



SNOHOMISH
HEALTH
DISTRICT

ENVIRONMENTAL HEALTH DIVISION
3020 Rucker Avenue, Suite 104
Everett, WA 98201-3900
425.339.5250 FAX: 425.339.5254
Deaf/Hard of Hearing: 425.339.5252 (TTY)

Healthy Lifestyles, Healthy Communities

June 1, 2004

Gary East
17553 15th Avenue NE
Shoreline, Washington 98155

Subject: Go East Landfill Property

Latitude: 47 53" 59.64

Longitude: 122 21" 28.38

TCP ID No. N-31-5162-000

Township 31N Section 19 Range 4E

Dear Mr. East:

The Snohomish Health District has completed the site hazard assessment (SHA) of the Go East Landfill property, as required under the Model Toxics Control Act. A determination of no further action (NFA) at this site has been made by the Department of Ecology (Ecology) based on this SHA.

For your information, Ecology will be publishing the results of this, and other recently completed SHAs, in the *August 17, 2004 Special Addition to the Site Register*.

Ecology reserves the right to initiate further investigation at this site where new information is received indicating potential/actual threat to human health and/or the environment through the release of hazardous substance(s).

Please contact me at 425.339.5250 if you have any questions/comments regarding this SHA/Determination of NFA.

Sincerely,

Geoffrey W. Crofoot, R.S.
Environmental Health Specialist

GWC:sei

Enclosures

cc: Michael Spencer, Department of Ecology, Olympia
Louise Bardy, NWRO DOE

Site Hazard Assessment
Recommendation for No Further Action

May 14, 2004

Site Name:	Go East Landfill	Section:	21
		Township:	28N
		Range:	5E
Site Address:	No site address, South of 108 th St SE, East of Silver Lake	Ecology Facility Site ID:	2708
City:	Everett	ERTS	
County:	Snohomish		
State:	WA		
Zip:	98208		
Lat:	47 53' 59.64"		
Long:	122 10' 45.26"		

Site Description (Include management areas, substances of concern, and quantities):

The Go East Landfill site, hereafter referred to as the landfill or the site, is a closed demolition waste and wood waste landfill which was operated by the Reckoway Corporation and later owned and closed by the Go East Corporation. Waste was hauled to the site in the time frame of 1972 to 1983. The site was placed on the Washington Department of Ecology (Ecology) suspected and confirmed contaminated sites list on March 1, 1988.

The landfill is located east of Silver Lake on 36th Drive SE, north of 116th Street, and south of 108th St SE, near Everett, Snohomish County, WA. The landfill area of the property occupies approximately eight acres of a larger portion of undeveloped land.

Management areas include soil and ground water and surface water in the immediate vicinity of the landfill. For the purposes of this Site Hazard Assessment (SHA) under the Model Toxics Control Act (MTCA) soils and ground water will be considered, since potential contaminants are sub-surface. The substances of concern for this SHA are the priority pollutant metals and carcinogenic polynuclear aromatic hydrocarbons (PAH.)

Site Description/History:

The landfill is surrounded predominantly by residential properties, the Olympic Pipeline easement and open space. Immediately to the northwest and south of the landfill single-family housing exists. Silver Lake is west and south of the landfill at approximately 7000 feet. Silver Lake is up gradient of the landfill for both surface and ground water. Unnamed creeks and springs exist immediately to the north, south and southeast of the site. These surface water features drain directly into the Snohomish River valley and eventually into the Snohomish River. The Snohomish River exists, at its closest, approximately 10,000 feet to the northeast. The south of the site is bounded by the Olympic Pipeline easements.

Soils have been imported to the site to cover and protect the surface of the landfill from wet surface conditions. However, due to fire conditions outlined below in 1983 and 1984, the surface of the landfill remains uneven.

It is unclear if gaps exist in the cover. It is unclear what effect seasonal ground water levels have on the landfill. It is also unclear what effect surface water has on the contents of the landfill.

The site currently exists as an open space nestled in between recently built housing developments. Trails on the property indicate that community members from all sides frequently access the site. The site is heavily vegetated in the summer with various berry vines, grasses, alder trees and scotch broom plants. The vegetation on the site makes visual inspection of soil and surveying of the site difficult. At the time of the March 2004 Snohomish Health District (SHD) site visit, no stressed vegetation was noted on top of the landfill. The toe of the landfill on the eastern side was visited. Red staining of the soil was observed. The staining at this location may be related to iron bacteria that could be activated by recent soil disturbances upstream of the sampling location.

The following is a brief history of the property. In 1969 a Snohomish County Conditional Use (CU) permit was issued for excavation. The permit was for a two-year period and was set to expire in 1971. In 1970 the property owner Vernon Holt enquired regarding the suitability of a solid waste site at the now excavated site. In 1972 Reckoway Inc. became the owner of the property. Snohomish County issued a CU for use of the site as both a sand and gravel excavation and solid waste disposal fill. At that time, solid waste disposal was reported to be limited to wood, mineral, or concrete. From 1972 to 1978, Reckoway operated the site in a similar manner. From time to time the CU was modified to extend the types of waste which could be accepted at the site, including wood waste. In 1974, the SHD adopted the Solid Waste Regulations RCW 173-301. Reckoway eventually submitted an application to the SHD regarding a wood waste landfill at the site. Ecology reviewed the application at that time, and noted that it could not recommend granting a permit for a wood waste landfill at the site. The Board of Health adopted the SHD's Regulations Governing Solid Waste Handling on October 8, 1974.

In the same time frame as the Ecology permit review, community members in the area reported concerns regarding the Reckoway Landfill. These concerns were that the site was not operated in compliance with the SHD solid waste regulations, the CU permits and that the site was generally a nuisance to the nearby neighborhood.

A fire was reported in the landfill in 1974. An article dated 8/23/1974 in the Seattle times indicated that the fire was a result of dumped magnesium, aluminum and phosphate. These products ignited when exposed to water and most likely ignited subterranean fuels. It is unclear when this fire was completely extinguished.

In 1977, the SHD advised that waste could not be accepted at the site beyond the date of 10/1/1977. Further, the SHD advised closure, which included closure under WAC 173-301. Closure requirements were not met.

In 1979 Gary East and David R. Golden of the Go-East Corporation purchased the property with the intent of depositing more fill and eventually developing it for residential use. East, in a letter to the SHD, noted that he would extinguish the existing fire and prevent further fires at the site. In 1979 Snohomish Count issued a CU and on 11/2/1979 the SHD issued a permit for the operation of a wood waste landfill.

SHD files indicate that there was little indication of fire at the site in the year of 1980 though 1982

In 1981 (8/26/81) the SHD received a letter from Ecology concerning the evaluation of the property pursuant to the Federal Resource Conservation Act (RCRA.) Ecology advised that the site not be placed onto the open dump inventory for 1982 because at the time of their evaluation, no significant non-complying situations had been noted.

On 7/29/1983 the site was posted by Snohomish County with a stop work order due to the expiration of the CU permit. On 7/27/1983 the SHD advised Gary East that the CU permit had expired on 9/18/1982 and that East would have to submit written plans to the SHD for compliance and closure. An August 9, 1983 letter from Gary East to the SHD indicated that East and Co planned to complete closure of the site By February 1984. Records indicate that waste continued to be brought to the site. On August 9, 1983, it was learned that a subterranean fire existed in the fill at the site.

Between late October of 1983 and September 1984 the fire continued. The record seems to indicate that the hottest burning of the landfill occurred early in 1984 and appeared to taper out towards the end of the year. Reports in September 1984, indicate that the fire continued to smolder with no open flame. Various legal actions took place to move the site toward closure, compliance, and fire elimination.

Through an inspection dated 1/15/1986, the SHD and Ecology indicated that subterranean fire persisted at the site. Photos taken at the time depict relatively small steam/smoke vents in the ground compared to the large vents depicted in 1984 and 1985.

On September 15, 1986, Go-East submitted a closure proposal to the SHD. It included grading and filling components. However, the plan did not address any of the ground water or landfill gas monitoring components, which were outlined in a SHD correspondence dated August 26, 1983. The record after this point does not indicate that any further action was taken towards closure of the landfill.

An inspection report dated June 21, 1990, indicated that the site was in violation of closure standards. The report indicated that the site was never closed in accordance with solid regulations and was in violation of the then new WAC 173-304 solid waste handling regulations.

Gary East responded to this notice in a July 9, 1990 letter to the SHD, noting that no further closure had occurred, and that none would be completed under the new and more strict 173-304 solid waste regulations. East asserted that the landfill had been closed in late 1983.

Files maintained at the SHD indicate a March 29, 1991 correspondence from Gary East, which indicated a contract with Future Development to complete grading at the site. The contract covered bringing clean inert fill to the site to fill in depressions caused by the 1983 fire. Additionally, the contract called for filling steep hill cuts as the original Go-East closure plan had indicated would happen. The file indicates that trucks were observed entering the site. However, it is unclear if this contract or plan to grade the site was ever completed.

Litigation by Gary East against the SHD in July of 1996 sought relief and a final decision on the matter of whether or not the Go-East landfill site was subject to closure requirements under WAC 173-304. The file does not indicate the outcome of this litigation or if the site was graded as the March 29, 1991 Future Development contract indicates.

Recent Activities:

The SHD conducted a small well survey within a one-mile radius of the landfill on the down gradient side. The well survey was conducted during September of 2003. Responses were received in October of 2003. The survey area was generally to the east and southeast. The purpose of the survey was to locate wells in the area, and determine the water level of the aquifer. The population directly east of the landfill along the Lowell Larimer Road is served by The Everett public water system. Houses along the Lowell Larimer Road between the Spane Dairy and 56th Ave SE were targeted in this survey. No houses were located that used or maintained private wells. Four surveys were sent out to houses suspected of having older wells. None of the responses indicated wells on site.

On March 16, 2004, the SHD visited the site to collect ground water samples from springs on the southeast, east and northeast down gradient sides of the landfill. The SHD planned to sample the springs under the assumption that these shallow sources of water may have been impacted by landfill activity.

The day of the sampling event the weather was poor and significant volumes of rain had fallen the prior night. Rain continued during the sampling. One difficulty of the sampling was surface water interference. The SHD noted significant overland flow. Another difficulty was the soils in the areas where the springs were located were extremely high in clay content. The difficulty this presented to sampling was that the clay clogged the inlet screens on the drive point piezometer. The clogged tip did not allow for sampling with that instrument. The SHD decided to collect two samples from surface water sources. One sample was collected from a seep located to the southeast of the main toe of the landfill. This area was selected because of red iron bacterial like staining observed at the time of sampling. This area was also observed as a spring, and would have been an area sampled by the drive point if clay conditions were not present. The second sample was collected from a stream, which drained the area across the toe of the landfill and property to the southeast of the toe of the landfill. This area was selected because it also showed signs of iron bacteria. The second sample location was selected also because it likely would have contained surfacing ground water drained from the area of the landfill prior to mingling with other surface water drainage areas.

Analytical Results of the Sampling are listed as follows.

Table 1 Surface Water Sampling Analytical Results March 4, 2004				
Analysis	MTCA Method A for Ground Water	MTCA Method B for Surface Water	Go-East # 1 Seep	Go-East # 2 Surface Water
Nitrate-N			1.72	ND
Sulfate			5	ND
TOC			9.93	3.63
Antimony		1.040	ND	ND
Arsenic	.005	.0177	.003	.055
Beryllium			ND	ND
Cadmium	.005	.0203	ND	ND
Chromium	.05		.002	ND
Copper		2.660	ND	ND
Lead	.015	NA	.001	ND
Mercury	.002	NA	ND	ND
Nickel		1.1	.004	.002
Selenium			ND	ND
Silver		25.9	ND	ND
Thallium			ND	ND
Zinc		16.5	.010	ND
All results are noted in Mg/l unless otherwise noted. Black outline indicates non-metal sample				

Carcinogenic Polynuclear Aeromatic Hydrocarbon (PAH) analysis was conducted. Results indicate non-detect for all PAHs on both samples. PAHs were sampled because of fire at the site. Elevated arsenic level may be attributed to natural background, however, no sampling confirms this.

Historical Activities

Ecology and Environment Inc. prepared a report for the United States Environmental Protection Agency (USEPA) Region X in June of 1987. The report and assessment were carried out under the provisions of Section 3012 of the Resource Conservation and Recovery Act (RCRA). The report recognized: Leachate is present at the site, several fires have occurred at the site and small amounts of metal dusts were deposited at one time. The report recommends no further action under Superfund for the following reasons: Small volume of hazardous waste was ever delivered to the site, contaminants found in surface water were below Primary Drinking water standards and the depth to regional ground water appeared to be approximately 200 feet bgs.

An October 1997 report by Robert G Bober Jr. PE, titled Surface Water Quality Testing Report, outlines the process used to select several surface water sample locations. Results from sampling indicate no evidence of significant contamination in the surface water.

On May 24, 1999, Shannon and Wilson Inc. prepared a proposal for the closure of the Go-East Landfill site.

June 21, 2002, HWA Geo Sciences Inc. prepared a report with the following scope: Collect surface water sample, analyze sample for pollutant parameters and monitor test pit excavation to determine the limits of in place waste. The report concluded that sample results did not indicate that hazardous materials or other contaminants adversely impacted the site. The report noted elevated levels of iron manganese, TDS and TOC, but linked them to a reducing environment caused by decaying wood in the landfill.

Test pits revealed the following types of fill at the site: Earthen fill consisting of loose to medium dense sand and silty sand with some wood. Construction debris including lumber, concrete, steel, glass and trace amounts of plastic intermixed with sand and silty sand, refuse and debris including tires, glass, wood, steel plastic, and textiles. SHD review of the test pit logs confirms the presence of all the aforementioned. In addition to the aforementioned, significant quantities of charred wood and material exists, presumably from historical fires.

The SHD maintains records of surface water sampling throughout 1984, and sporadically through 1997. Review of these records, without benefits of statistical analysis, reveals little change in, and apparently little impact to, the surface water quality. However, in all instances including recent sampling events, iron and manganese show elevated levels.

Soils

A 1970 Geolab study indicated that the geology of the site consists of Esperance sand overlain by Admiralty clay. A 1983 Soil Conservation Service Soil Survey of Snohomish County indicated that the surface soils at the site are Alderwood gravelly sandy loam 2 to 8 percent and Alderwood-Everett gravelly sandy loams 25-70 percent. Alderwood soils permeability are moderately rapid while available water capacity is low. The report indicates that this unit is mainly used for urban development. Alderwood-Everett soils are moderately deep above the hardpan and moderately well drained. Permeability is moderately rapid above the hardpan and slow through it.

Surface Water Features

Silver Lake is west and south of the landfill at approximately 7000 feet. Silver Lake is up gradient of the landfill for both surface and ground water. Unnamed creeks and springs exist immediately to the north, south and southeast of the site. These surface water features drain directly in to the Snohomish River valley and eventually in to the Snohomish River. The Snohomish River exists, at its closest, 10,000 feet to the northeast.

It is important to note that the site exists in a natural ravine. Like many of the ravines to the north and south of the site, the ravine at this site drains water to the Snohomish River valley. There is some evidence in the file that the natural stream, which existed at the site prior to 1972 when Reckoway operated as landfill at the site, was rerouted around the landfill. However, the files maintained at the SHD do not reflect plans, which support this assertion.

Ground Water Features

As previously noted, the SHD conducted a limited well survey in a one-mile radius of the site. The SHD was specifically looking down gradient of the site. It appeared

that all the residents in the defined area are served by public water system supplied by the City of Everett.

The SHD conducted a review of Ecology well logs in a two-mile radius. Forty domestic or municipal wells were observed in this area. All of these wells are on the west side of the Snohomish River. The Hilton Lake Homeowners Association completed a well slightly north and west of the site. The well log indicates that the well was completed at 256 feet below ground surface (bgs.) Water was available at 242-252 feet bgs. This well log also indicates that layers of hardpan and clay exist between 2 and 163 feet bgs. Yet another well log in NW corner of Section 21 (SEC 21, Twn 28, Rng 5E) details ground water at approximately 235 feet bgs. This particular log also shows water at 200-205 feet bgs. The well has been abandoned. The closest well to the site is located at 5115 116th St SE Everett. The well log for this well indicates that ground water can be found at 216-224 feet bgs. It also indicates that layers of clay can be found at 43-50 feet bgs, 65-80 feet bgs and 180 to 200 feet bgs. Noted the aforementioned wells are all up or cross gradient of the landfill and are noted to express the depth of ground water in the vicinity of the landfill.

A 1952 United States Department of the Interior Geologic Survey report conducted by R.C. Newcomb indicated that regional ground water, in the vicinity of the landfill exists at approximately 200 feet bgs. The report map indicates that springs exit the hill site to the Snohomish River valley at 180 to 140 feet above sea level. At the time of the March 2004 SHD site visit, the Global Positioning unit indicated the spring sampled was at 135 feet above sea level. The accuracy of the unit was, at that time plus or minus 40 feet.

Ground Water and Surface Water Uses

The well logs search indicated that 40 wells exist within a two-mile radius of the site. At 3 people served per connection this makes a population of 120 people served by domestic wells. The small well survey along the Lowell Larimer road indicated that most, if not all, houses along this road are served by public water, which is obtained from the City of Everett's distribution system. Housing developments to the north and south of the site are all served by Everett City water as well. There is a population of zero served by group A wells within the two-mile radius of the site. There is a population of 3 served by group B wells within a two-mile radius of the site.

The population in the area according to the Census 2000 numbers is 30308 people within a two-mile radius and 9618 within a one-mile radius. Reviewing current areas photos of the site indicate that a predominance of the aforementioned population exist to the west, and up gradient of the site. Population existing to the south of the site exists in separate drainage areas.

There are 565 acres of land irrigated by surface water collected within a two-mile radius and down stream of the site. There are 180 acres of land irrigated with ground water within a two-mile radius down gradient of the site.

There is some confusion as to whether this site has been ever been closed properly. Historical information indicates that the SHD contends that the site must be closed according to closure requirements outlined in WAC 173-304. Gary East, the owner of the site, contends that the site has been closed since 1983 when he reported that the site stopped accepting waste materials.

In 1983, there was a large subterranean fire, which lasted at least one year. It is unclear if further closure activities have ever taken place after the fire. There

is some evidence in the SHD maintained file that soils were brought to the site for the purpose of grading. Currently, Gary East intends to develop the larger portion of the property around the landfill to residential dwellings. Various inspection reports filed by the SHD indicate that leachate has been observed at the toe of the landfill. Reports also indicate scattered methane readings in the vicinity of the landfill. The aforementioned is to be expected. However, potential mitigation of these observed conditions is worthy of consideration when development takes place near or adjacent to existing landfills.

This SHA does not represent an indication of closure or completion of any requirements for working on or around an existing landfill. It simply attempts to define the relative risk to the population and environment caused by an existing landfill.

Historical work at this site has documented impacts to surface water. These impacts seem to be limited to secondary contaminants such as iron and manganese. Historical work also indicates that the contents of the landfill are not municipal solid waste in nature. Interned components of the landfill include: Construction debris including lumber, concrete, steel, glass and trace amounts of plastic intermixed with sand and silty sand, refuse and debris including tires, glass, wood, steel plastic, and textiles. The U.S. EPA concluded that the site posed little to no threat to public health or the environment. Various contractors have visited the site over the years and have concluded in a similar manner. The SHD has sampled the site on a number of different occasions. Analytical results of the SHD SHA sampling event appear to confirm the conclusions reached by the U.S. EPA and private contractors.

Routes of exposure to potential contaminants are few. As previously stated, contaminant levels in surface water and surfaced ground water are low. There are no recorded exceedances of MTCA cleanup standards for ground water. *Geoffrey: There are no monitoring wells so I would adjust this statement.* If it were to ever be demonstrated that significant contamination was entering surface water or ground water, the population in the area is supplied by the City of Everett's public water distribution system. Further, the few houses that are not currently connected to this system have public water accessible. Ground water appears to be further protected by layers of clay between the elevation of the landfill and regional groundwater.

Currently there is a soil cover to the fill, which significantly limits direct exposure to wastes and potential contaminants. The existing cover and vegetation limit route exposure as well. Although complete specifications of the cover are uncertain, it is clear that vegetation thrives without obvious evidence of stress or impact. Further development at the site will likely lead to a more a complete closure, and likely even less exposure to landfilled waste than currently exists.

Recommendations

At this time the Snohomish Health District recommends that the residential development of the site include and implement a closure plan as outlined in the May 24, 1999, Shannon and Wilson Inc. proposal for Closure of the Go-East Landfill. Beyond this recommendation, the SHD recommends no further action (NFA) at this site under MTCA WAC 173-340-310(5)(d)(ii).



11525 Knudson Rd.
Burlington, WA 98233
(800) 755-9295
(360) 757-1400 - FAX (360) 757-1402

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Health District
Environmental Health

March 22, 2004

Page 1 of 1

Geoffrey Crofoot
Snohomish Health District
3020 Rucker Ave Ste 104
Everett, WA 98201

RE: 04-1319 - SHD15017/Go-East


Dear Geoffrey Crofoot,

Your project: SHD15017/Go-East, was received on Thursday March 04, 2004.

All samples were analyzed within the accepted holding times, were appropriately preserved and were analyzed according to approved analytical protocols. The quality control data was within laboratory acceptance limits.

If you have questions phone me at 800 755-9295.

Respectfully Submitted,


L. J. Henderson, PhD
Laboratory Director

Enclosure Data Report
QC Reports
Chain of Custody



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 Burlington, WA 98233
 (800) 755-9295
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 MAR 24 2004
 Snohomish Health District
 Environmental Health

Data Report

Client Name: Snohomish Health District
 3020 Rucker Ave Ste 104
 Everett, WA 98201

Report Date: 3/15/2004
 Reference Number: 04-1319
 Project: SHD15017/Go-East

Collected By:

Date Received: 3/4/2004

Supervisor: *YJM*

Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments	
<u>Lab Number: 2607</u>		<u>Sample Description: G1 - Seap</u>					<u>Sample Date: 3/3/2004</u>				
NITRATE-N	1.72	0.1	0.015	mg/L	1.0	300.0	3/4/2004	MVP	I040304A		
SULFATE	5	1	0.04	mg/L	1.0	300.0	3/4/2004	MVP	I040304A		
TOTAL ORGANIC CARBON	9.93	0.5	0.06	mg/L	1.0	SM5310 B	3/4/2004	TW	TOC_040304		
ANTIMONY	ND	0.001	0.00004	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311		
ARSENIC	0.003	0.001	0.00003	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311		
BERYLLIUM	ND	0.001	0.00005	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311		
CADMIUM	ND	0.001	0.00002	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311		
CHROMIUM	0.002	0.005	0.0001	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311		
COPPER	ND	0.005	0.00004	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311		
LEAD	0.001	0.001	0.00002	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311		
MERCURY	ND	0.0005	0.0005	mg/L	1.0	245.1	3/8/2004	SV	Hg_040308		
NICKEL	0.004	0.001	0.00005	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311		
SELENIUM	ND	0.005	0.00009	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311		
SILVER	ND	0.001	0.00003	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311		
THALLIUM	ND	0.001	0.00003	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311		
ZINC	0.010	0.005	0.00006	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311		
<u>Lab Number: 2608</u>		<u>Sample Description: G-2 - stream</u>					<u>Sample Date: 3/3/2004</u>				
NITRATE-N	ND	0.1	0.015	mg/L	1.0	300.0	3/4/2004	MVP	I040304A		
SULFATE	ND	1	0.04	mg/L	1.0	300.0	3/4/2004	MVP	I040304A		
TOTAL ORGANIC CARBON	3.63	0.5	0.06	mg/L	1.0	SM5310 B	3/4/2004	TW	TOC_040304		
ANTIMONY	ND	0.001	0.00004	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311		
ARSENIC	0.055	0.001	0.00003	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311		
BERYLLIUM	ND	0.001	0.00005	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311		
CADMIUM	ND	0.001	0.00002	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311		
CHROMIUM	ND	0.005	0.0001	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311		
COPPER	ND	0.005	0.00004	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311		
LEAD	ND	0.001	0.00002	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311		
MERCURY	ND	0.0005	0.0005	mg/L	1.0	245.1	3/8/2004	SV	Hg_040308		
NICKEL	0.002	0.001	0.00005	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311		

PQL = Practical Quantitation Limit is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.
 ND = Not detected above the listed practical quantitation limit (PQL)
 D.F. - Dilution Factor



Data Report

Collected By:

Date Received: 3/4/2004

Analyte	Result	PQL	MDL	Units	DF	Method	Analyzed	Analyst	Batch	Comments
SELENIUM	ND	0.005	0.00009	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311	
SILVER	ND	0.001	0.00003	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311	
THALLIUM	ND	0.001	0.00003	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311	
ZINC	ND	0.005	0.00006	mg/L	1.0	200.8/200.2	3/11/2004	MVP	200.8D040311	

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PQL = Practical Quantitation Limit is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.
ND = Not detected above the listed practical quantitation limit (PQL)
D.F. - Dilution Factor



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DATA REPORT

Client Name: Snohomish Health District
 3020 Rucker Ave Ste 104
 Everett, WA 98201

Reference Number: 04-1319
 Project: SHD15017/Go-East

Lab Number: 2607

Field ID: G1

Sample Description: Seap

Matrix: Water

Collect Date: 3/3/2004

Extraction Date: 3/9/2004

Extraction Method: 3510C

Report Date: 3/22/2004

Date Analyzed: 3/17/2004

Analyst: CHM

Review:

Analytical Method: 8270C

Carcinogenic PAHs

CAS ID#	COMPOUNDS	RESULT*	Units	PQL	MDL	D.F.	Batch	COMMENT
- Polynuclear Aromatic Hydrocarbons (PAHs)								
56-55-3	BENZ[A]ANTHRACENE	ND	ug/L	0.1		1.0	8270_040309	
50-32-8	BENZO[A]PYRENE	ND	ug/L	0.1		1.0		
205-99-2	BENZO[B]FLUORANTHENE	ND	ug/L	0.1		1.0		
207-08-9	BENZO[K]FLUORANTHENE	ND	ug/L	0.1		1.0		
218-01-9	CHRYSENE	ND	ug/L	0.1		1.0		
53-70-3	DIBENZO[A,H]ANTHRACENE	ND	ug/L	0.1		1.0		
193-39-5	INDENO[1,2,3,C,D]PYRENE	ND	ug/L	0.1		1.0		

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*Result of: NA - indicates the compound was not analyzed.
 Alpha characters following a numeric value are data qualifiers. If there are data qualifiers on your report definitions can be found on an accompanying sheet.
 ND - indicates the compound was not detected above the PQL or MDL.

PQL = Practical Quantitation Limit is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.
 D.F. - Dilution Factor.



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DATA REPORT

Client Name: Snohomish Health District
 3020 Rucker Ave Ste 104
 Everett, WA 98201

Reference Number: 04-1319
 Project: SHD15017/Go-East

Lab Number: 2608
 Field ID: G-2

Report Date: 3/22/2004
 Date Analyzed: 3/17/2004

Sample Description: stream
 Matrix: Water
 Collect Date: 3/3/2004
 Extraction Date: 3/9/2004
 Extraction Method: 3510C

Analyst: CHM
 Review: *TW*
 Analytical Method: 8270C

Carcinogenic PAHs

CAS ID#	COMPOUNDS	RESULT*	Units	PQL	MDL	D.F.	Batch	COMMENT
- Polynuclear Aromatic Hydrocarbons (PAHs)								
56-55-3	BENZ[A]ANTHRACENE	ND	ug/L	0.1		1.0	8270_040309	
50-32-8	BENZO[A]PYRENE	ND	ug/L	0.1		1.0		
205-99-2	BENZO[B]FLUORANTHENE	ND	ug/L	0.1		1.0		
207-08-9	BENZO[K]FLUORANTHENE	ND	ug/L	0.1		1.0		
218-01-9	CHRYSENE	ND	ug/L	0.1		1.0		
53-70-3	DIBENZO[A,H]ANTHRACENE	ND	ug/L	0.1		1.0		
193-39-5	INDENO[1,2,3,C,D]PYRENE	ND	ug/L	0.1		1.0		

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*Result of: NA - indicates the compound was not analyzed.
 Alpha characters following a numeric value are data qualifiers. If there are data qualifiers on your report definitions can be found on an accompanying sheet.
 ND - indicates the compound was not detected above the PQL or MDL.

PQL = Practical Quantitation Limit is the lowest level that can be achieved within specified limits of precision and accuracy during routine laboratory operating conditions.
 D.F. - Dilution Factor.



QUALITY CONTROL REPORT SURROGATE REPORT

Reference Number: 04-1319
Report Date: 03/22/04

Lab No	Analyte	Result	Units	Method	Limit
8270_040309 2607	2 - FLUOROBIPHENYL (Surr)	91	%	8270C	Acceptance Limits 28-130%
	d5-NITROBENZENE (Surr)	93	%		Acceptance Limits 43-127%
	p-TERPHENYL-d14 (Surr)	86	%		Acceptance Limits 66-138%
8270_040309 2608	2 - FLUOROBIPHENYL (Surr)	95	%	8270C	Acceptance Limits 28-130%
	d5-NITROBENZENE (Surr)	93	%		Acceptance Limits 43-127%
	p-TERPHENYL-d14 (Surr)	90	%		Acceptance Limits 66-138%

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*Notation:

A surrogate is a pure compound added to a sample in the laboratory just before processing so that the overall efficiency of a method can be determined.

The Acceptance Limits (or Control Limits) approximate a 99% confidence interval around the mean recovery.



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QUALITY CONTROL REPORT BLANK REPORT

Reference Number: 04-1319
 Report Date: 03/22/04

Batch	Analyte	Result	Units	Limit	QC Qualifier Method	Type*	Comments
200.8D040311	BERYLLIUM	ND	mg/L	0.00	200.8	LRB	
	CHROMIUM	ND	mg/L	0.00	200.8	LRB	
	NICKEL	ND	mg/L	0.00	200.8	LRB	
	COPPER	ND	mg/L	0.01	200.8	LRB	
	ZINC	ND	mg/L	0.02	200.8	LRB	
	ARSENIC	ND	mg/L	0.01	200.8	LRB	
	SELENIUM	ND	mg/L	0.00	200.8	LRB	
	SILVER	ND	mg/L	0.00	200.8	LRB	
	CADMIUM	ND	mg/L	0.00	200.8	LRB	
	ANTIMONY	ND	mg/L	0.00	200.8	LRB	
	THALLIUM	ND	mg/L	0.00	200.8	LRB	
	LEAD	ND	mg/L	0.00	200.8	LRB	
Hg_040308	MERCURY	ND	mg/L	0.00	245.1	LRB	
1040304A	NITRATE-N	ND	mg/L	0.10	300.0	LRB	
	SULFATE	ND	mg/L	0.10	300.0	LRB	
TOC_040304	TOTAL ORGANIC CARBON	ND	mg/L	0.50	SM5310 B	LRB	
200.8D040311	BERYLLIUM	ND	mg/L	0.00	200.8	MB	
	BERYLLIUM	ND	mg/L	0.00	200.8	MB	
	CHROMIUM	ND	mg/L	0.00	200.8	MB	
	CHROMIUM	ND	mg/L	0.00	200.8	MB	
	NICKEL	ND	mg/L	0.00	200.8	MB	
	NICKEL	ND	mg/L	0.00	200.8	MB	
	COPPER	ND	mg/L	0.00	200.8	MB	
	COPPER	ND	mg/L	0.00	200.8	MB	
	ZINC	ND	mg/L	0.00	200.8	MB	
	ZINC	0.001	mg/L	0.00	200.8	MB	
	ARSENIC	ND	mg/L	0.00	200.8	MB	
	ARSENIC	ND	mg/L	0.00	200.8	MB	
	SELENIUM	ND	mg/L	0.00	200.8	MB	
	SELENIUM	ND	mg/L	0.00	200.8	MB	
	SILVER	ND	mg/L	0.00	200.8	MB	
	SILVER	ND	mg/L	0.00	200.8	MB	
	CADMIUM	ND	mg/L	0.00	200.8	MB	
	CADMIUM	ND	mg/L	0.00	200.8	MB	

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*Notation:

LRB: Laboratory Reagent Blanks are used to determine the background level of the analytes in a laboratory batch. Therefore, this report may include analytes not requested for your submitted samples.

MB: Method Blanks are used to determine background levels of analytes in digested and extracted laboratory reagent water.



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QUALITY CONTROL REPORT BLANK REPORT

Reference Number: 04-1319

Report Date: 03/22/04

Batch	Analyte	Result	Units	Limit	QC Qualifier	Method	Type*	Comments
200.8D040311	ANTIMONY	ND	mg/L	0.00		200.8	MB	
	ANTIMONY	ND	mg/L	0.00		200.8	MB	
	THALLIUM	ND	mg/L	0.00		200.8	MB	
	THALLIUM	ND	mg/L	0.00		200.8	MB	
	LEAD	ND	mg/L	0.00		200.8	MB	
	LEAD	ND	mg/L	0.00		200.8	MB	
8270_040309	BENZO[A]ANTHRACENE	ND	ug/L	0.02		8270C	MB	
	BENZO[A]PYRENE	ND	ug/L	0.02		8270C	MB	
	BENZO[B]FLUORANTHENE	ND	ug/L	0.02		8270C	MB	
	BENZO[K]FLUORANTHENE	ND	ug/L	0.02		8270C	MB	
	CHRYSENE	ND	ug/L	0.02		8270C	MB	
	DIBENZO[A,H]ANTHRACENE	ND	ug/L	0.02		8270C	MB	
	INDENO[1,2,3,C,D]PYRENE	ND	ug/L	0.02		8270C	MB	
	2 - FLUOROBIPHENYL (Surr)	67	%			8270C	MB	
	p-TERPHENYL-d14 (Surr)	127	%			8270C	MB	

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*Notation:

LRB: Laboratory Reagent Blanks are used to determine the background level of the analytes in a laboratory batch. Therefore, this report may include analytes not requested for your submitted samples.

MB: Method Blanks are used to determine background levels of analytes in digested and extracted laboratory reagent water.



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Reference Number: 04-1319

Report Date: 03/22/04



QUALITY CONTROL REPORT
 QCS/LFB REPORT

Batch	Analyte	Result	True		Method	%	Recovery Limits	QC	
			Value	Units				Qualifier Type*	Comment
200.8D040311	BERYLLIUM	0.039	0.040	mg/L	200.8	98	85-115	LFB	
	CHROMIUM	0.040	0.040	mg/L	200.8	100	85-115	LFB	
	NICKEL	0.039	0.040	mg/L	200.8	98	85-115	LFB	
	COPPER	0.040	0.040	mg/L	200.8	100	85-115	LFB	
	ZINC	0.0406	0.040	mg/L	200.8	102	85-115	LFB	
	ARSENIC	0.039	0.040	mg/L	200.8	98	85-115	LFB	
	SELENIUM	0.039	0.040	mg/L	200.8	98	85-115	LFB	
	SILVER	0.039	0.040	mg/L	200.8	98	85-115	LFB	
	CADMIUM	0.039	0.040	mg/L	200.8	98	85-115	LFB	
	ANTIMONY	0.038	0.040	mg/L	200.8	95	85-115	LFB	
	THALLIUM	0.040	0.040	mg/L	200.8	100	85-115	LFB	
	LEAD	0.040	0.040	mg/L	200.8	100	85-115	LFB	
200.8D040311	BERYLLIUM	0.042	0.040	mg/L	200.8	105	85-115	LFB	
	CHROMIUM	0.043	0.040	mg/L	200.8	108	85-115	LFB	
	NICKEL	0.042	0.040	mg/L	200.8	105	85-115	LFB	
	COPPER	0.043	0.040	mg/L	200.8	108	85-115	LFB	
	ZINC	0.042	0.040	mg/L	200.8	105	85-115	LFB	
	ARSENIC	0.041	0.040	mg/L	200.8	103	85-115	LFB	
	SELENIUM	0.041	0.040	mg/L	200.8	103	85-115	LFB	
	SILVER	0.042	0.040	mg/L	200.8	105	85-115	LFB	
	CADMIUM	0.042	0.040	mg/L	200.8	105	85-115	LFB	
	ANTIMONY	0.040	0.040	mg/L	200.8	100	85-115	LFB	
	THALLIUM	0.041	0.040	mg/L	200.8	103	85-115	LFB	
	LEAD	0.043	0.040	mg/L	200.8	108	85-115	LFB	
8270_040309	BENZ[A]ANTHRACENE	8.3	10	ug/L	8270C	83	33-143	LFB	
	BENZO[A]PYRENE	8.6	10	ug/L	8270C	86	17-163	LFB	
	BENZO[B]FLUORANTHENE	9.3	10	ug/L	8270C	93	24-159	LFB	
	BENZO[K]FLUORANTHENE	8.5	10	ug/L	8270C	85	11-162	LFB	
	CHRYSENE	8.8	10	ug/L	8270C	88	17-168	LFB	
	DIBENZO[A,H]ANTHRACENE	8.5	10	ug/L	8270C	85	1-227	LFB	
	INDENO[1,2,3,C,D]PYRENE	8.6	10	ug/L	8270C	86	1-171	LFB	
	2 - FLUOROBIPHENYL (Surr)	108		%	8270C	NA	NA	LFB	
	p-TERPHENYL-d14 (Surr)	130		%	8270C	NA	NA	LFB	
Hg_040308	MERCURY	0.00196	0.0020	mg/L	245.1	98	80-120	LFB	

*Notation:

% Recovery = (Result of Analysis)/(True Value) * 100

NA = Indicates % Recovery could not be calculated.

QCS: Quality Control Sample, a solution containing known concentrations of method analytes which is used to fortify an aliquot of reagent matrix. The QCS is obtained from an external source and is used to check lab performance.

LFB: Laboratory Fortified Blank, an aliquot of reagent matrix to which known quantities of method analytes are added in the lab. The LFB is analyzed exactly like a sample, and its purpose is to determine whether method performance is within accepted control limits.



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QUALITY CONTROL REPORT QCS/LFB REPORT

Reference Number: 04-1319

Report Date: 03/22/04

Batch	Analyte	Result	True		Method	% Recovery Limits		QC	Comment
			Value	Units		Qualifier Type*			
TOC_040304	TOTAL ORGANIC CARBON	0.98	1.0	mg/L	SM5310 B	98	90-110	LFB	
200.8D040311	BERYLLIUM	0.040	0.040	mg/L	200.8	100	85-115	QCS	
	CHROMIUM	0.040	0.040	mg/L	200.8	100	85-115	QCS	
	NICKEL	0.039	0.040	mg/L	200.8	98	85-115	QCS	
	COPPER	0.040	0.040	mg/L	200.8	100	85-115	QCS	
	ZINC	0.040	0.040	mg/L	200.8	100	85-115	QCS	
	ARSENIC	0.039	0.040	mg/L	200.8	98	85-115	QCS	
	SELENIUM	0.039	0.040	mg/L	200.8	98	85-115	QCS	
	SILVER	0.040	0.040	mg/L	200.8	100	85-115	QCS	
	CADMIUM	0.039	0.040	mg/L	200.8	98	85-115	QCS	
	ANTIMONY	0.038	0.040	mg/L	200.8	95	85-115	QCS	
	THALLIUM	0.040	0.040	mg/L	200.8	100	85-115	QCS	
	LEAD	0.040	0.040	mg/L	200.8	100	85-115	QCS	
Hg_040308	MERCURY	0.00259	0.0025	mg/L	245.1	104	80-120	QCS	
I040304A	NITRATE-N	2.55	2.50	mg/L	300.0	102	80-120	QCS	
	SULFATE	29	30	mg/L	300.0	97	80-120	QCS	
TOC_040304	TOTAL ORGANIC CARBON	1.67	1.65	mg/L	SM5310 B	101	90-110	QCS	

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*Notation:

% Recovery = (Result of Analysis)/(True Value) * 100

NA = Indicates % Recovery could not be calculated.

QCS: Quality Control Sample, a solution containing known concentrations of method analytes which is used to fortify an aliquot of reagent matrix. The QCS is obtained from an external source and is used to check lab performance.

LFB: Laboratory Fortified Blank, an aliquot of reagent matrix to which known quantities of method analytes are added in the lab. The LFB is analyzed exactly like a sample, and its purpose is to determine whether method performance is within accepted control limits.



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QUALITY CONTROL REPORT Duplicate Report

Reference Number: 04-1319
 Report Date: 03/22/04

Batch	Duplicate		Duplicate		Units	Method	%RPD	Limits	QC Qualifier
	Sample	Analyte	Result	Result					
200.8D040311	2477	COPPER	13	13	ug/L	200.8	0.0	0-45	
		CADMIUM	ND	ND	ug/L	200.8	NA	0-45	
		LEAD	2.0	2.0	ug/L	200.8	0.0	0-45	
	2546	BERYLLIUM	ND	ND	ug/L	200.8	NA	0-45	
		CHROMIUM	4.1	4.4	ug/L	200.8	7.1	0-45	
		NICKEL	5.1	5.6	ug/L	200.8	9.3	0-45	
		COPPER	96	97	ug/L	200.8	1.0	0-45	
		ZINC	264	264	ug/L	200.8	0.0	0-45	
		ARSENIC	1.8	1.6	ug/L	200.8	11.8	0-45	
		SELENIUM	1.7	2.1	ug/L	200.8	21.1	0-45	
		SILVER	3.3	3.7	ug/L	200.8	11.4	0-45	
		CADMIUM	0.6	0.6	ug/L	200.8	0.0	0-45	
		THALLIUM	ND	ND	ug/L	200.8	NA	0-45	
		LEAD	6.3	6.3	ug/L	200.8	0.0	0-45	
	2635	BERYLLIUM	ND	ND	ug/L	200.8		0-45	
		CHROMIUM	4.4	4.3	ug/L	200.8	2.3	0-45	
		NICKEL	5.0	5.2	ug/L	200.8	3.9	0-45	
		COPPER	79	77	ug/L	200.8	2.6	0-45	
		ZINC	163	164	ug/L	200.8	0.6	0-45	
		ARSENIC	1.5	1.4	ug/L	200.8	6.9	0-45	
	SELENIUM	1.2	1.2	ug/L	200.8	0.0	0-45		
	SILVER	3.4	3.3	ug/L	200.8	3.0	0-45		
	CADMIUM	0.4	0.4	ug/L	200.8	0.0	0-45		
	THALLIUM	ND	ND	ug/L	200.8	NA	0-45		
	LEAD	5.4	5.2	ug/L	200.8	3.8	0-45		
HG_040308	2468	MERCURY	ND	ND	mg/L	245.1	NA	0-45	
	2551	MERCURY	ND	ND	mg/L	245.1	NA	0-45	
	2610	MERCURY	ND	ND	mg/L	245.1	NA	0-45	
	2651	MERCURY	ND	ND	mg/L	245.1	NA	0-45	
IO40304A	2587	NITRATE-N	1.51	1.49	mg/L	300.0	1.3	0-45	
		SULFATE	25	25	mg/L	300.0	0.0	0-45	
	2610	NITRATE-N	ND	ND	mg/L	300.0	NA	0-45	
		SULFATE	15	15	mg/L	300.0	0.0	0-45	
TOC_040304	2608	TOTAL ORGANIC CARBON	3.63	3.60	mg/L	SM5310 B	0.8	0-50	

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%RPD = Relative Percent Difference
 NA = Indicates %RPD could not be calculated

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Duplicate analysis is used to validate all samples processed in a laboratory batch. Therefore, the duplicate analysis results in this report may not have come from the samples you submitted or may include analytes not requested.



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QUALITY CONTROL REPORT

Matrix Spike/Matrix Spike Duplicate Report

Reference Number: 04-1319
 Report Date: 3/22/2004

Batch	Sample	Analyte	Duplicate				Percent Recovery			QC					
			Result	Spike Result	Spike Result	Spike Conc	MS	MSD	Limits	%RPD	Limits	Qualifier	Comments		
200.8D040311	2477	COPPER	13	23		10	100		70-130	NA	0-60				
		CADMIUM	ND	9.7		10	97		70-130	NA	0-60				
		LEAD	2.0	12		10	100		70-130	NA	0-60				
	2546	BERYLLIUM	ND	40		40	100		70-130	NA	0-60				
		CHROMIUM	4.1	44		40	100		70-130	NA	0-60				
		NICKEL	5.1	40.5		40	89		70-130	NA	0-60				
		COPPER	96	129		40	83		70-130	NA	0-60				
		ZINC	264	288		40	60		70-130	NA	0-60				
		ARSENIC	1.8	40		40	96		70-130	NA	0-60	S	SPIKE <1:5 COMPARED TO BACKGROUND		
		SELENIUM	1.7	35		40	83		70-130	NA	0-60				
		SILVER	3.3	40		40	92		70-130	NA	0-60				
		CADMIUM	0.6	39		40	96		70-130	NA	0-60				
		THALLIUM	ND	39		40	98		70-130	NA	0-60				
		LEAD	6.3	45		40	97		70-130	NA	0-60				
		2635	BERYLLIUM	ND	41.6		40	104		70-130	NA	0-60			
			CHROMIUM	4.4	46		40	104		70-130	NA	0-60			
			NICKEL	5.0	42		40	93		70-130	NA	0-60			
			COPPER	79	114		40	88		70-130	NA	0-60			
ZINC	163		193		40	75		70-130	NA	0-60					
ARSENIC	1.5		41.6		40	100		70-130	NA	0-60					
SELENIUM	1.2		40		40	97		70-130	NA	0-60					
SILVER	3.4		42.6		40	98		70-130	NA	0-60					
CADMIUM	0.4		40		40	99		70-130	NA	0-60					
THALLIUM	ND	40.9		40	102		70-130	NA	0-60						
LEAD	5.4	46		40	102		70-130	NA	0-60						

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%RPD = Relative Percent Difference

NA = Indicates %RPD could not be calculated

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) analyses are used to determine the accuracy (MS) and precision (MSD) of an analytical method in a given sample matrix. Therefore, the usefulness of this report is limited to samples of similar matrices analyzed in the same analytical batch.



Batch	Sample	Analyte	Result	Duplicate			Units	Percent Recovery			%RPD	Limits	QC		
				Spike Result	Spike Result	Spike Conc		MS	MSD	Limits			Qualifier	Comments	
8270_040309	2537	BENZ[A]ANTHRACENE	ND	7.2		10	ug/L	72	NA	33-143	NA	0-60			
		BENZO[A]PYRENE	ND	7.8		10	ug/L	78	NA	17-163	NA	0-60			
		BENZO[B]FLUORANTHENE	ND	8.6		10	ug/L	86	NA	24-159	NA	0-60			
		BENZO[K]FLUORANTHENE	ND	7.4		10	ug/L	74	NA	11-162	NA	0-60			
		CHRYSENE	ND	8.4		10	ug/L	84	NA	17-168	NA	0-60			
		DIBENZO[A,H]ANTHRACENE	ND	7.7		10	ug/L	77	NA	1-227	NA	0-60			
		INDENO[1,2,3,C,D]PYRENE	ND	7.2		10	ug/L	72	NA	1-171	NA	0-60			
		2 - FLUOROBIPHENYL (Surr)	107	107			%		NA		NA				
p-TERPHENYL-d14 (Surr)	126	119			%		NA		NA						
HG_040308	2468	MERCURY	ND	0.00195	0.00194	0.0020	mg/L	98	97	80-120	1.0	0-60			
		2551	MERCURY	ND	0.00201	0.00199	0.0020	mg/L	101	100	80-120	1.0	0-60		
		2610	MERCURY	ND	0.00204	0.00204	0.0020	mg/L	102	102	80-120	0.0	0-60		
		2651	MERCURY	ND	0.00178	0.00170	0.0020	mg/L	89	85	80-120	4.6	0-60		
1040304A	2587	NITRATE-N	1.51	2.61		1.00	mg/L	110	NA	80-120	NA	0-60			
		2610	NITRATE-N	ND	1.24		1.00	mg/L	124	NA	80-120	NA	0-60		
			SULFATE	15	17		2.00	mg/L	100	NA	80-120	NA	0-60		
		2639	NITRATE-N	0.2	1.22		1.00	mg/L	102	NA	80-120	NA	0-60		
TOC_040304	2344	TOTAL ORGANIC CARBON	1.16	2.09	2.14	1.0	mg/L	93	98	70-130	5.2	0-50			

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%RPD = Relative Percent Difference

NA = Indicates %RPD could not be calculated

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) analyses are used to determine the accuracy (MS) and precision (MSD) of an analytical method in a given sample matrix. Therefore, the usefulness of this report is limited to samples of similar matrices analyzed in the same analytical batch.



Qualifier Definitions

Reference Number: 04-1319
Report Date: 03/22/04

Qualifier	Definition
S	Spiking amount was lower than the 5:1 spike to background (sample amount) basis for performance criteria. The reported criteria does not apply due to increased errors in measurement of both sample and spike concentration. The results are reported for prec

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Note: Some qualifier definitions found on this page may pertain to results or QC data which are not printed with this report.

