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BLACK DROSS PILE CHARACTERIZATION MARALCO ALUMINUM SITE KENT, WASHINGTON

For

LOEB & LOEB LLP
URS JOB NO.: 32977-006-189
AUGUST 31. 2000

URS

August 31, 2000

Mr. Larry Gutcho
Loeb & Loeb LLP
1000 Wilshire Boulevard
Suite 1800
Los Angeles, CA 90017-2475

Black Dross Pile Characterization
Maralco Aluminum Site
Kent, Washington
D&M Job No.: 32977-006-189

Dear Mr. Gutcho:

URS Corporation (formerly Dames & Moore) is pleased to submit the results of the analytical sampling performed on behalf of Loeb & Loeb to characterize the approximately 25,000-ton black dross pile at the former Maralco Aluminum Site. The Maralco property is located at 7730 South 202nd Street in Kent, Washington. This work was performed in accordance our proposal dated March 16, 2000, as authorized by Mr. Andrew Clare on June 8, 2000. This letter report summarizes the information discussed with you on July 25, 2000, specifically our interpretation of the analytical data and potential disposal options. Order-of-magnitude costs to carry out disposal of the black dross wastes and subsequent phases of work to address other environmental issues at the site are also discussed.

BACKGROUND

Loeb & Loeb is representing a third party that we understand owns an interest in the Maralco property. A former aluminum recycling/refinery facility was operated on this property between 1980 and 1986. The black dross pile is a by-product of the recycling process. Other wastes, debris, and abandoned equipment are also present. The property is currently under the control of the Washington State Department of Ecology (Ecology).

Based on our review of the *Draft Phase I Remedial Investigation Report* (MK Environmental Services, February 1991) and the *Draft Phase I Feasibility Study* (MK Environmental Services, March 1991), our opinion was that the black dross pile represented the main cost-related liability at the site. The cost per ton to transport and dispose of the black dross was estimated to range between $35 and $200 per ton, depending on the regulatory status of the waste. Sampling of the black dross was proposed to obtain data to characterize this waste, specifically to determine whether the State of Washington would consider the black dross to be a Dangerous Waste under the state's waste management regulations.

URS's March 16th proposal included a scope of work to conduct analytical testing of the black dross, as well as providing a general approach to address other environmental issues at the site. The results of

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these analyses are presented in this report. We have also updated the information provided to you in our original proposal and have addressed potential options for handling the dross wastes.

BLACK DROSS PILE SAMPLING AND ANALYSIS

As discussed in our March 16th proposal, Mr. Chuck Hinds, the Ecology manager for the Maralco site, confirmed that black dross wastes are not listed dangerous wastes. However, the black dross had not been tested to determine whether it might be classified as a dangerous waste based on the presence of leachable metals and/or salts.

Two tests are routinely used in Washington for this assessment: analysis of metals according to the toxicity characteristic leaching procedure (TCLP) and fish bioassays. To assess the probable regulatory status of the black dross, URS personnel collected soil samples from seven points within the largest section of the existing black dross stockpile, as shown in Figure 1. Hand tools, including a plastic scoop and a stainless steel hand auger, were used to collect waste samples from depths of 1 and 5 feet within the pile. A single sample was obtained at a depth of 9.5 feet, but the material was typically too dense to penetrate more than 5 feet using the hand auger.

Twenty discrete soil samples were collected from the stockpile. Field notes from the sampling work are contained in Attachment A. Thirteen of the samples were considered representative of depth-discrete conditions within the stockpile. A minimum number of samples were submitted to the laboratory for analysis, limiting costs while providing screening-level data to determine the probable regulatory status of the black dross wastes. Soil samples for twelve samples were combined in the field to produce four composite samples from similar depths (i.e., 1 or 5 feet within the stockpile) for laboratory analysis of metals. Two of the composite samples represented wastes within one foot of the pile surface. Two additional composite samples were from a depth of 5 feet within the stockpile. A single sample (HA2-9.5-070600) from 9.5 feet within the pile was also submitted to the lab for analysis. The samples were placed in laboratory-provided containers and transported to North Creek Analytical, Inc. under standard chain of custody protocols. Laboratory analyses of eight metals were performed by EPA methods 1311, 6010B, and 7470A. Chain-of-custody forms and laboratory analytical reports are provided in Attachment B. Table 1 summarizes the analytical results for each sample, as well as the laboratory reporting limit and the TCLP thresholds for designation as characteristic hazardous wastes.

Soil from each of the thirteen representative samples was also submitted to Parametrix, Inc., for testing in accordance with Ecology guidelines for 96-hour acute toxicity (Washington State Department of Ecology Biological Testing Methods for the Designation of Dangerous Waste, Publication #80-12, revised August 1996). Twelve samples were combined in the laboratory to form four depth-related soil composites; a single sample (HA2-9.5-070600) from 9.5 feet within the pile was analyzed separately. These tests were performed using rainbow trout, *Oncorhynchus mykiss,* and a waste concentration of 100 milligrams per liter (mg/l). Attachment C contains the July 24, 2000 report prepared by Parametrix.

WASTE CHARACTERIZATION

Based on URS's screening-type analytical testing program, the black dross wastes located at the Maralco site are characterized as nonhazardous and are unlikely to be designated as dangerous wastes under Ecology's regulations. The leachable metal concentrations obtained from the four composite samples and the single discrete soil sample were typically near or below the laboratory reporting limits, and orders-of-magnitude below regulatory thresholds for designation as dangerous wastes. Parametrix's 96-hour acute toxicity testing resulted in no fish mortality at the 100 mg/l concentration. Assuming that samples collected for this evaluation are representative of typical waste characteristics throughout the estimated 25,000 tons of waste in this stockpiles, the Maralco site's black dross wastes would not require handling or disposal as a hazardous or dangerous waste.

BLACK DROSS MANAGEMENT OPTIONS

Based on the metals and bioassay results, the Maralco site's black dross waste is not regulated as a dangerous or hazardous waste. However, the waste does contain metals at concentrations above Washington State Model Toxics Control Act (WAC 173-340) Method A soil cleanup levels, which limits disposal options for the waste. As such, the waste may be managed by a variety of methods, including on-site or offsite use or disposal. However, the elevated salt content and geotechnical properties of the black dross will continue to limit the desirability of the material for reuse or disposal. Based on our observations regarding the materials, the following use or disposal options appear feasible:

- Onsite use as a subbase material for asphalt parking areas — Processing of the black dross, including mechanical screening and blending with imported gravel, could produce a material suitable for use as a subbase for new asphalt parking areas. The asphalt would form a cap over the black dross that would eliminate direct contact with the waste. Complete containment of the waste (i.e., placement in a lined and covered cell) could be required if there is evidence that the dross has impacted groundwater quality beneath the site. Cleanup of the site by this option would require that a restrictive covenant be placed on the property due to the presence of elevated metals in the waste. Assuming blending of the dross wastes on a 1:1 basis with imported granular soil (i.e., 30,000 cubic yards of fill), a 3-foot thick fill would cover about 6 acres of the nominal 13-acre site. The silty nature of the dross could result in differential settlement and frost-susceptibility if used as a subbase material, which could result in unacceptable maintenance and repair problems for permanent site improvements.

- Offsite disposal in a permitted landfill — The black dross wastes, classified as a nonhazardous waste, could be hauled to and disposed of in a permitted RCRA Subtitle D landfill. These materials could be disposed of as waste fill or used as interim cover materials within the landfills (dust generation may limit this use). Preliminary discussions with local landfill operations indicate that Maralco's black dross wastes would be an

acceptable material for disposal, subject to submittal of additional analytical data required to complete the waste profiling and approval process.

Based on recent industrial/commercial growth in the Kent area, we believe that the onsite reuse/disposal options are unlikely to be compatible with the potential redevelopment opportunities for this property. If the black dross is not a regulated material, disposal of the waste in a permitted landfill appears the most feasible option.

ORDER-OF-MAGNITUDE DISPOSAL COSTS

URS's March 16th letter noted that potential transportation and disposal costs for the black dross wastes could range between $35 to $200 per ton. This represented a disposal cost of approximately $1 million to $5 million dollars. As discussed with Mr. Gutcho on July 25, 2000, the analytical data obtained by URS, if representative of typical waste characteristics for the estimated 25,000 tons of black dross waste, suggests that these wastes would not require handling or disposal as a hazardous or dangerous waste. We contacted the two major landfill operations for this area, obtaining the following estimates for transportation and disposal:

- Regional Disposal Company (formerly Rabanco) — $27.73 per ton, based on transportation and disposal through their Seattle facility located at 3rd and Lander Street; the waste would then be transported by rail to a permitted landfill site located in Roosevelt, Washington.

- Waste Management (WM)— $23.75 to $29.25 per ton, depending on the landfill site; the waste would be truck-hauled to the Olympic View Sanitary Landfill, located in Port Orchard, Washington, or truck-hauled to WM's reloading station in Seattle, followed by rail-haul to the Columbia Ridge Landfill, located in Arlington, Washington.

For planning purposes, we suggest using a transportation/disposal cost of at least $35 per ton to anticipate variations in the waste management market.

If offsite disposal or onsite containment of the black dross pile appears economically feasible, then the remaining environmental issues at the site should be evaluated. These other issues, and an estimated range of costs, include the following:

- Additional characterization of the black dross pile will be required to satisfy waste disposal requirements. These requirements vary by disposal facility, and could range between $2,000 and $15,000. For planning purposes, we recommend allocating $12,000 for this activity. This activity would include a one or two-day field sampling program to collect samples from throughout the black dross pile. Composited samples would then be analyzed for flashpoint, pH, reactive cyanide, reactive sulfide, TCLP metals and fish bioassay.

- Other waste materials stored onsite, as reported in MK Environmental Services' 1991 Remedial Investigation Report, include baghouse dust (500 pounds), chromium-bearing dross (10 tons), and aluminum oxide (1,400 tons). Analyses required for characterization and profiling of these materials for transportation and disposal will be similar to those for the black dross. However, because of the smaller quantity, fewer tests will be required. The estimated range of costs for this characterization is $5,000 to $11,000. We recommend allocating $10,000 for this activity. As the regulatory status of these wastes has not been determined, we recommend allocating a conservative transportation and disposal cost of $200 per ton for planning purposes.

- The soil underlying the waste stockpiles (e.g., dross and baghouse dust, aluminum oxide), sediment accumulated in adjacent stream/drainages, and documented releases from a former underground storage tank (UST) should be investigated to verify site conditions. Possible releases from the former onsite laboratory should also be investigated. This activity can likely be completed using hand tools and direct-push sampling equipment (e.g., Geoprobe or StrataProbe). Assuming one or two days of fieldwork and analysis of 20 to 30 samples for metals, volatile organics, and/or petroleum hydrocarbons, the estimated investigation cost would range between $10,000 and $15,000. We recommend allocation of $15,000 for this activity.

- Groundwater impacts related to the waste piles (i.e., metals and salts) and documented releases from a previously-removed UST should be investigated to ensure Ecology's approval of planned cleanup actions leading to subsequent removal of the site from management under Ecology's contaminated sites program. These investigations can be completed using direct-push sampling equipment (e.g., Geoprobe or StrataProbe). Assuming two days of fieldwork and analysis of 10 to 20 groundwater samples for metals, volatile organics, petroleum hydrocarbons and/or salts, the estimated cost would range between $10,000 and $15,000. We recommend allocation of $15,000 for this activity.

Table 2 provides an order-of-magnitude estimate of the costs to complete the site investigations; characterize, transport, and dispose of wastes; and support Loeb & Loeb to carry out subsequent reporting of site activities to the property owners and Ecology. This estimate is based on our review of available site reports and our experience at similar facilities. Actual costs will depend on the specific scope of work completed and site conditions encountered. Our cost evaluations are intended to assist in evaluating relative costs of investigation and cleanup of known waste sources, with the objective of timely return of the property to a suitable state for redevelopment. This evaluation is not intended to be a definitive evaluation of remaining environmental liabilities, waste disposal options, or site cleanup costs. Estimated costs are subject to the following assumptions and limitations:

- Costs are based on year 2000 dollars and our experience from other projects. No adjustment or escalation of prices has been factored into the estimates for inflation or changes in interest and tax rates.

- Key cost items are identified for comparison purposes only; the estimates are not intended to be all inclusive of potential costs that may be incurred during construction, operation, or maintenance.

- Cleanup costs for potential impacts to soil, groundwater, and sediment are not included.

- The costs discussed in this evaluation are order-of-relative magnitude estimates, made without full knowledge regarding site conditions, development of detailed engineering data, or regulatory confirmation and approval of approaches. The estimates are intended to establish broad cost categories for which actual costs may range from +50 percent to –30 percent.

SUMMARY

URS has completed the scope of work defined in our March 16, 2000 proposal, including sampling of the black dross waste stockpile and evaluation of the probable regulatory classification of the waste. We have also provided information regarding probable options for reuse or disposal. Order-of-magnitude costs to dispose of the black dross wastes, characterization of other wastes present at the site, and investigation of other know environmental issues are addressed in this letter report. Our evaluation of feasible reuse/disposal approaches and order-of-magnitude costs for subsequent work was based on our present site knowledge and our experience with other remediation projects.

This evaluation applies to the conditions known as of this date, as indicated in documents provided by Loeb & Loeb LLP regarding past investigations of this property and our interpretation of data collected by URS personnel in accordance with our authorized scope of work. Assumptions and approaches reflect our interpretation of current technical options and regulatory requirements for soil and groundwater remediation and waste management. This evaluation was performed with the degree of care and skill ordinarily exercised by experienced environmental professionals in the State of Washington. It is recognized that other areas of concern, impact, or cost liability may exist which have not been identified in this evaluation. Additionally, current or future regulatory requirements may be more restrictive than anticipated or increase environmental liabilities. No warranty or guarantee, either expressed or implied, is made as to the findings of this evaluation.

This evaluation is intended exclusively for the use of Loeb & Loeb LLP and its client. The scope of services performed by URS may not be appropriate for other users. Any use or reuse of this evaluation is at the sole risk of the user.

URS

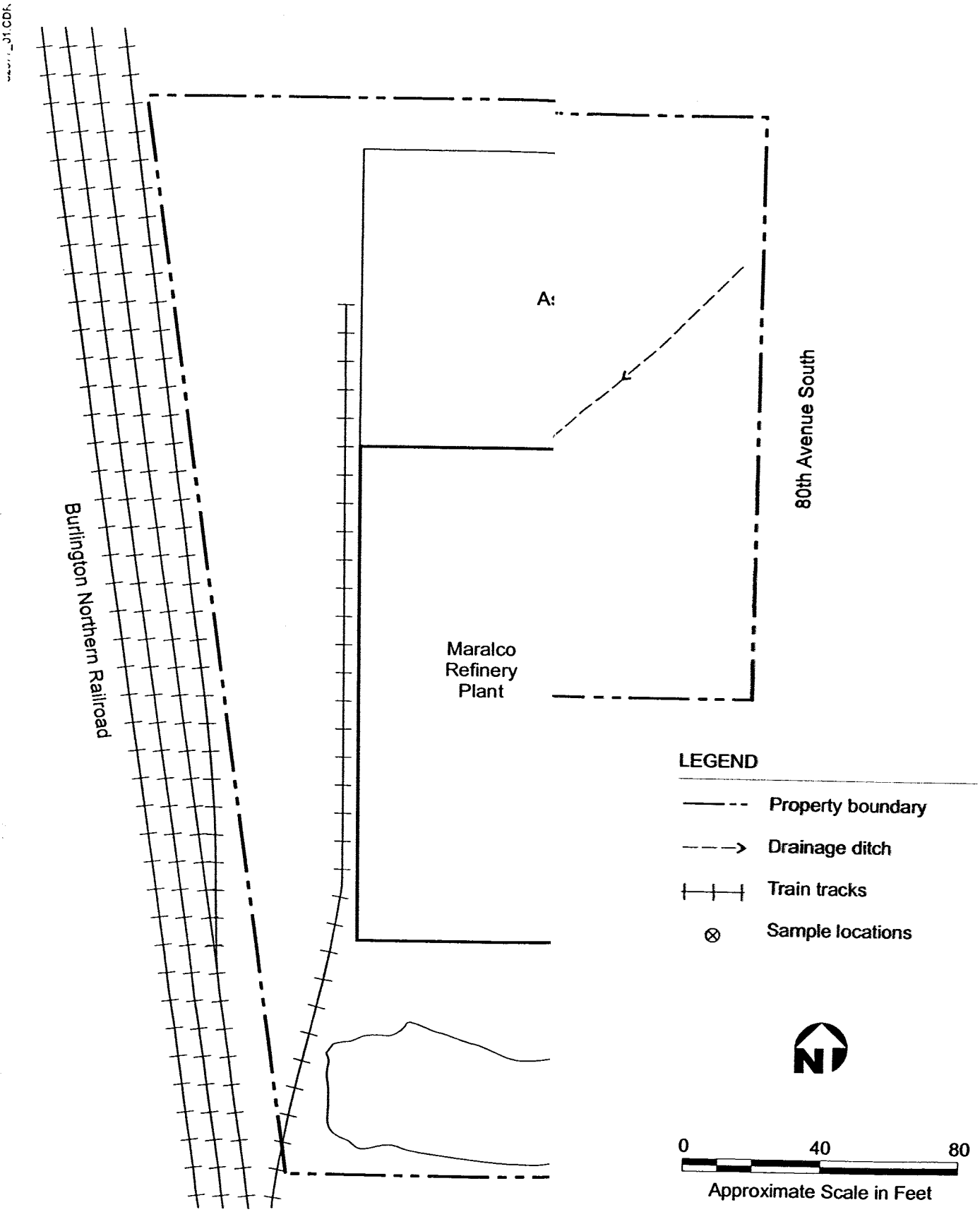
We trust this evaluation meets your needs, and look forward to discussing this project with you. If you have any questions or require additional information, please contact us at 206/728-0744.

Very truly yours,
URS Corporation

James H. Flynn, R.G.
Senior Hydrogeologist

Harry Ehlers, P.E.
Senior Engineer

Attachments:
Figure 1, Site Plan, Maralco Aluminum Refinery, Kent, Washington
Table 1, Summary of Aluminum Dross Stockpile Analytical Data
Table 2, Order-of-Magnitude Costs for Waste Management and Site Investigations
Attachment A, Field Notes
Attachment B, North Creek Analytical, Inc. Laboratory Report
Attachment C, Parametrix, Inc. Laboratory Report



Job No. 32977-006-189

Figure 1
SITE PLAN

URS

Maralco Aluminum Refinery
Kent, Washington

Table 1
Summary of Aluminum Dross Stockpile Analytical Data
Maralco Aluminum Refinery
Kent, Washington

		Laboratory Method	TCLP (mg/L)							
Date Collected	**Collection ID**	**Sample #**	**Silver**	**Arsenic**	**Barium**	**Cadmium**	**Chromium**	**Mercury**	**Lead**	**Selenium**
7/6/00	HA2-9.5-070600	B0G0157-09	ND	ND	ND	ND	ND	ND	ND	ND
7/6/00	Composite 1[a]	B0G0157-17	ND	ND	ND	ND	0.012	ND	ND	ND
7/6/00	Composite 2[b]	B0G0157-18	ND	ND	ND	0.00711	0.0173	ND	ND	ND
7/6/00-7/7/00	Composite 3[c]	B0G0157-19	ND	ND	ND	0.00651	0.0196	ND	ND	ND
7/6/00-07/7/00	Composite 4[d]	B0G0157-20	ND	ND	ND	ND	0.0212	ND	ND	ND
Laboratory Reporting Limits (mg/L)			0.05	0.50	1.00	0.00500	0.0010	0.001	0.20	0.15
Toxicity Characteristic Dangerous Waste Threshold (mg/L)			5.0	5.0	100.0	1.0	5.0	0.2	5.0	1.0

Notes:
TCLP - Toxicity Characteristic Leaching Procedure
NA - Not analyzed
ND - Not detected at reporting limits
[a] Composite includes samples HA2-1-070600, HA3-1-070600 and HA4-1-070600
[b] Composite includes samples HA2-5.5-070600, HA3-5-070600 and HA4-5-070600
[c] Composite includes samples HA5-1-070600, HA6-1-070600 and HA7-1-070600
[d] Composite includes samples HA7-5-070600, HA8-5-0070700 and HA6-5-070700

Table 2, Order-of-Magnitude Costs for Waste Management and Site Investigations

Cost Item	Units	Quantity	Unit Price	Amount
Management of Black Dross Waste				
Waste Characterization & Profiling	LS	1	$15,000	$15,000
Mobilization/Demobilization	LS	1	$12,000	$12,000
Excavation/Loading of Wastes	CY	15,000	$4	$60,000
Transportation/Disposal	Tons	25,000	$35	$875,000
Limited Site Restoration	LS	1	$10,000	$10,000
			Subtotal	***$972,000***
Management of Other Wastes				
Waste Characterization & Profiling	LS	1	$10,000	$10,000
Mobilization/Demobilization	LS	1	$5,000	$5,000
Excavation/Loading of Wastes	CY	1,000	$4	$4,000
Transportation/Disposal	Tons	1,410	$200	$282,000
			Subtotal	***$301,000***
Other Environmental Issues				
Soil/Sediment Investigation	LS	1	$15,000	$15,000
Groundwater Investigation	LS	1	$15,000	$15,000
Reporting/Consulting Services	LS	1	$10,000	$10,000
			Subtotal	***$40,000***
			Project Subtotal	***$1,313,000***
			Administrative Costs (5% of project costs)	$66,000
			Permitting/Agency Costs (5% of project costs)	$66,000
			Contingency (15% of Costs)	$217,000
			Order-of-Magnitude Project Total	***$1,662,000***

Attachment A
Field Notes

DAILY FIELD REPORT

Job. No.	
32799-006-5103	
Page 1 of 4	
Report Sequence No.	
Date 7/6/00	Day of Week THURS
Job Engineer	HRS Charged
Assistants KMV	HRS Charged

SUNNY/WARM

0800 KMV ONSITE

JHF ONSITE

MARK TEN (10) SAMPLE LOCATIONS w/ STAKES

0900 ~~0925~~ BEGIN HA-1

HA1-1-070600 @ 0905 DRY GREY/BLACK FINE

5 MOIST " "

HA1-5.5-070600 @ 0915 V. MOIST " "

6.5 V. MOIST (MUD-LIKE) GREY FINE SAND

7 —

Sample locations – HA-1 see map

HA-2 65' South and 10' east of HA-1

HA-3 25' South and 35' West of HA-2

HA-4 110' South and 10' West of HA-2 – N12' North of South Bldg. w

HA-5 8' North and 35' West of HA-4

HA-6 64' SW of HA-4 and 72' South of HA-5

HA-7 32' East and 10' South of HA-~~5~~6

HA-8 45' East and 15' South of HA-~~7~~4 approx. 10' West from east side of pile

1000 BEGIN HA-2

HA2-1-070600 COLLECTED @ 1003 MOIST, BLACK/PINK/GREY

HA2-5.5-070600 @ 1030 MOIST, BLACK/GREY – BLUE

HA3-9.5-070600 @ 1055 MOIST BLACK – BLUE

DAILY FIELD REPORT

Job. No.	
32977-006-189	
Page 2 of 4	
Report Sequence No.	
Date 7/6/00	Day of Week
Job Engineer	HRS Charged
Assistants KMV	HRS Charged

1110 Begin HA-3 (no tarp, string mesh cut)

HA3-1-070600 collected @ 1115 moist Black, Pink Blue, Grey

Refusal @ 4' → move hole 1.5'

HA3-5-070600 collected @ 1140 AA

Refusal @ 5'

1200 Begin HA-4

HA4-1-0706 collected @ 1205 moist Black/Grey/White/Pink/Blue

Refusal @ 1.5' (move hole 1' in 3 directions - Refusal)

Large chunk (rocks) recovered w/ postnole shover

Auger - Refusal

Note: Final hole exposed - not under tarp

1230 Lunch

1300 Continue HA-4

HA4-5-070600 collected @ 1325 moist, Black, some Blue, some pink

~~*~~ Refusal ~~*~~

1355 Begin HA-5

HA5-1-070600 collected @ 1400 moist - Grey/Black trace of Blue

Refusal @ 2' → move 1' in 3 directions → Refusal @ 1.5, 2. ! 3.0 ft

1450 Begin HA-~~7~~ (uncovered)

HA~~7~~-1-070600 collected @ 1300 moist Grey/Black w/ Blue & Pink

HA~~7~~-5-070600 collected @ 1315 " " "

~~*~~ Refusal @ 6.5' ~~*~~

1550 KMV off-site

DAILY FIELD REPORT

Job. No.	
J2977-006-189	
Page 3 of 4	
Report Sequence No.	
Date 7/7/00	Day of Week
Job Engineer	HRS Charged
Assistants KMV	HRS Charged

SUNNY / WARM

0800 KMV ON-SITE

0820 BEGIN NA-8 (UNCOVERED)

NA8-1-070700 COLLECTED @ 8:30 MOIST - GREY/BLACK W/ PINK-BLUE TRACE

BLACK TARP LAYER @ 1'

NA8-5-070700 COLLECTED @ 0850 MOIST - SANDY GREY W/ PINK, BLUE, BLACK TRACE

~5' REFUSAL

0900 ~~BEGIN~~ BEGIN NA-6 (~~UNCOVERED~~) BECAME JUST BARELY WAS COVERED BY BLACK TARP

NA6-1-070700 COLLECTED @ 0910 MOIST - GREY/BLACK, BLUE TRACE PINK

NA6-5-070700 COLLECTED @ 0935 → MOIST → GREY/BLACK W/ BLUE

~~*~~ 6.5' ROCK → REFUSAL

1000 PHOTO LOG

	Aspect
1.) NA1 (FOREGROUND) NA2 BACKGROUND)	S
2 UNCOVERED	~~S~~
2.) NA1 (LOOKING DOWN)	N
3.) NA2 (FURTHEST HOLE SAMPLED)	E
4.) NA3 (FURTHEST - DEEPEST)	N
5.) NA-4 (RIGHT/BOTTOM DEEPEST/COMPLETED)	N
6.) NA-6 (LEFT HOLE DEEPEST/SAMPLED)	S
7.) NA-6 (CLOSEST), NA-4 (TOP), NA-7 (RIGHT)	NE
8.) NA-5, NA-3 (BACKGROUND)	N
9.) NA-8	NE
10. (1.) NA-7	NE
12.) NA-2 FOREGROUND NA 1 BACKGROUND	N
FURTHEST BACK - NOT SAMPLED	

DAILY FIELD REPORT

Job. No.	32977-006-189
Page	4 of 4
Report Sequence No.	
Date	7/7/00
Day of Week	
Job Engineer	
HRS Charged	
Assistants	KmV
HRS Charged	

@ 1030 CLEAN-UP SITE

1100 KmV OFF-SITE

(INFORMED PIPE FACILITY OF DEPARTURE)

1300 COURIER SAMPLES TO PARAMETRIX & NCA

Attachment B
North Creek Analytical, Inc.
Laboratory Report

www.ncalabs.com

Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8223
425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

URS Corporation - Seattle	Project: Maralco	
2401 4th AVE Suite 808	Project Number: 32977-006-5104-189	**Reported:**
Seattle WA, 98121-1459	Project Manager: Jim Flynn	07/25/00 10:23

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
HA2-9.5-070600	B0G0157-09	Soil	07/06/00 10:55	07/07/00 13:00
Composite 1	B0G0157-17	Soil	07/06/00 10:00	07/07/00 13:00
Composite 2	B0G0157-18	Soil	07/06/00 10:30	07/07/00 13:00
Composite 3	B0G0157-19	Soil	07/06/00 14:00	07/07/00 13:00
Composite 4	B0G0157-20	Soil	07/06/00 15:15	07/07/00 13:00

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425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

URS Corporation - Seattle	Project: Maralco	
2401 4th AVE Suite 808	Project Number: 32977-006-5104-189	**Reported:**
Seattle WA, 98121-1459	Project Manager: Jim Flynn	07/25/00 10:23

TCLP Metals by EPA 1311/6000/7000 Series Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
HA2-9.5-070600 (B0G0157-09) Soil Sampled: 07/06/00 10:55 Received: 07/07/00 13:00									
Silver	ND	0.0500	mg/l	1	0G19050	07/19/00	07/21/00	EPA 6010B	
Arsenic	ND	0.500	"	"	"	"	07/21/00	"	
Barium	ND	1.00	"	"	"	"	07/21/00	"	
Cadmium	ND	0.00500	"	"	"	"	07/21/00	"	
Chromium	ND	0.0100	"	"	"	"	07/21/00	"	
Mercury	ND	0.00100	"	"	0G18048	07/18/00	07/20/00	EPA 7470A	
Lead	ND	0.200	"	"	0G19050	07/19/00	07/21/00	EPA 6010B	
Selenium	ND	0.150	"	"	"	"	07/21/00	"	
Composite 1 (B0G0157-17) Soil Sampled: 07/06/00 10:00 Received: 07/07/00 13:00									
Silver	ND	0.0500	mg/l	1	0G19050	07/19/00	07/21/00	EPA 6010B	
Arsenic	ND	0.500	"	"	"	"	07/21/00	"	
Barium	ND	1.00	"	"	"	"	07/21/00	"	
Cadmium	ND	0.00500	"	"	"	"	07/21/00	"	
Chromium	**0.0120**	0.0100	"	"	"	"	07/21/00	"	
ercury	ND	0.00100	"	"	0G18048	07/18/00	07/20/00	EPA 7470A	
Lead	ND	0.200	"	"	0G19050	07/19/00	07/21/00	EPA 6010B	
Selenium	ND	0.150	"	"	"	"	07/21/00	"	
Composite 2 (B0G0157-18) Soil Sampled: 07/06/00 10:30 Received: 07/07/00 13:00									
Silver	ND	0.0500	mg/l	1	0G19050	07/19/00	07/21/00	EPA 6010B	
Arsenic	ND	0.500	"	"	"	"	07/21/00	"	
Barium	ND	1.00	"	"	"	"	"	"	
Cadmium	**0.00711**	0.00500	"	"	"	"	07/21/00	"	
Chromium	**0.0173**	0.0100	"	"	"	"	07/21/00	"	
Mercury	ND	0.00100	"	"	0G18048	07/18/00	07/20/00	EPA 7470A	
Lead	ND	0.200	"	"	0G19050	07/19/00	07/21/00	EPA 6010B	
Selenium	ND	0.150	"	"	"	"	07/21/00	"	

Steve Davis, Project Manager

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URS Corporation - Seattle	Project: Maralco	
2401 4th AVE Suite 808	Project Number: 32977-006-5104-189	**Reported:**
Seattle WA, 98121-1459	Project Manager: Jim Flynn	07/25/00 10:23

TCLP Metals by EPA 1311/6000/7000 Series Methods

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Composite 3 (B0G0157-19) Soil	**Sampled: 07/06/00 14:00**	**Received: 07/07/00 13:00**							
Arsenic	ND	0.500	mg/l	1	0G20008	07/20/00	07/21/00	EPA 6010B	
Barium	ND	1.00	"	"	"	"	"	"	
Cadmium	**0.00651**	0.00500	"	"	"	"	07/21/00	"	
Chromium	**0.0196**	0.0100	"	"	"	"	07/21/00	"	
Mercury	ND	0.00100	"	"	0G20009	07/20/00	07/21/00	EPA 7470A	
Lead	ND	0.200	"	"	0G20008	07/20/00	07/21/00	EPA 6010B	
Selenium	ND	0.150	"	"	"	"	07/21/00	"	
Composite 3 (B0G0157-19RE1) Soil	**Sampled: 07/06/00 14:00**	**Received: 07/07/00 13:00**							
Silver	ND	0.0500	mg/l	1	0G21045	07/21/00	07/24/00	EPA 6010B	
Composite 4 (B0G0157-20) Soil	**Sampled: 07/06/00 15:15**	**Received: 07/07/00 13:00**							
Arsenic	ND	0.500	mg/l	1	0G20008	07/20/00	07/21/00	EPA 6010B	
Barium	ND	1.00	"	"	"	"	07/21/00	"	
Cadmium	ND	0.00500	"	"	"	"	07/21/00	"	
Chromium	**0.0212**	0.0100	"	"	"	"	07/21/00	"	
Mercury	ND	0.00100	"	"	0G20009	07/20/00	07/21/00	EPA 7470A	
Lead	ND	0.200	"	"	0G20008	07/20/00	07/21/00	EPA 6010B	
Selenium	ND	0.150	"	"	"	"	07/21/00	"	
Composite 4 (B0G0157-20RE1) Soil	**Sampled: 07/06/00 15:15**	**Received: 07/07/00 13:00**							
Silver	ND	0.0500	mg/l	1	0G21045	07/21/00	07/24/00	EPA 6010B	

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URS Corporation - Seattle
2401 4th AVE Suite 808
Seattle WA, 98121-1459

Project: Maralco
Project Number: 32977-006-5104-189
Project Manager: Jim Flynn

Reported:
07/25/00 10:23

TCLP Metals by EPA 1311/6000/7000 Series Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0G18026: Prepared 07/18/00 Using EPA 3010A TCLP										
Blank (0G18026-BLK1)										
Arsenic	ND	0.500	mg/l							
Barium	ND	1.00	"							
Cadmium	ND	0.00500	"							
Chromium	ND	0.0100	"							
Lead	ND	0.200	"							
Selenium	ND	0.150	"							
Silver	ND	0.0500	"							
LCS (0G18026-BS1)										
Arsenic	11.0	0.500	mg/l	10.0		110	80-120			
Barium	11.1	1.00	"	10.0		111	80-120			
Cadmium	11.4	0.00500	"	10.0		114	80-120			
Chromium	11.4	0.0100	"	10.0		114	80-120			
Lead	11.5	0.200	"	10.0		115	80-120			
Selenium	10.9	0.150	"	10.0		109	80-120			
Silver	1.08	0.0500	"	1.00		108	80-120			
Matrix Spike (0G18026-MS1)					**Source: B0G0157-05**					
Arsenic	11.1	0.500	mg/l	10.0	ND	111	80-120			
Barium	11.0	1.00	"	10.0	ND	105	80-120			
Cadmium	11.4	0.00500	"	10.0	ND	114	80-120			
Chromium	11.0	0.0100	"	10.0	ND	110	80-120			
Lead	11.1	0.200	"	10.0	ND	111	80-120			
Selenium	10.8	0.150	"	10.0	ND	108	80-120			
Silver	1.03	0.0500	"	1.00	ND	103	80-120			
Matrix Spike Dup (0G18026-MSD1)					**Source: B0G0157-05**					
Arsenic	11.1	0.500	mg/l	10.0	ND	111	80-120	0	20	
Barium	11.0	1.00	"	10.0	ND	105	80-120	0	20	
Cadmium	11.1	0.00500	"	10.0	ND	111	80-120	2.67	20	
Chromium	11.1	0.0100	"	10.0	ND	111	80-120	0.905	20	
Lead	11.0	0.200	"	10.0	ND	110	80-120	0.905	20	
Selenium	11.0	0.150	"	10.0	ND	110	80-120	1.83	20	
Silver	0.378	0.0500	"	1.00	ND	37.8	80-120	92.6	20	Q-01,Q-07

North Creek Analytical - Bothell

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URS Corporation - Seattle	Project: Maralco	
2401 4th AVE Suite 808	Project Number: 32977-006-5104-189	**Reported:**
Seattle WA, 98121-1459	Project Manager: Jim Flynn	07/25/00 10:23

TCLP Metals by EPA 1311/6000/7000 Series Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0G18048: Prepared 07/18/00 Using EPA 7470A TCLP										
Blank (0G18048-BLK1)										
Mercury	ND	0.00100	mg/l							
LCS (0G18048-BS1)										
Mercury	0.00562	0.00100	mg/l	0.00500		112	70-130			
Matrix Spike (0G18048-MS1)					**Source: B0F0661-13**					
Mercury	0.00597	0.00100	mg/l	0.00500	ND	119	75-125			
Matrix Spike Dup (0G18048-MSD1)					**Source: B0F0661-13**					**Q-01**
Mercury	0.00713	0.00100	mg/l	0.00500	ND	143	75-125	17.7	20	
Batch 0G19050: Prepared 07/19/00 Using EPA 3010A TCLP										
Blank (0G19050-BLK1)										
Arsenic	ND	0.500	mg/l							
Barium	ND	1.00	"							
Cadmium	ND	0.00500	"							
Chromium	ND	0.0100	"							
Lead	ND	0.200	"							
Selenium	ND	0.150	"							
Silver	ND	0.0500	"							
LCS (0G19050-BS1)										
Arsenic	10.2	0.500	mg/l	10.0		102	80-120			
Barium	10.5	1.00	"	10.0		105	80-120			
Cadmium	10.4	0.00500	"	10.0		104	80-120			
Chromium	10.4	0.0100	"	10.0		104	80-120			
Lead	10.9	0.200	"	10.0		109	80-120			
Selenium	10.3	0.150	"	10.0		103	80-120			
Silver	0.947	0.0500	"	1.00		94.7	80-120			

North Creek Analytical - Bothell

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URS Corporation - Seattle	Project: Maralco	
2401 4th AVE Suite 808	Project Number: 32977-006-5104-189	**Reported:**
Seattle WA, 98121-1459	Project Manager: Jim Flynn	07/25/00 10:23

TCLP Metals by EPA 1311/6000/7000 Series Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0G19050: Prepared 07/19/00 Using EPA 3010A TCLP										
Matrix Spike (0G19050-MS1)					**Source: B0G0285-05**					
Arsenic	10.5	0.500	mg/l	10.0	ND	105	80-120			
Barium	10.4	1.00	"	10.0	ND	103	80-120			
Cadmium	10.6	0.00500	"	10.0	ND	106	80-120			
Chromium	10.6	0.0100	"	10.0	0.0397	106	80-120			
Lead	11.1	0.200	"	10.0	ND	111	80-120			
Selenium	10.7	0.150	"	10.0	ND	107	80-120			
Silver	0.939	0.0500	"	1.00	ND	92.5	80-120			
Matrix Spike Dup (0G19050-MSD1)					**Source: B0G0285-05**					
Arsenic	10.4	0.500	mg/l	10.0	ND	104	80-120	0.957	20	
Barium	10.3	1.00	"	10.0	ND	102	80-120	0.966	20	
Cadmium	10.5	0.00500	"	10.0	ND	105	80-120	0.948	20	
Chromium	10.4	0.0100	"	10.0	0.0397	104	80-120	1.90	20	
ad	11.0	0.200	"	10.0	ND	110	80-120	0.905	20	
Selenium	10.5	0.150	"	10.0	ND	105	80-120	1.89	20	
Silver	0.971	0.0500	"	1.00	ND	95.7	80-120	3.35	20	
Batch 0G20008: Prepared 07/20/00 Using EPA 3010A										
Blank (0G20008-BLK1)										
Arsenic	ND	0.500	mg/l							
Barium	ND	1.00	"							
Cadmium	ND	0.00500	"							
Chromium	ND	0.0100	"							
Lead	ND	0.200	"							
Selenium	ND	0.150	"							

North Creek Analytical - Bothell

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URS Corporation - Seattle	Project: Maralco	
2401 4th AVE Suite 808	Project Number: 32977-006-5104-189	**Reported:**
Seattle WA, 98121-1459	Project Manager: Jim Flynn	07/25/00 10:23

TCLP Metals by EPA 1311/6000/7000 Series Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0G20008: Prepared 07/20/00 Using EPA 3010A										
LCS (0G20008-BS1)										
Arsenic	10.4	0.500	mg/l	10.0		104	80-120			
Barium	10.3	1.00	"	10.0		103	80-120			
Cadmium	10.8	0.00500	"	10.0		108	80-120			
Chromium	10.9	0.0100	"	10.0		109	80-120			
Lead	11.0	0.200	"	10.0		110	80-120			
Selenium	10.3	0.150	"	10.0		103	80-120			
Matrix Spike (0G20008-MS1)					**Source: B0G0244-01**					
Arsenic	10.3	0.500	mg/l	10.0	ND	103	80-120			
Barium	9.72	1.00	"	10.0	ND	96.4	80-120			
Cadmium	10.6	0.00500	"	10.0	ND	106	80-120			
Chromium	10.3	0.0100	"	10.0	ND	103	80-120			
Lead	10.1	0.200	"	10.0	ND	101	80-120			
Selenium	10.2	0.150	"	10.0	ND	102	80-120			
Matrix Spike Dup (0G20008-MSD1)					**Source: B0G0244-01**					
Arsenic	10.6	0.500	mg/l	10.0	ND	106	80-120	2.87	20	
Barium	9.82	1.00	"	10.0	ND	97.4	80-120	1.02	20	
Cadmium	10.5	0.00500	"	10.0	ND	105	80-120	0.948	20	
Chromium	10.4	0.0100	"	10.0	ND	104	80-120	0.966	20	
Lead	10.4	0.200	"	10.0	ND	104	80-120	2.93	20	
Selenium	10.4	0.150	"	10.0	ND	104	80-120	1.94	20	
Batch 0G20009: Prepared 07/20/00 Using EPA 7470A										
Blank (0G20009-BLK1)										
Mercury	ND	0.00100	mg/l							

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URS Corporation - Seattle
2401 4th AVE Suite 808
Seattle WA, 98121-1459

Project: Maralco
Project Number: 32977-006-5104-189
Project Manager: Jim Flynn

Reported:
07/25/00 10:23

TCLP Metals by EPA 1311/6000/7000 Series Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0G20009: Prepared 07/20/00 Using EPA 7470A										
LCS (0G20009-BS1)										
Mercury	0.00448	0.00100	mg/l	0.00500		89.6	70-130			
Matrix Spike (0G20009-MS1)					**Source: B0G0244-01**					
Mercury	0.00463	0.00100	mg/l	0.00500	ND	92.6	75-125			
Matrix Spike Dup (0G20009-MSD1)					**Source: B0G0244-01**					
Mercury	0.00463	0.00100	mg/l	0.00500	ND	92.6	75-125	0	20	
Batch 0G21045: Prepared 07/21/00 Using EPA 3010A										
Blank (0G21045-BLK1)										
Silver	ND	0.0500	mg/l							
LCS (0G21045-BS1)										
Silver	1.06	0.0500	mg/l	1.00		106	80-120			
Matrix Spike (0G21045-MS1)					**Source: B0G0157-19RE1**					
Silver	0.935	0.0500	mg/l	1.00	ND	93.5	80-120			
Matrix Spike Dup (0G21045-MSD1)					**Source: B0G0157-19RE1**					
Silver	0.926	0.0500	mg/l	1.00	ND	92.6	80-120	0.967	20	

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URS Corporation - Seattle	Project: Maralco	
2401 4th AVE Suite 808	Project Number: 32977-006-5104-189	**Reported:**
Seattle WA, 98121-1459	Project Manager: Jim Flynn	07/25/00 10:23

Notes and Definitions

Q-01	The spike recovery for this QC sample is outside of established control limits. Review of associated batch QC indicates the recovery for this analyte does not represent an out-of-control condition for the batch.
Q-07	The RPD value for this QC sample is above the established control limit. Review of associated QC indicates the high RPD does not represent an out-of-control condition for the batch.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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CHAIN OF CUSTODY REPORT Work Order #:

CLIENT: URS
REPORT TO: S. FLYNN
ADDRESS: 500 MARKETPLACE TOWER
2025 FIRST AVE SEATTLE WA 98121
PHONE: 206 728 0744 FAX: 206 727 7350

INVOICE TO:
P.O. NUMBER:

PROJECT NAME: MONACO
PROJECT NUMBER: 27277-006-5104-189
SAMPLED BY: K VOTRUBA

TURNAROUND REQUEST in Business Days*
Organic & Inorganic Analyses: 10 | 7 | 5 | 4 | 3 | 2 | 1 | <1
STD. Petroleum Hydrocarbon Analyses: 5 | 4 | 3 | 2 | 1 | <1
STD. OTHER Please Specify
*Turnaround Requests less than standard may incur Rush Charges.

REQUESTED ANALYSES: TCLP

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA WO ID
1. HA8-1-070700	7/7/00 0830	S	1	NORM	
2. HA8-5-070700	0850	↓	↓	↓	
3. HA6-1-070700	0910				
4. HA6-5-070700	0930				
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					

RELINQUISHED BY: [signature] DATE: 7/7/00
PRINT NAME: KRIS VOTRUBA FIRM: URS TIME: 1300
RECEIVED BY: [signature] DATE: 7.7.00
PRINT NAME: C. NICHOLS FIRM: NCA TIME: 13:00

RELINQUISHED BY: DATE:
PRINT NAME: FIRM: TIME:
RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

1 TEMP: 2.0

North Creek Analytical, Inc.
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20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 (541) 383-9310

CHAIN OF CUSTODY REPORT

Work Order #: BOG0157

CLIENT: URS
REPORT TO: J. FLYNN
ADDRESS: 500 MARKETPLACE TOWER 2025 FIRST AVE, SEATTLE WA 98121
PHONE: 727 728-0744 FAX: 727-727-3350

INVOICE TO:
P.O. NUMBER:

PROJECT NAME: MOSCALLO
PROJECT NUMBER: 32977-006-5167-197
SAMPLED BY: K. KUTZNER

TURNAROUND REQUEST In Busine...
Organic & Inorganic Analyses: 10 | 7 | 5 | 4 | 3 | 2 | 1
STD. Petroleum Hydrocarbon Analyses: 5 | 4 | 3 | 2 | 1 | <1
STD. OTHER Please Specify
*Turnaround Requests less than standard may incur Rush Charges.

REQUESTED ANALYSES

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	(Area 3) TCLP	TCLP Metals		MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA WO ID
1. HA2-1-070600	7/6/00 0905			BOG0157-05	S	1	* HOLD *	
2. HA2-5.5-070600	0935			-06			* HOLD *	
3. HA2-1-070600	1000			-07			SEE BELOW	
4. HA2-5.5-070600	1030			-08				
5. HA-9.5-070600	1055			-09				
6. HA3-1-0706	1115			-10				
7. HA3-5-070600	1140			-11				
8. HA4-1-070600	1205			-12				
9. HA4-5-070600	1325			-13				
10. HA5-1-070600	1400			-14				
11. HA7-1-070600	1500			-15				
12. HA7-5-070600	1515		* SEE BELOW	-16				
13.								
14.								
15.								

RELINQUISHED BY: PRINT NAME: Kris Kutzner FIRM: URS DATE: TIME:
RECEIVED BY: Ellen Jennis PRINT NAME: Ellen Jennis FIRM: NCA DATE: 7-07-00 TIME: 1300
RELINQUISHED BY: PRINT NAME: FIRM: DATE: TIME:
RECEIVED BY: PRINT NAME: FIRM: DATE: TIME:

ADDITIONAL REMARKS: Composite: (1.) HA2-1-070600, HA3-1-070600, HA4-1-070600 (3) HA5-1-070600, HA6-1-070600, HA7-1-070600, HA8-1-070800 (5.) HA2-9.5-070600
(2) HA2-5.5-070600, HA3-5-070600 HA4-5-070600 (4) HA7-5-070600, HA8-5-070700, HA5-5-070700
* SEE SECOND CHAIN FOR ADDITIONAL SAMPLES

TEMP: 4.5° C/O PAGE OF

COC REV 3/99

PAGE 02
206 727 3350
JUL 10 '00 17:04

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North Creek Analytical, Inc.
Environmental Laboratory Network
www.ncalabs.com

11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8223 (425) 420-9200 X 420-9210
East 11115 Montgomery, Suite B, Spokane, WA 98206-4776 (509) 924-9200 X 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 906-9200 FAX 906-9210
20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 (541) 383-9310 FAX 382-7588

CHAIN OF CUSTODY REPORT

Work Order #: BOG0157

CLIENT: URS

INVOICE TO:

REPORT TO: J. FLYNN

ADDRESS: 500 MARKETPLACE TOWER
2025 FIRST AVE SEATTLE WA 98121

PHONE: 206 728 0744 FAX: 206 727 3250

P.O. NUMBER:

PROJECT NAME: MORALCO

PROJECT NUMBER: 32977-006-5104-182

SAMPLED BY: K.V. REVISA

TURNAROUND REQUEST in Business Days*

Organic & Inorganic Analyses: 10 | 7 | 5 | 4 | 3 | 2 | 1 | <1

STD. Petroleum Hydrocarbon Analyses: 5 | 4 | 3 | 2 | 1 | <1

STD. OTHER Please Specify

*Turnaround Requests less than standard may incur Rush Charges.

REQUESTED ANALYSES

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	TCLP													MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA WO ID
1. MAP-1-070700	7/7/00 0830									BOG0157				01	S	1	Hold	
2. MAP-5-070700	0850													02				
3. MAG-1-070700	0910													03				
4. MAG-5-070700	0955													04				
5.																		
6.																		
7.																		
8.																		
9.																		
10.																		
11.																		
12.																		
13.																		
14.																		
15.																		

RELINQUISHED BY: [signature] DATE: 7/7/00
PRINT NAME: KRIS VOTRUBA FIRM: URS TIME: 1300

RECEIVED BY: Colette Weaver DATE: 7.7.00
PRINT NAME: Colette Weaver FIRM: NCA-Bothell TIME: 1300

RELINQUISHED BY: DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

TEMP:

Attachment C

Parametrix, Inc. Laboratory Report

Parametrix, Inc. *Consultants in Engineering and Environmental Science*

5808 Lake Washington Blvd. N.E. Suite 200 Kirkland, WA 98033-7350
425-822-8880 • Fax: 425-889-8808 • www.parametrix.com

Mr. Kris Votruba
URS Consultants
2025 1st Avenue
Market Place Tower, Suite 500
Seattle, Washington 98121

July 24, 2000
555-1516-024 (0700)

SUBJECT: RESULTS OF ACUTE DANGEROUS WASTE DESIGNATION TESTS

Dear Mr. Votruba:

Please find enclosed results of the 96-hour acute dangerous waste designation tests using rainbow trout, *Oncorhynchus mykiss*, conducted on five composite samples provided by URS on 10 July 2000. Testing was initiated on 23 July 2000 and conducted in accordance with Washington State Department of Ecology Guidelines (Methods 80-12). The bioassays were conducted at the 100 mg/L concentration in order to determine how the samples should be classified.

In summary, none of the composite samples exhibited any mortality at the 100 mg/L concentration; therefore, they should not be classified as dangerous waste. Testing was conducted concurrently with negative controls, which met all acceptable test criteria. Copies of the raw data, reference toxicant results, and chain-of-custody form are also enclosed in this data package.

If you have any questions regarding the results of these tests, or are in need of further assistance, please contact me or Jim Laughlin at (425) 822-8880.

Sincerely,

PARAMETRIX, INC.

Jim Laughlin
Manager, Toxicology Laboratory

cc: file

Summary of test conditions for static acute *O. mykiss* bioassay.

Job Name: URS Consultants

Job Number: 555-1516-024(0700)

Dates: 19-23 July 2000

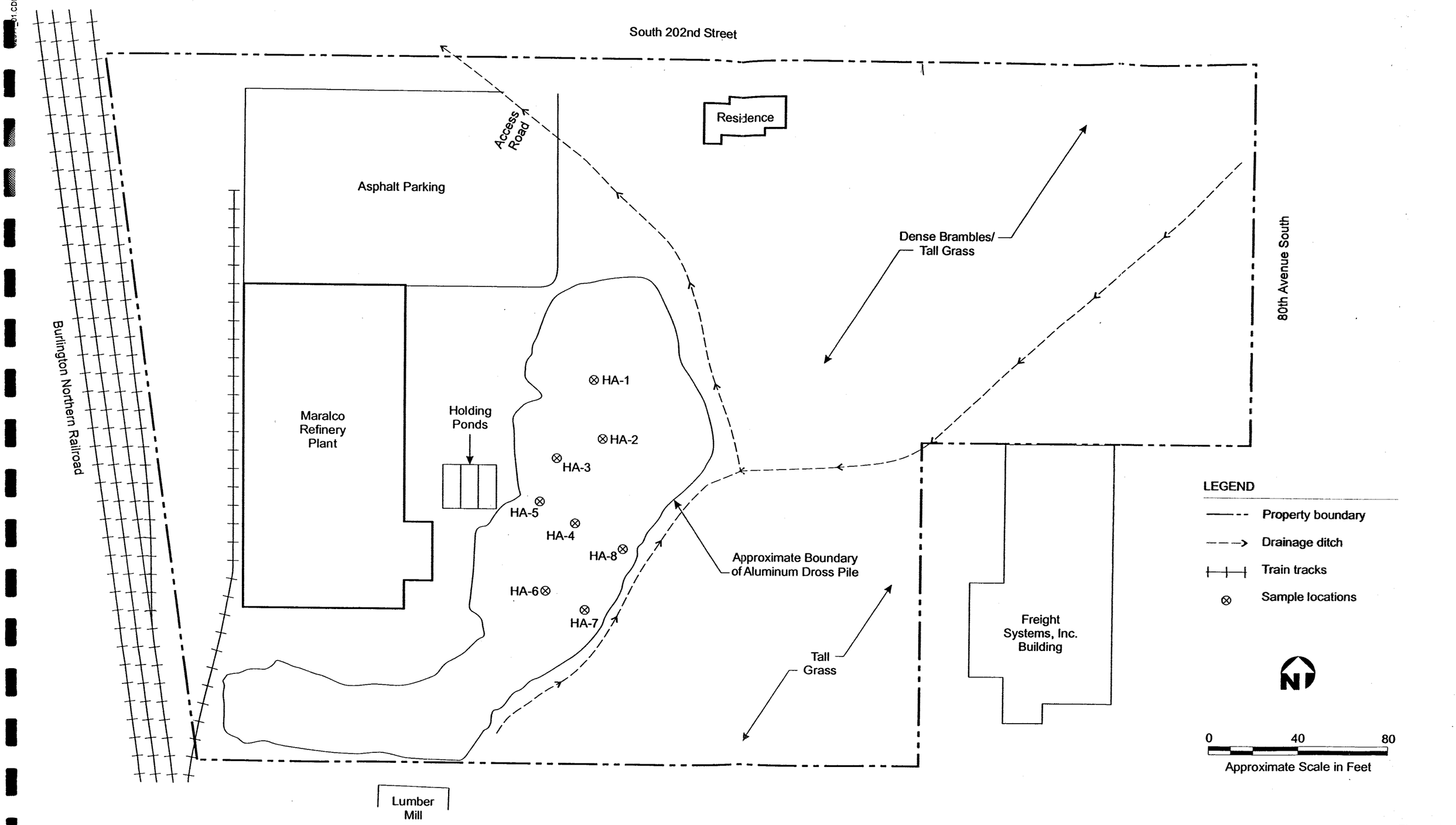
Test Protocol:	*Washington State Department of Ecology Biological Testing Methods, for the Designation of Dangerous Waste*, Publication # 80-12, revised August 1996.
Test Material:	Client sample IDs: HA1-1-070600, HA1-5.5-070600, HA2-1-070600, HA2-5.5-070600, HA2-9.5-070600, HA3-1-070600, HA3-5-070600, HA4-1-070600, HA4-5-070600, HA5-1-070600, HA7-1-070600, and HA7-5-070600
Test Organisms/Age:	*O. mykiss* (rainbow trout); 30 days from swim-up at test initiation
Source:	Thomas Fish Company; Anderson, California
Loading Limit:	0.8 g (wet weight) per liter of test solution
Number/Container:	10
Volume/Container:	5.4 liters
Test Chambers:	20 L High-density linear polyethylene containers
Replicates:	Three
Test Concentrations:	100 mg/L
Reference Toxicant:	Potassium chloride
Test Duration:	96 hours
Control:	Natural spring water from Gold Creek Trout Farm, Woodinville, Washington
Lighting:	Fluorescent bulbs (50-100 foot candles)
Photoperiod:	16 hours light; 8 hours dark
Aeration:	None
Renewal:	None
Temperature:	12 ± 1°C
Chemical Data:	Dissolved oxygen, temperature, and pH measured at test initiation and every 24 hours; hardness, alkalinity, and specific conductivity determined at each concentration
Effect Measured:	Mortality
Test Acceptability:	Control survival ≥90%

URS Sample Compositing Scheme:

Composited Sample Number	Composites
1	HA2-1 + HA3-1 + HA4-1
2	HA2-5.5 + HA3-5 + HA4-5
3	HA2-9.5
4	HA5-1 + HA7-1 + HA8-1 + HA6-1
5	HA7-5 + HA8-5 + HA6-5

Summary of Results:

	Percent Mortality	
Sample	Control - Spun	100 mg/L
Composite 1	0	0
Composite 2	0	0
Composite 3	0	0
Composite 4	0	0
Composite 5	0	0
Reference Toxicant	Acceptable	



Job No. 32977-006-189

Figure 1
SITE PLAN

Maralco Aluminum Refinery
Kent, Washington

URS

URS

Facsimile

Date:	August 17, 2000	Page 1 of:	17
To:	Larry Gutcho	From:	Jim Flynn
Firm:	Loeb & Loeb LLP	cc:	
Facsimile:	213-688-3460		
Subject:	Maralco Aluminum Site		

Larry-

Here is the draft letter we discussed. Please call me or Harry Ehlers if you have any questions or comments. I will be on vacation next week, returning to the office August 28, 2000. Please contact Harry if you need assistance next week.

Regards,

Jim

URS Corporation
2025 First Avenue, Suite 500
Seattle, Washington 98121
Tel: 206.728.0744
Fax: 206.727.3350
www.urscorp.com

****
*** TX REPORT ***
****

TRANSMISSION OK

TX/RX NO	4156
CONNECTION TEL	912136883460
SUBADDRESS	
CONNECTION ID	
ST. TIME	08/17 11:54
USAGE T	07'37
PGS. SENT	17
RESULT	OK

URS

Facsimile

Date: August 17, 2000 Page 1 of: 17

To: Larry Gutcho From: Jim Flynn

Firm: Loeb & Loeb LLP cc:

Facsimile: 213-688-3460

Subject: Maralco Aluminum Site

Larry-

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Regards,

Jim

Parametrix, Inc.
Environmental Toxicology Laboratory

Oncorhynchus mykiss

Test Type: Static Acute Trout Hazardous Waste (80-12)

Sample Number: ~~HA4-1-0706CC~~ AC 7/19/00 Composite 1

Test Initiation Date: 7/19/00 Time: 11:50

Source of Organisms: Thomas Fish Co.

Client: NCA-Bothell / URS

Age of Organisms: 30 days from swim-up 6/19/00 swimup

		Number of Survivors				
Concentration	Replicate	0 hours	24 hours	48 hours	72 hours	96 hours
Control (spun)	A	10	10	10	10	10
	B	10	10	10	10	10
	C	10	10	10	10	10
100 mg/L	A	10	10	10	10	10
	B	10	10	10	10	10
	C	10	10	10	10	10
	Initals	GC	AC	AC	AC	AC
	Date	7/19	7/20	7/21	7/22	7/23
	QC AC					

Fish Length Range:
MAX: 4.1
MIN: 3.4

Comments:
Load Limit = 0.8 mg/L
Weight of 10 fish = 4.30g
Total test Vol. = 5.4L

Control fish lengths: (cm) 3.7 | 4.1 | 3.5 | 3.4 | 3.5 | 3.7 | 3.4 | 3.7 | 3.5 | 3.9 | Mean = 3.6 cm

Analysis	Control (spun)	100 mg/L
Hardness		
Alkalinity		

Reviewed by: AC 7/24/00

Rev. 2/16/2000

Parametrix, Inc.
Environmental Toxicology Laboratory

Oncorhynchus mykiss

Test Type: Static Acute Trout Hazardous Waste (80-12) Client: NCA-Bothell /UMS

Test Initiation Date: 7/19/00 Sample Number: ~~HA4-1-070600~~ AC 7/18/00 Composite 1

Temperature (°C) 0 hr 12 24 hrs 11 48 hrs 11 72 hrs 11 96 hrs 11

		pH (°C)					Dissolved Oxygen (mg/L)					Specific Conductivity (µMHOS)	
		Time in Hours					Time in Hours					Time in Hours	
Concentration	Rep.	0	24	48	72	96	0	24	48	72	96	0	96
Control (spun)	A	7.3	7.7	7.6	7.5	7.5	9.6	9.6	9.6	10.1	9.7	216	232
	B	7.3	7.6	AC 7.5 7.7	7.5	7.5	9.6	9.6	9.6	10.2	9.8	216	227
	C	7.3	7.6	7.6	7.5	7.5	9.6	9.6	9.7	10.2	9.8	217	227
100 mg/L	A	7.3	7.6	7.6	7.5	7.5	9.8	9.6	9.6	10.2	9.8	234	250
	B	7.3	7.6	7.6	7.5	7.6	9.8	9.5	9.6	10.1	9.6	236	248
	C	7.3	7.6	7.7	7.5	7.5	10.0	9.8	9.9	10.3	9.7	234	249
	Initials	GC	AC	AC	AC	AC	GC	AC	AC	AC	AC	GC	AC
	Date	7/19	7/20	7/21	7/22	7/23	7/19	7/20	7/21	7/22	7/23	7/19	7/23

Comments:

GC 7/24/00

Parametrix, Inc.
Environmental Toxicology Laboratory

Oncorhynchus mykiss

Test Type: Static Acute Trout Hazardous Waste (80-12) Sample Number: Composite 2

Test Initiation Date: 7/19/00 Time: 11:00 Source of Organisms: Thomas Fish Co.

Client: NCA-Bothell / UWS Age of Organisms: 30 days from swim-up 6/19/00 swim up

		Number of Survivors				
Concentration	Replicate	0 hours	24 hours	48 hours	72 hours	96 hours
Control (spun)	A	10	10	10	10	10
	B	10	10	10	10	10
	C	10	10	10	10	10
100 mg/L	A	10	10	10	10	10
	B	10	10	10	10	10
	C	10	10	10	10	10
Initals		GC	AC	AC	AC	AC
Date		7/19	7/20	7/21	7/22	7/23
QC	AC					

Fish Length Range:
MAX: 4.1
MIN: 3.4

Comments:
Load Limit = 0.8mg/L
Weight of 10 fish = 4.30g
Test Volume: 5.4 L

Control fish lengths: (cm) 3.7 | 4.1 | 3.5 | 3.4 | 3.5 | 3.7 | 3.4 | 3.7 | 3.5 | 3.9 Mean = 3.6 cm

Analysis	Control (spun)	100 mg/L
Hardness		
Alkalinity		

Reviewed by: JZ 7/24/00

Rev. 2/16/2000

Parametrix, Inc.
Environmental Toxicology Laboratory

Oncorhynchus mykiss

Test Type: Static Acute Trout Hazardous Waste (80-12) Client: NCA-Bothell /ARI

Test Initiation Date: 7/19/00 Sample Number: Composite 2

Temperature (°C) 0 hr 12 24 hrs 11 48 hrs 11 72 hrs 11 96 hrs 11

		pH (°C)					Dissolved Oxygen (mg/L)					Specific Conductivity (µMHOS)	
		Time in Hours					Time in Hours					Time in Hours	
Concentration	Rep.	0	24	48	72	96	0	24	48	72	96	0	96
Control (spun)	A	7.3	7.7	7.6	7.5	7.5	9.6	9.6	9.6	10.1	9.7	(1)240/	232
	B	7.3	7.6	7.7	7.5	7.5	9.6	9.6	9.6	10.2	9.8	263	227
	C	7.3	7.6	7.6	7.5	7.5	9.6	9.6	9.7	10.2	9.8	251	227
100 mg/L	A	7.4	7.6	7.7	7.6	7.6	10.0	9.4	9.6	10.0	9.9	240	251
	B	7.4	7.6	7.7	7.5	7.6	10.0	9.4	9.6	10.0	9.8	263	266
	C	7.4	7.6	7.6	7.6	7.6	9.9	9.3	9.4	9.9	9.6	251	274
	Initials	GC	AC	AC	AC	AC	GC	AC	AC	AC	AC	GC	AC
	Date	7/19	7/20	7/21	7/22	7/23	7/19	7/20	7/21	7/22	7/23	7/19	7/23

Comments: (1) DC, SC 7/19/00 Should read: 216, 216, 217 JR 7/24/00

Rev. 2/16/2000

Parametrix, Inc.
Environmental Toxicology Laboratory

Oncorhynchus mykiss

Test Type: Static Acute Trout Hazardous Waste (80-12) Sample Number: Composite 3

Test Initiation Date: 7/19/00 Time: 1500 Source of Organisms: Thomas Fish Co.

Client: NCA-Bothell / URS Age of Organisms: 30 days from swimup

		Number of Survivors				
Concentration	Replicate	0 hours	24 hours	48 hours	72 hours	96 hours
Control (spun)	A	10	10	10	10	10
	B	10	10	10	10	10
	C	10	10	10	10	10
100 mg/L	A	10	10	10	10	10
	B	10	10	10	10	10
	C	10	10	10	10	10
	Initals	7/19	AC	AC	AC	AC
	Date	QC	7/20	~~7/21~~ 7/22 AC	7/22	7/23
	QC AC					

Fish Length Range:
MAX: 4.1
MIN: 3.4

Comments:
Load Limit = 0.8 mg/L
Weight of 10 fish = 4.30 g
Test Volume: 5.4 L

Control fish lengths: (cm) 3.7 | 4.1 | 3.5 | 3.4 | 3.5 | 3.7 | 3.4 | 3.7 | 3.5 | 3.9 Mean = 3.6 cm

Analysis	Control (spun)	100 mg/L
Hardness		
Alkalinity		

Reviewed by: JZ 7/24/00

Rev. 2/16/2000

Parametrix, Inc.
Environmental Toxicology Laboratory

Oncorhynchus mykiss

Test Type: Static Acute Trout Hazardous Waste (80-12) Client: NCA-Bothell / UNS

Test Initiation Date: 7/19/00 Sample Number: Composite 3

Temperature (°C) 0 hr 12 24 hrs 11 48 hrs 11 72 hrs 11 96 hrs 11

		pH (°C)					Dissolved Oxygen (mg/L)					Specific Conductivity (µMHOS)	
		Time in Hours					Time in Hours					Time in Hours	
Concentration	Rep.	0	24	48	72	96	0	24	48	72	96	0	96
Control (spun)	A	7.3	7.7	7.6	7.5	7.5	9.6	9.6	9.6	10.1	9.7	216	232
	B	7.3	7.6	7.7	7.5	7.5	9.6	9.6	9.6	10.2	9.8	216	227
	C	7.3	7.6	7.6	7.5	7.5	9.6	9.6	9.7	10.2	9.8	217	227
100 mg/L	A	7.5	7.7	7.7	7.6	7.7	10.1	9.6	9.7	10.2	9.7	243	265
	B	7.5	7.6	7.6	7.6	7.6	10.1	9.5	9.6	10.3	9.8	246	264
	C	7.4	7.6	7.6	7.6	7.6	10.1	9.3	9.5	9.8	9.3	245	266
	Initials	GC	AC	AC	AC	AC	GC	AC	AC	AC	AC	GC	AC
	Date	7/19	7/20	7/21	7/22	7/23	7/19	7/20	7/21	7/22	7/23	7/19	7/23

Comments:

92 7/24/00

Rev. 2/16/2000

Parametrix, Inc.
Environmental Toxicology Laboratory

Oncorhynchus mykiss

Test Type: Static Acute Trout Hazardous Waste (80-12) Sample Number: Composite 4

Test Initiation Date: 7/19 Time: 1500 Source of Organisms: B Thomas Fish Co.

Client: NCA-Bothell / URS Age of Organisms: 30 days from swimup

		Number of Survivors				
Concentration	Replicate	0 hours	24 hours	48 hours	72 hours	96 hours
Control (spun)	A	10	10	10	10	10
	B	10	10	10	10	10
	C	10	10	10	10	10
100 mg/L	A	10	10	10	10	10
	B	10	10	10	10	10
	C	10	10	10	10	10
Initals		7/19	AC	AC	AC	AC
Date		QC	7/20	7/21	7/22	7/23
QC	AC					

Fish Length Range:
MAX: 4.1
MIN: 3.4

Comments:
Load Limit = 0.8 mg/L
Weight of 10 fish = 4.30g
Test Volume: 5.4L

Control fish lengths: (cm) 3.7 | 4.1 | 3.5 | 3.4 | 3.5 | 3.7 | 3.5 | 3.9 | 3.7 | 3.4 Mean = 3.6 cm

Analysis	Control (spun)	100 mg/L
Hardness		
Alkalinity		

Reviewed by: JZ 7/24/00

Rev. 2/16/2000

Parametrix, Inc.
Environmental Toxicology Laboratory

Oncorhynchus mykiss

Test Type: Static Acute Trout Hazardous Waste (80-12) Client: NCA-Bothell /ARS

Test Initiation Date: 7/19/00 Sample Number: Composite 4

Temperature (°C) 0 hr 12 24 hrs 11 48 hrs 11 72 hrs 11 96 hrs 11

		pH (°C)					Dissolved Oxygen (mg/L)					Specific Conductivity (µMHOS)	
		Time in Hours					Time in Hours					Time in Hours	
Concentration	Rep.	0	24	48	72	96	0	24	48	72	96	0	96
Control (spun)	A	7.3	7.7	7.6	7.5	7.5	9.6	9.6	9.6	10.1	9.7	216	232
	B	7.3	7.6	7.7	7.5	7.5	9.6	9.6	9.6	10.2	9.8	216	227
	C	7.3	7.6	7.6	7.5	7.5	9.6	9.6	9.7	10.2	9.8	217	227
100 mg/L	A	7.5	7.7	7.7	7.6	7.6	10.0	9.8	9.7	10.2	9.8	225	239
	B	7.5	7.7	7.8	7.7	7.6	10.1	9.8	9.9	10.3	9.8	221	235
	C	7.5	7.7	7.8	7.7	7.7	10.3	9.9	9.9	10.4	9.9	220	235
	Initials	GC	AC	AC	AC	AC	GC	AC	AC	AC	AC	GC	AC
	Date	7/19	7/20	7/21	7/22	7/23	7/19	7/20	7/21	7/22	7/23	7/19	7/23

Comments:

JR 7/24/00

Parametrix, Inc.
Environmental Toxicology Laboratory

Oncorhynchus mykiss

Test Type: Static Acute Trout Hazardous Waste (80-12) Sample Number: Composite 5

Test Initiation Date: 7/19/00 Time: 1500 Source of Organisms: Thomas Fish Co

Client: NCA-Bothell / URS Age of Organisms: 30 days from swimup

		Number of Survivors				
Concentration	Replicate	0 hours	24 hours	48 hours	72 hours	96 hours
Control (spun)	A	10	10	10	10	10
	B	10	10	10	10	10
	C	10	10	10	10	10
100 mg/L	A	10	10	10	10	10
	B	10	10	10	10	10
	C	10	10	10	10	10
Initals		GC	AC	AC	AC	AC
Date		7/19	7/20	7/21	7/22	7/23
QC	AC					

Fish Length Range:
MAX: 4.1
MIN: 3.4

Comments:
Load Limit = 0.8 mg/L
Weight of 10 fish = 4.30g
Test Volume: 5.4L

Control fish lengths: (cm) 3.7 | 4.1 | 3.5 | 3.4 | 3.5 | 3.7 | 3.4 | 3.7 | 3.5 | 3.9 | Mean = 3.6 cm

Analysis	Control (spun)	100 mg/L
Hardness		
Alkalinity		

Reviewed by: JC 7/24/00

Rev. 2/16/2000

Parametrix, Inc.
Environmental Toxicology Laboratory

Oncorhynchus mykiss

Test Type: Static Acute Trout Hazardous Waste (80-12) Client: NCA-Bothell / URS

Test Initiation Date: 7/19/00 Sample Number: Composite 5

Temperature (°C) 0 hr 12 24 hrs 11 48 hrs 11 72 hrs 11 96 hrs 11

		pH (°C)					Dissolved Oxygen (mg/L)					Specific Conductivity (µMHOS)	
		Time in Hours					Time in Hours					Time in Hours	
Concentration	Rep.	0	24	48	72	96	0	24	48	72	96	0	96
Control (spun)	A	7.3	7.7	7.6	7.5	7.5	9.6	9.6	9.6	10.1	9.7	216	232
	B	7.3	7.6	7.7	7.5	7.5	9.6	9.6	9.6	10.2	9.8	216	227
	C	7.3	7.6	7.6	7.5	7.5	9.6	9.6	9.7	10.2	9.8	217	227
100 mg/L	A	7.5	7.7	7.8	7.7	7.6	10.3	9.7	9.8	10.2	9.6	224	238
	B	7.5	7.7	7.7	7.6	7.6	10.3	9.6	9.7	10.2	9.7	225	240
	C	7.5	7.7	7.7	7.6	7.6	10.2	9.7	9.8	10.1	9.4	224	241
	Initials	GC	AC	AC	AC	AC	GC	AC	AC	AC	AC	GC	AC
	Date	7/19	7/20	7/21	7/22	7/23	7/19	7/20	7/21	7/22	7/23	7/19	7/23

Comments:

Rev. 2/16/2000

Parametrix, Inc.
Environmental Toxicology Laboratory

ACUTE *Oncorhynchus mykiss* REFERENCE TOXICANT TEST

Toxicant: KCl
Dilution Water: Natural Spring Water collected 7/18/00
Source of Organisms: Thomas Fish Co.
Test Dates: 7/19/00 – 7/23/00
Age of Organisms: 72 days
5/8/00 Swim up

Temp (°C) Day 0 12 Day 1 12 Day 2 11 Day 3 11 Day 4 11

g/L Conc.	Rep.	No. of Survivors					pH					Dissolved Oxygen (mg/L)					Specific Conductivity (µS)	
		0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	96
Control	A	10	10	10	10	10	7.5	7.7	7.6	7.5	7.6	9.9	9.4	8.4	9.7	9.3	209	213
	B	10	10	10	10	10												
1.2	A	10	10	10	10	10	7.4	7.5	7.5	7.5	7.6	10.4	9.1	9.1	9.7	9.4	2530	2500
	B	10	10	10	10	10												
1.715	A	10	10	10	10	10	7.4	7.5	7.5	7.5	7.6	10.4	9.2	9.2	9.5	9.1	3340	3570
	B	10	10	10	10	10												
2.45	A	10	10	10	10	10	7.4	7.5	7.4	7.5	7.5	10.4	9.1	8.5	9.7	9.0	5040	4~~80~~
	B	10	10	10	10	10												
3.5	A	10	10	10	10	9-1	7.4	7.5	7.5	7.5	7.5	10.5	9.6	8.8	9.4	9.1	6363	6770
	B	10	10	10	8 AC 7/22 2 7-1													
5.0	A	10	3-7	0-3	0	0	7.5	7.4	7.5	—	—	10.6	8.6	9.6	—	—	9030	9260
	B	10	4-6	0-4	0	0												
	A																	
	B																	
Initials		GC	AC	AC	AC	AC	GC	AC	AC	AC	AC	GC	AC	AC	AC	AC	GC	AC
Date		7/19	7/20	7/21	7/22	7/23	7/19	7/20	7/21	7/22	7/23	7/19	7/20	7/21	7/22	7/23	7/19	7/23

QC: AC

Comments: Natural Spring Water Collected 7/18/00
(1) Conductivity should read 9370 us, AC 7/21/00

Reviewed by: JC 7/24/00

Test: AC-Acute Fish Test | Test ID: REFTOX1170
Species: OM-Oncorhynchus mykiss | Protocol: EPAA 91-EPA Acute
Sample ID: REF-Ref Toxicant | Sample Type: KCL-Potassium chloride
Start Date: 07/19/2000 End Date: 07/23/2000 | Lab ID: WAPTL-Parametrix Tox Lab

s	ID	Rep	Group	Start	24 Hr	48 Hr	72 Hr	96 Hr	Notes
	1	1	D-Control	10	10	10	10	10	
	2	2	D-Control	10	10	10	10	10	
	3	1	1.200	10	10	10	10	10	
	4	2	1.200	10	10	10	10	10	
	5	1	1.715	10	10	10	10	10	
	6	2	1.715	10	10	10	10	10	
	7	1	2.450	10	10	10	10	10	
	8	2	2.450	10	10	10	10	10	
	9	1	3.500	10	10	10	10	9	
	10	2	3.500	10	10	10	8	7	
	11	1	5.000	10	3	0	0	0	
	12	2	5.000	10	4	0	0	0	

Comments: 5/8/00 swim-up

Reviewed by:

Acute Fish Test-96 Hr Survival

Start Date:	07/19/2000	Test ID:	REFTOX1170	Sample ID:	REF-Ref Toxicant
End Date:	07/23/2000	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAA 91-EPA Acute	Test Species:	OM-Oncorhynchus mykiss
Comments:	5/8/00 swim-up				

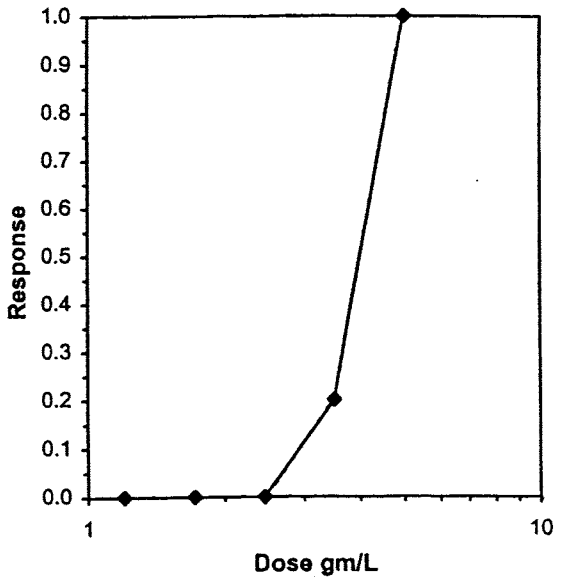
Conc-gm/L	1	2
D-Control	1.0000	1.0000
1.2	1.0000	1.0000
1.715	1.0000	1.0000
2.45	1.0000	1.0000
3.5	0.9000	0.7000
5	0.0000	0.0000

			Transform: Arcsin Square Root					Number	Total
Conc-gm/L	Mean	N-Mean	Mean	Min	Max	CV%	N	Resp	Number
D-Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20
1.2	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20
1.715	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20
2.45	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	0	20
3.5	0.8000	0.8000	1.1201	0.9912	1.2490	16.280	2	4	20
5	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	2	20	20

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Normality of the data set cannot be confirmed				
Equality of variance cannot be confirmed				

Trimmed Spearman-Karber

Trim Level	EC50	95% CL	
0.0%	3.8953	3.6545	4.1519
5.0%	3.9346	3.6577	4.2324
10.0%	3.9676	3.6294	4.3373
20.0%	4.0009	3.8063	4.2054
Auto-0.0%	3.8953	3.6545	4.1519

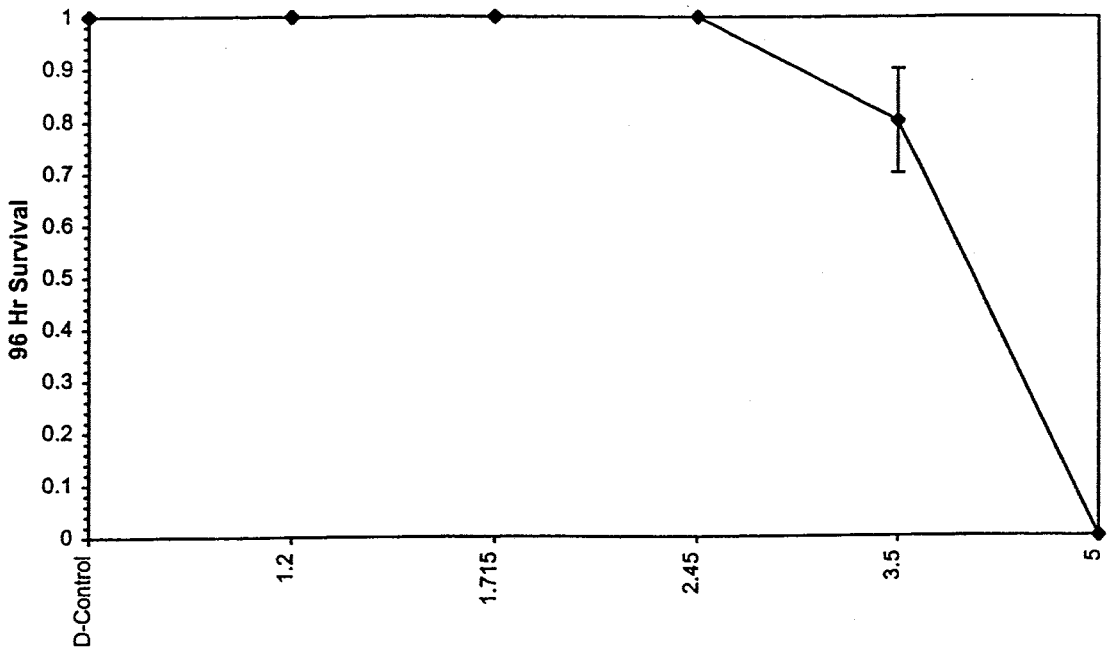


Reviewed by:

Acute Fish Test-96 Hr Survival

Start Date:	07/19/2000	Test ID:	REFTOX1170	Sample ID:	REF-Ref Toxicant
End Date:	07/23/2000	Lab ID:	WAPTL-Parametrix Tox Lab	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAA 91-EPA Acute	Test Species:	OM-Oncorhynchus mykiss
Comments:	5/8/00 swim-up				

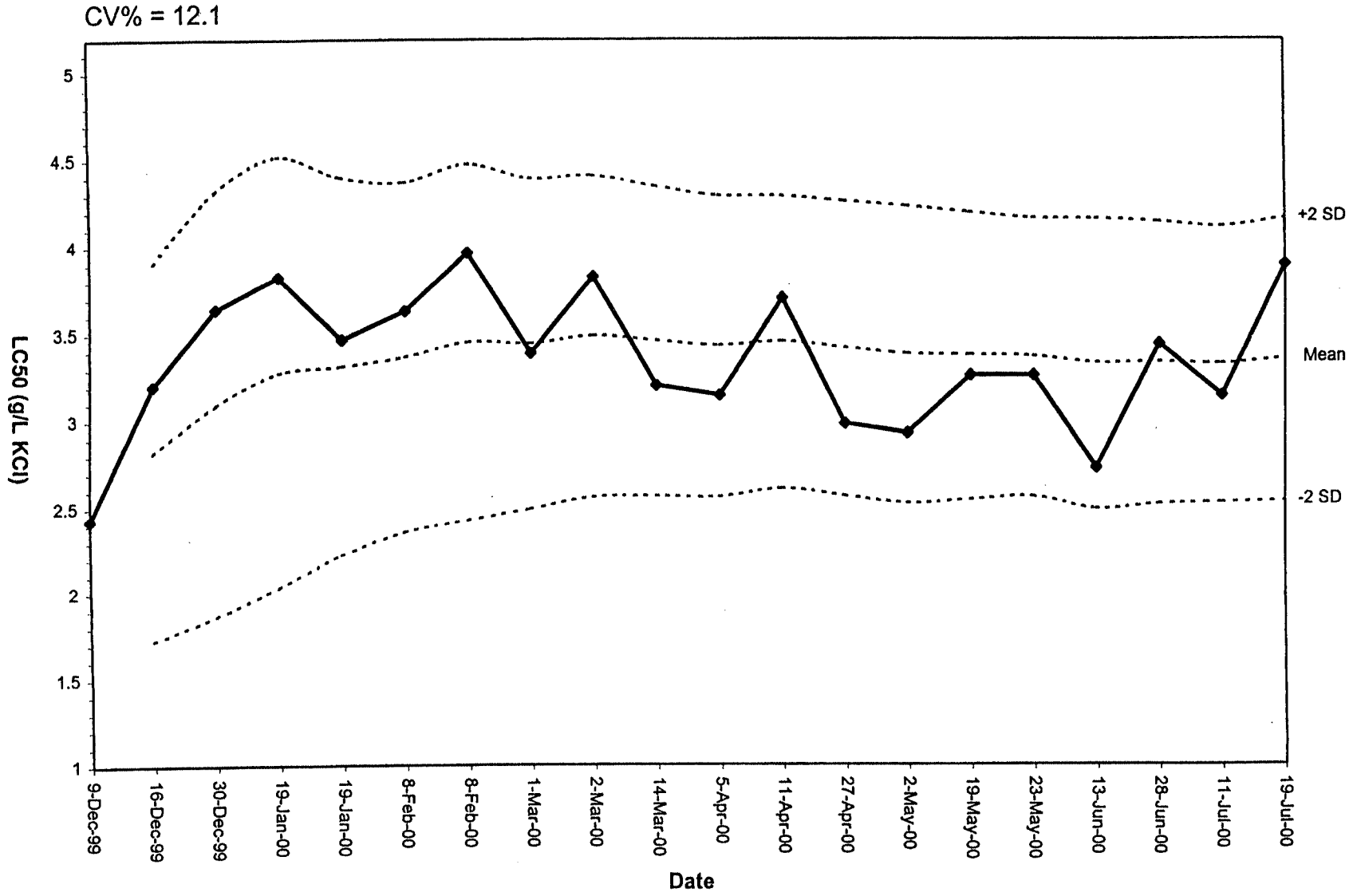
Dose-Response Plot



ToxCalc v5.0.23

Reviewed by:

Cum Sum Control Chart for Acute *O. mykiss* Survival



North Creek Analytical, Inc.
Environmental Laboratory Network
www.ncalabs.com

East [illegible] Montgomery, Suite B, Spokane, WA 99206-4776 (509) 924-9200
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 906- FA[illegible]906-9210
20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 (541) 383-9310 FAX 382-7588

CHAIN OF CUSTODY REPORT Work Order #:

CLIENT: URS

REPORT TO: J. FLYNN

ADDRESS: 501 MARKETPLACE TOWER
2025 FIRST AVE SEATTLE WA 98121

PHONE: 206 728-0744 FAX: 206 728 3350

INVOICE TO:

P.O. NUMBER:

PROJECT NAME: MARCOLED

PROJECT NUMBER: 32977-006-5108-189

SAMPLED BY: K. VOTRUBA

TURNAROUND REQUEST in Business Days*

Organic & Inorganic Analyses: 10 | 7 | 5 | 4 | 3 | 2 | 1 | <1

STD. Petroleum Hydrocarbon Analyses: 5 | 4 | 3 | 2 | 1 | <1

STD. OTHER Please Specify

*Turnaround Requests less than standard may incur Rush Charges.

REQUESTED ANALYSES

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	Sediment PAHs (Z-108)	MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA WO ID
1. ~~HA1-FW~~ 1-070600	7/6/10 0905	X	S	1	HOLD	
2. HA1-5.5-070600	7/6/10 0955	X				
3. HA2-1-070600	1000	X				
4. HA2-5.5-070600	1030	X				
5. HA2-9.5-070600	1055	X				
6. HA3-1-070600	1115	X				
7. HA3-5-070600	1140	X				
8. HA4-1-070600	1205					
9. HA4-5-070600	1325					
10. HA5-1-070600	1400					
11. HA~~7~~5-1-070600	1500					
12 HA~~7~~5-5-070600	1515					
13.						
14.						
15.						

RELINQUISHED BY: KV DATE: 7/7/10
PRINT NAME: KRIS VOTRUBA FIRM: URS TIME: 1300

RECEIVED BY: GC DATE: 7/10/10
PRINT NAME: Gretchen Crouch FIRM: PMX TIME: 1000

RELINQUISHED BY: DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

TEMP:

COC REV 3/99

PAGE OF