-19-03
Date Analyzed: 12-19&22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-166-01
Client ID: SR405UD-121603

Analyte	Method	Result	PQL
Cadmium	200.8	0.54	0.20
Copper	200.8	6.7	1.0
Lead	200.8	2.4	1.0
Zinc	200.8	64	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 12-19-03
Date Analyzed: 12-19&22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-166-02
Client ID: SR5DP1-121603

Analyte	Method	Result	PQL
Cadmium	200.8	0.30	0.20
Copper	200.8	6.0	1.0
Lead	200.8	1.8	1.0
Zinc	200.8	58	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 12-19-03
Date Analyzed: 12-19 & 22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-166-03
Client ID: SR405OV2-121603

Analyte	Method	Result	PQL
Cadmium	200.8	0.50	0.20
Copper	200.8	12	1.0
Lead	200.8	3.3	1.0
Zinc	200.8	67	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 12-19-03
Date Analyzed: 12-19&22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-166-04
Client ID: SR405CV1-121603

Analyte	Method	Result	PQL
Cadmium	200.8	0.40	0.20
Copper	200.8	3.9	1.0
Lead	200.8	1.3	1.0
Zinc	200.8	24	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 12-19-03
Date Analyzed: 12-19&22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-166-05
Client ID: SR405CV2-121603

Analyte	Method	Result	PQL
Cadmium	200.8	0.30	0.20
Copper	200.8	4.4	1.0
Lead	200.8	1.2	1.0
Zinc	200.8	33	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 12-19-03
Date Analyzed: 12-19&22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-166-06
Client ID: SR5DP2-121603

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	3.2	1.0
Lead	200.8	ND	1.0
Zinc	200.8	25	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 12-19-03
Date Analyzed: 12-19 & 22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-166-07
Client ID: SR5DP3-121603

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	3.7	1.0
Lead	200.8	ND	1.0
Zinc	200.8	28	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 12-19-03
Date Analyzed: 12-19&22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1219W1

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	ND	1.0
Lead	200.8	ND	1.0
Zinc	200.8	ND	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 12-19-03
Date Analyzed: 12-19 & 22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-149-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	ND	ND	NA	0.20	
Copper	6.24	5.18	19	1.0	
Lead	ND	ND	NA	1.0	
Zinc	52.2	45.9	13	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 12-19-03
Date Analyzed: 12-19&22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-149-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	113	102	113	102	0	
Copper	110	109	94	110	94	1	
Lead	110	114	104	113	103	1	
Zinc	110	165	103	162	100	2	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-17-03
Date Analyzed: 12-18 & 22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-166-01
Client ID: SR404UD-121603

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	5.6	1.0
Lead	200.8	1.2	1.0
Zinc	200.8	70	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-17-03
Date Analyzed: 12-18 & 22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-166-02
Client ID: SR5DP1-121603

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	4.1	1.0
Lead	200.8	ND	1.0
Zinc	200.8	49	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-17-03
Date Analyzed: 12-18 & 22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-166-03
Client ID: SR405OV2-121603

Analyte	Method	Result	PQL
Cadmium	200.8	0.24	0.20
Copper	200.8	7.1	1.0
Lead	200.8	ND	1.0
Zinc	200.8	52	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-17-03
Date Analyzed: 12-18 & 22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-166-04
Client ID: SR405CV1-121603

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	3.2	1.0
Lead	200.8	ND	1.0
Zinc	200.8	20	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-17-03
Date Analyzed: 12-18 & 22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-166-05
Client ID: SR405CV2-121603

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	3.8	1.0
Lead	200.8	ND	1.0
Zinc	200.8	18	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-17-03
Date Analyzed: 12-18 & 22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-166-06
Client ID: SR5DP2-121603

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	2.7	1.0
Lead	200.8	ND	1.0
Zinc	200.8	21	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-17-03
Date Analyzed: 12-18 & 22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-166-07
Client ID: SR5DP3-121603

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	2.6	1.0
Lead	200.8	ND	1.0
Zinc	200.8	21	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 12-17-03
Date Analyzed: 12-18 & 22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1217D2

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	ND	1.0
Lead	200.8	ND	1.0
Zinc	200.8	ND	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 12-17-03
Date Analyzed: 12-18 & 22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-149-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	ND	ND	NA	0.20	
Copper	3.96	3.96	0	1.0	
Lead	ND	ND	NA	1.0	
Zinc	43.5	41.4	5	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 17, 2003
Laboratory Reference: 0312-166
Project: 13455-02

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 12-17-03
Date Analyzed: 12-18 & 22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-149-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	40	38.1	95	39.1	98	3	
Copper	40	44.2	101	42.0	95	5	
Lead	40	39.1	98	40.5	101	3	
Zinc	40	79.3	89	81.5	95	3	

This report pertains to the samples analyzed in accordance with the chain of custody,
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OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical_____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Company: Tetra Tech, Inc
Project Number: 17455-02
Project Name: WSDOT SW Monitoring
Project Manager: John Virgin
Sampled by: John Virgin

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days)
☐ _____ (other)

Laboratory Number: 12-166

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	TSS, Hardness, Total Phosphorus	Metals, TBD			% Moisture
1	SR405UD-121603	12/16	1500	W	4																X	X			
2	SR5DP1-121603	12/16	1500	W	4																X	X			
3	SR405OV2-121603	12/16	1330	W	4																X	X			
4	SR405CV1-121603	12/16	1430	W	4																X	X			
5	SR405CV2-121603	12/16	2100	W	4																X	X			
6	SR5DP2-121603	12/17	0400	W	4																X	X			
7	SR5DP3-121603	12/16	1200	W	4																X	X			

	Signature	Company	Date	Time
Relinquished by	[signature]	Tetra Tech	12/17/03	13:50
Received by	[signature]	OnSite Env	12/17/03	1350
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
Filter dissolved metals
metals = Cd, Cu, Pb, Zn

Chromatograms with final report ☐

DISTRIBUTION LEGEND White OnSite Copy Yellow - Report Copy Pink Client Copy

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

December 29, 2003

David VanderMeulen
Enviovision
1220 East 4th Avenue
Olympia, WA 98506

Re: Analytical Data for Project Stormwater
Laboratory Reference No. 0312-183

Dear David:

Enclosed are the analytical results and associated quality control data for samples submitted on December 18, 2003.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

Case Narrative

Samples were collected on December 13 and 14, 2003, and received by the laboratory on December 18, 2003. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 12-19-03
Date Analyzed: 12-19&22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-183-01
Client ID: Martin Way

Analyte	Method	Result	PQL
Cadmium	200.8	1.5	0.20
Copper	200.8	5.7	1.0
Lead	200.8	1.5	1.0
Zinc	200.8	69	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 12-19-03
Date Analyzed: 12-19&22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-183-02
Client ID: Indian Creek

Analyte	Method	Result	PQL
Cadmium	200.8	1.6	0.20
Copper	200.8	28	1.0
Lead	200.8	15	1.0
Zinc	200.8	150	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 12-19-03
Date Analyzed: 12-19&22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-183-03
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Cadmium	200.8	1.2	0.20
Copper	200.8	14	1.0
Lead	200.8	5.9	1.0
Zinc	200.8	98	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 12-19-03
Date Analyzed: 12-19&22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-183-04
Client ID: Maytown Outlet

Analyte	Method	Result	PQL
Cadmium	200.8	1.7	0.20
Copper	200.8	4.8	1.0
Lead	200.8	0.64	1.0
Zinc	200.8	36	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 12-19-03
Date Analyzed: 12-19&22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-183-05
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Cadmium	200.8	1.9	0.20
Copper	200.8	14	1.0
Lead	200.8	5.6	1.0
Zinc	200.8	93	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 12-19-03
Date Analyzed: 12-19&22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1219W1

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	ND	1.0
Lead	200.8	ND	1.0
Zinc	200.8	ND	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 12-19-03
Date Analyzed: 12-19 & 22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-149-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	ND	ND	NA	0.20	
Copper	6.24	5.18	19	1.0	
Lead	ND	ND	NA	1.0	
Zinc	52.2	45.9	13	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 12-19-03
Date Analyzed: 12-19&22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-149-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	113	102	113	102	0	
Copper	110	109	94	110	94	1	
Lead	110	114	104	113	103	1	
Zinc	110	165	103	162	100	2	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-18-03
Date Analyzed: 12-18, 19 & 22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-183-01
Client ID: Martin Way

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	4.9	1.0
Lead	200.8	ND	1.0
Zinc	200.8	22	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-18-03
Date Analyzed: 12-18, 19 & 22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-183-02
Client ID: Indian Creek

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	4.1	1.0
Lead	200.8	ND	1.0
Zinc	200.8	60	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-18-03
Date Analyzed: 12-18, 19 & 22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-183-03
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	2.8	1.0
Lead	200.8	ND	1.0
Zinc	200.8	57	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-18-03
Date Analyzed: 12-18, 19 & 22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-183-04
Client ID: Maytown Outlet

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	3.6	1.0
Lead	200.8	ND	1.0
Zinc	200.8	30	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-18-03
Date Analyzed: 12-18, 19 & 22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-183-05
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Cadmium	200.8	0.20	0.20
Copper	200.8	3.4	1.0
Lead	200.8	ND	1.0
Zinc	200.8	62	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 12-18-03
Date Analyzed: 12-18,19&22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1218D1

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	ND	1.0
Lead	200.8	ND	1.0
Zinc	200.8	ND	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 12-18-03
Date Analyzed: 12-18, 19 & 22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-149-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	ND	ND	NA	0.20	
Copper	3.96	3.96	0	1.0	
Lead	ND	ND	NA	1.0	
Zinc	43.5	41.4	5	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 12-18-03
Date Analyzed: 12-18, 19 & 22-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-149-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	40	38.1	95	39.1	98	3	
Copper	40	44.2	101	42.0	95	5	
Lead	40	39.1	98	40.5	101	3	
Zinc	40	79.3	89	81.5	95	3	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 12-19-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-183-01
Client ID: Martin Way

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	17	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 12-19-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12183-02
Client ID: Indian Creek

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	12	2.0

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 12-19-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-183-03
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	15	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 12-19-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-183-04
Client ID: Maytown Outlet

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	27	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 12-19-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-183-05
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	15	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

HARDNESS
EPA 6010B/SM 2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 12-19-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: MB1219H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	ND	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

HARDNESS
EPA 6010B/SM 2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 12-19-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-166-01

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	27.0	26.9	0		2.0

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: December 29, 2003
Samples Submitted: December 18, 2003
Laboratory Reference: 0312-183
Project: Stormwater

HARDNESS
EPA 6010B/SM 2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 12-19-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-166-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	166	96	166	96	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical_____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone (425) 883-3881 • Fax (425) 885-4603

Company: EnviroVision Corporation
Project Number: WSDOT
Project Name: Stormwater
Project Manager: David Vander Meulen
Sampled by: David Vander Meulen

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days)
☐ ___ (other)

Laboratory Number: 12-183

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	TSS	Total Metals (Cd, Cu, Pb, Zn)	Dissolved Metals (Cd, Cu, Pb, Zn)	Hardness/phosphorus	% Moisture
1	Martin Way	12/14/03	0987		4																X	X	X	X	
2	Indian Creek	12/13/03	0822		4																X	X	X	X	
3	Maytown Inlet	12/13/03	0954		4																X	X	X	X	
4	Maytown Outlet	12/13/03	1259		4																X	X	X	X	
5	Field Duplicate	—	—		4																X	X	X	X	

	Signature	Company	Date	Time
Relinquished by	David Vander Meulen	EnviroVision Corp.	12/15/03	1630
Received by	[illegible]	OnSite Env	12/15/03	1630
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
Bottles labeled "Demineralized Water" contain Tap Water. Used for Ice Only.

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

January 6, 2004

John Virgin
Tetra Tech, Inc.
6100 219th Street S.W., Suite 550
Mountlake Terrace, WA 98043

Re: Analytical Data for Project 13455-02
Laboratory Reference No. 0312-208

Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on December 22, 2003.

Please note that the subcontracted data will follow in the final report.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

Case Narrative

Samples were collected on December 20, 2003, and received by the laboratory on December 22, 2003. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 12-29-03
Date Analyzed: 1-5-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-208-01
Client ID: SR5DP1-122003

Analyte	Method	Result	PQL
Cadmium	200.8	**0.21**	0.20
Copper	200.8	**5.9**	1.0
Lead	200.8	**1.2**	1.0
Zinc	200.8	**61**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 12-29-03
Date Analyzed: 1-5-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-208-02
Client ID: SR5DP3-122003

Analyte	Method	Result	PQL
Cadmium	200.8	**0.49**	0.20
Copper	200.8	**5.8**	1.0
Lead	200.8	**1.1**	1.0
Zinc	200.8	**63**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 12-29-03
Date Analyzed: 1-5-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-208-03
Client ID: SR405OV2-122003

Analyte	Method	Result	PQL
Cadmium	200.8	**0.33**	0.20
Copper	200.8	**11**	1.0
Lead	200.8	**4.2**	1.0
Zinc	200.8	**74**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 12-29-03
Date Analyzed: 1-5-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-208-04
Client ID: SR405B5-122003

Analyte	Method	Result	PQL
Cadmium	200.8	**0.22**	0.20
Copper	200.8	**6.2**	1.0
Lead	200.8	**1.0**	1.0
Zinc	200.8	**16**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 12-29-03
Date Analyzed: 1-5-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-208-05
Client ID: SR405UD-122003

Analyte	Method	Result	PQL
Cadmium	200.8	**0.24**	0.20
Copper	200.8	**7.4**	1.0
Lead	200.8	**2.7**	1.0
Zinc	200.8	**75**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 12-29-03
Date Analyzed: 1-5-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1229W1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 12-29-03
Date Analyzed: 1-5-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-208-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**0.213**	**ND**	NA	0.20	
Copper	**5.89**	**5.31**	10	1.0	
Lead	**1.20**	**1.06**	13	1.0	
Zinc	**61.1**	**59.3**	3	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 12-29-03
Date Analyzed: 1-5-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-208-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	**126**	114	**109**	99	14	
Copper	110	**130**	112	**120**	104	8	
Lead	110	**116**	105	**108**	97	8	
Zinc	110	**190**	118	**172**	101	10	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-23-03
Date Analyzed: 12-30-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-208-01
Client ID: SR5DP1-122003

Analyte	Method	Result	PQL
Cadmium	200.8	**0.25**	0.20
Copper	200.8	**4.8**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**53**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-23-03
Date Analyzed: 12-30-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-208-02
Client ID: SR5DP3-122003

Analyte	Method	Result	PQL
Cadmium	200.8	**0.35**	0.20
Copper	200.8	**4.6**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**51**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-23-03
Date Analyzed: 12-30-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-208-03
Client ID: SR405OV2-122003

Analyte	Method	Result	PQL
Cadmium	200.8	**0.24**	0.20
Copper	200.8	**6.2**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**48**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-23-03
Date Analyzed: 12-30-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-208-04
Client ID: SR405BS-122003

Analyte	Method	Result	PQL
Cadmium	200.8	**0.41**	0.20
Copper	200.8	**5.9**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**15**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 12-23-03
Date Analyzed: 12-30-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-208-05
Client ID: SR405UD-122003

Analyte	Method	Result	PQL
Cadmium	200.8	**0.84**	0.20
Copper	200.8	**6.2**	1.0
Lead	200.8	**2.2**	1.0
Zinc	200.8	**72**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 12-23-03
Date Analyzed: 12-30-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1223D1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 12-23-03
Date Analyzed: 12-30-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-208-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**0.252**	**0.228**	10	0.20	
Copper	**4.82**	**4.86**	1	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**52.8**	**54.2**	3	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 12-23-03
Date Analyzed: 12-30-03

Matrix: Water
Units: ug/L (ppb)

Lab ID: 12-208-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	80	**73.7**	92	**78.3**	98	6	
Copper	80	**77.8**	91	**81.5**	96	5	
Lead	80	**72.7**	91	**77.5**	97	6	
Zinc	80	**126**	92	**130**	96	3	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-30-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-208-01
Client ID: SR5DP1-122003

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**18**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-30-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-208-02
Client ID: SR5DP3-122003

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**18**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-30-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-208-03
Client ID: SR405OV2-122003

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**35**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-30-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-208-04
Client ID: SR405BS-122003

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**42**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 12-30-03

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 12-208-05
Client ID: SR405UD-122003

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**30**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 12-30-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: MB1230H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**ND**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 12-30-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-208-02

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	**18.3**	**18.3**	0		2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 6, 2004
Samples Submitted: December 22, 2003
Laboratory Reference: 0312-208
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 12-30-03

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 12-208-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	**159**	97	**159**	97	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885 4603

Company: Tetra Tech
Project Number: 13455-02
Project Name: WSDOT SW
Project Manager: John Virgin
Sampled by: John Virgin

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Day
- ☐ 3 Day
- ☑ Standard (7 working days)
- ☐ _____ (other)

Laboratory Number: 12-208

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	TSS, Total Phosphorus	Dissolved metals	Total metals (hardness)	(Cu, Pb, Zn)	% Moisture
1	SR5DP1-122003	12/20/03	0700	W	4																X	X	X		
2	SR5DP3-122003	12/20	0800	W	4																X	X	X		
3	SR405OV2-122003	12/20	0030	W	4																X	X	X		
4	SR405RB-122003	12/20	0330	W	4																X	X	X		
5	SR405UD-122003	12/20	0730	W	4																X	X	X		

	Signature	Company	Date	Time
Relinquished by	[signature]	Tetra Tech	12/24/03	13:50
Received by	[signature]	OnSite Env.	12/24/03	13:50
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions: Please filter dissolved metals

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow Report Copy Pink - Client Copy

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

January 28, 2004

John Virgin
Tetra Tech, Inc.
6100 219th Street S.W., Suite 550
Mountlake Terrace, WA 98043

Re: Analytical Data for Project 13455-02
Laboratory Reference No. 0401-079

Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on January 16, 2004.

Please note that the subcontracted data will follow in the final report.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

Case Narrative

Samples were collected on January 15, 2004 and received by the laboratory on January 16, 2004. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 1-22&26-04
Date Analyzed: 1-22&26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-079-01
Client ID: SR405BS-011504

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**6.7**	1.0
Lead	200.8	**1.6**	1.0
Zinc	200.8	**26**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 1-22&26-04
Date Analyzed: 1-22&26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-079-02
Client ID: SR405CV1-011504

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**4.4**	1.0
Lead	200.8	**1.0**	1.0
Zinc	200.8	**29**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 1-22&26-04
Date Analyzed: 1-22&26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-079-03
Client ID: SR405OV1-011504

Analyte	Method	Result	PQL
Cadmium	200.8	**0.96**	0.20
Copper	200.8	**38**	1.0
Lead	200.8	**28**	1.0
Zinc	200.8	**250**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 1-22&26-04
Date Analyzed: 1-22&26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-079-04
Client ID: SR5DP2-011504

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**2.0**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**38**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 1-22&26-04
Date Analyzed: 1-22&26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-079-05
Client ID: SR5DP1-011504

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**6.7**	1.0
Lead	200.8	**1.1**	1.0
Zinc	200.8	**49**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 1-22&26-04
Date Analyzed: 1-22&26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-079-06
Client ID: SR405CV2-011504

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**3.2**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**23**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 1-22-04
Date Analyzed: 1-22&26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0122W1

Analyte	Method	Result	PQL
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

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and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 1-26-04
Date Analyzed: 1-26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0126W1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 1-22-04
Date Analyzed: 1-22&26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-079-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Copper	**4.38**	**3.78**	15	1.0	
Lead	**1.04**	**1.04**	1	1.0	
Zinc	**28.6**	**25.3**	12	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 1-26-04
Date Analyzed: 1-26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-079-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 1-22-04
Date Analyzed: 1-22&26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-079-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Copper	110	**119**	104	**125**	109	5	
Lead	110	**120**	108	**119**	107	1	
Zinc	110	**139**	100	**143**	104	3	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 1-26-04
Date Analyzed: 1-26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-079-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	**107**	97	**112**	102	5	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 1-21-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-079-01
Client ID: SR405BS-011504

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**39**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 1-21-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-079-02
Client ID: SR405CV1-011504

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**34**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 1-21-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-079-03
Client ID: SR405OV1-011504

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**69**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 1-21-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-079-04
Client ID: SR5DP2-011504

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**18**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 1-21-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-079-05
Client ID: SR5DP1-011504

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**15**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 1-21-04

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 01-079-06
Client ID: SR405CV2-011504

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**33**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 1-21-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: MB0121H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**ND**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 1-21-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-079-01

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	**39.3**	**39.1**	1		2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 1-21-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-079-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	**178**	96	**178**	96	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 1-16-04
Date Analyzed: 1-22-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-079-01
Client ID: SR405BS-011504

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**5.1**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**16**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 1-16-04
Date Analyzed: 1-22-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-079-02
Client ID: SR405CV1-011504

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**3.5**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**18**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 1-16-04
Date Analyzed: 1-22-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-079-03
Client ID: SR405OV1-011504

Analyte	Method	Result	PQL
Cadmium	200.8	**0.25**	0.20
Copper	200.8	**9.4**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**74**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 1-16-04
Date Analyzed: 1-22-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-079-04
Client ID: SR5DP2-011504

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**2.5**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**32**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 1-16-04
Date Analyzed: 1-22-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-079-05
Client ID: SR5DP1-011504

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**6.9**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**39**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 1-16-04
Date Analyzed: 1-22-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-079-06
Client ID: SR405CV2-011504

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**2.8**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**16**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 1-16-04
Date Analyzed: 1-22-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0116D1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 1-16-04
Date Analyzed: 1-22-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-079-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**5.15**	**5.68**	10	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**16.0**	**15.5**	3	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 28, 2004
Samples Submitted: January 16, 2004
Laboratory Reference: 0401-079
Project: 13455-02

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 1-16-04
Date Analyzed: 1-22-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-079-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	40	**37.0**	93	**35.8**	90	3	
Copper	40	**49.6**	111	**48.8**	109	2	
Lead	40	**38.0**	95	**38.6**	97	2	
Zinc	40	**54.0**	95	**53.3**	93	1	

This report pertains to the samples analyzed in accordance with the chain of custody,
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OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone (425) 883-3881 • Fax (425) 885-4603

Company: Tetra Tech
Project Number: B455-02
Project Name: WSDOT SW
Project Manager: John Virgin
Sampled by: Jessica Williams

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days)
☐ _____ (other)

Laboratory Number: 01-079

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C - SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	Total Metals/Hardness	Dissolved metals	TSS	Total Phosphorous	% Moisture
1	SR405BS-011504	1/15/04	12:30	W	3																X	X	X		
2	SR405CV1-011504	1/15/04	13:00	W	4																X	X	X	X	
3	SR405OV1-011504	1/15/04	14:00	W	4																X	X	X	X	
4	SR5DP2-011504	1/15/04	11:00	W	4																X	X	X	X	
5	SR5DP1-011504	1/15/04	11:15	W	4																X	X	X	X	
~~6~~	~~SR5OV2-011504~~	~~1/15/04~~	~~13:20~~	~~W~~	~~4~~																				
6	SR405OV2-011504	1/15/04	13:20	W	4																X	X	X	X	

SW wrong Sample ID # (re-written)

	Signature	Company	Date	Time
Relinquished by	Jessica Williams	Tetra Tech	1/16/04	10:17
Received by	[illegible]	OnSite Em	1/16/04	10:17
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions: Please filter dissolved metals

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

February 3, 2004

John Virgin
Tetra Tech, Inc.
6100 219th Street S.W., Suite 550
Mountlake Terrace, WA 98043

Re: Analytical Data for Project 13455-02
Laboratory Reference No. 0401-132

Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on January 26, 2004.

Please note that the subcontracted data will follow in the final report.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

Case Narrative

Samples were collected on January 26, 2004 and received by the laboratory on January 26, 2004. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 1-28-04
Date Analyzed: 1-28&29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-132-01
Client ID: SR405OV1-012604

Analyte	Method	Result	PQL
Cadmium	200.8	**1.3**	0.20
Copper	200.8	**61**	1.0
Lead	200.8	**92**	1.0
Zinc	200.8	**350**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 1-28-04
Date Analyzed: 1-28&29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-132-02
Client ID: SR405BS-012604

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**6.0**	1.0
Lead	200.8	**1.5**	1.0
Zinc	200.8	**16**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 1-28-04
Date Analyzed: 1-28&29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-132-03
Client ID: SR5DP1-012604

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**4.0**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**33**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 1-28-04
Date Analyzed: 1-28&29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-132-04
Client ID: SR5DP2-012604

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**3.4**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**29**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 1-28-04
Date Analyzed: 1-28&29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-132-05
Client ID: SR405CV1-012604

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**4.5**	1.0
Lead	200.8	**1.3**	1.0
Zinc	200.8	**17**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 1-28-04
Date Analyzed: 1-28&29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-132-06
Client ID: SR405CV2-012604

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**5.4**	1.0
Lead	200.8	**3.0**	1.0
Zinc	200.8	**26**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 1-28-04
Date Analyzed: 1-28&29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-132-07
Client ID: SR405CV3-012604

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**5.5**	1.0
Lead	200.8	**3.2**	1.0
Zinc	200.8	**27**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 1-28-04
Date Analyzed: 1-28&29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0128W1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 1-28-04
Date Analyzed: 1-28&29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-129-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**1.13**	**ND**	NA	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**6.69**	**6.26**	7	5.0	

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and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 1-28-04
Date Analyzed: 1-28&29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-129-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	**117**	106	**120**	109	3	
Copper	110	**115**	104	**120**	108	4	
Lead	110	**124**	113	**125**	114	1	
Zinc	110	**123**	105	**124**	107	1	

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Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 1-28-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-132-01
Client ID: SR405OV1-012604

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**17**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 1-28-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-132-02
Client ID: SR405BS-012604

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**35**	2.0

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Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 1-28-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-132-03
Client ID: SR5DP1-012604

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**10**	2.0

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Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 1-28-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-132-04
Client ID: SR5DP2-012604

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**18**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 1-28-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-132-05
Client ID: SR405CV1-012604

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**28**	2.0

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Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 1-28-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-132-06
Client ID: SR405CV2-012604

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**22**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 1-28-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-132-07
Client ID: SR405CV3-012604

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**22**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 1-28-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: MB0128H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**ND**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 1-28-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-132-02

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	**34.5**	**34.3**	1		2.0

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Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 1-28-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-132-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	**171**	95	**172**	95	1	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 1-27-04
Date Analyzed: 1-29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-132-01
Client ID: SR405OV1-012604

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**2.0**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**27**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 1-27-04
Date Analyzed: 1-29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-132-02
Client ID: SR405BS-012604

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**5.8**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**13**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 1-27-04
Date Analyzed: 1-29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-132-03
Client ID: SR5DP1-012604

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**3.6**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**28**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 1-27-04
Date Analyzed: 1-29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-132-04
Client ID: SR5DP2-012604

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**2.8**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**24**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 1-27-04
Date Analyzed: 1-29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-132-05
Client ID: SR405CV1-012604

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**4.4**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**16**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 1-27-04
Date Analyzed: 1-29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-132-06
Client ID: SR405CV2-012604

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**5.0**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**19**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 1-27-04
Date Analyzed: 1-29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-132-07
Client ID: SR405CV3-012604

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**3.9**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**15**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 1-27-04
Date Analyzed: 1-29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0127D1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 1-27-04
Date Analyzed: 1-29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-132-03

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**3.60**	**3.51**	3	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**28.2**	**30.2**	7	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 3, 2004
Samples Submitted: January 26, 2004
Laboratory Reference: 0401-132
Project: 13455-02

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 1-27-04
Date Analyzed: 1-29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-132-03

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	40	**37.3**	93	**37.4**	93	0	
Copper	40	**41.0**	93	**41.9**	96	2	
Lead	40	**38.5**	96	**38.9**	97	1	
Zinc	40	**64.1**	90	**72.6**	111	12	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone (425) 883 3881 • Fax (425) 885-4603

Company: Tetra Tech
Project Number: 13455-02
Project Name: WSDOT SW
Project Manager: John Virgin
Sampled by: Jessica Williams

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days)
☐ ____ (other)

Laboratory Number: 01-132

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	total metals/Hardness	Dissolved metals	TSS	total Phosphorous	% Moisture
1	SR405UV1-012604	1/26/04																			X	X	X	X	
2	SR405BS-012604	↓																			X	X	X	X	
3	SR5DP1-012604																				X	X	X	X	
4	SR5DP2-012604																				X	X	X	X	
5	SR405CV1-012604																				X	X	X	X	
6	SR405CV2-012604																				X	X	X	X	
7	SR405CV3-012604	↓																			X	X	X	X	

	Signature	Company	Date	Time
Relinquished by	Jessica Williams	Tetra Tech	1/26/04	3:30
Received by	[illegible]	OnSite Env.	1/26/04	15:30
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
Please filter dissolved metals

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

February 4, 2004

David VanderMeulen
Envirovision
1220 East 4th Avenue
Olympia, WA 98506

Re: Analytical Data for Project WSDOT
Laboratory Reference No. 0401-135

Dear David:

Enclosed are the analytical results and associated quality control data for samples submitted on January 27, 2004.

Please note that the subcontracted data will follow in the final report.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 4, 2004
Samples Submitted: January 27, 2004
Laboratory Reference: 0401-135
Project: WSDOT

Case Narrative

Samples were collected on January 23, 2004 and received by the laboratory on January 27, 2004. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 4, 2004
Samples Submitted: January 27, 2004
Laboratory Reference: 0401-135
Project: WSDOT

TOTAL METALS
EPA 200.8

Date Extracted: 1-28-04
Date Analyzed: 1-28&29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-135-01
Client ID: Indian Creek

Analyte	Method	Result	PQL
Cadmium	200.8	**1.8**	0.20
Copper	200.8	**62**	1.0
Lead	200.8	**40**	1.0
Zinc	200.8	**310**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 4, 2004
Samples Submitted: January 27, 2004
Laboratory Reference: 0401-135
Project: WSDOT

TOTAL METALS
EPA 200.8

Date Extracted: 1-28-04
Date Analyzed: 1-28&29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-135-02
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Cadmium	200.8	**0.85**	0.20
Copper	200.8	**18**	1.0
Lead	200.8	**6.3**	1.0
Zinc	200.8	**140**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 4, 2004
Samples Submitted: January 27, 2004
Laboratory Reference: 0401-135
Project: WSDOT

TOTAL METALS
EPA 200.8

Date Extracted: 1-28-04
Date Analyzed: 1-28&29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-135-03
Client ID: Maytown Outlet

Analyte	Method	Result	PQL
Cadmium	200.8	**0.30**	0.20
Copper	200.8	**6.4**	1.0
Lead	200.8	**1.2**	1.0
Zinc	200.8	**66**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 4, 2004
Samples Submitted: January 27, 2004
Laboratory Reference: 0401-135
Project: WSDOT

TOTAL METALS
EPA 200.8

Date Extracted: 1-28-04
Date Analyzed: 1-28&29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-135-04
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Cadmium	200.8	**0.34**	0.20
Copper	200.8	**8.0**	1.0
Lead	200.8	**1.3**	1.0
Zinc	200.8	**64**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 4, 2004
Samples Submitted: January 27, 2004
Laboratory Reference: 0401-135
Project: WSDOT

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 1-28-04
Date Analyzed: 1-28&29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0128W1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 4, 2004
Samples Submitted: January 27, 2004
Laboratory Reference: 0401-135
Project: WSDOT

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 1-28-04
Date Analyzed: 1-28&29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-129-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**1.13**	**ND**	NA	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**6.69**	**6.26**	7	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 4, 2004
Samples Submitted: January 27, 2004
Laboratory Reference: 0401-135
Project: WSDOT

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 1-28-04
Date Analyzed: 1-28&29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-129-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	**117**	106	**120**	109	3	
Copper	110	**115**	104	**120**	108	4	
Lead	110	**124**	113	**125**	114	1	
Zinc	110	**123**	105	**124**	107	1	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 4, 2004
Samples Submitted: January 27, 2004
Laboratory Reference: 0401-135
Project: WSDOT

DISSOLVED METALS
EPA 200.8

Date Filtered: 1-28-04
Date Analyzed: 1-29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-135-01
Client ID: Indian Creek

Analyte	Method	Result	PQL
Cadmium	200.8	**0.42**	0.20
Copper	200.8	**5.7**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**63**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 4, 2004
Samples Submitted: January 27, 2004
Laboratory Reference: 0401-135
Project: WSDOT

DISSOLVED METALS
EPA 200.8

Date Filtered: 1-28-04
Date Analyzed: 1-29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-135-02
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Cadmium	200.8	**0.34**	0.20
Copper	200.8	**5.0**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**63**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 4, 2004
Samples Submitted: January 27, 2004
Laboratory Reference: 0401-135
Project: WSDOT

DISSOLVED METALS
EPA 200.8

Date Filtered: 1-28-04
Date Analyzed: 1-29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-135-03
Client ID: Maytown Outlet

Analyte	Method	Result	PQL
Cadmium	200.8	**0.21**	0.20
Copper	200.8	**3.8**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**40**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 4, 2004
Samples Submitted: January 27, 2004
Laboratory Reference: 0401-135
Project: WSDOT

DISSOLVED METALS
EPA 200.8

Date Filtered: 1-28-04
Date Analyzed: 1-29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-135-04
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Cadmium	200.8	**0.24**	0.20
Copper	200.8	**3.7**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**41**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 4, 2004
Samples Submitted: January 27, 2004
Laboratory Reference: 0401-135
Project: WSDOT

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 1-28-04
Date Analyzed: 1-29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0128D1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 4, 2004
Samples Submitted: January 27, 2004
Laboratory Reference: 0401-135
Project: WSDOT

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 1-28-04
Date Analyzed: 1-29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-132-03

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**3.60**	**3.51**	3	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**28.2**	**30.2**	7	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 4, 2004
Samples Submitted: January 27, 2004
Laboratory Reference: 0401-135
Project: WSDOT

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 1-28-04
Date Analyzed: 1-29-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-132-03

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	40	**37.3**	93	**37.4**	93	0	
Copper	40	**41.0**	93	**41.9**	96	2	
Lead	40	**38.5**	96	**38.9**	97	1	
Zinc	40	**64.1**	90	**72.6**	111	12	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 4, 2004
Samples Submitted: January 27, 2004
Laboratory Reference: 0401-135
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 1-30-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-135-01
Client ID: Indian Creek

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**34**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 4, 2004
Samples Submitted: January 27, 2004
Laboratory Reference: 0401-135
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 1-30-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-135-02
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**50**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 4, 2004
Samples Submitted: January 27, 2004
Laboratory Reference: 0401-135
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 1-30-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-135-03
Client ID: Maytown Outlet

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**41**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 4, 2004
Samples Submitted: January 27, 2004
Laboratory Reference: 0401-135
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 1-30-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-135-04
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**41**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 4, 2004
Samples Submitted: January 27, 2004
Laboratory Reference: 0401-135
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 1-30-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: MB0130H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**ND**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 4, 2004
Samples Submitted: January 27, 2004
Laboratory Reference: 0401-135
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 1-30-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-135-03

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	**40.8**	**40.6**	1		2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 4, 2004
Samples Submitted: January 27, 2004
Laboratory Reference: 0401-135
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 1-30-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-135-03

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	**178**	95	**178**	95	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

February 11, 2004

John Virgin
Tetra Tech, Inc.
6100 219th Street S.W., Suite 550
Mountlake Terrace, WA 98043

Re: Analytical Data for Project 13455-02
Laboratory Reference No. 0401-165

Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on January 30, 2004.

Please note that the subcontracted data will follow in the final report.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

Case Narrative

Samples were collected on January 30, 2004 and received by the laboratory on January 30, 2004. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 2-4-04
Date Analyzed: 2-6&10-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-165-01
Client ID: SR405BS-013004

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**4.5**	1.0
Lead	200.8	**1.3**	1.0
Zinc	200.8	**14**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 2-4-04
Date Analyzed: 2-6&10-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-165-02
Client ID: SR405CV2-013004

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**4.1**	1.0
Lead	200.8	**1.5**	1.0
Zinc	200.8	**19**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 2-4-04
Date Analyzed: 2-6&10-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-165-03
Client ID: SR405OV1-013004

Analyte	Method	Result	PQL
Cadmium	200.8	**0.46**	0.20
Copper	200.8	**35**	1.0
Lead	200.8	**30**	1.0
Zinc	200.8	**190**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 2-4-04
Date Analyzed: 2-6&10-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-165-04
Client ID: SR5DP1-013004

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**2.7**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**22**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 2-4-04
Date Analyzed: 2-6&10-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-165-05
Client ID: SR405OV3-013004

Analyte	Method	Result	PQL
Cadmium	200.8	**0.59**	0.20
Copper	200.8	**50**	1.0
Lead	200.8	**49**	1.0
Zinc	200.8	**240**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 2-4-04
Date Analyzed: 2-6-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0204W1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 2-4-04
Date Analyzed: 2-6-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-001-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**0.899**	**0.760**	17	0.20	
Copper	**1.17**	**ND**	NA	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**10300**	**10200**	1	250.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 2-4-04
Date Analyzed: 2-6-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-001-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	**118**	106	**113**	102	5	
Copper	110	**116**	104	**109**	98	6	
Lead	110	**109**	99	**106**	96	3	
Zinc	110	**10500**	221	**10100**	-180	4	A

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-4-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-165-01
Client ID: SR405BS-013004

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**20**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-4-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-165-02
Client ID: SR405CV2-013004

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**22**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-4-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-165-03
Client ID: SR405OV1-013004

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**18**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-4-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-165-04
Client ID: SR5DP2-013004

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**15**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-4-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-165-05
Client ID: SR405OV3-013004

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**21**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 2-4-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: MB0204H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**ND**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 2-4-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-165-04

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	**15.3**	**15.1**	1		2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 2-4-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-165-04

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	**156**	97	**157**	98	1	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-2-04
Date Analyzed: 2-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-165-01
Client ID: SR405BS-013004

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**4.3**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**12**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-2-04
Date Analyzed: 2-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-165-02
Client ID: SR405CV2-013004

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**3.3**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**13**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-2-04
Date Analyzed: 2-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-165-03
Client ID: SR405OV1-013004

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**4.7**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**45**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-2-04
Date Analyzed: 2-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-165-04
Client ID: SR5DP2-013004

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**2.6**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**24**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-2-04
Date Analyzed: 2-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-165-05
Client ID: SR405OV3-013004

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**4.0**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**45**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 2-2-04
Date Analyzed: 2-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0202D1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 2-2-04
Date Analyzed: 2-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-165-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**4.32**	**4.30**	1	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**11.5**	**11.7**	2	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 2-2-04
Date Analyzed: 2-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-165-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	80	**79.1**	99	**79.3**	99	0	
Copper	80	**84.9**	101	**83.9**	99	1	
Lead	80	**80.8**	101	**81.2**	101	0	
Zinc	80	**90.7**	99	**91.0**	99	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: January 30, 2004
Laboratory Reference: 0401-165
Project: 13455-02

TOTAL SUSPENDED SOLIDS
EPA 160.2

Date Analyzed: 2-4-04

Matrix: Water
Units: mg/L

Client ID	Lab ID	**Result**	PQL
SR405BS-013004	01-165-01	**3.0**	0.85
SR405CV2-013004	01-165-02	**12**	0.91
SR4050V1-013004	01-165-03	**290**	4.0
SR405DP2-013004	01-165-04	**2.0**	0.80
SR4050V3-013004	01-165-05	**280**	4.0

QUALITY CONTROL

METHOD BLANK QUALITY CONTROL

Lab ID	Result	PQL
MB0203W1	ND	0.80

SPIKE BLANK QUALITY CONTROL

Lab ID	Result	Spiked Amount	Percent Recovery
SB0203W1	85.0	100	85

DUPLICATE QUALITY CONTROL

Lab ID	Sample Result	Duplicate Result	RPD
02-003-04	1.20	1.40	15

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone (425) 883-3881 • Fax (425) 885-4603

Company: tetra tech
Project Number: 13455-02
Project Name: WSDOT SW
Project Manager: John Virgin
Sampled by: Jessica Williams

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days)
☐ (other)

Laboratory Number: 01-165

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C, SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	total metals/Hardness	dissolved metals	TSS	total Phosphorus	% Moisture
1	SR405BS-013004	1/30/04	13:29	w	4																X	X	X	X	
2	SR405CV2-013004	↓	13:37	w	4																X	X	X	X	
3	SR405OU1-013004	↓	12:47	w	4																X	X	X	X	
4	SR5DP2-013004	↓	11:59	w	4																X	X	X	X	
5	SR405DU3-013004	1/30/04	12:47	w	4																X	X	X	X	

	Signature	Company	Date	Time
Relinquished by	Jessica Williams	tetra tech	1/30/04	4:03
Received by	[illegible]	OSE	1/30/04	4:03
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
Please filter dissolved metals.

TSS - 10 ppm
total phos - 0.03 ppm

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

February 11, 2004

David VanderMeulen
Envirovision
1220 East 4th Avenue
Olympia, WA 98506

Re: Analytical Data for Project WSDOT Stormwater
Laboratory Reference No. 0402-003

Dear David:

Enclosed are the analytical results and associated quality control data for samples submitted on February 2, 2004.

Please note that the subcontracted data will follow in the final report.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

Case Narrative

Samples were collected on January 28 and 29, 2004 and received by the laboratory on February 2, 2004. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-4-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-003-01
Client ID: Martin Way

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**19**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-4-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-003-02
Client ID: Indian Creek

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**24**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-4-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-003-03
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**28**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-4-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-003-04
Client ID: Maytown Outlet

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**36**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-4-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-003-05
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**35**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

HARDNESS
EPA 6010B/SM2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 2-4-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: MB0204H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**ND**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

HARDNESS
EPA 6010B/SM2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 2-4-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-165-04

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	**15.3**	**15.1**	1		2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

HARDNESS
EPA 6010B/SM2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 2-4-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 01-165-04

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	**156**	97	**157**	98	1	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-2-04
Date Analyzed: 2-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-003-01
Client ID: Martin Way

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**4.8**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**18**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-2-04
Date Analyzed: 2-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-003-02
Client ID: Indian Creek

Analyte	Method	Result	PQL
Cadmium	200.8	**0.21**	0.20
Copper	200.8	**3.8**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**51**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-2-04
Date Analyzed: 2-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-003-03
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Cadmium	200.8	**0.25**	0.20
Copper	200.8	**3.5**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**54**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-2-04
Date Analyzed: 2-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-003-04
Client ID: Maytown Outlet

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**3.2**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**28**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-2-04
Date Analyzed: 2-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-003-05
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**3.2**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**29**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 2-2-04
Date Analyzed: 2-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0202D1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 2-2-04
Date Analyzed: 2-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-165-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**4.32**	**4.30**	1	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**11.5**	**11.7**	2	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 2-2-04
Date Analyzed: 2-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-165-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	80	**79.1**	99	**79.3**	99	0	
Copper	80	**84.9**	101	**83.9**	99	1	
Lead	80	**80.8**	101	**81.2**	101	0	
Zinc	80	**90.7**	99	**91.0**	99	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 2-4-04
Date Analyzed: 2-6-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-003-01
Client ID: Martin Way

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**8.3**	1.0
Lead	200.8	**1.8**	1.0
Zinc	200.8	**30**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 2-4-04
Date Analyzed: 2-6-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-003-02
Client ID: Indian Creek

Analyte	Method	Result	PQL
Cadmium	200.8	**0.80**	0.20
Copper	200.8	**38**	1.0
Lead	200.8	**21**	1.0
Zinc	200.8	**190**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 2-4-04
Date Analyzed: 2-6-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-003-03
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Cadmium	200.8	**1.0**	0.20
Copper	200.8	**42**	1.0
Lead	200.8	**19**	1.0
Zinc	200.8	**180**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 2-4-04
Date Analyzed: 2-6-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-003-04
Client ID: Maytown Outlet

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**4.8**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**38**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 2-4-04
Date Analyzed: 2-6-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-003-05
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**4.6**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**36**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 2-4-04
Date Analyzed: 2-6-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0204W1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 2-4-04
Date Analyzed: 2-6-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-001-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**0.899**	**0.760**	17	0.20	
Copper	**1.17**	**ND**	NA	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**10300**	**10200**	1	250.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 2-4-04
Date Analyzed: 2-6-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-001-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	**118**	106	**113**	102	5	
Copper	110	**116**	104	**109**	98	6	
Lead	110	**109**	99	**106**	96	3	
Zinc	110	**10500**	221	**10100**	-180	4	A

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 11, 2004
Samples Submitted: February 2, 2004
Laboratory Reference: 0402-003
Project: WSDOT Stormwater

TOTAL SUSPENDED SOLIDS
EPA 160.2

Date Analyzed: 2-4-04

Matrix: Water
Units: mg/L

Client ID	Lab ID	**Result**	PQL
Martin Way	02-003-01	**12**	0.80
Indian Creek	02-003-02	**170**	4.0
Maytown Inlet	02-003-03	**160**	4.0
Maytown Outlet	02-003-04	**1.2**	0.80
Field Duplicate	02-003-05	**1.4**	0.80

QUALITY CONTROL

METHOD BLANK QUALITY CONTROL

Lab ID	Result	PQL
MB0203W1	ND	0.80

SPIKE BLANK QUALITY CONTROL

Lab ID	Result	Spiked Amount	Percent Recovery
SB0203W1	85.0	100	85

DUPLICATE QUALITY CONTROL

Lab ID	Sample Result	Duplicate Result	RPD
02-003-04	1.2	1.4	15

This report pertains to the samples analyzed in accordance with the chain of custody,
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OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone (425) 883-3881 • Fax (425) 885-4603

Laboratory Number: 02-003

Company: Envirovision Corp
Project Number: WSDOT
Project Name: Stormwater
Project Manager: David Vander Meulen
Sampled by: David Vander Meulen

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days)
☐ _____ (other)

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH HCID	NWTPH-Gx:BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semi-volatiles by 8270C	PAHs by 8270C / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	~~EPH~~ HARDNESS	Dissolved metals (Cd, Zn)	Total metals (Cd, Zn)	TSS	Total phosphorus	% Moisture
01	Martin Way	←	1/29/04	0901	4															X	X	X	X	X	
02	Indian Creek	←	1/28/04	0432	4															X	X	X	X	X	
03	Maytown Inlet	←	1/28/04	0938	4															X	X	X	X	X	
04	Maytown Outlet	←	1/28/04	0840	4															X	X	X	X	X	
05	① Field Duplicate	←	—	—	4															X	X	X	X	X	

	Signature	Company	Date	Time
Relinquished by	David Vander Meulen	Envirovision Corp	1/30/04	11:00AM
Received by	Kelly Will	OnSite Env.	2/2/04	13:10
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
① Field Duplicate bottle labeled "Total metals" NOT preserved in HNO_3 due to lack of bottles w/ HNO_3. Please preserve sample w/ HNO_3 upon receipt. (and perform analysis)
David Vander Meulen

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

February 20, 2004

John Virgin
Tetra Tech, Inc.
6100 219th Street S.W., Suite 550
Mountlake Terrace, WA 98043

Re: Analytical Data for Project 13455-02
Laboratory Reference No. 0402-029

Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on February 5, 2004.

Please note that the subcontracted data will follow in the final report.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 5, 2004
Laboratory Reference: 0402-029
Project: 13455-02

Case Narrative

Samples were collected on February 5, 2004 and received by the laboratory on February 5, 2004. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 5, 2004
Laboratory Reference: 0402-029
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 2-10-04
Date Analyzed: 2-18&19-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-029-01
Client ID: SR5DP1-020504

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**4.4**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**52**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 5, 2004
Laboratory Reference: 0402-029
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 2-10-04
Date Analyzed: 2-18&19-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-029-02
Client ID: SR5DP2-020504

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**3.1**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**24**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 5, 2004
Laboratory Reference: 0402-029
Project: 13455-02

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 2-10-04
Date Analyzed: 2-18&19-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0210W1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 5, 2004
Laboratory Reference: 0402-029
Project: 13455-02

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 2-10-04
Date Analyzed: 2-18&19-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-029-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**4.38**	**4.63**	6	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**52.5**	**46.5**	12	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 5, 2004
Laboratory Reference: 0402-029
Project: 13455-02

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 2-10-04
Date Analyzed: 2-18&19-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-029-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	**111**	101	**113**	103	2	
Copper	110	**117**	102	**117**	103	0	
Lead	110	**112**	102	**116**	105	3	
Zinc	110	**157**	95	**152**	91	3	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 5, 2004
Laboratory Reference: 0402-029
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-12-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-029-01
Client ID: SR5DP1-020504

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**15**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 5, 2004
Laboratory Reference: 0402-029
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-12-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-029-02
Client ID: SR5DP2-020504

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**17**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 5, 2004
Laboratory Reference: 0402-029
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 2-12-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: MB0212H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**ND**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 5, 2004
Laboratory Reference: 0402-029
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 2-12-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-029-02

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	**16.6**	**16.4**	1		2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 5, 2004
Laboratory Reference: 0402-029
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 2-12-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-029-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	**149**	92	**149**	92	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 5, 2004
Laboratory Reference: 0402-029
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-6-04
Date Analyzed: 2-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-029-01
Client ID: SR5DP1-020504

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**3.9**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**37**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 5, 2004
Laboratory Reference: 0402-029
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-6-04
Date Analyzed: 2-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-029-02
Client ID: SR5DP2-020504

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**2.2**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**20**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 5, 2004
Laboratory Reference: 0402-029
Project: 13455-02

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 2-6-04
Date Analyzed: 2-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0206D1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 5, 2004
Laboratory Reference: 0402-029
Project: 13455-02

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 2-6-04
Date Analyzed: 2-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-165-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**4.32**	**4.30**	1	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**11.5**	**11.7**	2	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 5, 2004
Laboratory Reference: 0402-029
Project: 13455-02

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 2-6-04
Date Analyzed: 2-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 01-165-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	80	**79.1**	99	**79.3**	99	0	
Copper	80	**84.9**	101	**83.9**	99	1	
Lead	80	**80.8**	101	**81.2**	101	0	
Zinc	80	**90.7**	99	**91.0**	99	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 5, 2004
Laboratory Reference: 0402-029
Project: 13455-02

TOTAL SUSPENDED SOLIDS
EPA 160.2

Date Analyzed: 2-11-04

Matrix: Water
Units: mg/L

Client ID	Lab ID	**Result**	PQL
SR5DP1-020504	02-029-01	**ND**	0.80
SR5DP2-020504	02-029-02	**2.0**	0.80

QUALITY CONTROL

METHOD BLANK QUALITY CONTROL

Lab ID	Result	PQL
MB0210W1	ND	0.80

SPIKE BLANK QUALITY CONTROL

Lab ID	Result	Spiked Amount	Percent Recovery
SB0210W1	91.0	100	91

DUPLICATE QUALITY CONTROL

Lab ID	Sample Result	Duplicate Result	RPD
02-044-03	4450	4510	1

This report pertains to the samples analyzed in accordance with the chain of custody,
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OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Laboratory Number: 02-029

Company: Tetra Tech Inc
Project Number: 13455-02
Project Name: WSDOT SW
Project Manager: John Virgin
Sampled by: Jessica Williams

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days)
☐ _____ (other)

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	total metals/hardness	Dissolved metals	TSS	total Phosphorous	% Moisture
1	SR5DP1-020504	2/5/04	10:28	W	4																X	X	X	X	
2	SR5DP2-020504	2/5/04	10:17	W	4																X	X	X	X	

	Signature	Company	Date	Time
Relinquished by	Jessica Williams	Tetra Tech	2/5/04	2:46 pm
Received by	Shelley Mill	OnSite Env.	2/5/02	14:46
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

Chromatograms with final report ☐

DISTRIBUTION LEGEND White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

February 20, 2004

John Virgin
Tetra Tech, Inc.
6100 219th Street S.W., Suite 550
Mountlake Terrace, WA 98043

Re: Analytical Data for Project 13455-02
Laboratory Reference No. 0402-065

Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on February 9, 2004.

Please note that the subcontracted data will follow in the final report.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 9, 2004
Laboratory Reference: 0402-065
Project: 13455-02

Case Narrative

Samples were collected on February 9, 2004 and received by the laboratory on February 9, 2004. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 9, 2004
Laboratory Reference: 0402-065
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-13-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-065-01
Client ID: SR5DP2-020904

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**18**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 9, 2004
Laboratory Reference: 0402-065
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-13-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-065-02
Client ID: SR405OV2-020904

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**41**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 9, 2004
Laboratory Reference: 0402-065
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-13-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-065-03
Client ID: SR405BS-020904

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**29**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 9, 2004
Laboratory Reference: 0402-065
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-13-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-065-04
Client ID: SR405OV3-020904

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**40**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 9, 2004
Laboratory Reference: 0402-065
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 2-13-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: MB0213H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**ND**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 20, 2004
Samples Submitted: February 9, 2004
Laboratory Reference: 0402-065
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 2-13-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-065-01

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	**18.1**	**18.1**	0		2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 9, 2004
Laboratory Reference: 0402-065
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 2-13-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-065-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	**159**	97	**159**	97	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 9, 2004
Laboratory Reference: 0402-065
Project: 13455-02

TOTAL SUSPENDED SOLIDS
EPA 160.2

Date Analyzed: 2-11-04

Matrix: Water
Units: mg/L

Client ID	Lab ID	**Result**	PQL
SR5DP2-020904	02-065-01	**2.4**	0.80
SR4050V2-020904	02-065-02	**12**	0.81
SR405BS-020904	02-065-03	**15**	1.1
SR4050V3-020904	02-065-04	**10**	0.80

QUALITY CONTROL

METHOD BLANK QUALITY CONTROL

Lab ID	Result	PQL
MB0210W1	ND	0.80

SPIKE BLANK QUALITY CONTROL

Lab ID	Result	Spiked Amount	Percent Recovery
SB0210W1	91.0	100	91

DUPLICATE QUALITY CONTROL

Lab ID	Sample Result	Duplicate Result	RPD
02-044-03	4450	4510	1

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 9, 2004
Laboratory Reference: 0402-065
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-10-04
Date Analyzed: 2-18-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-065-01
Client ID: SRDP2-020904

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**2.3**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**20**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 9, 2004
Laboratory Reference: 0402-065
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-10-04
Date Analyzed: 2-18-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-065-02
Client ID: SR405OV2-020904

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**8.5**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**47**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 20, 2004
Samples Submitted: February 9, 2004
Laboratory Reference: 0402-065
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-10-04
Date Analyzed: 2-18-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-065-03
Client ID: SR405BS-020904

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**6.3**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**12**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 20, 2004
Samples Submitted: February 9, 2004
Laboratory Reference: 0402-065
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-10-04
Date Analyzed: 2-18-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-065-04
Client ID: SR405OV3-020904

Analyte	Method	Result	PQL
Cadmium	200.8	**0.19**	0.20
Copper	200.8	**8.8**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**48**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 20, 2004
Samples Submitted: February 9, 2004
Laboratory Reference: 0402-065
Project: 13455-02

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 2-10-04
Date Analyzed: 2-18-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0210D1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 20, 2004
Samples Submitted: February 9, 2004
Laboratory Reference: 0402-065
Project: 13455-02

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 2-10-04
Date Analyzed: 2-18-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-065-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**2.26**	**2.19**	3	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**20.1**	**19.8**	1	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 20, 2004
Samples Submitted: February 9, 2004
Laboratory Reference: 0402-065
Project: 13455-02

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 2-10-04
Date Analyzed: 2-18-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-065-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	80	**79.7**	100	**81.5**	102	2	
Copper	80	**82.9**	101	**82.1**	100	1	
Lead	80	**83.2**	104	**82.3**	103	1	
Zinc	80	**98.0**	97	**98.0**	97	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 9, 2004
Laboratory Reference: 0402-065
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 2-10-04
Date Analyzed: 2-18&19-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-065-01
Client ID: SRDP2-020904

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**2.7**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**30**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 20, 2004
Samples Submitted: February 9, 2004
Laboratory Reference: 0402-065
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 2-10-04
Date Analyzed: 2-18&19-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-065-02
Client ID: SR405OV2-020904

Analyte	Method	Result	PQL
Cadmium	200.8	**0.29**	0.20
Copper	200.8	**12**	1.0
Lead	200.8	**3.6**	1.0
Zinc	200.8	**71**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 9, 2004
Laboratory Reference: 0402-065
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 2-10-04
Date Analyzed: 2-18&19-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-065-03
Client ID: SR405BS-020904

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**8.3**	1.0
Lead	200.8	**4.2**	1.0
Zinc	200.8	**24**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 9, 2004
Laboratory Reference: 0402-065
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 2-10-04
Date Analyzed: 2-18&19-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-065-04
Client ID: SR405OV3-020904

Analyte	Method	Result	PQL
Cadmium	200.8	**0.53**	0.20
Copper	200.8	**14**	1.0
Lead	200.8	**3.6**	1.0
Zinc	200.8	**72**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 9, 2004
Laboratory Reference: 0402-065
Project: 13455-02

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 2-10-04
Date Analyzed: 2-18&19-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0210W1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 9, 2004
Laboratory Reference: 0402-065
Project: 13455-02

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 2-10-04
Date Analyzed: 2-18&19-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-029-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**4.38**	**4.63**	6	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**52.5**	**46.5**	12	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 20, 2004
Samples Submitted: February 9, 2004
Laboratory Reference: 0402-065
Project: 13455-02

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 2-10-04
Date Analyzed: 2-18&19-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-029-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	**111**	101	**113**	103	2	
Copper	110	**117**	102	**117**	103	0	
Lead	110	**112**	102	**116**	105	3	
Zinc	110	**157**	95	**152**	91	3	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Company: Tetra Tech Inc
Project Number: 13455-02
Project Name: WSDOT SW
Project Manager: John Virgin
Sampled by: Jessica Williams

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days)
☐ (other)

Laboratory Number: 02-065

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	Total Phosphorus/Turbidity	TSS	dissolved metals	total metals	% Moisture
1	SR5DP2-020904	2/9/04	12:37	W																	X	X	X	X	
2	SR405OV2-020904	↓	14:05	↓																	X	X	X	X	
3	SR405BS-020904	↓	13:11	↓																	X	X	X	X	
4	SR405OV3-020904	↓	14:05	↓																	X	X	X	X	

	Signature	Company	Date	Time
Relinquished by	Jessica Williams	Tetra tech	2-9-04	4:17
Received by	Kelley Allen	OnSite Env.	2/9/04	16:17
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
Please filter dissolved metals.

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

February 27, 2004

John Virgin
Tetra Tech, Inc.
6100 219th Street S.W., Suite 550
Mountlake Terrace, WA 98043

Re: Analytical Data for Project 13455-02
Laboratory Reference No. 0402-117

Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on February 17, 2004.

Please note that the subcontracted data will follow in the final report.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

Case Narrative

Samples were collected on February 16 and 17, 2004 and received by the laboratory on February 17, 2004. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

TOTAL SUSPENDED SOLIDS
EPA 160.2

Date Analyzed: 2-18-04

Matrix: Water
Units: mg/L

Client ID	Lab ID	**Result**	PQL
SR405BS-021604	02-117-01	**1.9**	0.83
SR405BS2-021604	02-117-02	**1.9**	0.83
SR405OV2-021604	02-117-03	**6.4**	0.80
SR405OV2-021704	02-117-04	**9.7**	0.88
SR5DP2-021704	02-117-05	**9.2**	0.80
SR405BS-021704	02-117-06	**6.8**	0.94
SR405CV2-021704	02-117-07	**1.8**	0.80
SR405CV3-021704	02-117-08	**ND**	0.82

QUALITY CONTROL

METHOD BLANK QUALITY CONTROL

Lab ID	Result	PQL
MB0218W1	ND	0.80

SPIKE BLANK QUALITY CONTROL

Lab ID	Result	Spiked Amount	Percent Recovery
SB0218W1	89.0	100	89

DUPLICATE QUALITY CONTROL

Lab ID	Sample Result	Duplicate Result	RPD
02-094-01	98.0	107	9

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-18-04
Date Analyzed: 2-26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-117-01
Client ID: SR405BS-021604

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**5.2**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**11**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-18-04
Date Analyzed: 2-26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-117-02
Client ID: SR405BS2-021604

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**5.6**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**11**	5.0

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Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-18-04
Date Analyzed: 2-26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-117-03
Client ID: SR405OV2-021604

Analyte	Method	Result	PQL
Cadmium	200.8	**0.34**	0.20
Copper	200.8	**7.8**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**41**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-18-04
Date Analyzed: 2-26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-117-04
Client ID: SR405OV2-021704

Analyte	Method	Result	PQL
Cadmium	200.8	**0.39**	0.20
Copper	200.8	**7.8**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**41**	5.0

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Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-18-04
Date Analyzed: 2-26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-117-05
Client ID: SR5DP2-021704

Analyte	Method	Result	PQL
Cadmium	200.8	**0.72**	0.20
Copper	200.8	**2.8**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**12**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-18-04
Date Analyzed: 2-26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-117-06
Client ID: SR405BS-021704

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**4.9**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**9.3**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-18-04
Date Analyzed: 2-26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-117-07
Client ID: SR405CV2-021704

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**2.9**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**11**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-18-04
Date Analyzed: 2-26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-117-08
Client ID: SR405CV3-021704

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**2.9**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**11**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 2-18-04
Date Analyzed: 2-26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0218D1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 2-18-04
Date Analyzed: 2-26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-119-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**2.49**	**2.47**	1	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**5.50**	**5.71**	4	5.0	

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and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 2-18-04
Date Analyzed: 2-26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-119-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	80	**79.3**	99	**80.7**	101	2	
Copper	80	**77.0**	93	**76.4**	92	1	
Lead	80	**76.5**	96	**79.1**	99	3	
Zinc	80	**79.3**	92	**77.9**	90	2	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-23-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-117-01
Client ID: SR405BS-021604

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**30**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-23-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-117-02
Client ID: SR405BS2-021604

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**30**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-23-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-117-03
Client ID: SR405OV2-021604

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**42**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-23-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-117-04
Client ID: SR405OV2-021704

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**42**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-23-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-117-05
Client ID: SR5DP2-021704

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**17**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-23-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-117-06
Client ID: SR405BS-021704

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**29**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-23-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-117-07
Client ID: SR405CV2-021704

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**32**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-23-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-117-08
Client ID: SR405CV3-021704

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**32**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 2-23-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: MB0223H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**ND**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 2-23-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-117-01

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	**30.4**	**30.1**	1		2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 2-23-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-117-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	**163**	92	**164**	92	1	

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 2-19-04
Date Analyzed: 2-20-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-117-01
Client ID: SR405BS-021604

Analyte	Method	Result	PQL
Cadmium	200.8	**1.1**	0.20
Copper	200.8	**6.0**	1.0
Lead	200.8	**1.8**	1.0
Zinc	200.8	**17**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 2-19-04
Date Analyzed: 2-20-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-117-02
Client ID: SR405BS2-021604

Analyte	Method	Result	PQL
Cadmium	200.8	**0.96**	0.20
Copper	200.8	**6.2**	1.0
Lead	200.8	**2.2**	1.0
Zinc	200.8	**17**	5.0

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Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 2-19-04
Date Analyzed: 2-20-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-117-03
Client ID: SR405OV2-021604

Analyte	Method	Result	PQL
Cadmium	200.8	**1.2**	0.20
Copper	200.8	**10**	1.0
Lead	200.8	**2.5**	1.0
Zinc	200.8	**57**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 2-19-04
Date Analyzed: 2-20-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-117-04
Client ID: SR405OV2-021704

Analyte	Method	Result	PQL
Cadmium	200.8	**1.4**	0.20
Copper	200.8	**12**	1.0
Lead	200.8	**3.8**	1.0
Zinc	200.8	**64**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 2-19-04
Date Analyzed: 2-20-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-117-05
Client ID: SR5DP2-021704

Analyte	Method	Result	PQL
Cadmium	200.8	**1.4**	0.20
Copper	200.8	**4.2**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**16**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 2-19-04
Date Analyzed: 2-20-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-117-06
Client ID: SR405BS-021704

Analyte	Method	Result	PQL
Cadmium	200.8	**0.84**	0.20
Copper	200.8	**6.3**	1.0
Lead	200.8	**2.8**	1.0
Zinc	200.8	**20**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 2-19-04
Date Analyzed: 2-20-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-117-07
Client ID: SR405CV2-021704

Analyte	Method	Result	PQL
Cadmium	200.8	**0.67**	0.20
Copper	200.8	**3.9**	1.0
Lead	200.8	**1.3**	1.0
Zinc	200.8	**17**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 2-19-04
Date Analyzed: 2-20-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-117-08
Client ID: SR405CV3-021704

Analyte	Method	Result	PQL
Cadmium	200.8	**0.80**	0.20
Copper	200.8	**4.0**	1.0
Lead	200.8	**1.3**	1.0
Zinc	200.8	**18**	5.0

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Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 2-19-04
Date Analyzed: 2-20-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0219W2

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

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and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 2-19-04
Date Analyzed: 2-20-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-088-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**5.78**	**5.58**	4	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**6.11**	**6.97**	13	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Laboratory Reference: 0402-117
Project: 13455-02

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 2-19-04
Date Analyzed: 2-20-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-088-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	**111**	101	**111**	101	0	
Copper	110	**108**	93	**112**	97	4	
Lead	110	**107**	98	**109**	99	1	
Zinc	110	**114**	98	**114**	98	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

INVOICE NUMBER: 0402-117

John Virgin
Tetra Tech, Inc.
6100 219th Street S.W., Suite 550
Mountlake Terrace, WA 98043

ATTENTION: ACCOUNTS PAYABLE
Credit terms are net 30 days. Please include the invoice number with your remittance.
Invoices are due in full by the due date, unless specifically contracted otherwise.
OnSite Environmental, Inc. Federal Tax ID Number is 91-1550636.
Past Due Accounts: 1.5% interest per month

Date of Report: February 27, 2004
Samples Submitted: February 17, 2004
Project: 13455-02
Purchase Order Number: TC13455 Task 2

Quantity	Analysis	Turnaround	Unit Price	Amount
8	TSS by EPA 160.2	Standard	20.00	$ 160.00
8	Dissolved Metals by EPA 200.8	Standard	90.00	720.00
8	Hardness EPA 6010B/SM2340B	Standard	20.00	160.00
8	Total Metals by EPA 200.8	Standard	90.00	720.00
8	Total Phosphorous EPA 365.1	Standard	30.00	240.00
		Total Due		$2,000.00

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax (425) 885-4603

Company: Tetra Tech Inc.
Project Number: 13455-02
Project Name: WSDOT SW
Project Manager: John Virgin
Sampled by: Jessica Williams

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days)
☐ _____ (other)

Laboratory Number: 02-177

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	TSS	dissolved metals	Total Phosphorus/Hardness	total metals	% Moisture
1	SR405BS-021604	2/16/04	9:25	W	4																X	X	X	X	
2	SR405BS2-021604	2/16/04	9:25	W	4																X	X	X	X	
3	SR405OV2-021604	2/16/04	10:25	W	4																X	X	X	X	
4	SR405OV2-021704	2/17/04	11:41	W	4																X	X	X	X	
~~5~~	~~SR405OV3-021704~~	~~2/17/04~~	~~11:41~~	~~W~~	~~4~~	~~WRONG SAMPLE NUMBER~~ jw 2/24																			
5	SR5DP2-021704	2/17/04	9:27	W	4																X	X	X	X	
6	SR405BS-021704	2/17/04	10:06	W	4																X	X	X	X	
7	SR405CV2-021704	2/17/04	10:15	W	4																X	X	X	X	
8	SR405CV3-021704	2/17/04	10:15	W	4																X	X	X	X	

	Signature	Company	Date	Time
Relinquished by	Jessica Williams	tetra tech	2/17/04	16:21
Received by	Kelley Wilt	OnSite Env.	2/17/04	16:21
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions: Please filter dissolved metals

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

March 1, 2004

David VanderMeulen
Envirovision
1220 East 4th Avenue
Olympia, WA 98506

Re: Analytical Data for Project WSDOT
Laboratory Reference No. 0402-139

Dear David:

Enclosed are the analytical results and associated quality control data for samples submitted on February 19, 2004.

Please note that the subcontracted data will follow in the final report.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

Case Narrative

Samples were collected on February 13, 15 and 16, 2004 and received by the laboratory on February 19, 2004. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

NWTPH-Dx

Date Extracted: 2-23-04
Date Analyzed: 2-23-04

Matrix: Water
Units: mg/L (ppm)

Client ID:	**Maytown Inlet**	**Maytown Outlet**	**Indian Creek Up**
Lab ID:	02-139-04	02-139-05	02-139-06
Diesel Range:	**ND**	**ND**	**0.33**
PQL:	0.27	0.26	0.26
Identification:	---	---	Diesel Fuel#2
Lube Oil Range:	**3.8**	**1.3**	**2.2**
PQL:	0.42	0.42	0.41
Identification:	Lube Oil	Lube Oil	Lube Oil
Surrogate Recovery			
o-Terphenyl:	93%	85%	97%
Flags:	M,Y	Y	Y

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

NWTPH-Dx

Date Extracted:	2-23-04
Date Analyzed:	2-23-04

Matrix:	Water
Units:	mg/L (ppm)

Client ID:	**Indian Creek Down**
Lab ID:	02-139-07

Diesel Range:	**0.33**
PQL:	0.26
Identification:	Diesel Fuel#2

Lube Oil Range:	**1.7**
PQL:	0.41
Identification:	Lube Oil

Surrogate Recovery	
o-Terphenyl:	99%

Flags:	Y

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Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	2-23-04
Date Analyzed:	2-23-04

Matrix:	Water
Units:	mg/L (ppm)

Lab ID:	MB0223W1

Diesel Range:	**ND**
PQL:	0.25
Identification:	---

Lube Oil Range:	**ND**
PQL:	0.40
Identification:	---

Surrogate Recovery	
o-Terphenyl:	122%

Flags:	Y

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted: 2-23-04
Date Analyzed: 2-23-04

Matrix: Water
Units: mg/L (ppm)

Lab ID:	02-147-08	02-147-08 DUP
Diesel Range:	**ND**	**ND**
PQL:	0.25	0.26
RPD:	N/A	
Surrogate Recovery		
o-Terphenyl:	102%	104%
Flags:	Y	Y

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

TOTAL SUSPENDED SOLIDS
EPA 160.2

Date Analyzed: 2-25-04

Matrix: Water
Units: mg/L

Client ID	Lab ID	**Result**	PQL
Martin Way	02-139-01	**6.8**	0.80
Indian Creek	02-139-02	**100**	2.0
Field Replicate	02-139-03	**6.4**	0.80

QUALITY CONTROL

METHOD BLANK QUALITY CONTROL

Lab ID	Result	PQL
MB0224W1	ND	0.80

SPIKE BLANK QUALITY CONTROL

Lab ID	Result	Spiked Amount	Percent Recovery
SB0224W1	94.0	100	94

DUPLICATE QUALITY CONTROL

Lab ID	Sample Result	Duplicate Result	RPD
02-139-01	6.80	7.27	7

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

TOTAL METALS
EPA 200.8

Date Extracted: 2-25-04
Date Analyzed: 2-26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-139-01
Client ID: Martin Way

Analyte	Method	Result	PQL
Cadmium	200.8	**0.23**	0.20
Copper	200.8	**6.3**	1.0
Lead	200.8	**1.2**	1.0
Zinc	200.8	**29**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

TOTAL METALS
EPA 200.8

Date Extracted: 2-25-04
Date Analyzed: 2-26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-139-02
Client ID: Indian Creek

Analyte	Method	Result	PQL
Cadmium	200.8	**0.97**	0.20
Copper	200.8	**40**	1.0
Lead	200.8	**13**	1.0
Zinc	200.8	**200**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

TOTAL METALS
EPA 200.8

Date Extracted: 2-25-04
Date Analyzed: 2-26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-139-03
Client ID: Field Replicate

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**5.8**	1.0
Lead	200.8	**1.0**	1.0
Zinc	200.8	**28**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 2-25-04
Date Analyzed: 2-26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0225W3

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 2-25-04
Date Analyzed: 2-26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-139-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**0.226**	**ND**	NA	0.20	
Copper	**6.33**	**6.91**	9	1.0	
Lead	**1.25**	**1.18**	5	1.0	
Zinc	**29.2**	**29.3**	0	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 2-25-04
Date Analyzed: 2-26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-139-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	**116**	105	**115**	104	1	
Copper	110	**124**	107	**125**	108	1	
Lead	110	**117**	106	**118**	106	1	
Zinc	110	**146**	106	**146**	106	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-20-04
Date Analyzed: 2-26&3-2-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-139-01
Client ID: Martin Way

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**4.8**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**20**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-20-04
Date Analyzed: 2-26&3-2-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-139-02
Client ID: Indian Creek

Analyte	Method	Result	PQL
Cadmium	200.8	**0.48**	0.20
Copper	200.8	**10**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**88**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-20-04
Date Analyzed: 2-26&3-2-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-139-03
Client ID: Field Replicate

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**4.6**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**21**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 2-20-04
Date Analyzed: 2-26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0220D1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 2-20-04
Date Analyzed: 2-26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-119-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**2.49**	**2.47**	1	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**5.50**	**5.71**	4	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 2-20-04
Date Analyzed: 2-26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-119-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	80	**79.3**	99	**80.7**	101	2	
Copper	80	**77.0**	93	**76.4**	92	1	
Lead	80	**76.5**	96	**79.1**	99	3	
Zinc	80	**79.3**	92	**77.9**	90	2	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-23-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-139-01
Client ID: Martin Way

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**18**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-23-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-139-02
Client ID: Indian Creek

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**37**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 2-23-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-139-03
Client ID: Field Replicate

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**18**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 2-23-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: MB0223H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**ND**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 2-23-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-117-01

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	**30.4**	**30.1**	1		2.0

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Date of Report: March 1, 2004
Samples Submitted: February 19, 2004
Laboratory Reference: 0402-139
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 2-23-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 02-117-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	**163**	92	**164**	92	1	

This report pertains to the samples analyzed in accordance with the chain of custody,
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OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Company: EnviroVision Corp.
Project Number: WSDOT
Project Name: Stormwater
Project Manager: David VanderMeulen
Sampled by: David VanderMeulen

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days)
☐ (other)

Laboratory Number: 02-139

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C, SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	TSS	Total Metals (Cu, Cd, Zn)	Dissolved Metals (Cu, Cd, Zn, Pb)	Hardness / Phosphorus	% Moisture
1	Martin Way	2/15/04	0713		4																X	X	X	X	
2	Indian Creek	2/13/04	2335		4																X	X	X	X	
3	Field Replicate	—	—		4																X	X	X	X	
4	Maytown Inlet	2/16/04	1100		2			X																	
5	Maytown Outlet	2/16/04	1100		2			X																	
6	Indian Creek UP	2/16/04	1130		2			X																	
7	Indian Creek Down	2/16/04	1130		2			X																	

	Signature	Company	Date	Time
Relinquished by	David VanderMeulen	EnviroVision Corp	2/17/04	1100
Received by	Kathleen Spears	OSE	2-19-04	13:30
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
* Please send cooler w/:
- (8) 1 liter plastic bottles w/ HNO3 preservative
- (3) 500 ml plastic bottles w/ H2SO4 preservative
- (10) 500 ml plastic bottles w/ HNO3 preservative
- (16) 500 ml amber glass bottles w/ HCl preservative

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

March 11, 2004

John Virgin
Tetra Tech, Inc.
6100 219th Street S.W., Suite 550
Mountlake Terrace, WA 98043

Re: Analytical Data for Project 13455-02
Laboratory Reference No. 0402-202

Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on February 27, 2004.

Please note that the subcontracted data will follow in the final report.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

Case Narrative

Samples were collected on February 27, 2004 and received by the laboratory on February 27, 2004. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 3-5-04

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 02-202-01
Client ID: SR5DP2-022704

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	15	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 3-5-04

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 02-202-02
Client ID: SR405BS-022704

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	41	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 3-5-04

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 02-202-03
Client ID: SR405BS2-022704

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	41	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 3-5-04

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 02-202-04
Client ID: SR405OV2-022704

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	48	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 3-5-04

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: MB0305H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	ND	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 3-5-04

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 02-202-01

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	14.5	14.3	1		2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 3-5-04

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 02-202-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	172	109	173	109	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-27-04
Date Analyzed: 3-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-202-01
Client ID: SR5DP2-022704

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	2.5	1.0
Lead	200.8	ND	1.0
Zinc	200.8	ND	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-27-04
Date Analyzed: 3-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-202-02
Client ID: SR405BS-022704

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	5.5	1.0
Lead	200.8	ND	1.0
Zinc	200.8	15	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-27-04
Date Analyzed: 3-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-202-03
Client ID: SR405BS2-022704

Analyte	Method	Result	PQL
Cadmium	200.8	0.57	0.20
Copper	200.8	8.6	1.0
Lead	200.8	ND	1.0
Zinc	200.8	31	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 2-27-04
Date Analyzed: 3-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-202-04
Client ID: SR405OV2-022704

Analyte	Method	Result	PQL
Cadmium	200.8	0.30	0.20
Copper	200.8	7.0	1.0
Lead	200.8	ND	1.0
Zinc	200.8	44	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 2-27-04
Date Analyzed: 3-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0227D1

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	ND	1.0
Lead	200.8	ND	1.0
Zinc	200.8	ND	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 2-27-04
Date Analyzed: 3-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-202-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	ND	ND	NA	0.20	
Copper	ND	ND	NA	1.0	
Lead	ND	ND	NA	1.0	
Zinc	ND	ND	NA	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 2-27-04
Date Analyzed: 3-9-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-202-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	80	83.8	105	82.0	102	2	
Copper	80	69.4	87	68.8	86	1	
Lead	80	77.1	96	76.0	95	2	
Zinc	80	84.7	106	83.9	105	1	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

TOTAL SUSPENDED SOLIDS
EPA 160.2

Date Analyzed: 3-4-04

Matrix: Water
Units: mg/L

Client ID	Lab ID	Result	PQL
SR5DP2-022704	02-202-01	8.0	0.80
SR405BS-022704	02-202-02	3.3	0.88
SR405BS2-022704	02-202-03	4.3	1.0
SR405OV2-022704	02-202-04	18	0.82

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

TOTAL SUSPENDED SOLIDS
EPA 160.2

QUALITY CONTROL

METHOD BLANK QUALITY CONTROL

Lab ID	Result	PQL
MB0303W1	ND	0.80

SPIKE BLANK QUALITY CONTROL

Lab ID	Result	Spiked Amount	Percent Recovery	QC Limit	Flag
SB0303W1	87.0	100	87	60-140	

DUPLICATE QUALITY CONTROL

Lab ID	Result	Result	RPD	QC Limit	Flag
SB0303W1	87.0	87.0	0	36	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 3-8-04
Date Analyzed: 3-8-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-202-01
Client ID: SR5DP2-022704

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	4.2	1.0
Lead	200.8	ND	1.0
Zinc	200.8	13	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 3-8-04
Date Analyzed: 3-8-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-202-02
Client ID: SR405BS-022704

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	9.0	1.0
Lead	200.8	2.4	1.0
Zinc	200.8	24	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 3-8-04
Date Analyzed: 3-8-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-202-03
Client ID: SR405BS2-022704

Analyte	Method	Result	PQL
Cadmium	200.8	0.63	0.20
Copper	200.8	13	1.0
Lead	200.8	3.5	1.0
Zinc	200.8	46	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 3-8-04
Date Analyzed: 3-8-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 02-202-04
Client ID: SR405OV2-022704

Analyte	Method	Result	PQL
Cadmium	200.8	0.30	0.20
Copper	200.8	13	1.0
Lead	200.8	3.6	1.0
Zinc	200.8	73	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 3-8-04
Date Analyzed: 3-8-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0308W1

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	ND	1.0
Lead	200.8	ND	1.0
Zinc	200.8	ND	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 3-8-04
Date Analyzed: 3-8-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-051-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	ND	ND	NA	0.20	
Copper	1.20	ND	NA	1.0	
Lead	ND	ND	NA	1.0	
Zinc	33.7	34.3	2	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 11, 2004
Samples Submitted: February 27, 2004
Laboratory Reference: 0402-202
Project: 13455-02

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 3-8-04
Date Analyzed: 3-8-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-051-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	103	93	108	98	5	
Copper	110	92.0	83	93.1	84	1	
Lead	110	99.4	90	101	92	2	
Zinc	110	134	91	141	97	5	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical_____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

March 15, 2004

John Virgin
Tetra Tech, Inc.
6100 219th Street S.W., Suite 550
Mountlake Terrace, WA 98043

Re: Analytical Data for Project 13455-02
Laboratory Reference No. 0403-038

Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on March 4, 2004.

Please note that the subcontracted data will follow in the final report.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

Case Narrative

Samples were collected on March 4, 2004 and received by the laboratory on March 4, 2004. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 3-5-04

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 03-038-01
Client ID: SR5DP2-030404

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	13	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 3-5-04

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 03-038-02
Client ID: SR5DP3-030404

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	13	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 3-5-04

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 03-038-03
Client ID: SR405BS-030404

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	38	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 3-5-04

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 03-038-04
Client ID: SR405OV1-030404

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	30	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 3-5-04

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 03-038-05
Client ID: SR405OV2-030404

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	44	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B

Date Analyzed: 3-5-04

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 03-038-06
Client ID: SR5DP1-030404

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	13	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 3-5-04

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: MB0305H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	ND	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 3-5-04

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 02-202-01

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	14.5	14.3	1		2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

HARDNESS
EPA 6010B/SM 2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 3-5-04

Matrix: Water
Units: mg equivalent $CaCO_3$/L (ppm)

Lab ID: 02-202-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	172	109	173	109	0	

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

TOTAL SUSPENDED SOLIDS
EPA 160.2

Date Analyzed: 3-10-04

Matrix: Water
Units: mg/L

Client ID	Lab ID	Result	PQL
SR5DP2-030404	03-038-01	8.0	0.80
SR5DP3-030404	03-038-02	7.6	0.80
SR405BS-030404	03-038-03	2.4	0.81
SR405OV1-030404	03-038-04	83	1.6
SR405OV2-030404	03-038-05	14	0.80
SR5DP1-030404	03-038-06	1.0	0.80

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

TOTAL SUSPENDED SOLIDS
EPA 160.2

QUALITY CONTROL

METHOD BLANK QUALITY CONTROL

Lab ID	Result	PQL
MB0309W1	ND	0.80

SPIKE BLANK QUALITY CONTROL

Lab ID	Result	Spiked Amount	Percent Recovery	QC Limit	Flag
SB0309W1	87.0	100	87	60-140	

DUPLICATE QUALITY CONTROL

Lab ID	Sample Result	Duplicate Result	RPD	QC Limit	Flag
03-058-01	148	151	2	36	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 3-8-04
Date Analyzed: 3-8-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-038-01
Client ID: SR5DP2-030404

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	4.5	1.0
Lead	200.8	ND	1.0
Zinc	200.8	27	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 3-8-04
Date Analyzed: 3-8-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-038-02
Client ID: SR5DP3-030404

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	4.7	1.0
Lead	200.8	ND	1.0
Zinc	200.8	31	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 3-8-04
Date Analyzed: 3-8-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-038-03
Client ID: SR405BS-030404

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	7.9	1.0
Lead	200.8	2.0	1.0
Zinc	200.8	25	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 3-8-04
Date Analyzed: 3-8-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-038-04
Client ID: SR405OV1-030404

Analyte	Method	Result	PQL
Cadmium	200.8	0.47	0.20
Copper	200.8	28	1.0
Lead	200.8	10	1.0
Zinc	200.8	130	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 3-8-04
Date Analyzed: 3-8-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-038-05
Client ID: SR405OV2-030404

Analyte	Method	Result	PQL
Cadmium	200.8	0.26	0.20
Copper	200.8	11	1.0
Lead	200.8	2.8	1.0
Zinc	200.8	59	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 3-8-04
Date Analyzed: 3-8-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-038-06
Client ID: SR5DP1-030404

Analyte	Method	Result	PQL
Cadmium	200.8	0.26	0.20
Copper	200.8	6.8	1.0
Lead	200.8	ND	1.0
Zinc	200.8	53	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 3-8-04
Date Analyzed: 3-8-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0308W1

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	ND	1.0
Lead	200.8	ND	1.0
Zinc	200.8	ND	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 3-8-04
Date Analyzed: 3-8-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-051-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	ND	ND	NA	0.20	
Copper	1.20	ND	NA	1.0	
Lead	ND	ND	NA	1.0	
Zinc	33.7	34.3	2	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 3-8-04
Date Analyzed: 3-8-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-051-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	103	93	108	98	5	
Copper	110	92.0	83	93.1	84	1	
Lead	110	99.4	90	101	92	2	
Zinc	110	134	91	141	97	5	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 3-4-04
Date Analyzed: 3-11-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-038-01
Client ID: SR5DP2-030404

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	3.1	1.0
Lead	200.8	ND	1.0
Zinc	200.8	16	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 3-4-04
Date Analyzed: 3-11-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-038-02
Client ID: SR5DP3-030404

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	3.4	1.0
Lead	200.8	ND	1.0
Zinc	200.8	31	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 3-4-04
Date Analyzed: 3-11-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-038-03
Client ID: SR405BS-030404

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	6.2	1.0
Lead	200.8	ND	1.0
Zinc	200.8	16	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 3-4-04
Date Analyzed: 3-11-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-038-04
Client ID: SR405OV1-030404

Analyte	Method	Result	PQL
Cadmium	200.8	0.23	0.20
Copper	200.8	8.5	1.0
Lead	200.8	ND	1.0
Zinc	200.8	46	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 3-4-04
Date Analyzed: 3-11-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-038-05
Client ID: SR405OV2-030404

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	6.9	1.0
Lead	200.8	ND	1.0
Zinc	200.8	39	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 3-4-04
Date Analyzed: 3-11-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-038-06
Client ID: SR5DP1-030404

Analyte	Method	Result	PQL
Cadmium	200.8	0.21	0.20
Copper	200.8	4.6	1.0
Lead	200.8	ND	1.0
Zinc	200.8	33	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 3-4-04
Date Analyzed: 3-11-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0304D1

Analyte	Method	Result	PQL
Cadmium	200.8	ND	0.20
Copper	200.8	ND	1.0
Lead	200.8	ND	1.0
Zinc	200.8	ND	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 3-4-04
Date Analyzed: 3-11-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-038-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	ND	ND	NA	0.20	
Copper	3.14	3.04	3	1.0	
Lead	ND	ND	NA	1.0	
Zinc	15.8	15.9	1	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 15, 2004
Samples Submitted: March 4, 2004
Laboratory Reference: 0403-038
Project: 13455-02

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 3-4-04
Date Analyzed: 3-11-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-038-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	80	80.7	101	81.8	102	1	
Copper	80	80.2	96	80.0	96	0	
Lead	80	81.4	102	81.6	102	0	
Zinc	80	98.1	103	97.4	102	1	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical_____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Page 1 of 1

Company: Tetra Tech
Project Number: 13455-02
Project Name: WSDOT SW
Project Manager: John Virgin
Sampled by: Jessica Williams

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days)
☐ ____ (other)

Laboratory Number: 03-038

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx-BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C : SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	total Phosphorous/Hardness	TSS	total metals	dissolved metals	% Moisture
1	SR5DP2-030404	3/4/04	931	W	4																X	X	X	X	X
2	SR5DP3-030404	↓	931	↓	↓																X	X	X	X	X
3	SR405BS-030404	↓	1011	↓	↓																X	X	X	X	X
4	SR405OV1-030404	↓	1059	↓	↓																X	X	X	X	X
5	SR405OV2-030404	↓	1054	↓	↓																X	X	X	X	X
6	SR5DP1-030404	↓	947	W	4																X	X	X	X	

	Signature	Company	Date	Time
Relinquished by	Jessica Williams	Tetra Tech	3-4-04	1338
Received by	[illegible]	OnSite Env.	~~DS~~ 3/4/04	1338
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
Please filter dissolved ~~Solid~~ metals.

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

March 18, 2004

David VanderMeulen
Envirovision
1220 East 4th Avenue
Olympia, WA 98506

Re: Analytical Data for Project WSDOT-Stormwater
Laboratory Reference No. 0403-076

Dear David:

Enclosed are the analytical results and associated quality control data for samples submitted on March 9, 2004.

Please note that the subcontracted data will follow in the final report.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

Case Narrative

Samples were collected on March 5, 2004 and received by the laboratory on March 9, 2004. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

NWTPH-Dx

Date Extracted: 3-16-04
Date Analyzed: 3-16-04

Matrix: Water
Units: mg/L (ppm)

Client ID:	**Martin Way**	**Indian Creek up**	**Indian Creek down**
Lab ID:	03-076-05	03-076-06	03-076-07
Diesel Range:	**ND**	**ND**	**ND**
PQL:	0.26	0.26	0.26
Identification:	---	---	---
Lube Oil Range:	**1.1**	**1.4**	**2.5**
PQL:	0.42	0.41	0.41
Identification:	Lube Oil	Lube Oil	Lube Oil
Surrogate Recovery			
o-Terphenyl:	78%	80%	91%
Flags:	Y	Y	Y

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Date Extracted:	3-16-04
Date Analyzed:	3-16-04

Matrix:	Water
Units:	mg/L (ppm)

Lab ID:	MB0316W1

Diesel Range:	**ND**
PQL:	0.25
Identification:	---

Lube Oil Range:	**ND**
PQL:	0.40
Identification:	---

Surrogate Recovery	
o-Terphenyl:	79%

Flags:	Y

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted: 3-16-04
Date Analyzed: 3-16-04

Matrix: Water
Units: mg/L (ppm)

Lab ID:	03-104-05	03-104-05 DUP
Diesel Range:	**1.01**	**1.17**
PQL:	0.25	0.25
RPD:	15	
Surrogate Recovery		
o-Terphenyl:	94%	94%
Flags:	Y	Y

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

TOTAL SUSPENDED SOLIDS
EPA 160.2

Date Analyzed: 3-11-04

Matrix: Water
Units: mg/L

Client ID	Lab ID	**Result**	PQL
Martin Way	03-076-01	**34**	0.80
Indian Creek	03-076-02	**190**	1.6
Maytown Inlet	03-076-03	**88**	1.3
Field Duplicate	03-076-04	**81**	1.3

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

TOTAL SUSPENDED SOLIDS
EPA 160.2
QUALITY CONTROL

Date Analyzed: 3-11-04

Matrix: Water
Units: mg/L

METHOD BLANK QUALITY CONTROL

Lab ID	Result	PQL
MB0310W1	ND	0.80

SPIKE BLANK QUALITY CONTROL

Lab ID	Result	Spiked Amount	Percent Recovery	QC Limit	Flag
SB0310W1	87.0	100	87	60-140	

DUPLICATE QUALITY CONTROL

Lab ID	Sample Result	Duplicate Result	RPD	QC Limit	Flag
03-076-01	34.4	37.8	9	36	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 3-11-04
Date Analyzed: 3-12-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-076-01
Client ID: Martin Way

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**14**	1.0
Lead	200.8	**4.1**	1.0
Zinc	200.8	**58**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 3-11-04
Date Analyzed: 3-12-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-076-02
Client ID: Indian Creek

Analyte	Method	Result	PQL
Cadmium	200.8	**1.1**	0.20
Copper	200.8	**45**	1.0
Lead	200.8	**23**	1.0
Zinc	200.8	**240**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 3-11-04
Date Analyzed: 3-12-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-076-03
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Cadmium	200.8	**0.85**	0.20
Copper	200.8	**29**	1.0
Lead	200.8	**11**	1.0
Zinc	200.8	**180**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

TOTAL METALS
EPA 200.8

Date Extracted: 3-11-04
Date Analyzed: 3-12-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-076-04
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Cadmium	200.8	**0.84**	0.20
Copper	200.8	**29**	1.0
Lead	200.8	**10**	1.0
Zinc	200.8	**170**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 3-11-04
Date Analyzed: 3-12-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0311W2

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 3-11-04
Date Analyzed: 3-12-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-041-19

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**1.87**	**1.95**	4	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**5.61**	**5.52**	2	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 3-11-04
Date Analyzed: 3-12-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-041-19

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	**113**	103	**118**	107	5	
Copper	110	**101**	90	**103**	92	3	
Lead	110	**110**	100	**116**	105	5	
Zinc	110	**115**	100	**119**	103	3	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 3-10-04
Date Analyzed: 3-11-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-076-01
Client ID: Martin Way

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**7.5**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**29**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 3-10-04
Date Analyzed: 3-11-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-076-02
Client ID: Indian Creek

Analyte	Method	Result	PQL
Cadmium	200.8	**0.31**	0.20
Copper	200.8	**5.4**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**70**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 3-10-04
Date Analyzed: 3-11-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-076-03
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Cadmium	200.8	**0.39**	0.20
Copper	200.8	**5.6**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**72**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

DISSOLVED METALS
EPA 200.8

Date Filtered: 3-10-04
Date Analyzed: 3-11-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-076-04
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Cadmium	200.8	**0.37**	0.20
Copper	200.8	**5.3**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**70**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 3-10-04
Date Analyzed: 3-11-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0310D1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 3-10-04
Date Analyzed: 3-11-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-038-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**3.14**	**3.04**	3	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**15.8**	**15.9**	1	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 3-10-04
Date Analyzed: 3-11-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-038-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	80	**80.7**	101	**81.8**	102	1	
Copper	80	**80.2**	96	**80.0**	96	0	
Lead	80	**81.4**	102	**81.6**	102	0	
Zinc	80	**98.1**	103	**97.4**	102	1	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 3-11-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 03-076-01
Client ID: Martin Way

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**23**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 3-11-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 03-076-02
Client ID: Indian Creek

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**28**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 3-11-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 03-076-03
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**37**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 3-11-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 03-076-04
Client ID: Field Duplicate

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**37**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

HARDNESS
EPA 6010B/SM2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 3-11-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: MB0311H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**ND**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

HARDNESS
EPA 6010B/SM2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 3-11-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 03-087-01

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	**12.2**	**11.9**	2		2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 9, 2004
Laboratory Reference: 0403-076
Project: WSDOT-Stormwater

HARDNESS
EPA 6010B/SM2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 3-11-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 03-087-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	**154**	98	**154**	98	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • Fax: (425) 885-4603

Company: EnviroVision Corp
Project Number: WSDOT
Project Name: Stormwater
Project Manager: David VanderMeulen
Sampled by: David VanderMeulen

Turnaround Request (in working days)
(Check One)
- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Day
- ☐ 3 Day
- ☒ Standard (7 working days)
- ☐ ___ (other)

Laboratory Number: 03-076

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C : SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	TSS	Total Metals (Cd, Cu, Zn, Pb)	Dissolved Metals (Cd, Cu, Zn, P)	Hardness / Phosphorus	% Moisture
1	Martin Way	3/5/04	1053		4																X	X	X	X	
2	Indian Creek	3/5/04	0931		4																X	X	X	X	
3	Maytown Inlet	3/5/04	1029		4																X	X	X	X	
4	Field Duplicate	—	—		4																X	X	X	X	
5	Martin Way	3/5/04	0930		2			X																	
6	Indian Creek UP	3/5/04	0945		2			X																	
7	Indian Creek down	3/5/04	0945		2			X																	

	Signature	Company	Date	Time
Relinquished by	David VanderMeulen	EnviroVision Corp	3/8/04	0900
Received by	Kelley Wilt	OnSite Env.	3/9/04	14:00
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

Chromatograms with final report ☐

DISTRIBUTION LEGEND White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

March 18, 2004

John Virgin
Tetra Tech, Inc.
6100 219th Street S.W., Suite 550
Mountlake Terrace, WA 98043

Re: Analytical Data for Project 13455-02
Laboratory Reference No. 0403-087

Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on March 10, 2004.

Please note that the subcontracted data will follow in the final report.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 10, 2004
Laboratory Reference: 0403-087
Project: 13455-02

Case Narrative

Samples were collected on March 10, 2004 and received by the laboratory on March 10, 2004. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 10, 2004
Laboratory Reference: 0403-087
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 3-11-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 03-087-01
Client ID: SR5DP2-031004

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**12**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 10, 2004
Laboratory Reference: 0403-087
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 3-11-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 03-087-02
Client ID: SR5DP3-031004

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**12**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 10, 2004
Laboratory Reference: 0403-087
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 3-11-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 03-087-03
Client ID: SR5DP1-031004

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**10**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 10, 2004
Laboratory Reference: 0403-087
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 3-11-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: MB0311H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**ND**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 10, 2004
Laboratory Reference: 0403-087
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 3-11-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 03-087-01

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	**12.2**	**11.9**	2		2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 10, 2004
Laboratory Reference: 0403-087
Project: 13455-02

HARDNESS
EPA 6010B/SM2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 3-11-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 03-087-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	**154**	98	**154**	98	0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 10, 2004
Laboratory Reference: 0403-087
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 3-11-04
Date Analyzed: 3-12-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-087-01
Client ID: SR5DP2-031004

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**3.2**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**12**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 10, 2004
Laboratory Reference: 0403-087
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 3-11-04
Date Analyzed: 3-12-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-087-02
Client ID: SR5DP3-031004

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**3.1**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**15**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 10, 2004
Laboratory Reference: 0403-087
Project: 13455-02

DISSOLVED METALS
EPA 200.8

Date Filtered: 3-11-04
Date Analyzed: 3-12-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-087-03
Client ID: SR5DP1-031004

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**5.7**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**20**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 10, 2004
Laboratory Reference: 0403-087
Project: 13455-02

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 3-11-04
Date Analyzed: 3-12-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0311D1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 10, 2004
Laboratory Reference: 0403-087
Project: 13455-02

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 3-11-04
Date Analyzed: 3-12-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-087-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**3.16**	**3.16**	0	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**12**	**12**	0	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 10, 2004
Laboratory Reference: 0403-087
Project: 13455-02

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 3-11-04
Date Analyzed: 3-12-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-087-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	80	**76.4**	96	**77.0**	96	1	
Copper	80	**80.5**	97	**79.8**	96	1	
Lead	80	**75.7**	95	**77.2**	97	2	
Zinc	80	**88.9**	96	**87.6**	94	2	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 10, 2004
Laboratory Reference: 0403-087
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 3-11-04
Date Analyzed: 3-12-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-087-01
Client ID: SR5DP2-031004

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**4.2**	1.0
Lead	200.8	**2.0**	1.0
Zinc	200.8	**20**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 10, 2004
Laboratory Reference: 0403-087
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 3-11-04
Date Analyzed: 3-12-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-087-02
Client ID: SR5DP3-031004

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**4.3**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**18**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 10, 2004
Laboratory Reference: 0403-087
Project: 13455-02

TOTAL METALS
EPA 200.8

Date Extracted: 3-11-04
Date Analyzed: 3-12-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-087-03
Client ID: SR5DP1-031004

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**7.6**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**31**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 10, 2004
Laboratory Reference: 0403-087
Project: 13455-02

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 3-11-04
Date Analyzed: 3-12-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0311W2

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 10, 2004
Laboratory Reference: 0403-087
Project: 13455-02

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 3-11-04
Date Analyzed: 3-12-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-041-19

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**1.87**	**1.95**	4	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**5.61**	**5.52**	2	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 10, 2004
Laboratory Reference: 0403-087
Project: 13455-02

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 3-11-04
Date Analyzed: 3-12-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-041-19

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	**113**	103	**118**	107	5	
Copper	110	**101**	90	**103**	92	3	
Lead	110	**110**	100	**116**	105	5	
Zinc	110	**115**	100	**119**	103	3	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: March 18, 2004
Samples Submitted: March 10, 2004
Laboratory Reference: 0403-087
Project: 13455-02

TOTAL SUSPENDED SOLIDS
EPA 160.2

Date Analyzed: 3-16-04

Matrix: Water
Units: mg/L

Client ID	Lab ID	**Result**	PQL
SR5DP2-031004	03-087-01	**4.4**	0.80
SR5DP3-031004	03-087-02	**2.5**	0.82
SR5DP1-031004	03-087-03	**2.0**	0.80

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: March 18, 2004
Samples Submitted: March 10, 2004
Laboratory Reference: 0403-087
Project: 13455-02

TOTAL SUSPENDED SOLIDS
EPA 160.2
QUALITY CONTROL

METHOD BLANK QUALITY CONTROL

Lab ID	Result	PQL
MB0315W1	ND	0.80

SPIKE BLANK QUALITY CONTROL

Lab ID	Result	Spiked Amount	Percent Recovery	QC Limit	Flag
SB0315W1	87.0	100	87	60-140	

DUPLICATE QUALITY CONTROL

Lab ID	Sample Result	Duplicate Result	RPD	QC Limit	Flag
03-087-03	2.00	2.65	28	36	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone (425) 883-3881 • Fax (425) 885 4603

Company: Tetra Tech
Project Number: ~~WSDOT - SW~~ 13455-02
Project Name: WSDOT SW
Project Manager: John Virgini
Sampled by: Jessica Williams

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Day
- ☐ 3 Day
- ☒ Standard (7 working days)
- ☐ (other)

Laboratory Number: 03-087

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	total Phosphorus/Hardness	dissolved metals	total metals	TSS	% Moisture
1	SR5DP2-031004	3/10/04	1434	W	5																X	X	X	X	
2	SR5DP3-031004	3/10/04	1434	W	5																X	X	X	X	
3	SR5DP1-031004	3/10/04	1500	W	5																X	X	X	X	

	Signature	Company	Date	Time
Relinquished by	Jessica Williams	Tetra Tech	3/10/04	1621
Received by	Kelley [illegible]	OnSite Env.	3/10/04	16:21
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions: Please filter dissolved metals.

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink Client Copy

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

April 1, 2004

David Vander Meulen
Envirovision
1220 East 4th Avenue
Olympia, WA 98506

Re: Analytical Data for Project WSDOT
Laboratory Reference No. 0403-163

Dear David:

Enclosed are the analytical results and associated quality control data for samples submitted on March 23, 2004.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: April 1, 2004
Samples Submitted: March 23, 2004
Laboratory Reference: 0403-163
Project: WSDOT

Case Narrative

Samples were collected on March 19, 2004 and received by the laboratory on March 23, 2004. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: April 1, 2004
Samples Submitted: March 23, 2004
Laboratory Reference: 0403-163
Project: WSDOT

TOTAL SUSPENDED SOLIDS
EPA 160.2

Date Analyzed: 3-26-04

Matrix: Water
Units: mg/L

Client ID	Lab ID	**Result**	PQL
Maytown Inlet	03-163-01	**110**	0.80
Indian Creek	03-163-02	**280**	2.0
SR8	03-163-03	**270**	2.0

QUALITY CONTROL

METHOD BLANK QUALITY CONTROL

Lab ID	Result	PQL
MB0326W1	ND	0.80

SPIKE BLANK QUALITY CONTROL

Lab ID	Result	Spiked Amount	Percent Recovery	QC Limit	Flag
SB0326W1	88.0	100	88	60-140	

DUPLICATE QUALITY CONTROL

Lab ID	Sample Result	Duplicate Result	RPD	QC Limit	Flag
03-163-01	105	108	3	36	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: April 1, 2004
Samples Submitted: March 23, 2004
Laboratory Reference: 0403-163
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 3-30-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 03-163-01
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**43**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: April 1, 2004
Samples Submitted: March 23, 2004
Laboratory Reference: 0403-163
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 3-30-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 03-163-02
Client ID: Indian Creek

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**33**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: April 1, 2004
Samples Submitted: March 23, 2004
Laboratory Reference: 0403-163
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 3-30-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 03-163-03
Client ID: SR8

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**37**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: April 1, 2004
Samples Submitted: March 23, 2004
Laboratory Reference: 0403-163
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 3-30-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: MB0330H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**ND**	2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: April 1, 2004
Samples Submitted: March 23, 2004
Laboratory Reference: 0403-163
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 3-30-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 03-204-01

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	**206**	**207**	0		2.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: April 1, 2004
Samples Submitted: March 23, 2004
Laboratory Reference: 0403-163
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 3-30-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 03-204-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	**340**	92	**340**	92	0	

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Date of Report: April 1, 2004
Samples Submitted: March 23, 2004
Laboratory Reference: 0403-163
Project: WSDOT

TOTAL PHOSPHORUS
EPA 365.3

Date Analyzed: 3-30-04

Matrix: Water
Units: mg/L

Client ID	Lab ID	**Result**	PQL
Maytown Inlet	03-199-01	**0.090**	0.010
Indian Creek	03-199-02	**0.084**	0.010
SR8	03-199-03	**0.33**	0.050

QUALITY CONTROL

METHOD BLANK QUALITY CONTROL

Lab ID	Result	PQL
MB0330W1	ND	0.010

SPIKE BLANK QUALITY CONTROL

Lab ID	Result	Spiked Amount	Percent Recovery	QC Limit	Flag
SB0330W1	0.196	0.200	98	55-143	

MATRIX SPIKE QUALITY CONTROL

Lab ID	Result	Spiked Amount	Percent Recovery	QC Limit	Flag
03-199-01	0.0903				
Matrix Spike	0.219	0.200	64	55-143	

DUPLICATE QUALITY CONTROL

Lab ID	Sample Result	Duplicate Result	RPD	QC Limit	Flag
03-199-01	0.0903	0.0921	2	44	

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: April 1, 2004
Samples Submitted: March 23, 2004
Laboratory Reference: 0403-163
Project: WSDOT

TOTAL METALS
EPA 200.8

Date Extracted: 3-24-04
Date Analyzed: 3-25&26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-163-01
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Cadmium	200.8	**1.1**	0.20
Copper	200.8	**38**	1.0
Lead	200.8	**12**	1.0
Zinc	200.8	**230**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: April 1, 2004
Samples Submitted: March 23, 2004
Laboratory Reference: 0403-163
Project: WSDOT

TOTAL METALS
EPA 200.8

Date Extracted: 3-24-04
Date Analyzed: 3-25&26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-163-02
Client ID: Indian Creek

Analyte	Method	Result	PQL
Cadmium	200.8	**1.3**	0.20
Copper	200.8	**59**	1.0
Lead	200.8	**29**	1.0
Zinc	200.8	**290**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: April 1, 2004
Samples Submitted: March 23, 2004
Laboratory Reference: 0403-163
Project: WSDOT

TOTAL METALS
EPA 200.8

Date Extracted: 3-24-04
Date Analyzed: 3-25&26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-163-03
Client ID: SR 8

Analyte	Method	Result	PQL
Cadmium	200.8	**1.6**	0.20
Copper	200.8	**73**	1.0
Lead	200.8	**39**	1.0
Zinc	200.8	**380**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: April 1, 2004
Samples Submitted: March 23, 2004
Laboratory Reference: 0403-163
Project: WSDOT

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 3-24-04
Date Analyzed: 3-25&26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0324W1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: April 1, 2004
Samples Submitted: March 23, 2004
Laboratory Reference: 0403-163
Project: WSDOT

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 3-24-04
Date Analyzed: 3-25&26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-144-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**2.20**	**2.14**	3	0.20	
Copper	**22.9**	**22.5**	2	1.0	
Lead	**48.9**	**49.0**	0	1.0	
Zinc	**86.6**	**84.6**	2	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: April 1, 2004
Samples Submitted: March 23, 2004
Laboratory Reference: 0403-163
Project: WSDOT

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 3-24-04
Date Analyzed: 3-25&26-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-144-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	**110**	98	**109**	97	1	
Copper	110	**125**	93	**133**	100	6	
Lead	110	**153**	94	**167**	108	9	
Zinc	110	**196**	100	**193**	97	2	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: April 1, 2004
Samples Submitted: March 23, 2004
Laboratory Reference: 0403-163
Project: WSDOT

DISSOLVED METALS
EPA 200.8

Date Filtered: 3-23-04
Date Analyzed: 3-24-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-163-01
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Cadmium	200.8	**0.43**	0.20
Copper	200.8	**14**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**100**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: April 1, 2004
Samples Submitted: March 23, 2004
Laboratory Reference: 0403-163
Project: WSDOT

DISSOLVED METALS
EPA 200.8

Date Filtered: 3-23-04
Date Analyzed: 3-24-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-163-02
Client ID: Indian Creek

Analyte	Method	Result	PQL
Cadmium	200.8	**0.39**	0.20
Copper	200.8	**12**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**90**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: April 1, 2004
Samples Submitted: March 23, 2004
Laboratory Reference: 0403-163
Project: WSDOT

DISSOLVED METALS
EPA 200.8

Date Filtered: 3-23-04
Date Analyzed: 3-24-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-163-03
Client ID: SR 8

Analyte	Method	Result	PQL
Cadmium	200.8	**0.31**	0.20
Copper	200.8	**12**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**89**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: April 1, 2004
Samples Submitted: March 23, 2004
Laboratory Reference: 0403-163
Project: WSDOT

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 3-23-04
Date Analyzed: 3-24-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0323D1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: April 1, 2004
Samples Submitted: March 23, 2004
Laboratory Reference: 0403-163
Project: WSDOT

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 3-23-04
Date Analyzed: 3-24-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-163-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**0.429**	**0.414**	4	0.20	
Copper	**13.8**	**13.3**	3	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**103**	**106**	3	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: April 1, 2004
Samples Submitted: March 23, 2004
Laboratory Reference: 0403-163
Project: WSDOT

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 3-23-04
Date Analyzed: 3-24-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-163-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	80	**76.8**	95	**81.1**	101	5	
Copper	80	**97.8**	105	**94.4**	101	4	
Lead	80	**76.6**	96	**81.3**	102	6	
Zinc	80	**183**	100	**180**	96	2	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone (425) 883-3881 • Fax (425) 885-4603

Laboratory Number: 03-163

Company: EnviroVision Corporation
Project Number: WSDOT
Project Name: Stormwater
Project Manager: David Vander Meulen
Sampled by: Jana Crawford

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days)
☐ (other)

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	VPH	EPH	TSS	Hardness/Alkalinity	Total Metals*	Dissolved Metals	% Moisture
1	Maytown Inlet	3/19/04	12:14 am		4																X	X	X	X	
2	Indian Creek	3/19/04	5:14 am		4																X	X	X	X	
3	SR 8				4																X	X	X	X	

	Signature	Company	Date	Time
Relinquished by	Jana Crawford	EnviroVision Corp	3/22/04	2:30 pm
Received by	[illegible]	OnSite Env	3/23/04	1115
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
* Cd, Cu, Pb, Zn

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

April 2, 2004

David VanderMeulen
Envirovision
1220 East 4th Avenue
Olympia, WA 98506

Re: Analytical Data for Project WSDOT
Laboratory Reference No. 0403-199

Dear David:

Enclosed are the analytical results and associated quality control data for samples submitted on March 27, 2004.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: April 2, 2004
Samples Submitted: March 27, 2004
Laboratory Reference: 0403-199
Project: WSDOT

Case Narrative

Samples were collected on March 24 and 25, 2004 and received by the laboratory on March 27, 2004. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: April 2, 2004
Samples Submitted: March 27, 2004
Laboratory Reference: 0403-199
Project: WSDOT

TOTAL SUSPENDED SOLIDS
EPA 160.2

Date Analyzed: 3-31-04

Matrix: Water
Units: mg/L

Client ID	Lab ID	**Result**	PQL
Maytown Inlet	03-199-01	**81**	0.80
Indian Creek	03-199-02	**190**	1.3
SR8	03-199-03	**240**	1.3

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: April 2, 2004
Samples Submitted: March 27, 2004
Laboratory Reference: 0403-199
Project: WSDOT

TOTAL SUSPENDED SOLIDS
EPA 160.2
QUALITY CONTROL

Date Analyzed: 3-31-04

Matrix: Water
Units: mg/L

METHOD BLANK QUALITY CONTROL

Lab ID	Result	PQL
MB0330W1	ND	0.80

SPIKE BLANK QUALITY CONTROL

Lab ID	Result	Spiked Amount	Percent Recovery	QC Limit	Flag
SB0330W1	89.0	100	89	60-140	

DUPLICATE QUALITY CONTROL

Lab ID	Sample Result	Duplicate Result	RPD	QC Limit	Flag
03-199-01	81.4	89.8	10	36	

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Date of Report: April 2, 2004
Samples Submitted: March 27, 2004
Laboratory Reference: 0403-199
Project: WSDOT

TOTAL METALS
EPA 200.8

Date Extracted: 3-30-04
Date Analyzed: 3-30&31-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-199-01
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Cadmium	200.8	**0.90**	0.20
Copper	200.8	**27**	1.0
Lead	200.8	**11**	1.0
Zinc	200.8	**160**	5.0

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Date of Report: April 2, 2004
Samples Submitted: March 27, 2004
Laboratory Reference: 0403-199
Project: WSDOT

TOTAL METALS
EPA 200.8

Date Extracted: 3-30-04
Date Analyzed: 3-30&31-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-199-02
Client ID: Indian Creek

Analyte	Method	Result	PQL
Cadmium	200.8	**1.0**	0.20
Copper	200.8	**36**	1.0
Lead	200.8	**19**	1.0
Zinc	200.8	**190**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: April 2, 2004
Samples Submitted: March 27, 2004
Laboratory Reference: 0403-199
Project: WSDOT

TOTAL METALS
EPA 200.8

Date Extracted: 3-30-04
Date Analyzed: 3-30&31-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-199-03
Client ID: SR8

Analyte	Method	Result	PQL
Cadmium	200.8	**1.1**	0.20
Copper	200.8	**43**	1.0
Lead	200.8	**24**	1.0
Zinc	200.8	**240**	5.0

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: April 2, 2004
Samples Submitted: March 27, 2004
Laboratory Reference: 0403-199
Project: WSDOT

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted: 3-30-04
Date Analyzed: 3-30&31-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0330W1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

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Date of Report: April 2, 2004
Samples Submitted: March 27, 2004
Laboratory Reference: 0403-199
Project: WSDOT

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 3-30-04
Date Analyzed: 3-30&31-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-204-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**0.249**	**ND**	NA	0.20	
Copper	**10.8**	**10.1**	6	1.0	
Lead	**4.92**	**4.95**	1	1.0	
Zinc	**78.3**	**75.3**	4	5.0	

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: April 2, 2004
Samples Submitted: March 27, 2004
Laboratory Reference: 0403-199
Project: WSDOT

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 3-30-04
Date Analyzed: 3-30&31-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-204-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	110	**116**	105	**113**	103	2	
Copper	110	**116**	96	**113**	93	3	
Lead	110	**112**	97	**112**	98	0	
Zinc	110	**183**	95	**174**	87	5	

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: April 2, 2004
Samples Submitted: March 27, 2004
Laboratory Reference: 0403-199
Project: WSDOT

DISSOLVED METALS
EPA 200.8

Date Filtered: 3-29-04
Date Analyzed: 4-1-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-199-01
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**5.6**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**59**	5.0

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Date of Report: April 2, 2004
Samples Submitted: March 27, 2004
Laboratory Reference: 0403-199
Project: WSDOT

DISSOLVED METALS
EPA 200.8

Date Filtered: 3-29-04
Date Analyzed: 4-1-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-199-02
Client ID: Indian Creek

Analyte	Method	Result	PQL
Cadmium	200.8	**0.23**	0.20
Copper	200.8	**7.2**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**69**	5.0

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Date of Report: April 2, 2004
Samples Submitted: March 27, 2004
Laboratory Reference: 0403-199
Project: WSDOT

DISSOLVED METALS
EPA 200.8

Date Filtered: 3-29-04
Date Analyzed: 4-1-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-199-03
Client ID: SR8

Analyte	Method	Result	PQL
Cadmium	200.8	**0.23**	0.20
Copper	200.8	**6.3**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**62**	5.0

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Date of Report: April 2, 2004
Samples Submitted: March 27, 2004
Laboratory Reference: 0403-199
Project: WSDOT

DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered: 3-29-04
Date Analyzed: 4-1-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0329D1

Analyte	Method	Result	PQL
Cadmium	200.8	**ND**	0.20
Copper	200.8	**ND**	1.0
Lead	200.8	**ND**	1.0
Zinc	200.8	**ND**	5.0

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Date of Report: April 2, 2004
Samples Submitted: March 27, 2004
Laboratory Reference: 0403-199
Project: WSDOT

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 3-29-04
Date Analyzed: 4-1-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-204-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Cadmium	**ND**	**ND**	NA	0.20	
Copper	**5.17**	**5.09**	1	1.0	
Lead	**ND**	**ND**	NA	1.0	
Zinc	**37.9**	**36.6**	4	5.0	

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Date of Report: April 2, 2004
Samples Submitted: March 27, 2004
Laboratory Reference: 0403-199
Project: WSDOT

DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 3-29-04
Date Analyzed: 4-1-04

Matrix: Water
Units: ug/L (ppb)

Lab ID: 03-204-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Cadmium	80	**79.7**	100	**79.3**	99	1	
Copper	80	**74.8**	87	**75.4**	88	1	
Lead	80	**79.4**	99	**78.5**	98	1	
Zinc	80	**116**	98	**118**	101	2	

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Date of Report: April 2, 2004
Samples Submitted: March 27, 2004
Laboratory Reference: 0403-199
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 3-30-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 03-199-01
Client ID: Maytown Inlet

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**27**	2.0

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Date of Report: April 2, 2004
Samples Submitted: March 27, 2004
Laboratory Reference: 0403-199
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 3-30-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 03-199-02
Client ID: Indian Creek

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**20**	2.0

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Date of Report: April 2, 2004
Samples Submitted: March 27, 2004
Laboratory Reference: 0403-199
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B

Date Analyzed: 3-30-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 03-199-03
Client ID: SR8

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**23**	2.0

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Date of Report: April 2, 2004
Samples Submitted: March 27, 2004
Laboratory Reference: 0403-199
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B
METHOD BLANK QUALITY CONTROL

Date Analyzed: 3-30-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: MB0330H1

Analyte	Method	Result	PQL
Hardness (calc.)	6010B/2340B	**ND**	2.0

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Date of Report: April 2, 2004
Samples Submitted: March 27, 2004
Laboratory Reference: 0403-199
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B
DUPLICATE QUALITY CONTROL

Date Analyzed: 3-30-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 03-204-01

Analyte	Method	Sample Result	Duplicate Result	RPD	Flags	PQL
Hardness (calc.)	6010B/2340B	**206**	**207**	0		2.0

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Date of Report: April 2, 2004
Samples Submitted: March 27, 2004
Laboratory Reference: 0403-199
Project: WSDOT

HARDNESS
EPA 6010B/SM2340B
MS/MSD QUALITY CONTROL

Date Analyzed: 3-30-04

Matrix: Water
Units: mg equivalent CaCO3/L (ppm)

Lab ID: 03-204-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hardness (calc.)	145	**340**	92	**340**	92	0	

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Date of Report: April 2, 2004
Samples Submitted: March 27, 2004
Laboratory Reference: 0403-199
Project: WSDOT

TOTAL PHOSPHORUS
EPA 365.3

Date Analyzed: 3-30-04

Matrix: Water
Units: mg/L

Client ID	Lab ID	**Result**	PQL
Maytown Inlet	03-163-01	**0.23**	0.010
Indian Creek	03-163-02	**0.36**	0.050
SR8	03-163-03	**0.47**	0.050

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Date of Report: April 2, 2004
Samples Submitted: March 27, 2004
Laboratory Reference: 0403-199
Project: WSDOT

TOTAL PHOSPHORUS
EPA 365.3
QUALITY CONTROL

Date Analyzed: 3-30-04

Matrix: Water
Units: mg/L

METHOD BLANK QUALITY CONTROL

Lab ID	Result	PQL
MB0330W1	ND	0.010

SPIKE BLANK QUALITY CONTROL

Lab ID	Result	Spiked Amount	Percent Recovery	QC Limit	Flag
SB0330W1	0.196	0.200	98	55-143	

MATRIX SPIKE QUALITY CONTROL

Lab ID	Result	Spiked Amount	Percent Recovery	QC Limit	Flag
03-199-01	0.0903				
Matrix Spike	0.219	0.200	64	55-143	

DUPLICATE QUALITY CONTROL

Lab ID	Sample Result	Duplicate Result	RPD	QC Limit	Flag
03-199-01	0.0903	0.0921	2	44	

This report pertains to the samples analyzed in accordance with the chain of custody,
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OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

G - Insufficient sample quantity for duplicate analysis.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

O - Hydrocarbons outside the defined gasoline range are present in the sample.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a silica gel cleanup procedure.

Y - Sample extract treated with an acid cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone (425) 883 3881 • Fax (425) 885-4603

Company: Envirovision Corp.
Project Number: WSDOT
Project Name: Stormwater
Project Manager: David VanderMeulen
Sampled by: Jana Crawford

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Day ☐ 3 Day
☒ Standard (7 working days)
☐ _____ (other)

Laboratory Number: 03-199

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270C	PAHs by 8270C / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (6)	TCLP Metals	HEM by 1664	VPH	EPH	TSS	Total Metals (Cd, Cu, Zn, Pb)	Dissolved Metals (Cd, Cu, Zn)	Hardness/phosphorus	% Moisture
1	Maytown Inlet	3/25/04	12:21 pm		4																X	X	X	X	
2	Indian Creek	3/24/04	7:28 pm		4																X	X	X	X	
3	SR 8	—	—		4																X	X	X	X	

	Signature	Company	Date	Time
Relinquished by	Jana Crawford	Envirovision Corp.	3/26/04	2:05 pm
Received by	[illegible]	OnSite Env	3/27/04	1305
Relinquished by				
Received by				
Relinquished by				
Received by				

Comments/Special Instructions:

Reviewed by/Date

Reviewed by/Date

Chromatograms with final report ☐

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