Golder Associates Inc.

18300 NE Union Hill Road, Suite 200 Redmond, WA 98052-3333 Telephone (425) 883-0777 Fax (425) 882-5498



August 1, 2000

Our ref: 923-1000.R271

Palmer Coking Coal Company 31407 Highway 169 P.O. Box 10 Black Diamond, Washington 98010

ATTENTION: Mr. Bill Kombol

RE: LANDSBURG MINE SITE INTERIM GROUNDWATER MONITORING RESULTS – MAY, 2000

Dear Mr. Kombol:

Golder Associates Inc. (Golder) completed the first interim groundwater monitoring event at the Landsburg Mine Site on May 18, 2000. Groundwater samples were collected from monitoring wells LMW-2, LMW-4, LMW-3, and LMW-5 (see Figure 1). Monitoring wells LMW-2 and LMW-4 are completed to monitor shallow and deeper zones within the Rogers seam north of the subsidence trench, and LMW-3 and LMW-5 are completed to monitor shallow and deeper zones within the Rogers seam south of the subsidence trench. These wells lay along the primary pathways for detection of a chemical release from the mine, were one to occur. Samples were also collected of the groundwater emanating from Rogers Portal #3, located south of wells LMW-3 and LMW-5.

Groundwater sampling was conducted in accordance with the *Draft Interim Groundwater Monitoring Plan, Landsburg Mine Site* (Golder, 1997), and included the following activities:

- Measurement of static water levels at monitoring wells,
- Well purging to insure sample representativeness with the currently installed dedicated pumping systems,
- Measurement of field parameters pH, specific conductance, temperature, dissolved oxygen, and turbidity,
- Collection of all purge water in appropriate containers for temporary on-site storage prior to disposal, and
- Collection of representative samples in appropriate containers; metals samples were field filtered using an inline $0.45 \mu m$ filter.

Sampling activities were documented on Sample Integrity Data Sheets (SIDS). Copies of the completed SIDS are attached to this letter.

The monitoring well scheduled to be installed in Portal #3 area was not installed as of the May 2000 sampling; therefore, samples were collected from a small sump dug into the Portal #3 seep area.

Following sample collection, all bottles were sealed, labeled and placed in a cooler maintained at approximately 4° C. Samples were transported under chain of custody procedures to North Creek Analytical, located in Bothell, Washington. Analysis included full GC/MS analysis (volatiles by EPA Method 8260, semivolatiles by EPA Method 8270, and pesticides/PCBs by EPA Method 8081), priority metals, fuel hydrocarbon scan, and selected general wet chemistry parameters.

The attached Table 1 presents analytical results for all analyses. Table 2 presents only those analytes that were detected in at least one of the samples. Table 2 also provides a comparison of detected concentrations to screening levels. Screening levels are based on maximum contaminant levels (MCLs) if the MCL represents a risk of less than 10^{-5} for carcinogens or hazard quotient of one (1) for systemic toxins. When the MCLs represent a greater risk or have not been promulgated for a particular hazardous substance, the MTCA Method B level shall be used for screening.

The analytical results indicate no significant changes in groundwater conditions from those observed during the remedial investigation (RI). There were no volatile organic, semivolatile organic, pesticides, PCBs or fuel hydrocarbons detected in any of the samples.

Total dissolved solids (TDS), iron and manganese are the only compounds that were detected at concentrations in excess of the screening levels. For these compounds the only screening levels are secondary maximum contaminant levels (SMCLs) which are not health-based standards, but are protective of aesthetic qualities of water only. The concentrations of TDS, iron and manganese detected during the May 2000 sampling are similar to concentrations detected during the RI (Golder, 1996)¹.

If you have any questions or require any additional information, please contact Douglas Morell at (425) 883-0777.

Sincerely,

GOLDER ASSOCIATES INC.

Gary L. Zimmerman

Senior Environmental Scientist

Douglas J. Morell

Principal

Attachments

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¹ Golder Associates, 1996. *Remedial Investigation and Feasibility Study for the Landsburg Mine Site*. Landsburg PLP Steering Committee.

TABLES

Landsburg Mine Site						
Interim Groundwater Monitorin	g					
Groundwater Quality Data	O .					
Well No:		LMW-2	LMW-4	LMW-3	LMW-5	Portal #3
Sampling Date:		5/18/00	5/18/00	5/18/00	5/18/00	5/18/00
Parameter	Units	Conc. Q	Conc. Q	Conc. Q	Conc. Q	Conc. Q
Field Parameters						
GW Elevation, ft	feet amsl	606.87	606.35	641.36	641.07	na
pH	units	6.77	6.76	7.52	6.77	na
Temperature	°C	10.9	10.8	11.1	11.4	na
Dissolved Oxygen	mg/L	0.8	0.9	0.7	0.9	na
Sp. Conductance	mS/cm	0.234	0.229	0.171	0.223	na
Turbidity	NTU	0.43	0.9	0.53	0.58	na
General Chemistry	1410	0.45	0.2	0.55	0.50	Tia -
Bicarbonate Alkalinity	mg/L as CaCO3	644	657	155	476	395
Carbonate Alkalinity	mg/L as CaCO3	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
Chloride	mg/l	6.74	6.39	2.02	2.25	2.47
Cyanide (total)	mg/l	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U
Fluoride	mg/l	0.100 U	0.100 U	0.100 U	0.125	0.100 U
Hardness	mg eq. CaCO3/L	646	693	159	509	435
Hydroxide Alkalinity	mg/L as CaCO3	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
Nitrate/Nitrite-Nitrogen	ug/l as N	10.0 U	24.9	10.0 U	10.0 U	10.0 U
Sulfate	mg/l	6.47	9.01	7.51	32.6	20.0
Total Alkalinity	mg/L as CaCO3	644	657	155	476	395
Total Dissolved Solids	mg/l	610	650	180	490	630
Inorganics	1118/1		050	100	170	000
Aluminum	mg/L	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
Antimony	mg/L	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U
Arsenic	mg/L	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00355
Barium	mg/L	0.290	0.357	0.0751	0.267	0.237
Beryllium	mg/L	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U
Cadmium	mg/L	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U
Calcium	mg/L	126	128	36.0	102	88.9
Chromium	mg/L	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U
Cobalt	mg/L	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00587
Copper	mg/L	0.00117	0.00114	0.00100 U	0.00100 U	0.00100 U
Iron	mg/L	0.150 U	0.896	0.150 U	0.150 U	4.20
Lead	mg/L	0.0100 U	0.0100 U	0.00100 U	0.00100 U	0.0100 U
Magnesium	mg/L	76.7	77.4	15.9	59.1	48.9
Manganese	mg/L	0.196	0.182	0.0421	0.246	0.514
Mercury	mg/L	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U
Nickel	mg/L	0.0300 U	0.0300 U	0.0300 U	0.0300 U	0.0300 U
Nickel	mg/L	0.00138	0.00127	0.00107	0.00100 U	0.00712
Potassium	mg/L	4.76	4.52	1.47	3.09	2.89
Selenium	mg/L	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U
Silicon	mg/L	9.74	9.74	10.6	9.88	9.50
Silver	mg/L	0.0100 U	0.0100 U	0.00100 U	0.00100 U	0.0100 U
Sodium	mg/L	28.3	31.1	10.7	20.6	18.3
Thallium	mg/L	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U
Vanadium	mg/L	0.00124	0.00158	0.00100 U	0.00120	0.00100 U
Zinc	mg/L	0.0100 U	0.0100 U	0.0100 U	0.0120 0.0100 U	0.877
Volatile Organics	IIIE/ LI	0.0100 0	0.0100 0	0.0100 0	0.0100 0	0.077
1,1,1,2-Tetrachloroethane	ug/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
1,1,1-Trichloroethane	ug/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
1,1,2,2-Tetrachloroethane	ug/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
1,1,2-Trichloroethane	ug/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
1,1-Dichloroethane	ug/L	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
1,1-Dictionoentable	n8/L	1.00 0	1.00 U	1.00 0	1.00 0	1.00 U

Landsburg Mine Site		444				
Interim Groundwater Monitoring						
Groundwater Quality Data						
Well No:	<u> </u>	LMW-2	LMW-4	LMW-3	LMW-5	Portal #3
Sampling Date:		5/18/00	5/18/00	5/18/00	5/18/00	5/18/00
Parameter	Units	Conc. Q				
1,1-Dichloroethene	ug/L	1.00 U				
1,1-Dichloropropene	ug/L	1.00 U				
1,2,3-Trichlorobenzene	ug/L	1.00 U				
1,2,3-Trichloropropane	ug/L	1.00 U				
1,2,4-Trichlorobenzene	ug/L	1.00 U				
1,2,4-Trimethylbenzene	ug/L	1.00 U				
1,2-Dibromo-3-chloropropane	ug/L	5.00 U				
1,2-Dibromoethane	ug/L	1.00 U				
1,2-Dichlorobenzene	ug/L	1.00 U				
1,2-Dichloroethane	ug/L	1.00 U				
1,2-Dichloropropane	ug/L	1.00 U				
1,3,5-Trimethylbenzene	ug/L	1.00 U				
1,3-Dichlorobenzene	ug/L	1.00 U				
1,3-Dichloropropane	ug/L	1.00 U				
1,4-Dichlorobenzene	ug/L	1.00 U				
2,2-Dichloropropane	ug/L	1.00 U				
2-Butanone	ug/L	10.0 U	10.0 U	10.0 U 1.00 U	10.0 U	10.0 U
2-Chlorotoluene	ug/L	1.00 U	1.00 U		1.00 U	1.00 U
2-Hexanone 4-Chlorotoluene	ug/L	10.0 U 1.00 U				
4-Chlorotoluene 4-Methyl-2-pentanone	ug/L ug/L	1.00 U 10.0 U				
4-Metnyl-2-pentanone Acetone	ug/L ug/L	10.0 U				
Benzene	ug/L ug/L	10.0 U	1.00 U	1.00 U	1.00 U	1.00 U
Bromobenzene	ug/L ug/L	1.00 U				
Bromochloromethane	ug/L ug/L	1.00 U				
Bromodichloromethane	ug/L	1.00 U				
Bromoform	ug/L	1.00 U				
Bromomethane	ug/L	1.00 U				
Carbon disulfide	ug/L	1.00 U				
Carbon tetrachloride	ug/L	1.00 U				
Chlorobenzene	ug/L	1.00 U				
Chloroethane	ug/L	1.00 U				
Chloroform	ug/L	1.00 U				
Chloromethane	ug/L	5.00 U				
cis-1,2-Dichloroethene	ug/L	1.00 U				
cis-1,3-Dichloropropene	ug/L	1.00 U				
Dibromochloromethane	ug/L	1.00 U				
Dibromomethane	ug/L	1.00 U				
Dichlorodifluoromethane	ug/L	1.00 U				
Ethylbenzene	ug/L	1.00 U				
Hexachlorobutadiene	ug/L	1.00 U				
Isopropylbenzene	ug/L	1.00 U				
m,p-Xylene	ug/L	2.00 U				
Methylene chloride	ug/L	5.00 U				
Naphthalene	ug/L	1.00 U				
n-Butylbenzene	ug/L	1.00 U				
n-Propylbenzene	ug/L	1.00 U				
o-Xylene	ug/L	1.00 U				
p-Isopropyltoluene	ug/L	1.00 U				
sec-Butylbenzene	ug/L	1.00 U				
Styrene	ug/L	1.00 U				

Landsburg Mine Site Interim Groundwater Monitoring						
Groundwater Quality Data						
Well No:		LMW-2	LMW-4	LMW-3	LMW-5	Portal #3
Sampling Date:		5/18/00	5/18/00	5/18/00	5/18/00	5/18/00
Parameter	Units	Conc. Q	Conc. Q	Conc. Q	Conc. Q	Conc. Ç
tert-Butylbenzene	ug/L	1.00 U				
Tetrachloroethene	ug/L	1.00 U				
Toluene	ug/L	1.00 U				
trans-1,2-Dichloroethene	ug/L	1.00 U				
trans-1,3-Dichloropropene	ug/L	1.00 U				
Trichloroethene	ug/L	1.00 U				
Trichlorofluoromethane	ug/L	1.00 U				
Vinyl chloride	ug/L	1.00 U				
Semivolatile Organics		10077	400 77	100 77	100 11	10077
1,2,4-Trichlorobenzene	ug/L	10.0 U				
1,2-Dichlorobenzene	ug/L	10.0 U				
1,3-Dichlorobenzene	ug/L	10.0 U				
1,4-Dichlorobenzene 2,4,5-Trichlorophenol	ug/L	10.0 U 10.0 U	10.0 U 10.0 U	10.0 U 10.0 U	10.0 U 10.0 U	10.0 U
	ug/L	10.0 U	10.0 U			10.0 U
2,4,6-Trichlorophenol 2,4-Dichlorophenol	ug/L ug/L	10.0 U	10.0 U	10.0 U 10.0 U	10.0 U 10.0 U	10.0 U 10.0 U
2,4-Dictiorophenol	ug/L ug/L	10.0 U				
2,4-Dinitrophenol	ug/L ug/L	20.0 U				
2,4-Dintrophenol	ug/L ug/L	10.0 U				
2,6-Dinitrotoluene	ug/L	10.0 U				
2-Chloronaphthalene	ug/L	10.0 U				
2-Chlorophenol	ug/L	10.0 U				
2-Methylnaphthalene	ug/L	10.0 U				
2-Methylphenol	ug/L	10.0 U				
2-Nitroaniline	ug/L	10.0 U				
2-Nitrophenol	ug/L	10.0 U				
3 & 4-Methylphenol	ug/L	10.0 U				
3,3´-Dichlorobenzidine	ug/L	10.0 U				
3-Nitroaniline	ug/L	10.0 U				
4,6-Dinitro-2-methylphenol	ug/L	10.0 U				
4-Bromophenyl phenyl ether	ug/L	10.0 U				
4-Chloro-3-methylphenol	ug/L	10.0 U				
4-Chloroaniline	ug/L	10.0 U				
4-Chlorophenyl phenyl ether	ug/L	10.0 U				
4-Nitroaniline	ug/L	10.0 U				
4-Nitrophenol	ug/L	10.0 U				
Acenaphthene	ug/L	10.0 U				
Acenaphthylene	ug/L	10.0 U				
Aniline	ug/L	10.0 U				
Anthracene	ug/L	10.0 U				
Benzo (a) anthracene	ug/L	10.0 U				
Benzo (a) pyrene	ug/L	10.0 U				
Benzo (b) fluoranthene	ug/L	10.0 U				
Benzo (ghi) perylene	ug/L	10.0 U				
Benzo (k) fluoranthene	ug/L	10.0 U				
Benzoic Acid	ug/L	10.0 U				
Benzyl alcohol	ug/L	10.0 U				
Bis(2-chloroethoxy)methane	ug/L	10.0 U				
Bis(2-chloroethyl)ether	ug/L	10.0 U				
Bis(2-chloroisopropyl)ether Bis(2-ethylhexyl)phthalate	ug/L ug/L	10.0 U 50.0 U	10.0 U 50.0 U	10.0 U 50.0 U	10.0 U 50.0 U	10.0 U

Landsburg Mine Site						
Interim Groundwater Monitoring						
Groundwater Quality Data		•				
Well No:		LMW-2	LMW-4	LMW-3	LMW-5	Portal #3
Sampling Date:		5/18/00	5/18/00	5/18/00	5/18/00	5/18/00
Parameter	Units	Conc. Q	Conc. Q	Conc. Q	Conc. Q	Conc. (
Butyl benzyl phthalate	ug/L	10.0 U				
Carbazole	ug/L	10.0 U				
Chrysene	ug/L	10.0 U				
Dibenz (a,h) anthracene	ug/L	10.0 U				
Dibenzofuran	ug/L	10.0 U				
Diethyl phthalate	ug/L	10.0 U				
Dimethyl phthalate	ug/L	10.0 U				
Di-n-butyl phthalate	ug/L	10.0 U				
Di-n-octyl phthalate	ug/L	10.0 U				
Fluoranthene	ug/L	10.0 U				
Fluorene	ug/L	10.0 U				
Hexachlorobenzene Hexachlorobutadiene	ug/L	10.0 U				
	ug/L	10.0 U				
Hexachlorocyclopentadiene Hexachloroethane	ug/L	10.0 U 10.0 U	10.0 U 10.0 U	10.0 U 10.0 U	10.0 U 10.0 U	10.0 U
Indeno (1,2,3-cd) pyrene	ug/L ug/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U 10.0 U
Isophorone	ug/L	10.0 U				
Naphthalene	ug/L	10.0 U				
Nitrobenzene	ug/L ug/L	10.0 U				
N-Nitrosodi-n-propylamine	ug/L	10.0 U				
N-Nitrosodiphenylamine	ug/L	10.0 U				
Pentachlorophenol	ug/L	10.0 U				
Phenanthrene	ug/L	10.0 U				
Phenol	ug/L	10.0 U				
Pyrene	ug/L	10.0 U				
Organochlorine Pesticides and PC		11				10.0
4,4´-DDD	ug/L	0.0400 U				
4,4´-DDE	ug/L	0.0300 U				
4,4´-DDT	ug/L	0.0900 U				
Aldrin	ug/L	0.0400 U				
alpha-BHC	ug/L	0.0200 U				
alpha-Chlordane	ug/L	0.0500 U				
Aroclor 1016	ug/L	0.100 U				
Aroclor 1221	ug/L	0.100 U				
Aroclor 1232	ug/L	0.100 U				
Aroclor 1242	ug/L	0.100 U				
Aroclor 1248	ug/L	0.100 U				
Aroclor 1254	ug/L	0.100 U				
Aroclor 1260	ug/L	0.100 U				
Aroclor 1262	ug/L	0.100 U				
Aroclor 1268	ug/L	0.100 U				
beta-BHC	ug/L	0.100 U				
Chlordane (tech)	ug/L	0.150 U				
delta-BHC	ug/L	0.0500 U				
Dieldrin	ug/L	0.0700 U				
Endosulfan I	ug/L	0.0300 U				
Endosulfan II	ug/L	0.0500 U				
Endosulfan sulfate	ug/L	0.0700 U				
Endrin	ug/L	0.0800 U				
Endrin aldehyde	ug/L	0.100 U				
gamma-BHC (Lindane)	ug/L	0.0300 U				

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Landsburg Mine Site									
Interim Groundwater Monitoring									
Groundwater Quality Data									
Well No:		LMW-2	LMW-4	LMW-3	LMW-5	Portal #3			
Sampling Date:		5/18/00	5/18/00	5/18/00	5/18/00	5/18/00			
Parameter	Units	Conc. Q							
gamma-Chlordane	ug/L	0.0200 U							
Heptachlor	ug/L	0.0300 U							
Heptachlor epoxide	ug/L	0.0300 U							
Methoxychlor	ug/L	0.500 U							
Toxaphene	ug/L	1.50 U							
Hydrocarbon Identification									
Diesel Range	mg/L	0.630 U							
Gx Range	mg/L	0.250 U							
Heavy Fuel Oil Range	mg/L	0.630 U							
Insulating Oil Range	mg/L	0.630 U							
Kerosene Range	mg/L	0.630 U							
Lube Oil Range	mg/L	0.630 U							

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

J - The associated value is an estimated quantity.

na - Not Analyzed

ANALYTES DETECTED DURING THE MAY 2000 GROUNDWATER ANALYTICAL RESULTS

Landsburg Mine Site		1000							
Interim Groundwater Mon	itoring								
Groundwater Quality Data									
Well No:			LMW-2	LMW-4	LMW-3	LMW-5	Portal #3		
Sampling Date:			5/18/00	5/18/00	5/18/00	5/18/00	5/18/00		
	Screening								
Parameter	Value	Units	Conc. Q	Conc. Q	Conc. Q	Conc. Q	Conc. Q		
General Chemistry									
Bicarbonate Alkalinity	NSA	mg/L as CaCO3	644	657	155	476	395		
Chloride	250 ^b	mg/l	6.74	6.39	2.02	2.25	2.47		
Hardness	NSA	mg eq. CaCO3/L	646	693	159	509	435		
Nitrate/Nitrite-Nitrogen	10,000ª	ug/l as N	10.0 U	24.9	10.0 U	10.0 U	10.0 U		
Sulfate	250 ^b	mg/l	6.47	9.01	7.51	32.6	20.0		
Total Alkalinity	NSA	mg/L as CaCO3	644	657	155	476	395		
Total Dissolved Solids	500 ^ъ	mg/l	610	650	180	490	630		
Inorganics					*	<u> </u>			
Barium	1.12 ^c	mg/L	0.290	0.357	0.0751	0.267	0.237		
Calcium	NSA	mg/L	126	128	36.0	102	88.9		
Cobalt	0.96°	mg/L	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00587		
Copper	0.592°	mg/L	0.00117	0.00114	0.00100 U	0.00100 U	0.00100 U		
Iron	0.3 ^b	mg/L	0.150 U	0.896	0.150 U	0.150 U	4.20		
Magnesium	NSA	mg/L	76.7	<i>7</i> 7.4	15.9	59.1	48.9		
Manganese	0.05 ^b	mg/L	0.196	0.182	0.0421	0.246	0.514		
Nickel	0.32 ^c	mg/L	0.00138	0.00127	0.00107	0.00100 U	0.00712		
Potassium	NSA	mg/L	4.76	4.52	1.47	3.09	2.89		
Silicon	NSA	mg/L	9.74	9.74	10.6	9.88	9.50		
Sodium	NSA	mg/L	28.3	31.1	10.7	20.6	18.3		
Vanadium	0.112 ^c	mg/L	0.00124	0.00158	0.00100 U	0.00120	0.00100 U		
Zinc	4.8°	mg/L	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.877		

^aPrimary Drinking Water Standards 40 CFR 141

^bSecondary Drinking Water Standards 40 CFR 143

[°]MTCA Method B

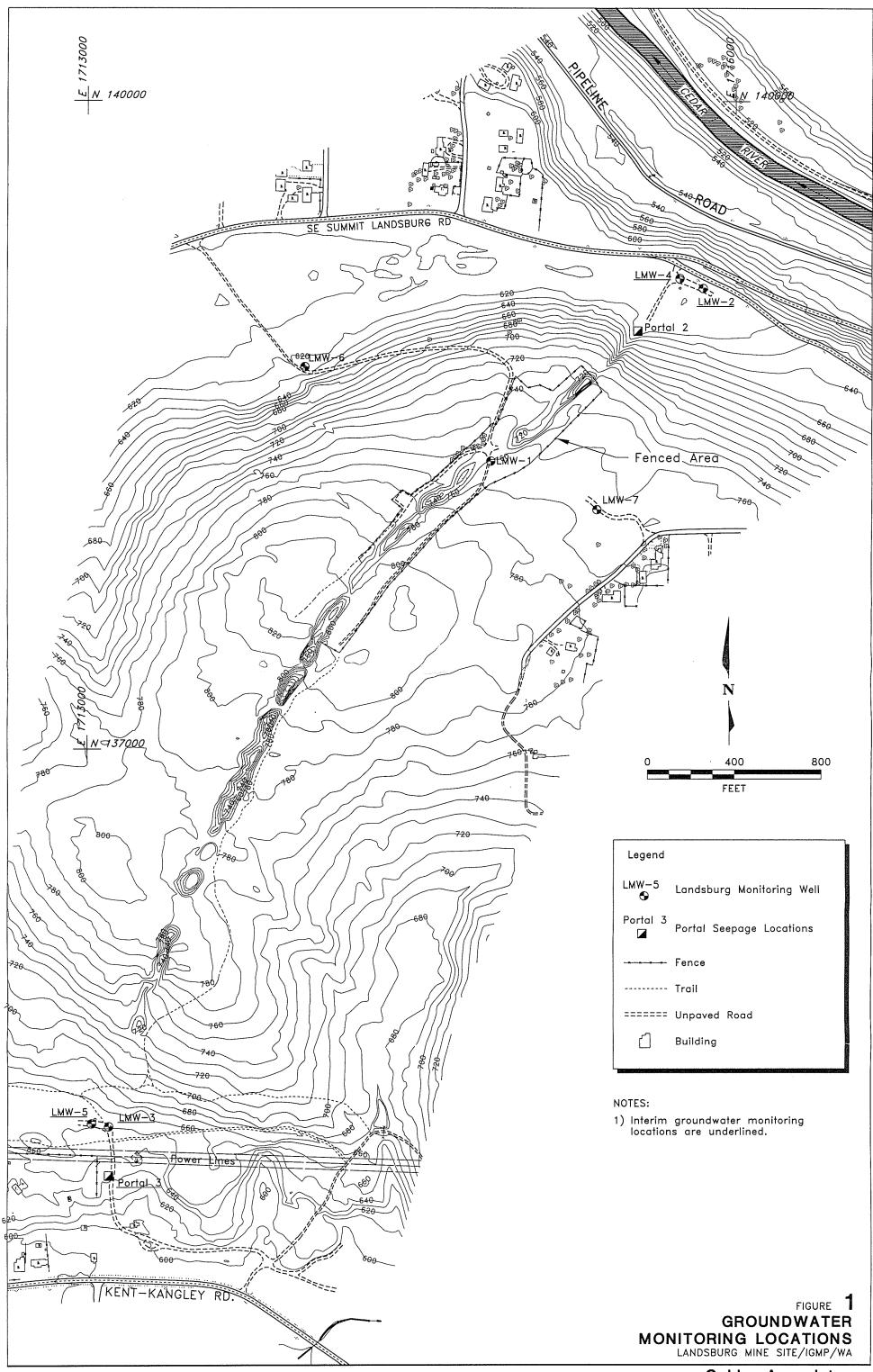
NSA - No Standard Available

Shading indicates exceedance of screening value

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

FIGURES

Golder Associates



FIELD REPORT FORMS

SAMPLE INTEGRITY DATA SHEET

	Plant/Site Lands but	g Mine	Pr	oject No. <u>923-1000</u>	
	Site Location Lands bun	a WA	Sa	mple ID LMW2-05/80	0
	Sampling Location	<u> </u>			
	End	ostoribab fe	Tetlon same	ling tube	
	Technical Procedure Referer	nce(s) TP-1.4-6	,	Λ	
	Type of Sampler Dedrog	ted Grundf	or bamb		
	Date 5~18~00		_Time		
	Media Water	11.094.000.000.000	_StationLMW	-2	
	Sample Type: grab	7	time composite	space co	mposite
	Sample Acquisition Measure				
	SWX- 7.28'	36.1-	1.58= 30.8 XI.	66=20.3 > 79 m	1sul
	Sand Park - 389-	11.H = 8.12	440.6=8.2	12191	
	Packer Dipth	-		87g/ to	tal
•	Sample Description Clea	H retall 1	2000	V	
	Management of the second second second and an accompanies of the second	•			
			n maria wata wata wa		
	Field Measurements on Sam	ple (pH, conductivi	ity, etc.) See AHa	ched Sheet	
	•				
				The first way and the first wa	
Edm		alysis	Container	Preservation/	Amount
CXAN		2'A0'	VOA UTAL	HCI	
for		2/AOV-11	Glass Amber	<u> </u>	
120	1 Olliter Per	2/809/42	Glass Amber		
Marin	1-500ml m	2/0/4	HOLE	HNO	
`	1-11-itan	Variet, total	HOBE	Na O	H
	1-500ml	11 20 Nt	HPPE	Hzson	1
	1-(1)riter 20	1,502,7,12, i	399H 207, ON		•
	1-(17272)-1	070H-487W	Glass Amb	r HCI	
	\$ 2.40m/	MALEH-BX	10) V AOV 100A 22010	HCI	
	Sampler (signature)	m		ite 5~18~00	wervite -
	Sampler (signature) NWW Supervisor (signature)	lo ₁	Da		
	(

LOCATION: LWW-2 DATE; 5-18-00 SAMPLE TIME; 1542

						$\leq h \parallel$		
TIME TE	EMP (C)	TURBIDITY (NTUS)	pН	DO (mg/L)	SP COND (uS)	PUMP ON, GPM/OFF	COMMENTS	
1442			 '		33.13 (40)	1 01011 010, 01 101/01 1		
1450	10.9	1.24	615	1112	adı	7 20001	1111/16 5	DOW
1557	10.9	5.40	2000	1000		129+	7	0.
15/4	100		3.17	0.87	239	1.201	<u>_</u>	
1527	1000		19.11	1000	236		PILVAR	apm
	10.	0,10	10.16	0.96	236	7.28 14	1	- F - 1
1530	_ :/•	0.16	6.77	0.8	235		<u>V</u>	V
140	10.9	0.43	6.77	0.77	234	See and the second		
			 					
			ļ					
<u> </u>								
L			L	l				

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SAMPLE INTEGRITY DATA SHEET

Plant/Site Lands burg M	ine Project No. 123-	-1000
Site Location Landsburg W	A Sample ID LMWH	-021800 +
Sampling Location	Pupl → Imu8	-051800
end of de	discated Teflon sampling tube	
	P-1.4-6 TP-1.2-20, TP-1.2-23	
Type of Sampler Dedricated C		
Date 5-18-00	Time17/2	
MediaWater	Station LMW-4	
Sample Type: grab .	time composite	space composite
Sample Acquisition Measurements (d	lepth, volume of statistic well water and purged water,	•
SWL- 9.3541		^
Sand Park - 23ft xD.1	= 13.8 gal > 30 gal [well vol. X	3= 40
Packer Digth- 24AXON	61 = 15-84 / 30 MM	
Sample Description Clear Wa		
		7411

Field Measurements on Sample (nH	conductivity etc.) Can Allanhad Chan	+
Field Measurements on Sample (pH,	conductivity, etc.) See Atlanhed Shee	+
Field Measurements on Sample (pH,	conductivity, etc.) See Attached Shee	+
Field Measurements on Sample (pH,	conductivity, etc.) See Atlanhed Shee	+
Field Measurements on Sample (pH, Aliquot Amount Analy 272		
Aliquot Amount Analy 272	Container Pr	eservation/Amount
Aliquot Amount Analy 272	Container Pr	
Aliquot Amount Analysis 2-40ml VOA's	Container Pr UOA Via\ Slaw Amber	
Aliquot Amount 2-40ml 2-(1)Lites 1 (1)Lites Pest PC	Container Pr UOA UTA Stan Amber B's Glass Amber	
Aliquot Amount Analysis 2-40ml VOA's 2-(1)Liter Seni-VOA 1 (1)Liter Pest PC 1-500ml Metals	Container Pr UOA UTA 15 Glass Amber B's Glass Amber 40PE	eservation/Amount
Aliquot Amount 2-40ml 2-40ml 2-(1)Liter 1 (1)Liter 1-500ml 1-1Liter Cyanid	Container Pr UOA Vial Listal Hope	eservation/Amount HCI HN03 NaOH
Aliquot Amount 2-40ml 2-40ml 2-(1)Liter 1 (1)Liter 1-500ml 1-1 Liter 1-500ml 1-1 Liter 1-500ml N+N a	Container Pr Vo A Via/ Listal HOPE LISTAL HOPE	eservation/Amount
Aliquot Amount	Container Vo A Vra/ Vo A Vra/ Si Glass Amber Class Amber HOPE Libia/ HOPE F, CO, HCO, 705 HAPE	eservation/Amount HCI HN03 NaOH
Aliquot Amount	Container VOA VIA LISTO GLAN Amber CLASS Amber LISTA HOPE LISTA HOPE CHOSO GLASS Amber VOA VION	eservation/Amount HCI HODA HcSOH HCI HCI
Aliquot Amount	Container VOA VIA SIGN Amber Class Amber HOPE HOPE NOTO Glass Amber VOA VIOL Class Amber	eservation/Amount HCI HOAN HCI
Aliquot Amount	Container VOA VIA LISTO GLAN Amber CLASS Amber LISTA HOPE LISTA HOPE CHOSO GLASS Amber VOA VION	eservation/Amount HCI HODA HcSOH HCI HCI



LANDSBURG FIELD PARAMETERS

LOCATION: MN-4
DATE; 5-18-00
SAMPLE TIME; 1712

LWZ

						2 W L		
TIME	TEMP (C)	TURBIDITY (NTUS)) pH	DO (mg/L)	SP COND (uS)	PUMP ON, GPM/OFF	COMMENŢS	1
1630	ا ا		1,	, , ,	(1-)		Barra Diana 3	ļ
1635	10.9		1153	1.70	246	9.35	Bogm Punge 3 gem	
1640	10,8		6.58	1.40	747	1.7.2	Resocation to zeen 30	6
1645	[0.8	1.62	6.67	6.43	241	9.35	Cosoco blon to silve 30	In bounded
1650	10.8	0.31	70.71	0.78	238	9,35	V.	
1700	10.8	0.74	6.76	09	233	1, 2	2	
105	(On 8	0.86	6.76	0,0	230			
1710	10.8	0 - 4	6.76	() . 9	229	9.35		,
	*		0 10					
						141		
						ACAD P.		
							I	

SIGNATURE MY

SAMPLE INTEGRITY DATA SHEET

Plant/Site Land	grim prudz	Proje	ect No	923-1000
Site Location Land		Sam		-
Sampling Location	V			
	stavible to bri	d Tetlon sampl	Dai	tube
Technical Procedure	Reference(s) TP-1.4-6	TP-1.2-20, TP-1.2	- 4	
Type of Sampler \underline{D}	edricated Grundf	or bamb		
Date	-00	_Time		
Media <u>Water</u>		_Station \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	<u> </u>	
Sample Type:	grab	time composite		space composite
• •	easurements (depth, volu	me of statistic well water a	ınd purg	ed water, etc.)
SWY- 15/12				4
Sand Park - 22	1X0,0x1/2+=	13.54 - 50.5	lag	Jac/OV 119W
tocker Diety-	55.81 x0:17 =	12.31.	<u> </u>	
Sample Description_	Clear Water			
				<u> </u>
Field Measurements	on Sample (pH, conductiv	ity, etc.) See Attack	hed	Sheet
Field Measurements	on Sample (pH, conductiv	ity, etc.) See AHQC	hed	Sheet
Field Measurements	on Sample (pH, conductiv	ity, etc.) See Attac	hed	Sheet
Field Measurements		ity, etc.) See Allac	hed	Sheet
Aliquot Amount	Analysis	ity, etc.) See Allac	hed	Sheet Preservation/Amount
	zrzylonA 2'AOV	Container Uo A Via	hed	
Aliquot Amount 2-40ml 12-(1) Liter	zrzylonA z'AOV z'AOV-in o2	Container UOA Vial Glan Amber	hed	
Aliquot Amount 2-40ml 2-(1) Liter	zrzylonA 2'AOV	Container UOA Vial Glav Amber Glass Amber	hed	Preservation/Amount
Aliquot Amount 2-40ml 12-(1) Liter	zrzylonA z'AOV z'AOV-in o2	Container UOA Vial Glan Amber	hed	
Aliquot Amount 2-40ml 2-(1) Liter	272 ylonA 2'AOV 2'AOV-in s2 2'BO9 t299	Container UOA Vial Glav Amber Glass Amber	hed	Preservation/Amount
Aliquot Amount 2-40ml 2-(1) Liter 1-500ml	272 ylonA 2'AOV 2'AOV-ing2 2'BO9 t299 2/0 tom	Container UOA Vial Glav Amber Glass Amber	hed	Preservation/Amount
Aliquot Amount 2-40ml 2-(1) Liter 1-500ml 1-1 Liter	272 yon 2/A0V-in 92 2/A0V-in 92 2/A0V-in 92 2/A0V-in 92 2/AV-in 10V-in 10V	Container UOA Vial Glan Amber Glass Amber HOPE HOPE HOPE	hed	Preservation/Amount
Aliquot Amount 2-40ml 2-(1) Liter 1-500ml 1-1 Liter 1-500ml	272 yon 2/A0V-in 92 2/A0V-in 92 2/A0V-in 92 2/A0V-in 92 2/AV-in 10V-in 10V	Container UOA Vial Glass Amber Glass Amber HOPE HOPE HOPE HOPE HOPE Glass Amber Glass Amber		Preservation/Amount HCI HNO3 NA OH HzSO4 HCI
Aliquot Amount 2-40ml 2-(1) Liter 1-500ml 1-1 Liter 1-500ml	272 ylanA 2/AOV 2/AOV 2/AOV 2/AOP	Container VOA Vial Glass Amber Glass Amber HOPE HOPE HOPE HOPE Glass Amber VOA Viol		Preservation/Amount HCI HNO3 NAOH HzSO4 HCI
Aliquot Amount 2-40ml 2-(1) Liter 1-500ml 1-1 Liter 1-500ml 1-1 Liter 1-500ml	272 ylonA 2'AOV-ing2 2'AOV-ing2 2'AOV-ing2 2'AOV- 10 20 N+N 1, 602, 7, 12, 1002	Container UOA Vial Glass Amber Glass Amber HOPE HOPE HOPE HOPE HOPE Glass Amber Glass Amber		Preservation/Amount HCI HNO3 NA OH HzSO4 HCI

LANDSBURG FIELD PARAMETERS

LOCATION: LMW-3
DATE; 5-18-00
SAMPLE TIME; 1015

love retour

						1813/15/200	
TIME	TEMP (C)	TURBIDITY (NTUS)	рН	DO (mg/L)	SP COND (uS)	PUMP ON, GPM/OFF	COMMENTS
1935 1945 1955 1005 1005	11.0 11.0 11.1 11.1		7.43 7.55 7.55 7.54 7.52 7.52	0.95	196 175 173 171		0920 Bayin longe @ 29pm To ght radius \$110 to 19pm

SIGNATURE MY

SAMPLE INTEGRITY DATA SHEET

Plant/Site Lands k	grill pru	Proje	ct No	000
Site Location Lands		Samp	ole ID LAW 5.	-051800
Sampling Location	V			
En	nstaribab to 6	Tetlon sample	na tube	
		TP-1.2-20, TP-1.2-		
Type of Sampler Ded	() ^ .	•		
Date 5-18-00		, , , , , , , , , , , , , , , , , , , ,	0	
Media Water		Station LMINI	5	
Sample Type:	grab	time composite		space composite
Sample Acquisition Meas	======================================	me of statistic well water ar		•
SWL- 13.71				•
and Park -		is c		
acker Doth 2	1801 X 10891	10W1/10044 = +	Klmb by L	3 = 132
Sample Description Cl		. ^ \ \		
Field Measurements on S	Sample (pH, conductivi	ty, etc.) See Attach	tood? host	
		, , , , , , , , , , , , , , , , , , ,		
Aliquot Amount	<u>272 ylan A</u>	Container	Pre	servation/Amount
2-40ml	z'AOV_	UOA UTA)		HCI
2-(1) Liter	2/AOV-ing2	Glass Amber		
1016+00	2'879/ +299	Glass Amber		_
1-500ml	2/otom	HOBE		4403
1-1 Fifor	Cyanide total	HOPE		Na OH
1-500ml	N+N as N	HPPE		HollsH
1-(1)r.trc	907, C1, F. CO. 14	399H 207,500	•	
1-072740	MMLbH-HOLD	Glass Amber		HCI
2.40m/	NWTOH-DX	1014 AOV 14dmA 22010		HCI
Sampler (signature)	11125	Date	5-19-00	701
Supervisor (signature)	Illa	Date		
,				

LANDSBURG FIELD PARAMETERS

LOCATION: LMW-5
DATE; 05~18-00
SAMPLE TIME; 1230

JWL

TIME TEMP (C) TURBIDITY (NTUS) pH DO (mg/L) SP COND (uS) PUMP ON GPM/OFF COMMENTS 1						1WF	
1108 11.2 0.38 6.60 1.37 235 13.70 Stant Punys at 29pm 1131 11.3 0.27 1.74 1.53 220 13.70 1145 11.3 0.51 6.77 0.04 226 13.70 Reduct Flow to 1.9pm 1049n 1218 11.4 0.51 6.77 0.69 224 13.7	TIME TEMP (C)	TURBIDITY (NTUS)	,pH	DO (mg/L)	SP COND (uS)	PUMP ON GPM/OFF	COMMENTS
1131 11.3 0.27 1.74 1.53 220 13.70 1145 11.3 0.58 6.75 0.04 226 13.70 Rodung Flow to Gray 10.4 gr 1213 11.4 0.51 6.77 0.60 224 13.7 1218 11.4 0.58 6.77 0.89 224 13.7	1102		/ . <i>L</i>			13.70	
1745 11.3 (.58 (.75 (.90 226 13.70 Reduce Flow to Gentle flow to G	1,10 11	0, 38	6.60				3411
1213 11-4 0.51 6.77 0.69 225 13.70 Reduce Floor to Gent 104 yell 1228 11-4 0.58 1.77 0.89 224 12.77 Purged 132 and	1175 11.3	0.27	4	1,53		13.70	
1228 11.4 0.56 6.77 0.87 225 13.7 Region Flow to 1 pm 104 gm	1300 11.3	() 88	6.77	10.90	122		
1218 11.4 0.58 1.77 0.87 224 13.7 Purgid 13 c and			7	40,07			Rodera Flow to lapon into
155 11.4 0.26 6.22 6.22 13.0 14.11 32cm		N. 21	7.74		225	13.7	
1 2 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 1 2 1 1 1 2 1		0.58	4.44		1	123	A
			W1, r	0.8			135 gm
							V
			~				
						The state of the property of the state of th	

SIGNATURE_____

Portal 3

SAMPLE INTEGRITY DATA SHEET

Plant/Site	grim prudab	Project N	o. 923-1000
Site Location Lan		Sample II	\circ
Sampling Location_	0 + 1110 + 11	rataltic Pump, Exces	+ VOA's direct arab.
	End of dedicat		tube - Myz
Technical Procedure	Reference(s) TP-1.4-	6 TP-1.2-20, TP-1.2-2	3
	bound betwarted	A \	
Date <u>5-18</u>	-00	Time	
Media Wate	10	StationPONTN 3	
Sample Type:	grab	time composite	space composite
Sample Acquisition	Measurements (depth, vo	plume of statistic well water and pu	
Stot	Dug a small s	other gover nortoglas	Portal 3 spep
Sand Park -	Orea. Deg	peristaltic to colle	+ somples, except
Locker Dichy-	onow eAby	4 Hogrib cotis/162	from the sump.
Sample Description	Clear Water		\
4-14-14-14-14-14-14-14-14-14-14-14-14-14			r big
Field Measurements	s on Sample (pH, conduc	tivity, etc.) See Alachec	Sheet" Mone
		The state of the s	

Aliquot Amount	Analysis	Container	Preservation/Amount
2-40ml	2'A0V	UOA UTAl	HCI
2-11/2711	2 AOV-ino2	Class Amber	<u> </u>
1016/10	2879/1299	Glass Amber	
1-500 ml	2/otom	HOGE	HNO3
1-11-100	Cyanide, total	HOPE	Na OH
1-200ml	N+Nas N	HOPE	HeSOH
1-(1)5:400		100 -00 W 100	,
1-072:14m	204 (1 F (0)	399H 2QT 507H.	
	504 C1 F 603 NOUTOH-HOT	or Glass Amber	HC1
\$ 2.40m/		Olasi Amber	HCI
Sampler (signature)	W NMLSH-DX NMLSH-DX NMLSH-BCI	Now Peal O.	•
= 1-012140c	NoteH-BX NoteH-BX NoteH-BX	Now Peal O.	HCI



P.01/01

18939 120th Avenue N.E., Suite 101, Bolhett, WA 98014-9008 m. . 11112 Atautaman, Chinaban Wa 08096 4776

9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711

731904-024-02903 F4 X 974-9190 FAX 906-9210

15031 906-9200 (541) 383-9310 FAX 382-7588

CHAIN OF CUSTODY REPORT

Work Order #: BOE0354

	1 2 1 1		, , , , , , , , , , , , , , , , , , , ,			INVOI	 CE TO-	۰.۸	٦ ٨ ٦							TURN	AROUNI	REQUES	T in Business	Days*
CLIENT: Golder P		2:				INVOI	CE IU.	601	19 EL							/	Organ	isa & Inorgani	c Analyses	
REPORT TO: GARY ZIM	WALWAL	. \ \ \ .	٦ ,	•							9		<u>.</u>			10 7	5	4 3	. 2	<1
ADDRESS: 18300 NE Un Redmand, W	liff poil	yoog, 20	1,16 5	00							زين	خرائج				STD.	Petro et	un Hydrecarb	วเก.ค้อยใหล่ตร	
Redmond, W	V NEDRS	tia		I	100						2	5-			\dashv	Ĕ			1 <	1
LHOVE: MIZZK&1_0 1 L		137. 10	1 22	<u> </u>	148	P.O. N			70. 437.	TVCC	0	<u> </u>				ن <i>يلي</i> ة 577	است، الك	·		
PROJECT NAME: Palmer		ď	<u> </u>	,	6)	,		UESII	D ANA	LISE	7	7				31.	отн		se Specify	
PROJECT NUMBER: 923-1	000		21/2	19	300	7	2	The state of the s	12 1		*	0						H		
SAMPLED BY: GANY ZY	mmgpmsc	\	من در	200	200	200) <u>'</u>	1	13	7	0	1				*Turvar	and Sequent	less than standi	ard may incur Bash	Charges.
CLIENT SAMPLE	SAMP		14	1/2	رن سند	23	تخبر	178	3 10	£	2	2	ļ			MATRIX	#OF			NCA WO
IDENTIFICATION	DATE/	TIME	VOA	John - 10A	老子	Distaly	Total Cyanide	Nthoakl + Nthin	504, C17, FT C07, Mc0, 105	NWTRKHCIO	NATOH-CO K	NWTOH-D*				(W, S, O)	CONT.	CO	MMENTS	ID
1.LAW3-051800	5-18-00	1015	1/	1	V	V	V	1	V	V	*	*				W	3		_	-01
	1	1230	V	7	V	1/	1	1	1	V	X	X				1	13		1	-02
2. LMW 5-051800	 			0	 	-		. /	-	v		*	 		\neg		29	EXTY	Mount	0.40
008120-2 WMJ.E		1542	4	1	V	0	U	1/	<i>V</i>	,	*		ļ					100	19 W 117	M-03
108/20-4 WMJ.		1712	1		1	1/		1	V	V	X	*	W/00				13	<u> </u>		- 04
s.LMW8-051800	Y	1730	V			V					*	X	M3			l,	3			-05
6. Portal	548.60	1830	V	V	-	/	V	-	V	W	X	*				V_{\perp}	13			-06
o. TVI TUVI	0 10 00		1										1							
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8.				ļ	<u> </u>		i]———	ļ			-	<u> </u>	ļ	-				-		_ <u>-</u>
9.											<u> </u>		<u> </u>	 -			-			
10.]		<u> </u>	<u>!</u>		<u> </u>		! 		<u> </u>			<u> </u>	<u> </u>						_
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13.												! 								
14.																				
15.				İ		İ				-			: : .							
RELINQUISHED BY: BOTTO	\(\frac{1}{2}\)				1	DATE	5-10	100	RECE	IVED B	S.	ie					KCA			TE 5-195
PRINT NAME: GAMALA.	marina	A FIRME	6106	80		TIME	127	25	PRINT	NAME						FIRM:	1 -1,			1E.1225
RELINQUISHED BY	(Toa	ug!	TON	1					TE 5//9/07
PRINT NAME:		FIRM:	v Ch				/3	90.	PRINT	r NASte		PRA	NY	NOT	14	FIRM:	NCH	1 -	TIN	IE: 1300
ADDITIONAL REMARKS: Met	tegrew elo	Ist blass	an EF.	1 01	45 12	W		`	_			C.	١	0 1 1	(r. 1.	1 1	TEMP:	
Roth Roth	T OIVEN	soud illan	Ch N	140	fro.	3 M ~	6 A	erted	2-1	5-21	OUC	176	181 3	il git	\		W	0	3.8/ PA	GE OF

LABORATORY DATA



 Seattle
 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8223

 425.420.9200
 fax 425.420.9210

 pokane
 East 11115 Montgomery, Suite B, Spokane, WA 99206-4776

509.924.9200 fax 509.924.9290

Portland 9405 SW Nimbus Avenue, Beeverton, OR 97008-7132 503.906.9210 fax 503.906.9210

Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 541.383.9310 fax 541.382.7588

Golder Associates Inc.

18300 NE Union Hill Road, Suite 200

Redmond WA, 98052-3333

Project: Palmer/Landsburg Project

Project Number: 923-100

Project Manager: Gary Zimmerman

Reported:

06/22/00 11:31

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
LMW3-051800	B0E0354-01	Water	05/18/00 10:15	05/19/00 13:00
LMW5-051800	B0E0354-02	Water	05/18/00 12:30	05/19/00 13:00
LMW2-051800	B0E0354-03	Water	05/18/00 15:42	05/19/00 13:00
LMW4-051800	B0E0354-04	Water	05/18/00 17:12	05/19/00 13:00
LMW8-051800	B0E0354-05	Water	05/18/00 17:30	05/19/00 13:00
Portal	B0E0354-06	Water	05/18/00 18:30	05/19/00 13:00

North Creek Analytical - Bothell

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Laura Cacek for Kirk Gendron, Project Manager



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

Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported: 06/22/00 11:31

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

Hydrocarbon Identification by Washington DOE Method NWTPH-HCID North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW3-051800 (B0E0354-01) Water	Sampled: 05	/18/00 10:15	Received	: 05/19/00 1	3:00				
Gx Range Hydrocarbons	ND	0.250	mg/l	1	0E21002	05/21/00	05/22/00	NWTPH-HCID	
Kerosene Range Hydrocarbons	ND	0.630	11	Ħ	u .	n	11	II .	
Diesel Range Hydrocarbons	ND	0.630	10	H	u	n	11	н	
Insulating Oil Range Hydrocarbons	ND	0.630	11	11	tt	n	11	11	
Heavy Fuel Oil Range Hydrocarbons	ND	0.630	11	11	n	n	11	11	
Lube Oil Range Hydrocarbons	ND	0.630	*1	If	H	II	11	11	
Surrogate: 2-FBP	63.3 %	50-150		W. S. S. S. S. S. S. S. S. S. S. S. S. S.	"	"	"	"	
LMW5-051800 (B0E0354-02) Water	Sampled: 05	/18/00 12:30	Received	: 05/19/00 1	3:00				
Gx Range Hydrocarbons	ND	0.250	mg/l	1	0E21002	05/21/00	05/22/00	NWTPH-HCID	
Kerosene Range Hydrocarbons	ND	0.630	n	tt	11	n	**	11	
Diesel Range Hydrocarbons	ND	0.630	n	H	**	"	**	11	
Insulating Oil Range Hydrocarbons	ND	0.630	11	Ħ	**	**	II .	11	
Heavy Fuel Oil Range Hydrocarbons	ND	0.630	11	ti	tt	tt .	H	11	
Lube Oil Range Hydrocarbons	ND	0.630	11	tt	**	n	II	fI	
Surrogate: 2-FBP	66.3 %	50-150			"	#	"	"	
LMW2-051800 (B0E0354-03) Water	Sampled: 05	/18/00 15:42	Received	: 05/19/00 1	3:00				
Gx Range Hydrocarbons	ND	0.250	mg/l	1	0E21002	05/21/00	05/22/00	NWTPH-HCID	
Kerosene Range Hydrocarbons	ND	0.630	**	11	11	"	II	tt	
Diesel Range Hydrocarbons	ND	0.630	11	11	**	"	11	II.	
Insulating Oil Range Hydrocarbons	ND	0.630	Ħ	11	**	n	11	n	
Heavy Fuel Oil Range Hydrocarbons	ND	0.630	n	11	11	n	11	n	
Lube Oil Range Hydrocarbons	ND	0.630	n	11	e	U	11	11	
Surrogate: 2-FBP	58.5 %	50-150			"	"	"	"	

North Creek Analytical - Bothell

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Loura Carek for Kirk Gendron, Project Manager



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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Hydrocarbon Identification by Washington DOE Method NWTPH-HCID North Creek Analytical - Bothell

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW4-051800 (B0E0354-04) Water	Sampled: 05	/18/00 17:12	Received	: 05/19/00 1	3:00				
Gx Range Hydrocarbons	ND	0.250	mg/l	1	0E21002	05/21/00	05/22/00	NWTPH-HCID	
Kerosene Range Hydrocarbons	ND	0.630	rr .	tt.	"	u	11	n	
Diesel Range Hydrocarbons	ND	0.630	rr	H	"	n	11	n	
Insulating Oil Range Hydrocarbons	ND	0.630	n	n	"	IJ	"	η	
Heavy Fuel Oil Range Hydrocarbons	ND	0.630	11	II	**	11	ij	n	
Lube Oil Range Hydrocarbons	ND	0.630	11	11	H	11	n	n	
Surrogate: 2-FBP	59.8 %	50-150			"	"	"	"	
Portal (B0E0354-06) Water Sample	d: 05/18/00 18	:30 Receive	d: 05/19/0	0 13:00					
Gx Range Hydrocarbons	ND	0.250	mg/l	1	0E21002	05/21/00	05/22/00	NWTPH-HCID	
Kerosene Range Hydrocarbons	ND	0.630	II	II	n	Ħ	11	11	
Diesel Range Hydrocarbons	ND	0.630	11	11	**	n	**	11	
Insulating Oil Range Hydrocarbons	ND	0.630	11	11	n	n	11	n	
Heavy Fuel Oil Range Hydrocarbons	ND	0.630	11	**	0	n	**	**	
Lube Oil Range Hydrocarbons	ND	0.630	11	"	11	11	tř	n .	
Surrogate: 2-FBP	66.0 %	50-150			"	"	"	"	

North Creek Analytical - Bothell

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Golder Associates Inc.

18300 NE Union Hill Road, Suite 200

Redmond WA, 98052-3333

Project Number: 923-100

Project: Palmer/Landsburg Project

Project Manager: Gary Zimmerman

Reported:

06/22/00 11:31

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW3-051800 (B0E0354-01) Water	Sampled: 05	/18/00 10:15	Received	: 05/19/00 1	3:00				
Silver	ND	0.00100	mg/l	I	0E23031	05/23/00	06/08/00	EPA 6020	
Aluminum	ND	0.250	11	u	0E22009	05/22/00	06/11/00	EPA 6010B	
Arsenic	ND	0.00100	11	II	0E23031	05/23/00	05/31/00	EPA 6020	
Barium	0.0751	0.00100	**	31	"	"	U	n	
Beryllium	ND	0.00100	**	**	**	**	06/05/00	tt	
Calcium	36.0	0.250	ti .	**	0E22009	05/22/00	06/11/00	EPA 6010B	
Cadmium	ND	0.00100	11	n n	0E23031	05/23/00	05/31/00	EPA 6020	
Cobalt	ND	0.00100	11	H	11	11	**	* "	
Chromium	ND	0.00100	**	11	**	**	**	n	
Copper	ND	0.00100	"	11	"	"	e	u	
Iron	ND	0.150	tr	11	0E22009	05/22/00	06/11/00	EPA 6010B	
Mercury	ND	0.00100	11	ıı	0E31014	05/31/00	06/05/00	EPA 7470A	
Potassium	1.47	1.00	11	11	0E22009	05/22/00	06/12/00	EPA 6010B	
Magnesium	15.9	0.100	**	11	11	11	06/11/00	а	
Manganese	0.0421	0.0100	**	11	0E23031	05/23/00	05/31/00	EPA 6020	
Sodium	10.7	0.500	u	11	0E22009	05/22/00	06/11/00	EPA 6010B	
Nickel	ND	0.0300	lii	н	н	n	06/11/00	**	
Nickel	0.00107	0.00100	n	II	0E23031	05/23/00	06/05/00	EPA 6020	
Lead	ND	0.00100	11	11	"	**	06/08/00	0	
Antimony	ND	0.00100	11	"	**	**	05/31/00		
Selenium	ND	0.00100	11	**	Ħ	n	U	**	
Silicon	10.6	0.500	11	11	0E22009	05/22/00	06/20/00	EPA 6010B	
Thallium	ND	0.0100	tt .	10	0E23031	05/23/00	06/10/00	EPA 6020	
Vanadium	ND	0.00100	H	1	**	**	06/02/00	11	
Zinc	ND	0.0100	11	Ħ	**	**	05/31/00	**	

North Creek Analytical - Bothell

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Laura Cack for Kirk Gendron, Project Manager



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Golder Associates Inc.

18300 NE Union Hill Road, Suite 200

Redmond WA, 98052-3333

Project: Palmer/Landsburg Project

Project Number: 923-100

Project Manager: Gary Zimmerman

Reported:

06/22/00 11:31

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

		Reporting				_			
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW5-051800 (B0E0354-02) Water	Sampled: 05/	18/00 12:30	Received:	05/19/00 1	3:00				
Silver	ND	0.00100	mg/l	1	0E23031	05/23/00	06/08/00	EPA 6020	
Aluminum	ND	0.250	**	н	0E22009	05/22/00	06/11/00	EPA 6010B	
Arsenic	ND	0.00100	n	ĪĪ	0E23031	05/23/00	05/31/00	EPA 6020	
Barium	0.267	0.00100	п	**	n	11	**	H	
Beryllium	ND	0.00100	11	tt	11	"	06/05/00	11	
Calcium	102	0.250	11	H	0E22009	05/22/00	06/11/00	EPA 6010B	
Cadmium	ND	0.00100	**	"	0E23031	05/23/00	05/31/00	EPA 6020	
Cobalt	ND	0.00100	tt	11	н	11	10	u	
Chromium	ND	0.00100	0	n	lt .	"	11	II .	
Copper	ND	0.00100	11	U	11	n	tt .	11	
Iron	ND	0.150	"	19	0E22009	05/22/00	06/11/00	EPA 6010B	
Mercury	ND	0.00100	n	11	0E31014	05/31/00	06/05/00	EPA 7470A	
Potassium	3.09	1.00	H	Ħ	0E22009	05/22/00	06/12/00	EPA 6010B	
Magnesium	59.1	0.100	11	n	n	11	06/11/00	11	
Manganese	0.246	0.0100	11	n	0E23031	05/23/00	05/31/00	EPA 6020	
Sodium	20.6	0.500	"	11	0E22009	05/22/00	06/11/00	EPA 6010B	
Nickel	ND	0.0300	Ħ	11	"	11	06/11/00	n	
Nickel	ND	0.00100	n	11	0E23031	05/23/00	06/05/00	EPA 6020	
Lead	ND	0.00100	11	ti	11	n	06/08/00	"	
Antimony	ND	0.00100	11	ti .	11	n	05/31/00	"	
Selenium	ND	0.00100	11	11	11	n	11	n	
Silicon	9.88	0.500	"	It	0E22009	05/22/00	06/20/00	EPA 6010B	
Thallium	ND	0.0100	11	10	0E23031	05/23/00	06/10/00	EPA 6020	
Vanadium	0.00120	0.00100	11	1	n	rr	06/02/00	H	
Zinc	ND	0.0100	11	n	11	It	05/31/00	u	

North Creek Analytical - Bothell

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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW2-051800 (B0E0354-03) Water	Sampled: 05/	18/00 15:42	Received	: 05/19/00 1	3:00				
Silver	ND	0.0100	mg/l	10	0E23031	05/23/00	06/09/00	EPA 6020	
Aluminum	ND	0.250	11	1	0E22009	05/22/00	06/11/00	EPA 6010B	
Arsenic	ND	0.00100	11	11	0E23031	05/23/00	05/31/00	EPA 6020	
Barium	0.290	0.00100	**	**	0	11	11	н	
Beryllium	ND	0.00100	**	tt	11	11	06/05/00	II	
Calcium	126	0.250	tt	n	0E22009	05/22/00	06/11/00	EPA 6010B	
Cadmium	ND	0.00100	H	n	0E23031	05/23/00	05/31/00	EPA 6020	
Cobalt	ND	0.00100	11	11	Ħ	n	*1	11	
Chromium	ND	0.00100	**	10	ŧŧ	n	n	11	
Copper	0.00117	0.00100	H	ŧŧ	II	n	н	**	
Iron	ND	0.150	H	11	0E22009	05/22/00	06/11/00	EPA 6010B	
Mercury	ND	0.00100	n	tt.	0E31014	05/31/00	06/05/00	EPA 7470A	
Potassium	4.76	1.00	n	H	0E22009	05/22/00	06/13/00	EPA 6010B	
Magnesium	76.7	0.100	19	"	**	**	06/11/00	11	
Manganese	0.196	0.0100	11	11	0E23031	05/23/00	05/31/00	EPA 6020	
Sodium	28.3	0.500	11	11	0E22009	05/22/00	06/13/00	EPA 6010B	
Nickel	ND	0.0300	n	H	Ħ	н	06/11/00	п	
Nickel	0.00138	0.00100	u	u	0E23031	05/23/00	06/05/00	EPA 6020	
Lead	ND	0.0100	n	10	11	11	06/09/00	11	
Antimony	ND	0.00100	H .	1	**	**	05/31/00	11	
Selenium	ND	0.00100	**	11	"	**	n n	11	
Silicon	9.74	0.500	11	11	0E22009	05/22/00	06/20/00	EPA 6010B	
Thallium	ND	0.0100	11	10	0E23031	05/23/00	06/10/00	EPA 6020	
Vanadium	0.00124	0.00100	"	1	10	17	06/02/00	U	
Zinc	ND	0.0100	"	n	19	11	05/31/00	11	

North Creek Analytical - Bothell

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Project: Palmer/Landsburg Project Golder Associates Inc.

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW4-051800 (B0E0354-04) Water	Sampled: 05/	18/00 17:12	Received	: 05/19/00 1	3:00				
Silver	ND	0.0100	mg/l	10	0E23031	05/23/00	06/09/00	EPA 6020	
Aluminum	ND	0.250	**	1	0E22009	05/22/00	06/11/00	EPA 6010B	
Arsenic	ND	0.00100	tt .	n	0E23031	05/23/00	05/31/00	EPA 6020	
Barium	0.357	0.00100	II.	11	n	**	11	II.	
Beryllium	ND	0.00100	11	11	II .	**	06/05/00	u	
Calcium	128	0.250	Ħ	11	0E22009	05/22/00	06/11/00	EPA 6010B	
Cadmium	ND	0.00100	11	"	0E23031	05/23/00	05/31/00	EPA 6020	
Cobalt	ND	0.00100	11	**	11	H	n	п	
Chromium	ND	0.00100	**	"	11	tt	17	U	
Copper	0.00114	0.00100	**	**	. "	u	19	II	
Iron	0.896	0.150	11	"	0E22009	05/22/00	06/11/00	EPA 6010B	
Mercury	ND	0.00100	"	Ħ	0E31014	05/31/00	06/05/00	EPA 7470A	
Potassium	4.52	1.00	**	II	0E22009	05/22/00	06/12/00	EPA 6010B	
Magnesium	77.4	0.100	n	tt	"	u	06/11/00	H .	
Manganese	0.182	0.0100	tt	II .	0E23031	05/23/00	05/31/00	EPA 6020	
Sodium	31.1	0.500	"	II .	0E22009	05/22/00	06/11/00	EPA 6010B	
Nickel	ND	0.0300	**	n	rr ·	11	06/11/00	Ħ	
Nickel	0.00127	0.00100	11	11	0E23031	05/23/00	06/05/00	EPA 6020	
Lead	ND	0.0100	H	10	n	11	06/09/00	u	
Antimony	ND	0.00100	ti	1	n	**	05/31/00	H	
Selenium	ND	0.00100	11	11	n	**	ti	#	
Silicon	9.74	0.500	11	11	0E22009	05/22/00	06/20/00	EPA 6010B	
Thallium	ND	0.0100	"	10	0E23031	05/23/00	06/10/00	EPA 6020	
Vanadium	0.00158	0.00100	n	1	11	n	06/02/00	u u	
Zinc	ND	0.0100	11	11	11	U	05/31/00	n .	

North Creek Analytical - Bothell

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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

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

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW8-051800 (B0E0354-05) Water	Sampled: 05/	18/00 17:30	Received	05/19/00 1	3:00				
Silver	ND	0.0100	mg/l	10	0E23031	05/23/00	06/09/00	EPA 6020	
Aluminum	ND	0.250	11	1	0E22009	05/22/00	06/11/00	EPA 6010B	
Arsenic	ND	0.00100	11	"	0E23031	05/23/00	05/31/00	EPA 6020	
Barium	0.336	0.00100	11	"	**	11	n	U	
Beryllium	ND	0.00100	*1	11	n	"	06/05/00	u	
Calcium	128	0.250	u	**	0E22009	05/22/00	06/11/00	EPA 6010B	
Cadmium	ND	0.00100	n	u	0E23031	05/23/00	05/31/00	EPA 6020	
Cobalt	ND	0.00100	11	II .	**	н	06/05/00	**	
Chromium	ND	0.00100	**	17	**	11	05/31/00	Ħ	
Copper	0.00123	0.00100	n	11	Ħ	11	ti .	n	
Iron	0.876	0.150	н	11	0E22009	05/22/00	06/11/00	EPA 6010B	
Mercury	ND	0.00100	11	Ħ	0E31014	05/31/00	06/05/00	EPA 7470A	
Potassium	4.55	1.00	"	n	0E22009	05/22/00	06/12/00	EPA 6010B	
Magnesium	78.2	0.100	11	ıı	11	u	06/11/00	n	
Manganese .	0.178	0.0100	11	11	0E23031	05/23/00	05/31/00	EPA 6020	
Sodium	30.8	0.500	n	11	0E22009	05/22/00	06/11/00	EPA 6010B	
Nickel	ND	0.0300	Ħ	n	n	"	06/11/00	#	
Nickel	0.00134	0.00100	11	u	0E23031	05/23/00	06/05/00	EPA 6020	
Lead	ND	0.0100	11	10	11	11	06/09/00	U	
Antimony	ND	0.00100	11	1	**	**	05/31/00	II .	
Selenium	0.00103	0.00100	11	"	п	Ħ	11	**	
Thallium	ND	0.0100	"	10	11	n	06/10/00	n	
Vanadium	0.00179	0.00100	п	1		n	06/02/00	н	
Zinc	ND	0.0100	u	u	11	11	05/31/00	10	

North Creek Analytical - Bothell

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| Seattle | 11720 North Creek Pkwy N, Suite 400, Bothell, WA 92011-8223 | 425.420.9200 | fax 425.420.9210 | Spokane | East 11115 Montgomery, Suite B, Spokane, WA 99206-4776 | 509.924.9200 | fax 509.924.9290 | 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132 | 503.906.9200 | fax 503.906.9210 | Spokane, WA 97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-7114 | 94008-97008-714 | 94008-97008-714 | 94008-97008-714 | 94008-97008-714 | 94008-97008-714 | 94008-97008-714 | 94008

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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

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

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Portal (B0E0354-06) Water	Sampled: 05/18/00 18:	30 Received	1: 05/19/00	13:00					
Silver	ND	0.0100	mg/l	10	0E23031	05/23/00	06/09/00	EPA 6020	
Aluminum	ND	0.250	H	1	0E22009	05/22/00	06/11/00	EPA 6010B	
Arsenic	0.00355	0.00100	19	11	0E23031	05/23/00	05/31/00	EPA 6020	
Barium	0.237	0.00100	**	"	11	n	11	11	
Beryllium	ND	0.00100	11	11	11	n	06/05/00	**	
Calcium	88.9	0.250	н	II	0E22009	05/22/00	06/11/00	EPA 6010B	
Cadmium	ND	0.00100	11	11	0E23031	05/23/00	05/31/00	EPA 6020	
Cobalt	0.00587	0.00100	11	11	11	n	06/05/00	11	
Chromium	ND	0.00100	u	n	11	n	05/31/00	n	
Copper	ND	0.00100	11	n	11	u	11	п	
Iron	4.20	0.150	11	H	0E22009	05/22/00	06/11/00	EPA 6010B	
Mercury	ND	0.00100	11	11	0E31014	05/31/00	06/05/00	EPA 7470A	
Potassium	2.89	1.00	**	**	0E22009	05/22/00	06/12/00	EPA 6010B	
Magnesium	48.9	0.100	**	n n	**	u	06/11/00	n	
Manganese	0.514	0.0500	n	5	0E23031	05/23/00	06/02/00	EPA 6020	
Sodium	18.3	0.500	n	1	0E22009	05/22/00	06/11/00	EPA 6010B	
Nickel	ND	0.0300	11	11	11	**	06/11/00	**	
Nickel	0.00712	0.00100	10	"	0E23031	05/23/00	06/05/00	EPA 6020	
Lead	ND	0.0100	**	10	**	n	06/09/00	11	
Antimony	ND	0.00100	11	1	11	**	05/31/00	"	
Selenium	ND	0.00100	11	It	11	11	11	**	
Silicon	9.50	0.500	**	11	0E22009	05/22/00	06/20/00	EPA 6010B	
Thallium	ND	0.0100	11	10	0E23031	05/23/00	06/10/00	EPA 6020	
Vanadium	ND	0.00100	**	1	n	If	06/02/00	**	
Zinc	0.877	0.0500	**	5	н	11	06/15/00	II	

North Creek Analytical - Bothell

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Laura Cacek Fa



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Golder Associates Inc.

Project: Palmer/Landsburg Project

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

18300 NE Union Hill Road, Suite 200

Project Manager: Gary Zimmerman

06/22/00 11:31

Organochlorine Pesticides and PCBs by EPA Method 8081A and 8082 North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW3-051800 (B0E0354-01) Water	Sampled: 05	/18/00 10:15	Received:	05/19/00 1	3:00				
Aldrin	ND	0.0400	ug/l	1	0E20007	05/20/00	05/22/00	EPA 8081A/8082	
alpha-BHC	ND	0.0200	n	U	17	n	II .	U	
beta-BHC	ND	0.100	11	н	*	u	n	"	
delta-BHC	ND	0.0500	11	11	tt	11	11	11	
gamma-BHC (Lindane)	ND	0.0300	11	11	n	11	19	Ħ	
Chlordane (tech)	ND	0.150	"	**	n	**	11	"	
alpha-Chlordane	ND	0.0500	"	*1	n	Ħ	**	II .	
gamma-Chlordane	ND	0.0200	11	ıı	11	**	11	···	
4,4′ - DDD	ND	0.0400	n	n	11	u	#	19	
4,4'-DDE	ND	0.0300	u	H	**	U	n	11	
4,4'-DDT	ND	0.0900	**	11	"	11	U	18	
Dieldrin	ND	0.0700	***	11	**	11	u	11	
Endosulfan I	ND	0.0300	**	**	tt	11	11	tí	
Endosulfan II	ND	0.0500	"	"	11	Ħ	H	u .	
Endosulfan sulfate	ND	0.0700	u	tt .	11	Ħ	11	n	
Endrin	ND	0.0800	u .	n	11	н	**	11	
Endrin aldehyde	ND	0.100	11	U	11	u	tt	16	
Heptachlor	ND	0.0300	U	n	"	11	II .	11	
Heptachlor epoxide	ND	0.0300	11	17	H .	11	11	II .	
Methoxychlor	ND	0.500	11	11	II .	11	11	II	
Toxaphene	ND	1.50	n	17	II	11	**	11	
Aroclor 1016	ND	0.100	11	tr.	n	u	ıı	н	
Aroclor 1221	ND	0.100	"	**	11	n	n	tt	
Aroclor 1232	ND	0.100	u	ŧŧ	11	11	11	H	
Aroclor 1242	ND	0.100	"	tr	"	11	11	II	
Aroclor 1248	ND	0.100	"	ti	"	"	"	11	
Aroclor 1254	ND	0.100	"	n	н	**	n .	**	
Aroclor 1260	ND	0.100	"	**	n	n	ıı	u	
Aroclor 1262	ND	0.100	"	н	II	н	н		
Aroclor 1268	ND	0.100	**	tt	п	u	"	n	
Surrogate: TCX	72.4 %	40-130			"	"	"	"	
Surrogate: Decachlorobiphenyl	86.5 %	40-130			"	n	"	"	

North Creek Analytical - Bothell

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Laura Cacek In Kirk Gendron, Project Manager



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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Organochlorine Pesticides and PCBs by EPA Method 8081A and 8082 North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW5-051800 (B0E0354-02) Water	Sampled: 05	/18/00 12:30	Received:	05/19/00 1	3:00				
Aldrin	ND	0.0400	ug/l	1	0E20007	05/20/00	05/22/00	EPA 8081A/8082	
alpha-BHC	ND	0.0200	O	11	п	u	Ħ	**	
beta-BHC	ND	0.100	II	***	11	II .	O O	**	
delta-BHC	ND	0.0500	11	"	11	11	n	ti	
gamma-BHC (Lindane)	ND	0.0300	**	u	11	11	11	u	
Chlordane (tech)	ND	0.150	n	n	ŧŧ	**	It	u	
alpha-Chlordane	ND	0.0500	n	11	H	tr	tt	11	
gamma-Chlordane	ND	0.0200	н	11	Ħ	n	11	Ħ	
4,4'-DDD	ND	0.0400	11	"	11	11	tt.	n	
4,4'-DDE	ND	0.0300	11	Ħ	11	11	n	Ħ	
4,4'-DDT	ND	0.0900	11	н	11	n	n	ü	
Dieldrin	ND	0.0700	**	11	**	**	11	**	
Endosulfan I	ND	0.0300	n	11	n	n	11	**	
Endosulfan II	ND	0.0500	н	11	Ħ	n	11	n .	
Endosulfan sulfate	ND	0.0700	u	"	II	n	u	u	
Endrin	ND	0.0800	"	u	11	11	U	II.	
Endrin aldehyde	ND	0.100	**	u	11	"	11	ii	
Heptachlor	ND	0.0300	11	II	"	"	**	11	
Heptachlor epoxide	ND	0.0300	n	"	rı .	u	n	u	
Methoxychlor	ND	0.500	ri .	"	н	n	11	tt	
Toxaphene	ND	1.50	H.	"	n	"	11	11	
Aroclor 1016	ND	0.100	n	"	11	"	11	11	
Aroclor 1221	ND	0.100	**	н	**	"	**	Ħ	
Aroclor 1232	ND	0.100	"	II .	"	**	n	tt	
Aroclor 1242	ND	0.100	"	и	**	II .	u	11	
Aroclor 1248	ND	0.100		11	**	0	"	11	
Aroclor 1254	ND	0.100	n .	19	n	11	•	11	
Aroclor 1260	ND	0.100	m	**	ıı	11	"	n	
Aroclor 1262	ND	0.100	".	•	11	11	ti .	tt .	
Aroclor 1268	ND	0.100	11	11	11	11	н	11	
Surrogate: TCX	71.7%	40-130			"	"	"	"	
Surrogate: Decachlorobiphenyl	68.6 %	40-130			"	"	"	"	

North Creek Analytical - Bothell

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Lewer Cacek to Kirk Gendron, Project Manager



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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Organochlorine Pesticides and PCBs by EPA Method 8081A and 8082 North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW2-051800 (B0E0354-03) Water	Sampled: 05/18/00 15:42 Received: 05/19/00 13:00				3:00				
Aldrin	ND	0.0400	ug/l	1	0E20007	05/20/00	05/22/00	EPA 8081A/8082	
alpha-BHC	ND	0.0200	11	II .	**	11	Ħ	u	
beta-BHC	ND	0.100	11	11	н	**	II.	u	
delta-BHC	ND	0.0500	11	1t	II .	u	11	"	
gamma-BHC (Lindane)	ND	0.0300	*1	**	**	11	Ħ	II .	
Chlordane (tech)	ND	0.150	н	Ħ	**	11	11	11	
alpha-Chlordane	ND	0.0500	11	n	Ħ	"	tt	U	
gamma-Chlordane	ND	0.0200	**	11	n	n	H	U	
4,4'-DDD	ND	0.0400	u u	*11	11	H	II .	19	
4,4'-DDE	ND	0.0300	11	11	11	11	#	tt	
4,4'-DDT	ND	0.0900	11	n	ti	**	**	u	
Dieldrin	ND	0.0700	11	ı,	u	n	11	н	
Endosulfan I	ND	0.0300	n	11	11	n	11	11	
Endosulfan II	ND	0.0500	n	u	**	**	11	**	
Endosulfan sulfate	ND	0.0700	11	U	н	17	Ħ	n	
Endrin	ND	0.0800	11	11	u	"	n	n .	
Endrin aldehyde	ND	0.100	u	11	"	н	II.	11	
Heptachlor	ND	0.0300	u	n	**	11	11	n	
Heptachlor epoxide	ND	0.0300	ıı	н	п	Ħ	11	11	
Methoxychlor	ND	0.500	"	n	11	n	tt.	11	
Toxaphene	ND	1.50	11	11	11	11	11	ti	
Aroclor 1016	ND	0.100	"	**	*1	11	**	H	
Aroclor 1221	ND	0.100	**	tt	n	m ,	11	11	
Aroclor 1232	ND	0.100	tt.	n	11	n	II.	n	
Aroclor 1242	ND	0.100	11	u u	11	11	11	11	
Aroclor 1248	ND	0.100	11	11	"	**	n	11	
Aroclor 1254	ND	0.100	**	**	"	"	n	rr .	
Aroclor 1260	ND	0.100	**	n	ti .	n	11	ti	
Aroclor 1262 .	ND	0.100	11	n	. "	"	11	19	
Aroclor 1268	ND	0.100	**	11	"	**	tt	**	
Surrogate: TCX	71.2 %	40-130			"	"	"	"	
Surrogate: Decachlorobiphenyl	72.8 %	40-130			"	"	"	"	

North Creek Analytical - Bothell

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Laura Cacek to

Kirk Gendron, Project Manager



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Golder Associates Inc. 18300 NE Union Hill Road, Suite 200 Redmond WA, 98052-3333

Golder Associates Project Number: 923-100

Project Manager: Gary Zimmerman

Reported: 06/30/00 12:06

Organochlorine Pesticides and PCBs by EPA Method 8081A and 8082 North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW4-051800 (B0E0354-04) Water	Sampled: 05/	18/00 17:12	Received:	05/19/00 1.	3:00				
Aldrin	ND	0.0400	ug/l	1	0E20007	05/20/00	05/22/00	EPA 8081A/8082	
alpha-BHC	ND	0.0200	H	II .	11	11	#	u	
beta-BHC	ND	0.100	II .	"	ii	н	U	"	
delta-BHC	ND	0.0500	**	u	п	**	11	n	
gamma-BHC (Lindane)	ND	0.0300	u	"	11	0	11	"	
Chlordane (tech)	ND	0.150	"	"	u	**	n	**	
alpha-Chlordane	ND	0.0500	11	tt	"	"	"	u	
gamma-Chlordane	ND	0.0200	u .	**	n	"	u	11	
4,4'-DDD	ND	0.0400	**	n	**	19	"	0	
4,4'-DDE	ND	0.0300	11	"	II	*1	н	ti .	
4,4´-DDT	ND	0.0900	n	н	**	11	†I	п	
Dieldrin	ND	0.0700	"	11	11	*11	"	u	
Endosulfan I	ND	0.0300	"	"	п	11	u	н	
Endosulfan II	ND	0.0500	**	"	11	U	**	H	
Endosulfan sulfate	ND	0.0700		H.	u	11	11	"	
Endrin	ND	0.0800	"	a		n	**	If	
Endrin aldehyde	ND	0.100	u	11	н	**	11	u	
Heptachlor	ND	0.0300	"	ıı	**	U	11	tt.	
Heptachlor epoxide	ND	0.0300	H	"	a	11	II	u	
Methoxychlor	ND	0.500	"	u	11	19	11	п	
Toxaphene	ND	1.50	п	"	11	tt	H	0	
Aroclor 1016	ND	0.100	**	u	"	11	ii .	11	
Aroclor 1221	ND	0.100	11	"	u	u	**	H.	
Aroclor 1232	ND	0.100	u ·	0	**	**	**	"	
Aroclor 1242	ND	0.100	11	**	"	н	ii	11	
Aroclor 1248	ND	0.100	tr	n	**	11	II	n	
Aroclor 1254	ND	0.100	11	**	п	"	"	и	
Aroclor 1260	ND	0.100	11	II .	**	**	"	н	
Aroclor 1262	ND	0.100	**	11	**	u	u	H	
Aroclor 1268	ND	0.100	#	11	n		**	ti	
Surrogate: TCX	94.3 %	40-130			"	"	"	"	
Surrogate: Decachlorobiphenyl	76.2 %	40-130			"	"	"	"	

North Creek Analytical - Bothell

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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Organochlorine Pesticides and PCBs by EPA Method 8081A and 8082 North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Portal (B0E0354-06) Water	Sampled: 05/18/00 18:3	Receive	d: 05/19/00	13:00					
Aldrin	ND	0.0400	ug/l	1	0E20007	05/20/00	05/22/00	EPA 8081A/8082	
alpha-BHC	ND	0.0200	11	11	H	n	11	10	
beta-BHC	ND	0.100	"	**	11	11	11	ti	
delta-BHC	ND	0.0500	"	"	"	11	Ħ	u	
gamma-BHC (Lindane)	ND	0.0300	11	n	u	"	H .	n	
Chlordane (tech)	ND	0.150	11	"	n	II.	u	#	
alpha-Chlordane	ND	0.0500	"	**	11	II.	19	II	
gamma-Chlordane	ND	0.0200	"	tt.	H	11	11	IJ	
4,4′-DDD	ND	0.0400	11	11	n	"	**	11	
4,4'-DDE	ND	0.0300	"	11	19	n	II .	n	
4,4'-DDT	ND	0.0900	"	tt	11	II .	11	U	
Dieldrin	ND	0.0700	п	II .	tr	"	11	n	
Endosulfan I	ND	0.0300	11	11	n	**	Ħ	11	
Endosulfan II	ND	0.0500	11	**	**	tr	11	u .	
Endosulfan sulfate	ND	0.0700	**	tt	11	11	11	U	
Endrin	ND	0.0800	II	n	u	tt	**	11	•
Endrin aldehyde	ND	0.100	11	11	11	ti	п	n	
Heptachlor	ND	0.0300	**	***	"	11	11	H	
Heptachlor epoxide	ND	0.0300	"	tr	n	11	"	**	
Methoxychlor	ND	0.500	tt .	н	II	**	0	tt	
Toxaphene	ND	1.50	11	11	19	ıı	и	U	
Aroclor 1016	ND	0.100	***	"	**	11	"	11	
Aroclor 1221	ND	0.100	11	n	ŧi	"	U	"	
Aroclor 1232	ND	0.100	n	II .	If	n	10	u	
Aroclor 1242	ND	0.100	Ħ	11	11	11	11	11	
Aroclor 1248	ND	0.100	11	**	**	11	rr	"	
Aroclor 1254	ND	0.100	n	n	ti .	11	и	n .	
Aroclor 1260	ND	0.100		n	tt	11	19	11	
Aroclor 1262	. ND	0.100	11	11	**	n	и.	"	
Aroclor 1268	ND	0.100	ti	11	**	Ħ	tt	tt	
Surrogate: TCX	92.6% 4	0-130			"	"	"	"	***************************************
Surrogate: Decachlorobipheny	ol 68.9 % 4	0-130			"	"	"	"	

North Creek Analytical - Bothell

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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Volatile Organic Compounds by EPA Method 8260B North Creek Analytical - Bothell

		Reporting	¥ 7 ·.	D:1 .:	D 4 1	D 1	A 1 1	26.1	3.7
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
LMW3-051800 (B0E0354-01) Water	Sampled: 05/1	8/00 10:15	Received:	05/19/00 1	3:00				
Acetone	ND	10.0	ug/l	1	0E24010	05/23/00	05/23/00	EPA 8260B	
Benzene	ND	1.00	11	II	"	11	п	11	
Bromobenzene	ND	1.00	"	11	11	"	11	Ħ	
Bromochloromethane	ND	1.00	**	11	H	**	11	U	
Bromodichloromethane	ND	1.00	ti	**	**	Ħ	11	11	
Bromoform	ND	1.00	"	ti	**	n	11	11	
Bromomethane	ND	1.00	11	n	Ħ	11	**	**	
2-Butanone	ND	10.0	11	II .	tt	11	U	11	
n-Butylbenzene	ND	1.00	Ħ	11	11	"	n	tt	
sec-Butylbenzene	ND	1.00	II .	"	11	**	n	U	
tert-Butylbenzene	ND	1.00	H	**	11	н	"	11	
Carbon disulfide	ND	1.00	11	n	**	n	11	11	
Carbon tetrachloride	ND	1.00	17	11	tt.	11	n	u	
Chlorobenzene	ND	1.00	11	11	n	**	· ·	u	
Chloroethane	ND	1.00	"	**	11	**	"	n	
Chloroform	ND	1.00	н	**	11	n	"	**	
Chloromethane	ND	5.00	н	n	**	11	**	u	
2-Chlorotoluene	ND	1.00	H	n	"	11		11	
1-Chlorotoluene	ND	1.00	11	11	н	**	"	11	
Dibromochloromethane	ND	1.00	11	11	н	u	**	**	
1,2-Dibromo-3-chloropropane	ND	5.00	**	**	11	II .	**	II.	
1,2-Dibromoethane	ND	1.00	**	"	**	11	n .	n	
Dibromomethane	ND	1.00	11	U	"	"	11	и	
1,2-Dichlorobenzene	ND	1.00	11	U	н	**	#	н	
1,3-Dichlorobenzene	ND	1.00	19	II.	ıı	U	n	п	
I,4-Dichlorobenzene	ND	1.00	11	11	11	11	n	11	
Dichlorodifluoromethane	ND	1.00	**	**	11	**	11	"	
1,1-Dichloroethane	ND	1.00	**	11		"	11	"	
1,2-Dichloroethane	ND	. 1.00	er	H	**	tt	**	".	
1,1-Dichloroethene	ND	1.00	tt	H	n	tt	**	u u	
cis-1,2-Dichloroethene	ND	1.00	n	"	ti .	11	n		
rans-1,2-Dichloroethene	ND	1.00	11	11	tt	11	II	**	
1,2-Dichloropropane	ND	1.00	11	11	11	11	11	**	
1,3-Dichloropropane	ND	1.00	11	10	n	11	15	**	
2,2-Dichloropropane	ND	1.00	11	11	11	11	11	**	
1,1-Dichloropropene	ND	1.00	11	**	11	17	11	11	
cis-1,3-Dichloropropene	ND ND	1.00	**	11	11	**	11	II .	
rans-1,3-Dichloropropene	ND ND	1.00	11	11	11	11	"	п	
rans-1,3-Diemoropropene	ND	1.00	-			-			

North Creek Analytical - Bothell

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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Volatile Organic Compounds by EPA Method 8260B North Creek Analytical - Bothell

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW3-051800 (B0E0354-01) Water	Sampled: 05	/18/00 10:15	Received	: 05/19/00 1	3:00				
Ethylbenzene	ND	1.00	ug/l	1	0E24010	05/23/00	05/23/00	EPA 8260B	
Hexachlorobutadiene	ND	1.00	ti	11	tt	11	e	11	
2-Hexanone	ND	10.0	11	"	u	"	tt	11	
Isopropylbenzene	ND	1.00	11	n .	19	**	n	**	
p-Isopropyltoluene	ND	1.00	Ħ	U	11	"	u	n	
Methylene chloride	ND	5.00	11	u	**	II .	11	u	
4-Methyl-2-pentanone	ND	10.0	H	11	tt	11	**	n	
Naphthalene	ND	1.00	n	11	n	11	**	"	
n-Propylbenzene	ND	1.00	11	n	"	**	11	Ħ	
Styrene	ND	1.00	41	II	17	ti	"	u	
1,1,1,2-Tetrachloroethane	ND	1.00	n	n	**	ıı	11	n	
1,1,2,2-Tetrachloroethane	ND	1.00	п	11	**	11	11	11	
Tetrachloroethene	ND	1.00	17	111	u	"	H	n	
Toluene	ND	1.00	11	u	11	"	O	а	
1,2,3-Trichlorobenzene	ND	1.00	***	H	11	tt	11	II .	
1,2,4-Trichlorobenzene	ND	1.00	Ħ	11	**	11	10	11	
1,1,1-Trichloroethane	ND	1.00	u	11	H	11	11	11	
1,1,2-Trichloroethane	ND	1.00	11	"	11	Ħ	п	II .	
Trichloroethene	ND	1.00	11	u	19	п	"	**	
Trichlorofluoromethane	ND	1.00	**	н	11	17	11	Ħ	
1,2,3-Trichloropropane	ND	1.00	u	11	11	11	n	п	
1,2,4-Trimethylbenzene	ND	1.00	n	11	II	tt	II .	11	
1,3,5-Trimethylbenzene	ND	1.00	u	**	ıı	Ħ	11	11	
Vinyl chloride	ND	1.00	11	Ħ	10	11	n	er	
m,p-Xylene	ND	2.00	11	n	**	11	U	n	
o-Xylene	ND	1.00	"	11	"	"	11	11	
Surrogate: 1,2-DCA-d4	116%	80-120			"	"	"	"	
Surrogate: Toluene-d8	102 %	80-120			"	"	"	"	
Surrogate: 4-BFB	109 %	80-120			"	"	"	"	•

North Creek Analytical - Bothell

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Lewra Cacek In Kirk Gendron, Project Manager



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Spokane

Portland

Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Volatile Organic Compounds by EPA Method 8260B North Creek Analytical - Bothell

Analyte Result Limit Units LMW5-051800 (B0E0354-02) Water Sampled: 05/18/00 12:30 Received: 05/18/00 12:30 Acetone ND 10.0 ug/l Benzene ND 1.00 " Bromobenzene ND 1.00 " Bromochloromethane ND 1.00 " Bromoform ND 1.00 " Bromomethane ND 1.00 " 2-Butanone ND 10.0 " n-Butylbenzene ND 1.00 " sec-Butylbenzene ND 1.00 "	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acetone ND 10.0 ug/l Benzene ND 1.00 " Bromobenzene ND 1.00 " Bromochloromethane ND 1.00 " Bromodichloromethane ND 1.00 " Bromoform ND 1.00 " Bromomethane ND 1.00 " 2-Butanone ND 10.0 " n-Butylbenzene ND 1.00 " sec-Butylbenzene ND 1.00 "			Troparca		TVICTIOG	110103
Benzene ND 1.00 " Bromobenzene ND 1.00 " Bromochloromethane ND 1.00 " Bromodichloromethane ND 1.00 " Bromoform ND 1.00 " Bromomethane ND 1.00 " 2-Butanone ND 10.0 " n-Butylbenzene ND 1.00 " sec-Butylbenzene ND 1.00 "	5/19/00 13	3:00				
Bromobenzene ND 1.00 " Bromochloromethane ND 1.00 " Bromodichloromethane ND 1.00 " Bromoform ND 1.00 " Bromomethane ND 1.00 " 2-Butanone ND 10.0 " n-Butylbenzene ND 1.00 " sec-Butylbenzene ND 1.00 "	1	0E24010	05/23/00	05/23/00	EPA 8260B	
Bromochloromethane ND 1.00 " Bromodichloromethane ND 1.00 " Bromoform ND 1.00 " Bromomethane ND 1.00 " 2-Butanone ND 10.0 " n-Butylbenzene ND 1.00 " sec-Butylbenzene ND 1.00 "	n	**	Ħ	11	tt	
Bromodichloromethane ND 1.00 " Bromoform ND 1.00 " Bromomethane ND 1.00 " 2-Butanone ND 10.0 " n-Butylbenzene ND 1.00 " sec-Butylbenzene ND 1.00 "	11	**	n	"	п	
Bromoform ND 1.00 " Bromomethane ND 1.00 " 2-Butanone ND 10.0 " n-Butylbenzene ND 1.00 " sec-Butylbenzene ND 1.00 "	11	tf	n	"	п	
Bromomethane ND 1.00 " 2-Butanone ND 10.0 " n-Butylbenzene ND 1.00 " sec-Butylbenzene ND 1.00 "	11	п	11	**	"	
2-Butanone ND 10.0 " n-Butylbenzene ND 1.00 " sec-Butylbenzene ND 1.00 "	**	U	19	"	"	
n-Butylbenzene ND 1.00 " sec-Butylbenzene ND 1.00 "	**	11	11	u	**	
sec-Butylbenzene ND 1.00 "	ŧı	11	**	"	H .	
sec-Butylbenzene ND 1.00 "	u	**	**	"	u	
	n	**	**	"	11	
tert-Butylbenzene ND 1.00 "	н	**	n	11	11	
Carbon disulfide ND 1.00 "	"	ti .	u	n .	11	
Carbon tetrachloride ND 1.00 "	11	tt	н	tt	11	
Chlorobenzene ND 1.00 "	**	11	11	tt	tt	
Chloroethane ND 1.00 "	**	11	11	n	u	
Chloroform ND 1.00 "	**	11	11	n .	n .	
Chloromethane ND 5.00 "	u	11	**	17	11	
2-Chlorotoluene ND 1.00 "	U	**	u	11	**	
4-Chlorotoluene ND 1.00 "	11	11	u	tt	n	
Dibromochloromethane ND 1.00 "	**	n	n	er	n S	
1,2-Dibromo-3-chloropropane ND 5.00 "	11	H .	ıı	u	11	
1,2-Dibromoethane ND 1.00 "	**	19	"	н	"	
Dibromomethane ND 1.00 "	17	11	"	11	rr ·	
1,2-Dichlorobenzene ND 1.00 "	tt	10	n	**	tt	
1,3-Dichlorobenzene ND 1.00 "	Ħ	11	rr ·	**	u	
1,4-Dichlorobenzene ND 1.00 "	tr .	11	**	Ħ	n	
Dichlorodifluoromethane ND 1.00 "	tt	11	n	11	11	
1,1-Dichloroethane ND 1.00 "	II	**	н	n	11	
1,2-Dichloroethane ND 1.00 "	"	"	u	11	**	
1,1-Dichloroethene ND 1.00 "	н .	"	u	"	tt .	
cis-1,2-Dichloroethene ND 1.00 "	11	11	н	11	п	
trans-1,2-Dichloroethene ND 1.00 "	11	"	II.	**	11	
1,2-Dichloropropane ND 1.00 "	11	**	11	11	11	
1,3-Dichloropropane ND 1.00 "	11	**	n	**	u	
2,2-Dichloropropane ND 1.00 "	11	ıı	u	**	n	
1,1-Dichloropropene ND 1.00 "	17	"	11	11	11	
cis-1,3-Dichloropropene ND 1.00 "	"	u	18		11	
trans-1,3-Dichloropropene ND 1.00 "	11	**	11	"	11	

North Creek Analytical - Bothell

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Golder Associates Inc.

18300 NE Union Hill Road, Suite 200

Redmond WA, 98052-3333

Project: Palmer/Landsburg Project

Project Number: 923-100

Project Manager: Gary Zimmerman

Reported:

06/22/00 11:31

Volatile Organic Compounds by EPA Method 8260B North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW5-051800 (B0E0354-02) Water	Sampled: 05	/18/00 12:30	Received	: 05/19/00 1	3:00				
Ethylbenzene	ND	1.00	ug/l	1	0E24010	05/23/00	05/23/00	EPA 8260B	
Hexachlorobutadiene	ND	1.00	n	tt	H	"	n	11	
2-Hexanone	ND	10.0	11	u	11	11	11	**	
Isopropylbenzene	ND	1.00	17	U	11	"	10	tt	
p-Isopropyltoluene	ND	1.00	**	H.	11	"	11	п	
Methylene chloride	ND	5.00	tt	11	11	11	11	II	
4-Methyl-2-pentanone	ND	10.0	"	"	11	"	**	H	
Naphthalene	ND	1.00	n	"	n	II	u	11	
n-Propylbenzene	ND.	1.00	11	**	u	11	u	11	
Styrene	ND	1.00	11	n	"	11	н	u	
1,1,1,2-Tetrachloroethane	ND	1.00	11	O	11	"	H	u	
1,1,2,2-Tetrachloroethane	ND	1.00	***	11	**	n	#	н	
Tetrachloroethene	ND	1.00	Ħ	11	"	u u	ŧŧ	11	
Toluene	ND	1.00	n	"	n	u	n	n	
1,2,3-Trichlorobenzene	ND	1.00	u	**	U	n	H	п	
1,2,4-Trichlorobenzene	ND	1.00	H	**	ıı	"	U	II .	
1,1,1-Trichloroethane	ND	1.00	11	II .	11	**	11	11	
1,1,2-Trichloroethane	ND	1.00	"	u	**	U	11	n	
Trichloroethene	ND	1.00	11	11	tt.	If	n	0	
Trichlorofluoromethane	ND	1.00	"	11	п	11	n	11	
1,2,3-Trichloropropane	ND	1.00	"	11	n	**	n	H	
1,2,4-Trimethylbenzene	ND	1.00	Ħ	it .	11	Ħ	11	11	
1,3,5-Trimethylbenzene	ND	1.00	n	11	11	H	11	п	
Vinyl chloride	ND	1.00	н	**	11	Ħ	**	11	
m,p-Xylene	ND	2.00	n	n	**	11	п	n	
o-Xylene	ND	1.00	Ħ	u	u	11	n	U	
Surrogate: 1,2-DCA-d4	116%	80-120			n	"	"	n	
Surrogate: Toluene-d8	102 %	80-120			"	n	"	"	
Surrogate: 4-BFB	110 %	80-120			"	. "	"	"	

North Creek Analytical - Bothell

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Golder Associates Inc. Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200 Redmond WA, 98052-3333

Project Number: 923-100

Reported:

Project Manager: Gary Zimmerman

06/22/00 11:31

Volatile Organic Compounds by EPA Method 8260B North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW2-051800 (B0E0354-03) Water	Sampled: 05	/18/00 15:42	Received	l: 05/19/00 1:	3:00				***************************************
Acetone	ND	10.0	ug/l	1	0E22013	05/22/00	05/22/00	EPA 8260B	
Benzene	ND	1.00	11	11	n	10	**	11	
Bromobenzene	ND	1.00	**	n	11	**	U	ti .	
Bromochloromethane	ND	1.00	H	"	11	tt	ti	H	
Bromodichloromethane	ND	1.00	н	11	11	n	11	n	
Bromoform	ND	1.00	**	"	**	n	"	11	
Bromomethane	ND	1.00	**	rr	"	11	11	11	
2-Butanone	ND	10.0	44	ti ti	11	10	**	u	
n-Butylbenzene	ND	1.00	н	n	11	**	п	u	
sec-Butylbenzene	ND	1.00	u	11	"	n	u	n	
tert-Butylbenzene	ND	1.00	"	**	"	n	n	**	
Carbon disulfide	ND	1.00	"	**	**	11	"	**	
Carbon tetrachloride	ND	1.00	"	tt	u	**	11	п	
Chlorobenzene	ND	1.00	н	n	11	"	U	n	
Chloroethane	ND	1.00	н	**	11	n	H	n .	
Chloroform	ND	1.00	11	"	**	н	11	**	
Chloromethane	ND	5.00	11	**	11	11	**	U	
2-Chlorotoluene	ND	1.00	11	tt	ti .	11	n	11	
4-Chlorotoluene	ND	1.00	*1	n	H	n n	u	**	
Dibromochloromethane	ND	1.00	n	n	11	n	"	u	
1,2-Dibromo-3-chloropropane	ND	5.00	н	11	**	11	**	II.	
1,2-Dibromoethane	ND	1.00	n	**	u	11	n	**	
Dibromomethane	ND	1.00	11	**	n	ti .	11	"	
1,2-Dichlorobenzene	ND	1.00	11	ŧŧ	H	tt	**	п	
1,3-Dichlorobenzene	ND	1.00	11	u	"	11	TI TI	n	
1,4-Dichlorobenzene	ND	1.00	11	n n	"	11	u	11	
Dichlorodifluoromethane	ND	1.00	Ħ	H .	"	n	11	tt	
1,1-Dichloroethane	ND	1.00	н	u	"	tt	11	u	
1,2-Dichloroethane	. ND	1.00	ti .	**	n	11	" .	н	
1,1-Dichloroethene	ND	1.00	19	**	n	19	ti .	11	
cis-1,2-Dichloroethene	ND	1.00	11	n	11	11	II	**	
trans-1,2-Dichloroethene	ND	1.00	**	"	11	11	ti .	tt	
1,2-Dichloropropane	ND	1.00	11	ıı	11	11	11	tt	
1,3-Dichloropropane	ND	1.00	**	n	**	**	11	н	
2,2-Dichloropropane	ND	1.00	n	II	"	tt	**	11	
1,1-Dichloropropene	ND	1.00	н	"	**	tt	"	11	
cis-1,3-Dichloropropene	ND	1.00	11	"	**	H	n	**	
trans-1,3-Dichloropropene	ND	1.00	11	"	tt	n	rr ·	"	

North Creek Analytical - Bothell

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Golder Associates Inc.

18300 NE Union Hill Road, Suite 200

Project: Palmer/Landsburg Project Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Volatile Organic Compounds by EPA Method 8260B North Creek Analytical - Bothell

LMW2-051800 (B0E0354-03) Water Sampled: 05/18/00 15:42 Received: 05/19/00 13:00 Ethylbenzene ND 1.00 ug/l 1 0E22013 0E22013 <th>05/22/00 "" "" "" "" "" "" "" "" "" "" "" "" "</th> <th>Analyzed 05/22/00 " " " " " " " " " " "</th> <th>Method EPA 8260B</th> <th>Notes</th>	05/22/00 "" "" "" "" "" "" "" "" "" "" "" "" "	Analyzed 05/22/00 " " " " " " " " " " "	Method EPA 8260B	Notes
Ethylbenzene ND 1.00 ug/l 1 0E22013 Hexachlorobutadiene ND 1.00 " " " 2-Hexanone ND 10.0 " " " Isopropylbenzene ND 1.00 " " " P-Isopropyltoluene ND 1.00 " " " " Methylene chloride ND 1.00 " </th <th>0 9 9 10 11 11 11</th> <th>11 11 11 11 11 11 11 11 11 11 11 11 11</th> <th>11 11 11 11 11 11 11 11 11 11</th> <th></th>	0 9 9 10 11 11 11	11 11 11 11 11 11 11 11 11 11 11 11 11	11 11 11 11 11 11 11 11 11 11	
Hexachlorobutadiene ND 1.00 " " " " " 2-Hexanone ND 10.0 " " " " " "	0 9 9 10 11 11 11	11 11 11 11 11 11 11 11 11 11 11 11 11	11 11 11 11 11 11 11 11 11 11	
2-Hexanone ND 10.0 " " " Isopropylbenzene ND 1.00 " " " p-Isopropyltoluene ND 1.00 " " " Methylene chloride ND 5.00 " " " Methylene chloride ND 5.00 " " " 4-Methyl-2-pentanone ND 10.0 " " " Naphthalene ND 1.00 " "	0 0 0 0 0 0 0 0	11 11 11 11 11 11 11 11 11 11 11 11 11	0 0 0 0 0 0 0 0 0 0	
Isopropylbenzene	11 11 11 11 11 11 11 11	11 11 11 11 11 11 11 11 11 11 11 11 11	17 18 18 18 18 18 18 18 18 18 18 18 18 18	
p-Isopropyltoluene ND 1.00 " " " Methylene chloride ND 5.00 " " " 4-Methyl-2-pentanone ND 10.0 " " " Naphthalene ND 1.00 " " " n-Propylbenzene ND 1.00 " " " Styrene ND 1.00 " " " 1,1,2-Tetrachloroethane ND 1.00 " " " 1,1,2-Tetrachloroethane ND 1.00 " " " Toluene ND 1.00 " " " 1,2,3-Trichlorobenzene ND 1.00 " " " 1,1,1-Trichloroethane ND 1.00 " " " 1,1,2-Trichloroethane ND 1.00 " " " 1,1,2-Trichloroethane ND 1.00 " " " Trichlorofluoromethane	0 0 10 10 10 10	. n . n . n . n . n . n	17 11 11 11 11 11	
Methylene chloride ND 5.00 " " " 4-Methyl-2-pentanone ND 10.0 " " " Naphthalene ND 1.00 " " " n-Propylbenzene ND 1.00 " " " Styrene ND 1.00 " " " 1,1,2-Tetrachloroethane ND 1.00 " " " 1,1,2,2-Tetrachloroethane ND 1.00 " " " Toluene ND 1.00 " " " 1,2,3-Trichlorobenzene ND 1.00 " " " 1,2,4-Trichloroethane ND 1.00 " " " 1,1,2-Trichloroethane ND 1.00 " " " Trichloroethene ND 1.00 " " " Trichlorofluoromethane ND 1.00 " " " 1,2,3-Trichloropropane	11 11 11 11 11 11 11	, n n n n n	11 13 14 14 16	
4-Methyl-2-pentanone ND 10.0 " </td <td>11 11 11 11</td> <td>11 11 11</td> <td>0 0 10 11</td> <td></td>	11 11 11 11	11 11 11	0 0 10 11	
Naphthalene ND 1.00 " " " n-Propylbenzene ND 1.00 " " " Styrene ND 1.00 " " " 1,1,2-Tetrachloroethane ND 1.00 " " " 1,2,2-Tetrachloroethane ND 1.00 " " " Tetrachloroethene ND 1.00 " " " Toluene ND 1.00 " " " 1,2,3-Trichlorobenzene ND 1.00 " " " 1,1,1-Trichloroethane ND 1.00 " " " 1,1,2-Trichloroethane ND 1.00 " " " Trichloroethene ND 1.00 " " " Trichlorofluoromethane ND 1.00 " " " 1,2,3-Trichloropropane ND 1.00 " " "	11 11 11 11	11 11 11	0 11 11	
n-Propylbenzene ND 1.00 " " " Styrene ND 1.00 " " " 1,1,1,2-Tetrachloroethane ND 1.00 " " " 1,1,2,2-Tetrachloroethane ND 1.00 " " " Tetrachloroethene ND 1.00 " " " Toluene ND 1.00 " " " 1,2,3-Trichlorobenzene ND 1.00 " " " 1,2,4-Trichloroethane ND 1.00 " " " 1,1,1-Trichloroethane ND 1.00 " " " 1,1,2-Trichloroethane ND 1.00 " " " Trichloroethene ND 1.00 " " " Trichlorofluoromethane ND 1.00 " " " 1,2,3-Trichloropropane ND 1.00 " " "	tt 11 11	11 11 11	n n	
Styrene ND 1.00 " <th< td=""><td>1) 11</td><td>11 12</td><td>n</td><td></td></th<>	1) 11	11 12	n	
1,1,1,2-Tetrachloroethane ND 1.00 " <t< td=""><td>II 11</td><td>17</td><td>n</td><td></td></t<>	II 11	17	n	
1,1,2,2-Tetrachloroethane ND 1.00 " <t< td=""><td>tt</td><td>**</td><td></td><td></td></t<>	tt	**		
Tetrachloroethene ND 1.00 " " " Toluene ND 1.00 " " " 1,2,3-Trichlorobenzene ND 1.00 " " " 1,2,4-Trichlorobenzene ND 1.00 " " " 1,1,1-Trichloroethane ND 1.00 " " " 1,1,2-Trichloroethane ND 1.00 " " " Trichloroethene ND 1.00 " " " Trichlorofluoromethane ND 1.00 " " " 1,2,3-Trichloropropane ND 1.00 " " "			11	
Toluene ND 1.00 " " " 1,2,3-Trichlorobenzene ND 1.00 " " " 1,2,4-Trichlorobenzene ND 1.00 " " " 1,1,1-Trichloroethane ND 1.00 " " " 1,1,2-Trichloroethane ND 1.00 " " " Trichloroethene ND 1.00 " " " Trichlorofluoromethane ND 1.00 " " " 1,2,3-Trichloropropane ND 1.00 " " "				
1,2,3-Trichlorobenzene ND 1.00 "		u	H	
1,2,4-Trichlorobenzene ND 1.00 "	11	11	II.	
1,1,1-Trichloroethane ND 1.00 "<	11	11	H	
1,1,2-Trichloroethane ND 1.00 " " " Trichloroethene ND 1.00 " " " Trichlorofluoromethane ND 1.00 " " " 1,2,3-Trichloropropane ND 1.00 " " "	"	**	Ħ	
Trichloroethene ND 1.00 " " " Trichlorofluoromethane ND 1.00 " " " 1,2,3-Trichloropropane ND 1.00 " " "	IJ	ti .	n	
Trichlorofluoromethane ND 1.00 " " " 1,2,3-Trichloropropane ND 1.00 " " "	11	**	н	
1,2,3-Trichloropropane ND 1.00 " " "	n .	**	11	
	H	u	n	
	11	11	tt	
1,2,4-Trimethylbenzene ND 1.00 " " "	11	•	H	
1,3,5-Trimethylbenzene ND 1.00 " " "	U	ti	**	
Vinyl chloride ND 1.00 " "	B	H	u .	
m,p-Xylene ND 2.00 " "	1r	11	II	
o-Xylene ND 1.00 " " "	"	tt	11	
Surrogate: 1,2-DCA-d4 114 % 80-120 "	"	n	"	
Surrogate: Toluene-d8 99.5 % 80-120 "		"	#	
Surrogate: 4-BFB 104 % 80-120 · "	"	"	<i>"</i> .	

North Creek Analytical - Bothell

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Laura Carek Fa



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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

Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Volatile Organic Compounds by EPA Method 8260B North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW4-051800 (B0E0354-04) Water	Sampled: 05/1	8/00 17:12	Received	: 05/19/00 1	3:00			THE SHOP OF THE SH	
Acetone	, ND	10.0	ug/l	1	0E22013	05/22/00	05/22/00	EPA 8260B	
Benzene	ND	1.00	"	**	**	**	Ħ	11	
Bromobenzene	ND	1.00	ŧŧ	n	H	"	ti .	"	
Bromochloromethane	ND	1.00	ti	11	11	Ħ	11	n	
Bromodichloromethane	ND	1.00	11	11	11	n	11	II .	
Bromoform	ND	1.00	11	н	**	11	11	11	
Bromomethane	ND	1.00	u	11	u	11	**	"	
2-Butanone	ND	10.0	II .	11	ii	11	u	**	
n-Butylbenzene	ND	1.00	11	"	11	ti	11	u	
sec-Butylbenzene	ND	1.00	11	"	"	11	11	н	
tert-Butylbenzene	ND	1.00	11	n	**	"	11	"	
Carbon disulfide	ND	1.00	н	11	n	11	u	**	
Carbon tetrachloride	ND	1.00	11	11	11	ti .	11	0	
Chlorobenzene	ND	1.00	11	**	11	11	11	"	
Chloroethane	ND	1.00	**	"	Ħ	**	11	"	
Chloroform	ND	1.00	n	н	n	**	tt	n	
Chloromethane	ND	5.00	n	11	11	n	II	u	
2-Chlorotoluene	ND	1.00	11	11	11	11	11	"	
4-Chlorotoluene	ND	1.00	**	u	11	11	11	tt.	
Dibromochloromethane	ND	1.00	**	tt.	11	**	n	u	
1,2-Dibromo-3-chloropropane	ND	5.00	"	n	u	u	11	11	
1,2-Dibromoethane	ND	1.00	н	11	11	11	**	**	
Dibromomethane	ND	1.00	**	**	**	**	"	ıı	
1,2-Dichlorobenzene	ND	1.00		"	**	**	"	11	
1,3-Dichlorobenzene	ND	1.00	"	"	Ħ	n	**	**	
1,4-Dichlorobenzene	ND	1.00	"	n n	11	11	**	tt	
Dichlorodifluoromethane	ND	1.00	tt	"	10	11	n	11	
1,1-Dichloroethane	ND	1.00	11	"	11		11	11	
1,2-Dichloroethane	ND	1.00		"	**	n	11	11	
1,1-Dichloroethene	ND	1.00	u	n	rr ·	n	11	tt	
cis-1,2-Dichloroethene	ND	1.00	**	11	H	11	tt	11	
trans-1,2-Dichloroethene	ND	1.00	fī	11	н	11	n	,, 1	
1,2-Dichloropropane	ND	1.00	11	11	11	11	н	11	
1,3-Dichloropropane	ND	1.00	11	**	11	**	11	"	
2,2-Dichloropropane	ND	1.00	11	11	11	11	11	tt	
1,1-Dichloropropene	ND	1.00	11	**	11	**	11	п	
cis-1,3-Dichloropropene	ND	1.00	tt	tt	**	n	n	11	
trans-1,3-Dichloropropene	ND	1.00	ŧı	tt	**	ti .	**	11	

North Creek Analytical - Bothell

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

auga Cacek the Kirk Gendron, Project Manager



 Seattle
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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Volatile Organic Compounds by EPA Method 8260B North Creek Analytical - Bothell

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW4-051800 (B0E0354-04) Water	Sampled: 05	3/18/00 17:12	Received	: 05/19/00 1	3:00				
Ethylbenzene	ND	1.00	ug/l	1	0E22013	05/22/00	05/22/00	EPA 8260B	
Hexachlorobutadiene	ND	1.00	H	11	n	**	IF	n	
2-Hexanone	ND	10.0	11	"	19	ti	11	"	
Isopropylbenzene	ND	1.00	"	II .	11	11	*1	***	
p-Isopropyltoluene	ND	1.00	н	11	**	**	**	n	
Methylene chloride	ND	5.00	11	11	ti	"	te .	11	
4-Methyl-2-pentanone	ND	10.0	11	11	11	11	11	**	
Naphthalene	ND	1.00	tt	II	**	11	**	u	
n-Propylbenzene	ND	1.00	Ħ	11	Ħ	tt.	**	11	
Styrene	ND	1.00	11	**	11	Ħ	11	**	
1,1,1,2-Tetrachloroethane	ND	1.00	"	n	11	11	ti	n	
1,1,2,2-Tetrachloroethane	ND	1.00	Ħ	n	**	11	n	n	
Tetrachloroethene	ND	1.00	H	11	n	II	IF	"	
Toluene	ND	1.00	"	"	11	11	11	Œ	
1,2,3-Trichlorobenzene	ND	1.00	п	0	"	"	tt	u u	
1,2,4-Trichlorobenzene	ND	1.00	u	11	"	n	11	**	
1,1,1-Trichloroethane	ND	1.00	II .	tr	"	н	11	**	
1,1,2-Trichloroethane	ND	1.00	11	u	**	u	n	0	
Trichloroethene	ND	1.00	ŧī	n	H	u	II .	11	
Trichlorofluoromethane	ND	1.00	u	11	u	u	"	n	
1,2,3-Trichloropropane	ND	1.00	11	11	11	"	п	U	
1,2,4-Trimethylbenzene	ND	1.00	11	n	**	n	11	n	
1,3,5-Trimethylbenzene	ND	1.00	Ħ	II	u	11	**	**	
Vinyl chloride	ND	1.00	U	11	н	"	u	tt	
m,p-Xylene	ND	2.00	n	**	11	tt	0	n	
o-Xylene	ND	1.00	**	"	"	H	11	**	
Surrogate: 1,2-DCA-d4	115 %	80-120			n	"	"	"	
Surrogate: Toluene-d8	102 %	80-120			"	"	n .	"	
Surrogate: 4-BFB	105 %	80-120		•	"	"	"	"	

North Creek Analytical - Bothell

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Laura Cacek Fa

Kirk Gendron, Project Manager



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Golder Associates Inc. Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Volatile Organic Compounds by EPA Method 8260B North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW8-051800 (B0E0354-05) Water	Sampled: 05	/18/00 17:30	Received	: 05/19/00 1:	3:00				
Acetone	ND	10.0	ug/l	1	0E22013	05/22/00	05/22/00	EPA 8260B	
Benzene	ND	1.00	tt	Ü	"	11	ш	**	
Bromobenzene	ND	1.00	11	II	**	"	H .	11	
Bromochloromethane	ND	1.00	"	11	**	11	11	U	
Bromodichloromethane	ND	1.00	11	"	tt	**	Ħ	11	
Bromoform	ND	1.00	#1	n	11	tt	ti	Ħ	
Bromomethane	ND	1.00	**	11	11	n	n	tt	
2-Butanone	ND	10.0	n	11	n	**	11	u	
n-Butylbenzene	ND	1.00	11	H	11	"	11	**	
sec-Butylbenzene	ND	1.00	11	11	11	U	ti	11	
tert-Butylbenzene	ND	1.00	**	11	"	"	U	**	
Carbon disulfide	ND	1.00	н	**	tt.	11	n	n	
Carbon tetrachloride	ND	1.00	11	n n	11	H	**	tt.	
Chlorobenzene	ND	1.00	11	II .	11	n	n	n	
Chloroethane	ND	1.00	**	11	"	11	11	11	• .
Chloroform	ND	1.00	**	11	n	11	n	n	
Chloromethane	ND	5.00	11	u	n	n	n	IT	
2-Chlorotoluene	ND	1.00	**	11	**	H	n	11	
4-Chlorotoluene	ND	1.00	n	11	**	**	11	U	
Dibromochloromethane	ND	1.00	II	**	n	**	11	n	
1,2-Dibromo-3-chloropropane	ND	5.00	11	tt	11	11	n .	11	
1,2-Dibromoethane	ND	1.00	**	ti .	**	ıı	II .	n	
Dibromomethane	ND	1.00	u	11	"	11	11	It	
1,2-Dichlorobenzene	ND	1.00	n.	11	u .	n	11	11	
1,3-Dichlorobenzene	ND	1.00	n	tt	"	н	ti .	tt	
1,4-Dichlorobenzene	ND	1.00	н	u	"	и .	19	н	
Dichlorodifluoromethane	ND	1.00	11	11	"	11	tr	11	
1,1-Dichloroethane	ND	1.00	"	11	If	"	tt	"	
1,2-Dichloroethane .	ND	1.00	**	11	11		u	ıı .	
1,1-Dichloroethene	ND	1.00	H	"	"	11	11	11	
cis-1,2-Dichloroethene	ND	1.00	"	Ħ	"	**	tr .	"	
trans-1,2-Dichloroethene	ND	1.00	**	n	tt	**	tt	"	
1,2-Dichloropropane	ND	1.00	"	11	H	#	H	tt	
1,3-Dichloropropane	ND	1.00	Ħ	11	11	n	II	II .	
2,2-Dichloropropane	ND	1.00	tt	**	11	n		н	
1,1-Dichloropropene	ND	1.00	11	н	**	11	"	19	
cis-1,3-Dichloropropene	ND	1.00	11	n	"	19	11	10	
trans-1,3-Dichloropropene	ND	1.00	"	11	"	11	rr	11	
trans-1,3-Diction obtobene	עאו	1.00	**		••	-		.,	

North Creek Analytical - Bothell

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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Volatile Organic Compounds by EPA Method 8260B North Creek Analytical - Bothell

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW8-051800 (B0E0354-05) Water	Sampled: 05	/18/00 17:30	Received	: 05/19/00 13	3:00				
Ethylbenzene	ND	1.00	ug/l	1	0E22013	05/22/00	05/22/00	EPA 8260B	
Hexachlorobutadiene	ND	1.00	11	**	11	"	II .	11	
2-Hexanone	ND	10.0	11	H	**	n	"	**	
Isopropylbenzene	ND	1.00	H .	11	ti	11	tt .	**	
p-Isopropyltoluene	ND	1.00	tt	n	11	**	U	U	
Methylene chloride	ND	5.00	11	11	11	n	11	n	
4-Methyl-2-pentanone	ND	10.0	"	H	11	11	11	11	
Naphthalene	ND	1.00	н	11	H	10	ŧŧ	ti .	
n-Propylbenzene	ND	1.00	II	"	11	11	II .	u	
Styrene	ND	1.00	11	U	H	"	11	H	
1,1,1,2-Tetrachloroethane	ND	1.00	**	11	Ħ	**	"	н	
1,1,2,2-Tetrachloroethane	ND	1.00	"	tt	19	**	U	u	
Tetrachloroethene	ND	1.00	11	tt t	"	n n	n	11	
Toluene	ND	1.00	11	U	11	U	11	11	
1,2,3-Trichlorobenzene	ND	1.00	"	II.	n	11	Ħ	п	
1,2,4-Trichlorobenzene	ND	1.00	H	11	**	**	U	II .	
1,1,1-Trichloroethane	ND	1.00	"	"	**	n n	11	11	
1,1,2-Trichloroethane	ND	1.00	**	ıı .	"	11	Ħ	ti .	
Trichloroethene	ND	1.00	"	**	**	11	n	II .	
Trichlorofluoromethane	ND	1.00	tt tt	tt .	**	н	11	**	
1,2,3-Trichloropropane	ND	1.00	11	n n	H	**	n	II	
1,2,4-Trimethylbenzene	ND	1.00	17	11	H	**	11	11	
1,3,5-Trimethylbenzene	ND	1.00	"	11	11	**	10	11	
Vinyl chloride	ND	1.00	tr .	tr	er e	11	**	II .	
m,p-Xylene	ND	2.00	Ħ	H .	II .	10	II .	н	
o-Xylene	ND	1.00	11	11	11	ŧr	"	"	
Surrogate: 1,2-DCA-d4	115 %	80-120			"	"	"	"	
Surrogate: Toluene-d8	101 %	80-120			"	"	n	"	
Surrogate: 4-BFB	· 106 %	80-120			"	"	. "	"	

North Creek Analytical - Bothell

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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Volatile Organic Compounds by EPA Method 8260B North Creek Analytical - Bothell

	Re	porting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Portal (B0E0354-06) Water	Sampled: 05/18/00 18:30	Receive	d: 05/19/00	13:00					***
Acetone	ND	10.0	ug/l	1	0E22013	05/22/00	05/22/00	EPA 8260B	***************************************
Benzene	ND	1.00	"	"	**	11	11	u	
Bromobenzene	ND	1.00	н	"	н	**	11	11	
Bromochloromethane	ND	1.00	10	U	11	**	II.	n	
Bromodichloromethane	ND	1.00	**	11	**	11	11	II .	
Bromoform	ND	1.00	ti .	11	u	19	"	II	
Bromomethane	ND	1.00		ti .	**	**	ti .	11	
2-Butanone	ND	10.0	"	11	"	ti	n	n	
n-Butylbenzene	ND	1.00	tt	11	H	H	11	II	
sec-Butylbenzene	ND	1.00	11	tt	n	11	**	If	
tert-Butylbenzene	ND	1.00	**	Ħ	**	Ħ	n	11	
Carbon disulfide	ND	1.00	n	"	ti	Ħ	H	U	
Carbon tetrachloride	ND	1.00	H	"	11	n	n	H	
Chlorobenzene	ND	1.00	11	U	"	11	"	11	,
Chloroethane	ND	1.00	n	11	**	н	"	"	
Chloroform	ND	1.00	n	**	**	n	**	и	
Chloromethane	ND	5.00	11	u	"	"	u	n	
2-Chlorotoluene	ND	1.00	"	11	n	Ħ	"	n	
4-Chlorotoluene	ND	1.00	Ħ	"	11	"	ŧŧ	11	
Dibromochloromethane	ND	1.00	11	n	"	"	н	**	
1,2-Dibromo-3-chloropropane	ND	5.00	11	"	tt	n	10	u	
1,2-Dibromoethane	ND	1.00	n	"	n	11	**	**	
Dibromomethane	ND	1.00	11	Ħ	**	**		11	
1,2-Dichlorobenzene	ND	1.00	11	U	**	n	**	U	
1,3-Dichlorobenzene	ND	1.00	11	11	tt	н	n	11	
1,4-Dichlorobenzene	ND	1.00	п	**	**	**	n	fi fi	
Dichlorodifluoromethane	ND	1.00	u	**	**	n	11	tt	
1,1-Dichloroethane	ND	1.00	"	U	tt	H	n	11	
1,2-Dichloroethane	ND	1.00	11	II .	n	11	H	. "	
1,1-Dichloroethene	ND	1.00	11	u	11	n	11	ti .	
cis-1,2-Dichloroethene	ND	1.00	11	"	11	n	11	11	
trans-1,2-Dichloroethene	ND	1.00	11	n	"	11	tt	n	
1,2-Dichloropropane	ND	1.00	11	n	n	11	U	н	
1,3-Dichloropropane	ND	1.00	н	11	n		"	U	
2,2-Dichloropropane	ND	1.00	н	**	11	n	n	11	
1,1-Dichloropropene	ND	1.00	11	**	11	tt	H	"	
cis-1,3-Dichloropropene	ND	1.00	tt	n	n	н	n	**	
trans-1,3-Dichloropropene	ND	1.00	11	11	n	11	tt.	n	

North Creek Analytical - Bothell

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Laura Cacek In



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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Volatile Organic Compounds by EPA Method 8260B North Creek Analytical - Bothell

Analyte	R Result	eporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Portal (B0E0354-06) Water	Sampled: 05/18/00 18:30	Receive	d: 05/19/00	13:00					
Ethylbenzene	ND	1.00	ug/l	1	0E22013	05/22/00	05/22/00	EPA 8260B	
Hexachlorobutadiene	ND	1.00	11	n	**	**	19	n	
2-Hexanone	ND	10.0	u	11		u	11	"	
Isopropylbenzene	ND	1.00	II .	11	"	II.	11	11	
p-Isopropyltoluene	ND	1.00	11	**	It	11	n .	Ħ	
Methylene chloride	ND	5.00	"	Ü	tt	**	u	n .	
4-Methyl-2-pentanone	ND	10.0	п	H	n	n	11	II.	
Naphthalene	ND	1.00	11	11	0	11	11	II .	
n-Propylbenzene	ND	1.00	11	"	11	n	**	11	
Styrene	ND	1.00	11	11	11	**	**	u	
1,1,2-Tetrachloroethane	ND	1.00	n	u	ŧŧ	**	n	11	
1,1,2,2-Tetrachloroethane	ND	1.00	n	11	u	n	II .	II .	
Tetrachloroethene	ND	1.00	11	11	II.	ï	11	"	
Toluene	ND	1.00	10	**	11	11	11	**	,
1,2,3-Trichlorobenzene	ND	1.00	11	Ħ	**	"	**	"	
1,2,4-Trichlorobenzene	ND	1.00	**	u	n	**	п	U	
1,1,1-Trichloroethane	ND	1.00	n	n	n	n	11	11	
1,1,2-Trichloroethane	ND	1.00	n	11	11	"	"	u	
Trichloroethene	ND	1.00	u	11	11	"	a	H	
Trichlorofluoromethane	ND	1.00	11	11	n	tr.	17	tt	
1,2,3-Trichloropropane	ND	1.00	"	n	O	u	11	tt	
1,2,4-Trimethylbenzene	ND	1.00	"	u	n	"	п	u	
1,3,5-Trimethylbenzene	ND	1.00	n	11	11	tt	u	н	
Vinyl chloride	ND	1.00	II	11	**	tt	17	**	
m,p-Xylene	ND	2.00	Iŧ	**	H	п	11	**	
o-Xylene	ND	1.00	11	**	II	11	"	п	
Surrogate: 1,2-DCA-d4	115 % 8	0-120			"	"	"	"	
Surrogate: Toluene-d8	102 % 8	0-120			"	"	"	"	
Surrogate: 4-BFB	106 % 8	0-120 ·			"	"	"	<i>"</i> .	

North Creek Analytical - Bothell

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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200 Redmond WA, 98052-3333

Project Number: 923-100 Project Manager: Gary Zimmerman Reported:

06/22/00 11:31

Semivolatile Organic Compounds by EPA Method 8270C North Creek Analytical - Bothell

A 1 t-	Danisle	Reporting	Tinita	D:1	Datak	D 1	A 1	N.C. d J	N.T. :
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW3-051800 (B0E0354-01) Water	Sampled: 05/	18/00 10:15	Received:	: 05/19/00 13	3:00				
Acenaphthene	ND	10.0	ug/l	1	0E20008	05/20/00	06/10/00	EPA 8270C	
Acenaphthylene	ND	10.0	11	11	11	11	II .	II .	
Aniline	ND	10.0	"	Ħ	"	1t	19	19	
Anthracene	ND	10.0	u	U	n	**	11	It	
Benzoic Acid	ND	10.0	"	H	H	u	**	11	
Benzo (a) anthracene	ND	10.0	**	11	11	n	U	11	
Benzo (b) fluoranthene	ND	10.0	11	"	**	If	n	u	
Benzo (k) fluoranthene	ND	10.0	II	U	H	*1	11	ii .	
Benzo (ghi) perylene	ND	10.0	11	n	ij	n	11	H	
Benzo (a) pyrene	ND	10.0	**	11	**	n	u	**	
Benzyl alcohol	ND	10.0	tt .	tt	ŧŧ	ıı	n	u	
Bis(2-chloroethoxy)methane	ND	10.0	11	11	u	11	**	u u	
Bis(2-chloroethyl)ether	ND	10.0	11	If	н	n	н	11	
Bis(2-chloroisopropyl)ether	ND	10.0	11	11	11	н	n	Ħ	•
Bis(2-ethylhexyl)phthalate	ND	50.0	**	11	"	11	11	0	
4-Bromophenyl phenyl ether	ND	10.0	II	U	ti.	**	**	n	
Butyl benzyl phthalate	ND	10.0	11	II	**	tt .	п	н	
Carbazole	ND	10.0	11	11	tr .	n	n	. 11	
4-Chloroaniline	ND	10.0	**	ti	**	11	"	n	
2-Chloronaphthalene	ND	10.0	0	n	U	n	"	Ħ	
4-Chloro-3-methylphenol	ND	10.0	n	n	H	Ħ	11	"	
2-Chlorophenol	ND	10.0	11	II	11	II.	"	u u	
4-Chlorophenyl phenyl ether	ND	10.0	11	11	**	11	n	II .	
Chrysene	ND	10.0	**	n	II .	n	11	Ħ	
Dibenz (a,h) anthracene	ND	10.0	n	u	н	u	11	U	
Dibenzofuran	ND	10.0	H	n	**	II .	**	u	
Di-n-butyl phthalate	ND	10.0	11	11	11	11	II.	II	
1,3-Dichlorobenzene	ND	10.0	"	11	11	11	11	11	
1,4-Dichlorobenzene	ND	10.0	n .	11	tt	n	11	Ħ	
1,2-Dichlorobenzene	ND	10.0	n	n	11	n	tt	11	
3,3'-Dichlorobenzidine	ND	10.0	11	U	11	11	n	11	
2,4-Dichlorophenol	ND	10.0	11	H	11	11	H	11	
Diethyl phthalate	ND	10.0	•	11	**	Ħ	**	n	
2,4-Dimethylphenol	ND	10.0	n	**	tt	**	**	11	
Dimethyl phthalate	ND	10.0	н	tt	n	Ħ	**	11	
4,6-Dinitro-2-methylphenol	ND	10.0	11	"	n	н	tt	It	
2,4-Dinitrophenol	ND	20.0	11	n	19	n	H .	n	
2,4-Dinitrotoluene	ND	10.0	11	**	19	11	n	**	

North Creek Analytical - Bothell

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Golder Associates Inc.

18300 NE Union Hill Road, Suite 200

Redmond WA, 98052-3333

Project: Palmer/Landsburg Project

Project Number: 923-100

Project Manager: Gary Zimmerman

Reported:

06/22/00 11:31

Semivolatile Organic Compounds by EPA Method 8270C North Creek Analytical - Bothell

Commonweal Com	Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Di-n-octyl phthalate	LMW3-051800 (B0E0354-01) Water	Sampled: 05	3/18/00 10:15	Received:	: 05/19/00 1	3:00				
Fluoranthene	2,6-Dinitrotoluene	ND	10.0	ug/l	1	0E20008	05/20/00	06/10/00	EPA 8270C	
Fluorene ND 10.0 "	Di-n-octyl phthalate	ND	10.0	11	"	11	11	II .	tt	
Hexachlorobenzene ND 10.0 " " " " " " " " " " " "	Fluoranthene	ND	10.0	"	"	**	ŧı	**	II.	
Hexachlorobutadiene ND 10.0 " " " " " " " " " " " " " " " " " "	Fluorene	ND	10.0	11	**	II .	n	**	11	
Hexachloroeyclopentadiene ND 10.0 """"""""""""""""""""""""""""""""""""	Hexachlorobenzene	ND	10.0	11	11	11	11	H	"	
Hexachloroethane	Hexachlorobutadiene	ND	10.0	"	11	**	11	11	u	
Indeno (1,2,3-cd) pyrene ND 10.0 " " " " " " " " " " " " "	Hexachlorocyclopentadiene	ND	10.0	u	**	n	ti	**	11	
Sophorone ND 10.0 " " " " " " " " " " " " " " " " " "	Hexachloroethane	ND	10.0	11	n	11	"	tt	"	
2-Methylnaphthalene ND 10.0 " " " " " " " " " " " 2-Methylphenol ND 10.0 " " " " " " " " " " " " " " " " " "	Indeno (1,2,3-cd) pyrene	ND	10.0	**	н	**	11	n	II .	
2-Methylphenol ND 10.0 " " " " " " " " " " " " " " " " " "	Isophorone	ND	10.0	II	ŧi	II	#	11	11	
3 & 4-Methylphenol ND 10.0 """"""""""""""""""""""""""""""""""""	2-Methylnaphthalene	ND	10.0	**	"	11	ti .	"	"	
Naphthalene 2-Nitroaniline ND 10.0 """"""""""""""""""""""""""""""""""	2-Methylphenol	ND	10.0	**	и	11	II .	"	tt	
2-Nitroaniline ND 10.0 " " " " " " " " " " " " " " " " " "	3 & 4-Methylphenol	ND	10.0	11	"	п	**	"	ti .	
3-Nitroaniline	Naphthalene	ND	10.0	n	"	n	u	"	n	
4-Nitroaniline ND 10.0 " " " " " " " " " " " " " " " " " "	2-Nitroaniline	ND	10.0	11	tt	11	n	**	**	·
Nitrobenzene	3-Nitroaniline	ND	10.0	**	11	**	11	n .	п	
2-Nitrophenol ND 10.0 " " " " " " " " " " " " " " " " " "	4-Nitroaniline	ND	10.0	**	11	"	**	n	н	
4-Nitrophenol ND 10.0 " " " " " " " " " " " " " " " " " "	Nitrobenzene	ND	10.0	11	tt	**	n	11	rr .	
N-Nitrosodiphenylamine ND 10.0 """"""""""""""""""""""""""""""""""	2-Nitrophenol	ND	10.0	"	n	**	**	n	U	
N-Nitrosodi-n-propylamine ND 10.0 " " " " " " " " " " " " " " " " " "	4-Nitrophenol	ND	10.0	tr.	11	U	н	n .	11	
N-Nitrosodi-n-propylamine ND 10.0 " " " " " " " " " " " " " " " " " "		ND	10.0	tt	n	n	H	**	rr .	
Phenanthrene ND 10.0 "		ND	10.0	11	u	**	11		u	
Phenol ND 10.0 "	Pentachlorophenol	ND	10.0	11	u	ti	11	"	11	
Pyrene ND 10.0 "	Phenanthrene	ND	10.0		11	tt	0	**	II .	
1,2,4-Trichlorobenzene ND 10.0 "	Phenol	ND	10.0	n	11	**	Ħ	n	11	
2,4,5-Trichlorophenol ND 10.0 "<	Pyrene	ND	10.0	11	n	**	11	11	tt	
2,4,5-Trichlorophenol ND 10.0 "<	1,2,4-Trichlorobenzene	ND	10.0	11	19	n	"	11	n	
2,4,6-Trichlorophenol ND 10.0 "<	2,4,5-Trichlorophenol	ND	10.0	11	11	н	H	11	11	
Surrogate: Phenol-d6 68.2 % 18-145 " " " " " " " Surrogate: 2,4,6-TBP 70.3 % 24-130 " " " " " " " Surrogate: Nitrobenzene-d5 77.8 % 42-110 " " " " " " " Surrogate: 2-FBP 72.6 % 46-116 " " " " " " " "	•	ND		tt	".	11	11	H	**	
Surrogate: Phenol-d6 68.2 % 18-145 " " " " " " " Surrogate: 2,4,6-TBP 70.3 % 24-130 " " " " " " " Surrogate: Nitrobenzene-d5 77.8 % 42-110 " " " " " " " Surrogate: 2-FBP 72.6 % 46-116 " " " " " " " "	Surrogate: 2-FP	69.2 %	40-115			"	"	"	n	
Surrogate: 2,4,6-TBP 70.3 % 24-130 " " " " " " Surrogate: Nitrobenzene-d5 77.8 % 42-110 " " " " " " " Surrogate: 2-FBP 72.6 % 46-116 " " " " " " "	<u> </u>	68.2 %	18-145			"	"	"	"	
Surrogate: Nitrobenzene-d5 77.8 % 42-110 " " " " " Surrogate: 2-FBP 72.6 % 46-116 " " " " "	=		24-130			"	"	"	"	
Surrogate: 2-FBP 72.6 % 46-116 " " " " "						"	"	"	n	
o	=					"	"	"	"	
Surrogate: p-Terphenyl-d14 89.2 % 63-117 " " " " "	Surrogate: p-Terphenyl-d14	89.2 %	63-117			"	"	"	"	

North Creek Analytical - Bothell

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Laura Cacek Fa

Kirk Gendron, Project Manager



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Golder Associates Inc.

18300 NE Union Hill Road, Suite 200

Redmond WA, 98052-3333

Project: Palmer/Landsburg Project

Project Number: 923-100

Project Manager: Gary Zimmerman

Reported:

06/22/00 11:31

Semivolatile Organic Compounds by EPA Method 8270C North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
2 mary to		Dillit	Oillis	Dilution	Datell	ricpared	AllalyZeu	ivictilou	notes
LMW5-051800 (B0E0354-02) Water	Sampled: 05	/18/00 12:30	Received	: 05/19/00 13	3:00				
Acenaphthene	ND	10.0	ug/l	1	0E20008	05/20/00	06/10/00	EPA 8270C	
Acenaphthylene	ND	10.0	"	**	11	11	U	11	
Aniline	ND	10.0	#	tt	**	11	U	n	
Anthracene	ND	10.0	11	11	**	U	114	11	
Benzoic Acid	ND	10.0	Ħ	**	11	n	11	n	
Benzo (a) anthracene	ND	10.0	H	**	11	"	ti	11	
Benzo (b) fluoranthene	ND	10.0	"		**	**	U	11	
Benzo (k) fluoranthene	ND	10.0	tt.	11	tt	U	11	n	
Benzo (ghi) perylene	ND	10.0	n	11	n	11	**	11	
Benzo (a) pyrene	ND	10.0	н	n	11	"	ti .	#	
Benzyl alcohol	ND	10.0	11	n	**	п	II .	ti .	
Bis(2-chloroethoxy)methane	ND	10.0	u	11	"	n	11	11	
Bis(2-chloroethyl)ether	ND	10.0	**	**	11	11	**	11	
Bis(2-chloroisopropyl)ether	ND	10.0	11	**	"	#	Ħ	Ħ	
Bis(2-ethylhexyl)phthalate	ND	50.0	"	U	**	"	n	u	
4-Bromophenyl phenyl ether	ND	10.0	"	H		n	11	"	
Butyl benzyl phthalate	ND	10.0	н	11	11	11	11	u	
Carbazole	ND	10.0	н		**	"	и	u	
4-Chloroaniline	ND	10.0	11	u	"	H	•	n	
2-Chloronaphthalene	ND	10.0	**		II .	11	11	**	
4-Chloro-3-methylphenol	ND	10.0	**	"	11	11	11	n	
2-Chlorophenol	ND	10.0	H	**	11	n	17	11	
4-Chlorophenyl phenyl ether	ND	10.0	11	n	**	n	11	"	
Chrysene	ND	10.0	11	11	11	11	**	tr .	
Dibenz (a,h) anthracene	ND	10.0	**	11	11	11	н	п	
Dibenzofuran	ND	10.0	**	**	**	ti .	11	11	
Di-n-butyl phthalate	ND	10.0	н	11	n	н	**	n .	
1,3-Dichlorobenzene	ND	10.0	**	tt	17	11	tt	п	
1,4-Dichlorobenzene .	ND	10.0		11	11	."	H	**	
1,2-Dichlorobenzene	ND	10.0	"	11	**		11	n	
3,3'-Dichlorobenzidine	ND	10.0	n	11	"	11	11	u	
2,4-Dichlorophenol	ND	10.0	**	"	**	11	tt	n	
Diethyl phthalate	ND	10.0	11	**	u .	11	п	11	
2,4-Dimethylphenol	ND	10.0	"	11	tt	11	n	**	
Dimethyl phthalate	ND	10.0	**	н	**	**	11	**	
4,6-Dinitro-2-methylphenol	ND	10.0	tr	11	11	**	11	tt	
2,4-Dinitrophenol	ND	20.0	11	11	11	ti	11	u	
2,4-Dinitrophenol	ND	10.0	11	71	"	ti	11	0	
2,4-Dilliliotoluciic	עא	10.0		**		••		**	

North Creek Analytical - Bothell

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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Semivolatile Organic Compounds by EPA Method 8270C North Creek Analytical - Bothell

LMWS-051800 (B0E0354-02) Water Sampled: 05/18/00 12:30 Received: 05/19/00 13:00 Section		Reporting								
2,6-Dinitrotoluene	Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Di-n-octyl phthalate	LMW5-051800 (B0E0354-02) Water	Sampled: 05	/18/00 12:30	Received:	05/19/00 13	3:00				
Fluoranthene ND 10.0 " " " " " " " " Fluoranthene ND 10.0 " " " " " " " " " " " " " " " " " "	2,6-Dinitrotoluene	ND	10.0	ug/l	1	0E20008	05/20/00	06/10/00	EPA 8270C	
Fluorene ND 10.0 " " " " " " " " " " " " " " " " " "	Di-n-octyl phthalate	ND	10.0	**	**	11	11	U	Ħ	
Hexachlorobenzene ND 10.0 "	Fluoranthene	ND	10.0	"	"	11	"	11	н	
Hexachlorobutadiene ND 10.0 " " " " " " " " " " " " " "	Fluorene	ND	10.0	#	tt	n	II .	11	и	
Hexachlorocyclopentadiene ND 10.0 "	Hexachlorobenzene	ND	10.0	11	11	11	н	**	11	
Hexachloroethane	Hexachlorobutadiene	ND	10.0	11	**	11	11	11	"	
Indeno (1,2,3-cd) pyrene ND 10.0 " " " " " " " " "	Hexachlorocyclopentadiene	ND	10.0	"	**	"	"	II .	11	
Isophorone	Hexachloroethane	ND	10.0	tt	Ħ	"	***	11	u	
2-Methylnaphthalene ND 10.0 """"""""""""""""""""""""""""""""""""	Indeno (1,2,3-cd) pyrene	ND	10.0	It	11	n	tt	11	11	
2-Methylphenol ND 10.0 " " " " " " " " " " " " " " " " " "	Isophorone	ND	10.0	11	11	11	n	**	"	
2-Methylphenol ND 10.0 " " " " " " " " " " " " " " " " " "	2-Methylnaphthalene	ND	10.0	#	"	11	11	"	"	
Naphthalene		ND	10.0	11	**	**	**	n	u u	
2-Nitroaniline ND 10.0 " " " " " " " " " " " " " " " " " "	3 & 4-Methylphenol	ND	10.0	n	O	tt	n	II	n	
3-Nitroaniline	Naphthalene	ND	10.0	n	II .	n .	II	"	19	
4-Nitroaniline ND 10.0 " " " " " " " " " " " " " " " " " "		ND	10.0	11	11	11	11	"	18	
Nitrobenzene	3-Nitroaniline	ND	10.0	**	"	11	**	Ħ	n	
2-Nitrophenol ND 10.0 " " " " " " " " " " " " " " " " " "	4-Nitroaniline	ND	10.0	"	n	**	"	II	н	
4-Nitrophenol ND 10.0 " " " " " " " " " " " " " " " " " "	Nitrobenzene	ND	10.0	n	H	tt	н	11	11	
N-Nitrosodiphenylamine ND 10.0 """"""""""""""""""""""""""""""""""	2-Nitrophenol	ND	10.0	11	11	U	11	"	tt	
N-Nitrosodi-n-propylamine ND 10.0 " " " " " " " " " " " " " " " " " "	4-Nitrophenol	ND	10.0	11	11	11	11	U	н	
Pentachlorophenol ND 10.0 " " " " " " " " " " " " " " " " " "	N-Nitrosodiphenylamine	ND	10.0	n	***	**	tt	u	11	
Phenanthrene ND 10.0 "	N-Nitrosodi-n-propylamine	ND	10.0	"	Ħ	Ħ	H	"	Ħ	
Phenol ND 10.0 "	Pentachlorophenol	ND	10.0	"	н	11	11	II .	н	
Pyrene ND 10.0 "	Phenanthrene	ND	10.0	tt	11	11	**	11	11	
1,2,4-Trichlorobenzene ND 10.0 "	Phenol	ND	10.0	H	11	11	tt.	**	11	
2,4,5-Trichlorophenol ND 10.0 "<	Pyrene	ND	10.0	11	n	**	11	ii.	ti	
2,4,6-Trichlorophenol ND 10.0 "<	1,2,4-Trichlorobenzene	ND	10.0	"	tt .	n	11	II	n	
Surrogate: 2-FP 78.4 % 40-115 " " " " " Surrogate: Phenol-d6 73.4 % 18-145 " " " " " Surrogate: 2,4,6-TBP 80.3 % 24-130 " " " " " " Surrogate: Nitrobenzene-d5 79.5 % 42-110 " " " " " " Surrogate: 2-FBP 74.6 % 46-116 " " " " " "	2,4,5-Trichlorophenol	ND	10.0	n	n	н	11	II	11	
Surrogate: Phenol-d6 73.4 % 18-145 " " " " " " Surrogate: 2,4,6-TBP 80.3 % 24-130 " " " " " " Surrogate: Nitrobenzene-d5 79.5 % 42-110 " " " " " " Surrogate: 2-FBP 74.6 % 46-116 " " " " " " "	2,4,6-Trichlorophenol	. ND	10.0	, 11	II .	11	n	",	11	
Surrogate: 2,4,6-TBP 80.3 % 24-130 " " " " " Surrogate: Nitrobenzene-d5 79.5 % 42-110 " " " " " Surrogate: 2-FBP 74.6 % 46-116 " " " " " "	Surrogate: 2-FP	78.4 %	40-115			"	"	"	"	
Surrogate: 2,4,6-TBP 80.3 % 24-130 " " " " " " Surrogate: Nitrobenzene-d5 79.5 % 42-110 " " " " " " Surrogate: 2-FBP 74.6 % 46-116 " " " " " " "	Surrogate: Phenol-d6	73.4 %	18-145			"	"	n	"	
Surrogate: Nitrobenzene-d5 79.5 % 42-110 " " " " " Surrogate: 2-FBP 74.6 % 46-116 " " " " " "	-	80.3 %	24-130			"	"	n	"	
Surrogate: 2-FBP 74.6 % 46-116 " " " " "	-	79.5 %	42-110			11	"	n	"	
			46-116			"	"	"	"	
	Surrogate: p-Terphenyl-d14	87.8 %	63-117			"	"	"	"	

North Creek Analytical - Bothell

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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Semivolatile Organic Compounds by EPA Method 8270C North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW2-051800 (B0E0354-03) Water	Sampled: 05/	18/00 15:42	Received	: 05/19/00 1	3:00				
Acenaphthene	ND	10.0	ug/l	1	0E20008	05/20/00	06/10/00	EPA 8270C	
Acenaphthylene	ND	10.0	II	"	н	**	11	11	
Aniline	ND	10.0	11	u	11	H	n	tt	
Anthracene	ND	10.0	11	II	11	11	H .	n	
Benzoic Acid	ND	10.0	**	11	**	17	R	H	
Benzo (a) anthracene	ND	10.0	H	"	11	**	11	fl fl	
Benzo (b) fluoranthene	ND	10.0	11	н	11	ti .	11	11	
Benzo (k) fluoranthene	ND	10.0	11	II	11	n	U	n	
Benzo (ghi) perylene	ND	10.0	**	11	**	11	19	11	
Benzo (a) pyrene	ND	10.0	n	n	н	11	It	11	
Benzyl alcohol	ND	10.0	11	u	11	H	**	Ħ	
Bis(2-chloroethoxy)methane	ND	10.0	12	n	11	U	U	**	
Bis(2-chloroethyl)ether	ND	10.0	"	11	**	11	n	11	
Bis(2-chloroisopropyl)ether	ND	10.0	**	**	п	**	11	11	
Bis(2-ethylhexyl)phthalate	ND	50.0	n	"	n	н	**	n	,
4-Bromophenyl phenyl ether	ND	10.0	II .	U	11	u	u	u	
Butyl benzyl phthalate	ND	10.0	**	11	0	11	n	u	
Carbazole	ND	10.0	**	11	tt.	**	11	u	
4-Chloroaniline	ND	10.0	n n	TI TI	11	n .	n	u	
2-Chloronaphthalene	ND	10.0	н	ti	11	n	n	. 11	
4-Chloro-3-methylphenol	ND	10.0	11	II .	**	11	11	н	
2-Chlorophenol	ND	10.0	11	19	n	0	ti	11	
4-Chlorophenyl phenyl ether	ND	10.0	"	11	11	11	n	II .	
Chrysene	ND	10.0	**	**	11	II	u ·	11	
Dibenz (a,h) anthracene	ND	10.0	ti .	tt	**	**	11	Ħ	
Dibenzofuran	ND	10.0	н	H	u u	11	**	ti .	
Di-n-butyl phthalate	ND	10.0	11	11	H .	11	n	ti .	
1,3-Dichlorobenzene	ND	10.0	**	11	н	17	11	11	
1,4-Dichlorobenzene	ND	. 10.0	11	**	n	Ħ	"	. "	
1,2-Dichlorobenzene	ND	10.0	n	"	**	11	11	п	
3,3'-Dichlorobenzidine	ND	10.0	11	**	11	11	**	11	
2,4-Dichlorophenol	ND	10.0	19	II	"	11	11	11	
Diethyl phthalate	ND	10.0	11	ti	tt.	**	11	**	
2,4-Dimethylphenol	ND	10.0	**	11	**	ŧŧ	11	**	
Dimethyl phthalate	ND	10.0	**	11	**	tt	11	н	
4,6-Dinitro-2-methylphenol	ND	10.0	tt	**	11	tt .	11	11	
2,4-Dinitrophenol	ND	20.0	tt	· ·	11	n	11	11	
2,4-Dinitrotoluene	ND	10.0	11	11	"	11	tt	**	

North Creek Analytical - Bothell

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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Semivolatile Organic Compounds by EPA Method 8270C North Creek Analytical - Bothell

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
LMW2-051800 (B0E0354-03) Water	Sampled: 05	3/18/00 15:42	Received	05/19/00 13	3:00				
2,6-Dinitrotoluene	ND	10.0	ug/l	1	0E20008	05/20/00	06/10/00	EPA 8270C	
Di-n-octyl phthalate	ND	10.0	**	"	**	H	"	II .	
Fluoranthene	ND	10.0	**	"	"	11	11	"	
Fluorene	ND	10.0	11	0	11	u	n	н	
Hexachlorobenzene	ND	10.0	19	11	**	tt	11	n	
Hexachlorobutadiene	ND	10.0	11	11	n	11	11	U	
Hexachlorocyclopentadiene	ND	10.0	**	11	19	11	***	If	
Hexachloroethane	ND	10.0	U	11	11	***	11	11	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	n	**	u	n	u	
Isophorone	ND	10.0	"	11	ti	11	"	n	
2-Methylnaphthalene	ND	10.0	n	11	11	**	п	H	
2-Methylphenol	ND	10.0	IJ	ţi.	11	**	u	11	
3 & 4-Methylphenol	ND	10.0	11	u	**	II .	II .	u	
Naphthalene	ND	10.0	11	II .	11	n	11	II .	
2-Nitroaniline	ND	10.0	11	11	n	11	**	H	
3-Nitroaniline	ND	10.0	н	**	11	tr	u	n.	
4-Nitroaniline	ND	10.0	H	n	**	II .	19	U	
Nitrobenzene	ND	10.0	11	II .	H	11	11	19	
2-Nitrophenol	ND	10.0	**	11*	n .	"	ŧI	#	
4-Nitrophenol	ND	10.0	"	11	19	u	II .	u	
N-Nitrosodiphenylamine	ND	10.0	n n	*1	11	11	11	#	
N-Nitrosodi-n-propylamine	ND	10.0		n	ti	11	tt	tt .	
Pentachlorophenol	ND	10.0	11	u	U	ti ti	n	u	
Phenanthrene	ND	10.0	"	11	H	II	II	11	
Phenol	ND	10.0	"	**	**	н	**	"	
Pyrene	ND	10.0	n	n n	**	17	ti .	II	
1,2,4-Trichlorobenzene	ND	10.0	11	n	tt	"	ti .	ti	
2,4,5-Trichlorophenol	ND	10.0	. "	n	11	"	11	u ·	
2,4,6-Trichlorophenol	ND	10.0 .	**	11	11	11	11		
Surrogate: 2-FP	73.0 %	40-115			"	"	"	"	
Surrogate: Phenol-d6	71.3 %	18-145			"	"	"	"	
Surrogate: 2,4,6-TBP	74.2 %	24-130			"	"	"	"	
Surrogate: Nitrobenzene-d5	74.6 %	42-110			"	"	"	"	
Surrogate: 2-FBP	68.8 %	46-116			"	"	"	"	
Surrogate: p-Terphenyl-d14	86.5 %	63-117			"	"	"	"	

North Creek Analytical - Bothell

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Golder Associates Inc. Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333 Project Manager: Gary Zimmerman 06/22/00 11:31

Semivolatile Organic Compounds by EPA Method 8270C North Creek Analytical - Bothell

A	D	Reporting	TT '	TS'1 .1	D . 1	n :		3.7.1.1	
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW4-051800 (B0E0354-04) Water	Sampled: 05/	/18/00 17:12	Received	: 05/19/00 1	3:00				
Acenaphthene	ND	10.0	ug/l	1	0E20008	05/20/00	06/10/00	EPA 8270C	
Acenaphthylene	ND	10.0	11	11	11	19	17	11	
Aniline	ND	10.0	**	"	11	***	"	11	
Anthracene	ND	10.0	н	II	ti .	m .	u	Ħ	
Benzoic Acid	ND	10.0	11	11	11	11	0	n	
Benzo (a) anthracene	ND	10.0	**	u	**	11	11	n	
Benzo (b) fluoranthene	ND	10.0	II .	tt	n	"	11	11	
Benzo (k) fluoranthene	ND	10.0	19	H	H	ıı	н	11	
Benzo (ghi) perylene	ND	10.0	"	11	11	n	u	11	
Benzo (a) pyrene	ND	10.0	n	n	**	11	11	н	
Benzyl alcohol	ND	10.0	n	0	tt	11	**	n	
Bis(2-chloroethoxy)methane	ND	10.0	11	11	u	n	n	H	
Bis(2-chloroethyl)ether	ND	10.0	"	"	11	n	u	11	
Bis(2-chloroisopropyl)ether	ND	10.0	n	"	**	11	17	"	
Bis(2-ethylhexyl)phthalate	ND	50.0	11	H .	п	**	**	n	
4-Bromophenyl phenyl ether	ND	10.0	**	11	11	ti .	**	H.	
Butyl benzyl phthalate	ND	10.0	**	"	11	U	н	ff.	
Carbazole	ND	10.0	II	tt	, n	"	11	n	
4-Chloroaniline	ND	10.0	11	п	11	u	TI .	11	
2-Chloronaphthalene	ND	10.0	**	11	11	n	u	u	
4-Chloro-3-methylphenol	ND	10.0	11	"	**	11	**	H	
2-Chlorophenol	ND	10.0	II .	II .	n	tt	**	11	
4-Chlorophenyl phenyl ether	ND	10.0	11	n		n	11	u	
Chrysene	ND	10.0	11	**	11	11	**	11	
Dibenz (a,h) anthracene	ND	10.0	11	"	**	"	ti	n	
Dibenzofuran	ND	10.0	n	Ħ	n	ti .	11	11	
Di-n-butyl phthalate	ND	10.0	11	11	н	11	**	**	
1,3-Dichlorobenzene	ND	10.0	**	11	11	11	tr	tt .	
1,4-Dichlorobenzene	ND	10.0	**	"	**	"	11	п	
1,2-Dichlorobenzene	ND	10.0	H	tt.	rr ·	ıı	"	11	•
3,3'-Dichlorobenzidine	ND	10.0	11	11		II	**	"	
2,4-Dichlorophenol	ND	10.0	11	11	19	11	**	u	
Diethyl phthalate	ND	10.0	**	11	11	11	It	11	
2,4-Dimethylphenol	ND	10.0	11	"	11	11	11	11	
Dimethyl phthalate	ND	10.0	11	n	**	**	"	**	
4,6-Dinitro-2-methylphenol	ND	10.0	11	"	11	n	11	ti	
2,4-Dinitrophenol	ND	20.0	"	11	H	н	tr	U	
2,4-Dinitroplication	ND	10.0	"	11	U	ıı	tt	н	
2,7-Diminotoruche	עאו	10.0							

North Creek Analytical - Bothell

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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Semivolatile Organic Compounds by EPA Method 8270C North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
						.			
LMW4-051800 (B0E0354-04) Water	Sampled: 05	/18/00 17:12	Received:	: 05/19/00 13	3:00				
2,6-Dinitrotoluene	ND	10.0	ug/l	1	0E20008	05/20/00	06/10/00	EPA 8270C	
Di-n-octyl phthalate	ND	10.0	"	11	**	**	n	ti .	
Fluoranthene	ND	10.0	11	**	"	11	ti .	U	
Fluorene	ND	10.0	11	II .	11	n	n	11	
Hexachlorobenzene	ND	10.0	"	"	Ħ	11	11	11	
Hexachlorobutadiene	ND	10.0	11	11	n	**	11	11	
Hexachlorocyclopentadiene	ND	10.0	ŧ1	**	11	tt tt	"	11	
Hexachloroethane	ND	10.0	11	n n	11	н	n	U	
Indeno (1,2,3-cd) pyrene	ND	10.0	11	U	11	11	u	н	
Isophorone	ND	10.0	11	11	U	11	11	R	
2-Methylnaphthalene	ND	10.0	11	**	H	"	**	11	
2-Methylphenol	ND	10.0	u	n	11	n	"	11	
3 & 4-Methylphenol	ND	10.0	"	II	n	11	н	0	
Naphthalene	ND	10.0	u	n	**	11	0	н .	
2-Nitroaniline	ND	10.0	11	11	H	Ħ	11	Ħ	
3-Nitroaniline	ND	10.0	"	11	n	Ħ	11	0	
4-Nitroaniline	ND	10.0	"	tt	n	n	**	U	
Nitrobenzene	ND	10.0	"	III	11	11	ti	11	
2-Nitrophenol	ND	10.0	n	Ħ	n	11	U	ti	
4-Nitrophenol	ND	10.0	11	11	n	ŧŧ	11	II .	
N-Nitrosodiphenylamine	ND	10.0	**	tt	II	H .	**	11	
N-Nitrosodi-n-propylamine	ND	10.0	11	**	11	11	ti .	"	
Pentachlorophenol	ND	10.0	**	ıı	11	11	п	u	
Phenanthrene	ND	10.0	tt	n	ti .	11	11	n	
Phenol	ND	10.0	11	"	n	**	**	11	
Pyrene	ND	10.0	11	11	11	n	11	tt	
1,2,4-Trichlorobenzene	ND	10.0	11	"	11	n	Ħ	н	
2,4,5-Trichlorophenol	ND	10.0	**	n	W	11	11	11	
2,4,6-Trichlorophenol	ND	10.0	"	" ,	**	"	11	11	
Surrogate: 2-FP	68.5 %	40-115			"	"	"	"	
Surrogate: Phenol-d6	66.6 %	18-145			"	"	"	"	
Surrogate: 2,4,6-TBP	73.6 %	24-130			"	"	"	11	
Surrogate: Nitrobenzene-d5	71.8 %	42-110			"	"	"	"	
Surrogate: 2-FBP	71.1 %	46-116			"	"	"	"	
Surrogate: p-Terphenyl-d14	89.1 %	63-117			"	n	"	"	

North Creek Analytical - Bothell

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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Semivolatile Organic Compounds by EPA Method 8270C North Creek Analytical - Bothell

	Re	porting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Portal (B0E0354-06) Water	Sampled: 05/18/00 18:30	Received	d: 05/19/00	13:00				Name of the second	
Acenaphthene	ND	10.0	ug/l	1	0E20008	05/20/00	06/10/00	EPA 8270C	
Acenaphthylene	ND	10.0	n	11	"	U	n	50	
Aniline	ND	10.0	"	"	17	11	17	tt	
Anthracene	ND	10.0	11	"	tr	11	TF.	n	
Benzoic Acid	ND	10.0	11	tt.	u	ti	n	TP .	
Benzo (a) anthracene	ND	10.0	"	**	18	II	11	tt .	
Benzo (b) fluoranthene	ND	10.0	**	**	11	19	"	II .	
Benzo (k) fluoranthene	ND	10.0	11	u	u	11	u	#	
Benzo (ghi) perylene	ND	10.0	*	19	19	H	11	u	
Benzo (a) pyrene	ND	10.0	Ħ	"	**	ii.	**	11	
Benzyl alcohol	ND	10.0	n	n	**	11	n	**	
Bis(2-chloroethoxy)methane	ND	10.0	11	11	. "	ti .	II.	u	
Bis(2-chloroethyl)ether	ND	10.0	"	"	17	"	"	n	
Bis(2-chloroisopropyl)ether	ND	10.0	u .	tt	11	11	u u	11	
Bis(2-ethylhexyl)phthalate	ND	50.0	11	11	u	n n	u	н	
4-Bromophenyl phenyl ether	ND	10.0	"	11	n	II .	"	n	
Butyl benzyl phthalate	ND	10.0	u u	11	11	10	u u	н	
Carbazole	ND	10.0	n	O O	п	ti	11	u	
4-Chloroaniline	ND	10.0	**	11	u	11	"	U	
2-Chloronaphthalene	ND	10.0	n	n	· Ir	**	n .	11	
4-Chloro-3-methylphenol	ND	10.0	п	H	u .	O O	19	U	
2-Chlorophenol	ND	10.0	11	11	н	11	**	11	
4-Chlorophenyl phenyl ether	ND	10.0	**	"	11	*1	11	tt.	
Chrysene	ND	10.0	n	Ħ	**	n	**	u u	
Dibenz (a,h) anthracene	ND	10.0	**	II	п	11		**	
Dibenzofuran	ND	10.0	**	11	н	**	11	n	
Di-n-butyl phthalate	ND	10.0	**	"	**	ti .	**	n	
1,3-Dichlorobenzene	ND	10.0	"	"	**	11	tt	**	
1,4-Dichlorobenzene	ND	10.0	11	11		**	11	п	
1,2-Dichlorobenzene	ND	10.0	**	**	"	н	**	**	
3,3'-Dichlorobenzidine	ND	10.0	Ħ	"	11	11	11	**	
2,4-Dichlorophenol	ND	10.0	н	11	Ħ	11	II .	II .	
Diethyl phthalate	ND	10.0	11	n .	н	**	11	11	
2,4-Dimethylphenol	ND	10.0	"		19	u	"	11	
Dimethyl phthalate	ND	10.0	tt	"	11	п	11	н	
4,6-Dinitro-2-methylphenol	ND	10.0	H	"	11	н	n .	II.	
2,4-Dinitrophenol	ND	20.0	11	11	**	11	II	11	
2,4-Dinitrophenor	ND ND	10.0	"	"		"	11	**	
-, Dillill Ololuciic	ND	10.0		11	**			••	

North Creek Analytical - Bothell

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Golder Associates Inc. Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Semivolatile Organic Compounds by EPA Method 8270C North Creek Analytical - Bothell

Di-n-octyl phthalate	Analyte	Result	leporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Di-n-octyl phthalate	Portal (B0E0354-06) Water	Sampled: 05/18/00 18:30	Receive	d: 05/19/00	13:00				2.00/21000	
Fluoranthene ND 10.0 " " " " " " " " " Fluorene ND 10.0 " " " " " " " " " " " " " " " " " "	2,6-Dinitrotoluene	ND	10.0	ug/l	1	0E20008	05/20/00	06/10/00	EPA 8270C	*****
Fluorene ND 10.0 " " " " " " " " " " " " " " " " " "	Di-n-octyl phthalate	ND	10.0	11	"	11	11	**	u .	
Hexachlorobenzene ND 10.0 " " " " " " " " " " " " "	Fluoranthene	ND	10.0	11	"	tt	"	п	11	
Hexachlorobutadiene ND 10.0 " " " " " " " " " " " " " " " " " "	Fluorene	ND	10.0	tt	II	n	tt	11	u	
Hexachlorocyclopentadiene ND 10.0 "	Hexachlorobenzene	ND	10.0	"	11	. #	n	11	n	
Hexachloroethane ND 10.0 " " " " " " " " " " " " " " " " " "	Hexachlorobutadiene	ND	10.0	11	11	H	"	u	**	
Indeno (1,2,3-cd) pyrene ND 10.0 "	Hexachlorocyclopentadiene	ND	10.0	ti	H	11	u	II .	n	
Isophorone	Hexachloroethane	ND	10.0	lt .	11	**	**	11	11	
2-Methylnaphthalene	Indeno (1,2,3-cd) pyrene	ND	10.0	n	n	n	n .	**	**	
2-Methylphenol ND 10.0 " " " " " " " " " " " " " " " " " "	Isophorone	ND	10.0	U	11	12	u	"	u	
3 & 4-Methylphenol ND 10.0 " <td>2-Methylnaphthalene</td> <td>ND</td> <td>10.0</td> <td>11</td> <td>H</td> <td>**</td> <td>11</td> <td>**</td> <td>н</td> <td></td>	2-Methylnaphthalene	ND	10.0	11	H	**	11	**	н	
Naphthalene ND 10.0 " " " " " " " " " " " " " " " " " "	2-Methylphenol	ND	10.0	ŧI	U	0	ti .	0	11	
2-Nitroaniline ND 10.0 " " " " " " " " " " " " " " " " " "	3 & 4-Methylphenol	ND	10.0	ti .	19	**	11	11	n .	
3-Nitroaniline	Naphthalene	ND	10.0	"	tt	n	**	11	H	
4-Nitroaniline ND 10.0 " " " " " " " " " " " " " " " " " "	2-Nitroaniline	ND	10.0	"	II .	U	н	11	n	
Nitrobenzene	3-Nitroaniline	ND	10.0	n	11	11	11	u .	n	
2-Nitrophenol ND 10.0 " " " " " " " " " " " " " " " " " "	4-Nitroaniline	ND	10.0	11	11	**	11	**	It	
4-Nitrophenol ND 10.0 " " " " " " " " " " " " " " " " " "	Nitrobenzene	ND	10.0	"	11	ıı	11		ti	
N-Nitrosodiphenylamine ND 10.0 """"""""""""""""""""""""""""""""""	2-Nitrophenol	ND	10.0	n	"	#	"		n	
N-Nitrosodi-n-propylamine ND 10.0 " " " " " " " " " " " " " " " " " "	4-Nitrophenol	ND	10.0	19	II.	0	n	n	n	
Pentachlorophenol ND 10.0 " " " " " " " " " " " " " " " " " "	N-Nitrosodiphenylamine	ND	10.0	n	II.	11	11	n	n	
Phenanthrene ND 10.0 " " " " " " " " " " " " " " " " " "	N-Nitrosodi-n-propylamine	ND	10.0	**	11	tr .	11	n	11	
Phenol ND 10.0 " " " " " " " " " " " " " " " " " "	Pentachlorophenol	ND	10.0	H	**	н	u	II .	tt	
Pyrene ND 10.0 " " " " " " " " " " " " " " " " " "	Phenanthrene	ND	10.0	11	n	II .	11	10	II	
1,2,4-Trichlorobenzene ND 10.0 " " " " " " " " " " " " " " " " " "	Phenol	ND	10.0	"	11	11	**	n	11	
2,4,5-Trichlorophenol ND 10.0 " " " " " " " " " " " " " " " " " "	Pyrene	ND	10.0	H	"	n	n	II	u	
2,4,6-Trichlorophenol ND 10.0 "<	1,2,4-Trichlorobenzene	ND	10.0	11	11	n	11	11	u	
Surrogate: 2-FP 63.2 % 40-115 " " " " " Surrogate: Phenol-d6 60.7 % 18-145 " " " " " Surrogate: 2,4,6-TBP 73.2 % 24-130 " " " " " " Surrogate: Nitrobenzene-d5 68.8 % 42-110 " " " " " " Surrogate: 2-FBP 67.8 % 46-116 " " " " " "	2,4,5-Trichlorophenol	ND	10.0	**	11	11	u u	H	**	
Surrogate: Phenol-d6 60.7 % 18-145 " " " " " " " Surrogate: 2,4,6-TBP 73.2 % 24-130 " " " " " " " Surrogate: Nitrobenzene-d5 68.8 % 42-110 " " " " " " " Surrogate: 2-FBP 67.8 % 46-116 " " " " " " "	2,4,6-Trichlorophenol	. ND	10.0	н	**	**	۳.	II	п	
Surrogate: 2,4,6-TBP 73.2 % 24-130 " " " " " " Surrogate: Nitrobenzene-d5 68.8 % 42-110 " " " " " " Surrogate: 2-FBP 67.8 % 46-116 " " " " " "	Surrogate: 2-FP	63.2 % 4	0-115			"	"	"	"	
Surrogate: Nitrobenzene-d5 68.8 % 42-110 " " " " " Surrogate: 2-FBP 67.8 % 46-116 " " " " "	Surrogate: Phenol-d6	60.7 %	8- <i>145</i>			"	"	"	"	
Surrogate: Nitrobenzene-d5 68.8 % 42-110 " " " " " Surrogate: 2-FBP 67.8 % 46-116 " " " " "	Surrogate: 2,4,6-TBP	73.2 % 2	4-130			"	"	"	"	
Surrogate: 2-FBP 67.8 % 46-116 " " " "	Surrogate: Nitrobenzene-d5	68.8 % 4.	2-110			"	"	"	"	
· ·	Surrogate: 2-FBP	67.8 % 4	6-116			"	"	"	"	
	Surrogate: p-Terphenyl-d14	94.4 % 6.	3-117			"	"	"	"	

North Creek Analytical - Bothell

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Laura Cacek for

Kirk Gendron, Project Manager



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Golder Associates Inc.

Redmond WA, 98052-3333

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100 Project Manager: Gary Zimmerman Reported:

06/22/00 11:31

Conventional Chemistry Parameters by APHA/EPA Methods North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW3-051800 (B0E0354-01) Water	Sampled: 05/	18/00 10-15	Pacaivad: 0			1			2.300
Bicarbonate Alkalinity	155		ng/L as CaCO3	1	0E30024	05/30/00	05/30/00	SM 2320B	
Carbonate Alkalinity	ND	5.00 1	ng/L as CaCO3	1	UL30024	03/30/00	"	3W1_232UB	
Hydroxide Alkalinity	ND	5.00	"	11	n	li .	"	11	
Total Alkalinity	155	5.00	**	11	**	11	и	n	
Cyanide (total)	ND	0.0100	mg/l	**	0E22019	05/22/00	05/22/00	EPA 9010B	
Fluoride	ND	0.100	11	Ħ	0F01010	06/01/00	06/01/00	EPA 340.2	
Hardness	159	1.00m	ig eq. CaCO3/L	11	0E20005	05/20/00	06/08/00	SM 2340B	
Nitrate/Nitrite-Nitrogen	ND	10.0	ug/l as N	**	0E31004	05/30/00	05/30/00	EPA 353.2	
Total Dissolved Solids	180	10	mg/l	u	0E30033	05/24/00	05/27/00	EPA 160.1	
LMW5-051800 (B0E0354-02) Water	Sampled: 05/	18/00 12:30	Received: 0	5/19/00 1	3:00				,
Bicarbonate Alkalinity	476	5.00 m	ng/L as CaCO3	1	0E30024	05/30/00	05/30/00	SM 2320B	***************************************
Carbonate Alkalinity	ND	5.00	"	н	u	**	11	"	
Hydroxide Alkalinity	ND	5.00	"	17	11	н	**	"	
Total Alkalinity	476	5.00	n	tt	n	**	II	tt	
Cyanide (total)	ND	0.0100	mg/l	u	0E22019	05/22/00	05/22/00	EPA 9010B	
Fluoride	0.125	0.100	11	11	0F01010	06/01/00	06/01/00	EPA 340.2	
Hardness	509	1.00m	g eq. CaCO3/L	"	0E20005	05/20/00	06/08/00	SM 2340B	
Nitrate/Nitrite-Nitrogen	ND	10.0	ug/l as N	tt	0E31004	05/30/00	05/30/00	EPA 353.2	
Total Dissolved Solids	490	10	mg/l	19	0E30033	05/24/00	05/27/00	EPA 160.1	
LMW2-051800 (B0E0354-03) Water	Sampled: 05/	18/00 15:42	Received: 05	5/19/00 13	3:00				
Bicarbonate Alkalinity	644	5.00 m	ng/L as CaCO3	1	0E30024	05/30/00	05/30/00	SM 2320B	
Carbonate Alkalinity	ND	5.00	11	11	tt	**	u	11	
Hydroxide Alkalinity	ND	5.00	"	11	II	Ħ	11	"	
Total Alkalinity	644	5.00	"	11	11	11	"	II .	
Cyanide (total)	ND	0.0100	mg/l	n	0E22019	05/22/00	05/22/00	EPA 9010B	
Fluoride	ND	0.100	Ħ	"	0F01010	06/01/00	06/01/00	EPA 340.2	
Hardness	646	1.00m	g eq. CaCO3/L	"	0E20005	05/20/00	06/08/00	SM 2340B	
Nitrate/Nitrite-Nitrogen	ŊD	10.0	ug/l as N	TT .	0E31004	05/30/00	05/30/00 -	EPA 353.2	
Total Dissolved Solids	610	10	mg/l	n	0E30033	05/24/00	05/27/00	EPA 160.1	

North Creek Analytical - Bothell

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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Conventional Chemistry Parameters by APHA/EPA Methods North Creek Analytical - Bothell

		Reporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW4-051800 (B0E0354-04) Water	Sampled: 05/1	8/00 17:12	Received: 0	5/19/00 1	3:00				
Bicarbonate Alkalinity	657	5.00 m	ıg/L as CaCO3	1	0E30024	05/30/00	05/30/00	SM 2320B	
Carbonate Alkalinity	ND	5.00	**	11	"	H	n	n	
Hydroxide Alkalinity	ND	5.00	n	**	11	11	11	11	
Total Alkalinity	657	5.00	"	tt	**	11	"	Ħ	
Cyanide (total)	ND	0.0100	mg/l	11	0E22019	05/22/00	05/22/00	EPA 9010B	
Fluoride	ND	0.100	II .	**	0F01010	06/01/00	06/01/00	EPA 340.2	
Hardness	693	1.00m	g eq. CaCO3/L	. "	0E20005	05/20/00	06/08/00	SM 2340B	
Nitrate/Nitrite-Nitrogen	24.9	10.0	ug/I as N	H	0E31004	05/30/00	05/30/00	EPA 353.2	
Total Dissolved Solids	650	10	mg/l	n	0E30033	05/24/00	05/27/00	EPA 160.1	
Portal (B0E0354-06) Water Sample	ed: 05/18/00 18:3	0 Receive	d: 05/19/00 1	3:00					
Bicarbonate Alkalinity	395	5.00 m	g/L as CaCO3	1	0E30024	05/30/00	05/30/00	SM 2320B	
Carbonate Alkalinity	ND	5.00	u	**	**	11	**	H	
Hydroxide Alkalinity	ND	5.00	**	n	н	n	**	n .	
Total Alkalinity	395	5.00	**	11	"	11	u	U	
Cyanide (total)	ND	0.0100	mg/l	11	0E31021	05/31/00	05/31/00	EPA 9010B	
Fluoride	ND	0.100	11	tt	0F01010	06/01/00	06/01/00	EPA 340.2	
Hardness	435	1.00 mg	g eq. CaCO3/L	11	0E20005	05/20/00	06/08/00	SM 2340B	
Nitrate/Nitrite-Nitrogen	ND	10.0	ug/l as N	11	0E31004	05/30/00	05/30/00	EPA 353.2	
Total Dissolved Solids	630	10	mg/l	n	0E30033	05/24/00	05/27/00	EPA 160.1	

North Creek Analytical - Bothell

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Golder Associates Inc.

18300 NE Union Hill Road, Suite 200

Redmond WA, 98052-3333

Project: Palmer/Landsburg Project

Project Number: 923-100

Reported: Project Manager: Gary Zimmerman 06/22/00 11:31

Anions by EPA Method 300.0 North Creek Analytical - Bothell

	R	eporting							
Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
LMW3-051800 (B0E0354-01) Water	Sampled: 05/18/	00 10:15	Received:	: 05/19/00 1	3:00				
Chloride	2.02	0.200	mg/l	1	0E22008	05/20/00	05/20/00	EPA 300.0	
Sulfate	7.51	0.200	II	"	11	"	11	n	
LMW5-051800 (B0E0354-02) Water	Sampled: 05/18/	00 12:30	Received:	05/19/00 1	3:00				
Chloride	2.25	0.200	mg/l	1	0E22008	05/20/00	05/20/00	EPA 300.0	
Sulfate	32.6	1.00	U	5	0E24009	05/23/00	05/23/00	tt	
LMW2-051800 (B0E0354-03) Water	Sampled: 05/18/	00 15:42	Received:	05/19/00 1	3:00				
Chloride	6.74	0.200	mg/l	1	0E22008	05/20/00	05/20/00	EPA 300.0	
Sulfate	6.47	0.200	n	"	"	"	II .	II .	
LMW4-051800 (B0E0354-04) Water	Sampled: 05/18/	00 17:12	Received:	05/19/00 1	3:00				
Chloride	6.39	0.200	mg/l	1	0E22008	05/20/00	05/20/00	EPA 300.0	
Sulfate	9.01	0.200	H	"	"	**	u	n n	
Portal (B0E0354-06) Water Sampled	I: 05/18/00 18:30	Received	d: 05/19/00	13:00					<i>t</i>
Chloride	2.47	0.200	mg/l	1	0E22008	05/20/00	05/20/00	EPA 300.0	
Sulfate	20.0	0.800	ti	4	11	**	ti .	n ·	

North Creek Analytical - Bothell

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Laura Cacek for

Kirk Gendron, Project Manager



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Golder Associates Inc.

Project: Palmer/Landsburg Project

Spike

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reporting

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

RPD

Hydrocarbon Identification by Washington DOE Method NWTPH-HCID - Quality Control North Creek Analytical - Bothell

Analyte		Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 0E21002:	Prepared 05/21/00	Using EF	PA 3520C/	600 Series							
Blank (0E21002-B)	LK1)										
Gx Range Hydrocarbo	ns	ND	0.250	mg/l							78784.4.4
Kerosene Range Hydr	ocarbons	ND	0.630	u							
Diesel Range Hydroca	rbons	ND	0.630	n							
Insulating Oil Range I	Hydrocarbons	ND	0.630	11							
Heavy Fuel Oil Range	Hydrocarbons	ND	0.630	n							
Lube Oil Range Hydro	ocarbons	ND	0.630	Ħ							
Surrogate: 2-FBP		DET		"	0.320		62.8	50-150			

North Creek Analytical - Bothell

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Kirk Gendron, Project Manager



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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200 Redmond WA, 98052-3333

Project Number: 923-100

Reported:

Project Manager: Gary Zimmerman

06/22/00 11:31

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

Blank (0E22009-BLK1)	Analyte		Result	Reporting Limit	Units	Spike	Source	%REC	%REC	DDD	RPD	Notes
Blank (0E22009-BLK1) Aluminum	Allalyte		Result	Lillit	Units	Level	Result	70KEC	Limits	KPD	Limit	Notes
Aluminum ND 0.250 mg/l Calcium ND 0.250 " Iron ND 0.150 " Iron ND 0.150 " NEgensium ND 0.000 " Nickel ND 0.000 " No 0.500	Batch 0E22009:	Prepared 05/22/00	Using El	PA 3005A								
Calcium ND 0.250 " Iron ND 0.150 " Magnesium ND 0.100 " Nickel ND 0.0300 " ND 0.500 " Silicon ND 0.500 " Silicon ND 0.500 " Sodium ND 0.500 " LCS (0E22009-BS1) Aluminum 9,80 0.250 mg/l 10.0 98.0 80-120 Calcium 10.2 0.100 " 10.0 103 80-120 Magnesium 10.2 0.100 " 10.0 103 80-120 Sodium 10.0 0.500 " 10.0 103 80-120 Vickel 10.2 0.0300 " 10.0 102 80-120 Sodium 10.0 0.500 " 10.0 103 80-120 LCS (0E22009-BS2) LCS (0E22009-BS2) Solicon 10.0 0.500 " 10.0 103 80-120 Magnesium 10.0 0.500 " 10.0 100 80-120 Cotor 10.0 0.500 " 10.0 100 80-120 Magnesium 10.0 0.500 " 10.0 100 80-120 Cotor 10.0 0.500 " 10.0 100 80-120 Cotor 10.0 0.500 " 10.0 100 80-120 Cotor 10.0 0.500 " 10.0 100 80-120 Cotor 10.0 0.500 " 10.0 100 80-120 Cotor 10.0 0.500 " 10.0 100 80-120 Cotor 10.0 10.0 100 80-120 Matrix Spike (0E22009-MS1) Matrix Spike (0E22009-MS1) Aluminum 9,56 0.250 mg/l 10.0 ND 95.6 80-120 Calcium 125 0.250 " 10.0 126 -10.0 80-120 Calcium 125 0.250 " 10.0 ND 98.5 80-120 Magnesium 80.9 0.100 " 10.0 ND 98.5 80-120 Magnesium 80.	Blank (0E22009-Bl	LK1)										
Magnesium	Aluminum		ND	0.250	mg/l					,,		
Magnesium ND 0.100 " Nickel ND 0.0300 " Potassium ND 1.00 " Silitoon ND 0.500 " Sodium ND 0.500 " LCS (0E22009-BS1) **** ***** Aluminum 9.80 0.250 mg/l 10.0 98.0 80-120 Calcium 9.92 0.250 " 10.0 99.2 80-120 Calcium 9.92 0.250 " 10.0 99.2 80-120 Magnesium 10.3 0.150 " 10.0 103 80-120 Magnesium 10.2 0.100 " 10.0 102 80-120 Nickel 10.2 0.0300 " 10.0 102 80-120 Voltassium 34.8 1.00 " 30.0 116 80-120 LCS (0E22009-BS2) Silicon 9.38 0.500 mg/l 10.0 ND </td <td>Calcium</td> <td></td> <td>ND</td> <td>0.250</td> <td>11</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Calcium		ND	0.250	11							
Nickel ND 0.0300 " Potassium ND 1.00 " Silicon ND 0.500 " Sodium ND 0.500 " LCS (0E22009-BS1) Aluminum 9.80 0.250 mg/l 10.0 98.0 80-120 Calcium 9.92 0.250 " 10.0 103 80-120 Iron 10.3 0.150 " 10.0 103 80-120 Magnesium 10.2 0.100 " 10.0 102 80-120 Nickel 10.2 0.0300 " 10.0 102 80-120 Potassium 34.8 1.00 " 30.0 116 80-120 Sodium 10.0 0.500 " 10.0 100 80-120 LCS (0E22009-BS2) Silicon 9.38 0.500 mg/l 10.0 93.8 80-120 LCS (0E22009-BS2) Aluminum 9.56 0.250 mg/l 10.0 ND 93.8 80-120 Matrix Spike (0E22009-MS1) Source: B0E0354-03 Aluminum 9.56 0.250 mg/l 10.0 ND 95.6 80-120 Calcium 125 0.250 " 10.0 126 -10.0 80-120 Aluminum 9.85 0.150 " 10.0 ND 98.5 80-120 Matrix Spike (0E22009-MS1) Aluminum 8.80 0.100 " 10.0 ND 98.5 80-120 Magnesium 80.9 0.100 " 10.0 ND 98.5 80-120 Magnesium 80.9 0.100 " 10.0 ND 98.5 80-120 Magnesium 80.9 0.100 " 10.0 ND 98.5 80-120 Magnesium 80.9 0.100 " 10.0 ND 98.5 80-120 Magnesium 80.9 0.100 " 10.0 ND 93.4 80-120 Potassium 39.9 1.00 " 10.0 ND 93.4 80-120	Iron		ND	0.150	**							
Potassium ND 1.00 "	Magnesium		ND	0.100	tt							
Solition ND 0.500 " Solition ND 0.500 " Solition ND 0.500 " Solition ND 0.500 " Solition ND 0.500 " Solition ND 0.500 " Solition Soliti	Nickel		ND	0.0300	"							
ND 0.500 "	Potassium		ND	1.00	"							
Calcium 9.80 0.250 mg/l 10.0 98.0 80-120	Silicon		ND	0.500	n .							
Aluminum 9.80 0.250 mg/l 10.0 98.0 80-120 Calcium 9.92 0.250 " 10.0 99.2 80-120 fron 10.3 0.150 " 10.0 103 80-120 Magnesium 10.2 0.100 " 10.0 102 80-120 Nickel 10.2 0.0300 " 10.0 102 80-120 Potassium 34.8 1.00 " 30.0 116 80-120 Sodium 10.0 0.500 " 10.0 100 80-120 LCS (0E22009-BS2) Silicon 9.38 0.500 mg/l 10.0 93.8 80-120 Matrix Spike (0E22009-MS1) Aluminum 9.56 0.250 mg/l 10.0 ND 95.6 80-120 Calcium 125 0.250 " 10.0 126 -10.0 80-120 Calcium 125 0.250 " 10.0 ND 98.5 80-120 Magnesium 80.9 0.100 " 10.0 ND 98.5 80-120 Magnesium 80.9 0.100 " 10.0 ND 93.4 80-120 Potassium 39.9 1.00 " 30.0 4.76 117 80-120	Sodium		ND	0.500	19							
Calcium	LCS (0E22009-BS1)										
Tron	Aluminum		9.80	0.250	mg/l	10.0		98.0	80-120	***************************************		
Magnesium 10.2 0.100 " 10.0 102 80-120 Nickel 10.2 0.0300 " 10.0 102 80-120 Potassium 34.8 1.00 " 30.0 116 80-120 Sodium 10.0 0.500 " 10.0 100 80-120 LCS (0E22009-BS2) Silicon 9.38 0.500 mg/l 10.0 93.8 80-120 Matrix Spike (0E22009-MS1) Source: B0E0354-03 Aluminum 9.56 0.250 mg/l 10.0 ND 95.6 80-120 Calcium 125 0.250 " 10.0 126 -10.0 80-120 Magnesium 9.85 0.150 " 10.0 ND 98.5 80-120 Magnesium 80.9 0.100 " 10.0 ND 98.5 80-120 Magnesium 80.9 0.100 " 10.0 ND 98.5 80-120 Magnesium 39.9 1.00 " 30.0 4.76 117 80-120 Potassium 39.9 1.00 " 30.0 4.76 117 80-120	Calcium		9.92	0.250	11	10.0		99.2	80-120			
Nickel 10.2 0.0300 " 10.0 102 80-120 Potassium 34.8 1.00 " 30.0 116 80-120 Sodium 10.0 0.500 " 10.0 100 80-120 LCS (0E22009-BS2) Silicon 9.38 0.500 mg/l 10.0 93.8 80-120 Matrix Spike (0E22009-MS1) Aluminum 9.56 0.250 mg/l 10.0 ND 95.6 80-120 Calcium 125 0.250 " 10.0 126 -10.0 80-120 Tron 9.85 0.150 " 10.0 ND 98.5 80-120 Magnesium 80.9 0.100 " 10.0 ND 98.5 80-120 Magnesium 80.9 0.100 " 10.0 ND 93.4 80-120 Otassium 39.9 1.00 " 30.0 4.76 117 80-120	Iron		10.3	0.150	11	10.0		103	80-120			
Potassium 34.8 1.00 " 30.0 116 80-120	Magnesium		10.2	0.100	tt	10.0		102	80-120			
Sodium 10.0 0.500 " 10.0 100 80-120	Nickel		10.2	0.0300	tt	10.0		102	80-120			
LCS (0E22009-BS2) Silicon 9.38 0.500 mg/l 10.0 93.8 80-120 Matrix Spike (0E22009-MS1) Aluminum 9.56 0.250 mg/l 10.0 ND 95.6 80-120 Calcium 125 0.250 " 10.0 126 -10.0 80-120 Q-1: ron 9.85 0.150 " 10.0 ND 98.5 80-120 Magnesium 80.9 0.100 " 10.0 ND 98.5 80-120 Nickel 9.34 0.0300 " 10.0 ND 93.4 80-120 Potassium 39.9 1.00 " 30.0 4.76 117 80-120	Potassium		34.8	1.00	11	30.0		116	80-120			
Solution 9.38 0.500 mg/l 10.0 93.8 80-120	Sodium		10.0	0.500	**	10.0		100	80-120			
Matrix Spike (0E22009-MS1) Source: B0E0354-03 Aluminum 9.56 0.250 mg/l 10.0 ND 95.6 80-120 Calcium 125 0.250 " 10.0 126 -10.0 80-120 Q-13 ron 9.85 0.150 " 10.0 ND 98.5 80-120 Magnesium 80.9 0.100 " 10.0 76.7 42.0 80-120 Q-13 Nickel 9.34 0.0300 " 10.0 ND 93.4 80-120 Potassium 39.9 1.00 " 30.0 4.76 117 80-120	LCS (0E22009-BS2)										
Aluminum 9.56 0.250 mg/l 10.0 ND 95.6 80-120 Calcium 125 0.250 " 10.0 126 -10.0 80-120 Q-1: ron 9.85 0.150 " 10.0 ND 98.5 80-120 Magnesium 80.9 0.100 " 10.0 76.7 42.0 80-120 Q-1: Nickel 9.34 0.0300 " 10.0 ND 93.4 80-120 Potassium 39.9 1.00 " 30.0 4.76 117 80-120	Silicon		9.38	0.500	mg/l	10.0		93.8	80-120			
Calcium 125 0.250 " 10.0 126 -10.0 80-120 Q-12 (ron 9.85 0.150 " 10.0 ND 98.5 80-120 Magnesium 80.9 0.100 " 10.0 76.7 42.0 80-120 Q-13 (Nickel 9.34 0.0300 " 10.0 ND 93.4 80-120 Potassium 39.9 1.00 " 30.0 4.76 117 80-120	Matrix Spike (0E22	009-MS1)					Source: B	0E0354-0	3			
ron 9.85 0.150 " 10.0 ND 98.5 80-120 Magnesium 80.9 0.100 " 10.0 76.7 42.0 80-120 Q-1: Nickel 9.34 0.0300 " 10.0 ND 93.4 80-120 Potassium 39.9 1.00 " 30.0 4.76 117 80-120	Aluminum		9.56	0.250	mg/l	10.0	ND	95.6	80-120			
Magnesium 80.9 0.100 " 10.0 76.7 42.0 80-120 Q-1: Nickel 9.34 0.0300 " 10.0 ND 93.4 80-120 Potassium 39.9 1.00 " 30.0 4.76 117 80-120	Calcium		125	0.250	п	10.0	126	-10.0	80-120			Q-15
Nickel 9.34 0.0300 " 10.0 ND 93.4 80-120 Potassium 39.9 1.00 " 30.0 4.76 117 80-120	Iron		9.85	0.150	11	10.0	ND	98.5	80-120			
Potassium : 39.9 1.00 " 30.0 4.76 117 80-120	Magnesium		80.9	0.100	11	10.0	76.7	42.0	80-120			Q-15
	Nickel		9.34	0.0300	**	10.0	ND	93.4	80-120			·
Godium 35.1 0.500 " 10.0 28.3 68.0 80-120 Q-13	Potassium		39.9	1.00	u	30.0	4.76	117 ·	80-120			
	Sodium		35.1	0.500	n .	10.0	28.3	68.0	80-120			Q-13

North Creek Analytical - Bothell

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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

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

		Reporting		Spike	Source		%REC		RPD	******
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Prepared 05/22/00	Using El	PA 3005A		-						
009-MS2)					Source: E	30E0354-0)3			
	20.1	0.500	mg/l	10.0	9.74	104	80-120		PPMR	
E22009-MSD1)					Source: E	30E0354-0)3			
	9.85	0.250	mg/l	10.0	ND	98.5	80-120	2.99	20	
	125	0.250	n.	10.0	126	-10.0	80-120	0	20	Q-1:
	9.99	0.150	11	10.0	ND	99.9	80-120	1.41	20	
	81.8	0.100	"	10.0	76.7	51.0	80-120	1.11	20	Q-1:
	9.37	0.0300	"	10.0	ND	93.7	80-120	0.321	20	
	39.5	1.00	11	30.0	4.76	116	80-120	1.01	20	
	34.8	0.500	17	10.0	28.3	65.0	80-120	0.858	20	Q-13
E22009-MSD2)					Source: B	0E0354-0)3			
, ,	20.1	0.500	mg/l	10.0	9.74	104	80-120	0	20	
)	Prepared 05/22/00 009-MS2) 0E22009-MSD1)	Result Prepared 05/22/00 Using El 009-MS2) 20.1 0E22009-MSD1) 9.85 125 9.99 81.8 9.37 39.5 34.8 0E22009-MSD2)	Result Limit Prepared 05/22/00 Using EPA 3005A 009-MS2) 20.1 0.500 0E22009-MSD1) 9.85 0.250 125 0.250 9.99 0.150 81.8 0.100 9.37 0.0300 39.5 1.00 34.8 0.500	Result Limit Units Prepared 05/22/00 Using EPA 3005A 009-MS2) 20.1 0.500 mg/l 20.250 mg/l 125 0.250 " 9.99 0.150 " 81.8 0.100 " 9.37 0.0300 " 39.5 1.00 " 34.8 0.500 "	Result Limit Units Level	Result Limit Units Level Result	Result Limit Units Level Result %REC	Result Limit Units Level Result %REC Limits	Result Limit Units Level Result %REC Limits RPD	Result Limit Units Level Result %REC Limits RPD Limit

Batch 0E23031:	Prepared 05/23/00	Using E	PA 3005A			
Blank (0E23031-B)	LK1)					
Antimony		ND	0.00100	mg/l	 	
Arsenic		ND	0.00100	**		
Barium		ND	0.00100	tt		
Beryllium		ND	0.00100	tt		
Cadmium		ND	0.00100	н		
Chromium		ND	0.00100	11		
Cobalt		ND	0.00100	**		
Copper		ND	0.00100	tt .		
Lead		ND	0.00100	U		
Manganese		ND	0.0100	n		
Nickel		ŃD	0.00100	11		
Selenium		ND	0.00100	"		
Silver		ND	0.00100	n		
Γhallium		ND	0.00100	11		
Vanadium		ND	0.00100	11		
Zinc		0.0102	0.0100	**		

North Creek Analytical - Bothell

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Golder Associates Inc.

18300 NE Union Hill Road, Suite 200

Redmond WA, 98052-3333

Project: Palmer/Landsburg Project

Project Number: 923-100

Reported:

06/22/00 11:31

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

Project Manager: Gary Zimmerman

			Reporting		Spike	Source		%REC		RPD	
Analyte		Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 0E23031:	Prepared 05/23/00	Using E	EPA 3005A								
LCS (0E23031-BS1)							,				
Antimony		0.193	0.00100	mg/l	0.200		96.5	80-120			
Arsenic		0.195	0.00100	11	0.200		97.5	80-120			
Barium		0.216	0.00100	11	0.200		108	80-120			
Beryllium		0.197	0.00100	**	0.200		98.5	80-120			
Cadmium		0.201	0.00100	u	0.200		101	80-120			
Chromium		0.198	0.00100	11	0.200		99.0	80-120			
Cobalt		0.191	0.00100	"	0.200		95.5	80-120			
Copper		0.204	0.00100	н	0.200		102	80-120			
Lead		0.207	0.00100	n	0.200		103	80-120			
Manganese		0.192	0.0100	11 .	0.200		96.0	80-120			
Nickel		0.193	0.00100	"	0.200		96.5	80-120			
Selenium		0.195	0.00100	**	0.200		97.5	80-120			
Silver		0.199	0.00100	II.	0.200		99.5	80-120			
Thallium		0.216	0.00100	O	0.200		108	80-120			
Vanadium		0.219	0.00100	11	0.200		109	80-120			
Zinc		0.204	0.0100	**	0.200		102	80-120			
Matrix Spike (0E230	31-MS1)					Source: B	0E0354-0	1			
Antimony		0.0992	0.00100	mg/l	0.100	ND	98.8	75-125	***************************************		
Arsenic		0.219	0.00100	11	0.200	ND	109	75-125			
Barium		0.292	0.00100	**	0.200	0.0751	108	75-125			
Beryllium		0.212	0.00100	"	0.200	ND	106	75-125			
Cadmium		0.210	0.00100	**	0.200	ND	105	75-125			
Chromium		0.204	0.00100	n	0.200	ND	102	75-125			
Cobalt		0.193	0.00100	H	0.200	ND	96.4	75-125			
Copper		0.205	0.00100	11	0.200	ND	102	75-125			
Manganese		0.237	0.0100	11	0.200	0.0421	97.4	75-125		•	
Nickel		0.197	0.00100	**	0.200	0.00107	98.0	75-125			
Selenium		0.216	0.00100	**	0.200	ND	108	75-125			
Vanadium		0.239	0.00100	tt	0.200	ND	119	75-125			
Zinc		0.215	0.0100	17	0.200	ND	106	75-125			

North Creek Analytical - Bothell

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Laura Cacek for



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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Dissolved Metals by EPA 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 0E23031:	Prepared 05/23/00		PA 3005A								
Matrix Spike (0E23						Source: E	30E0354-0)2			
Lead		0.231	0.00100	mg/l	0.200	ND	116	75-125			547 W
Silver		0.184	0.00100	"	0.200	ND	92.0	75-125			
Thallium		0.222	0.0100	11	0.200	ND	111	75-125			
Matrix Spike Dup ((0E23031-MSD1)					Source: E	80E0354-0)1			
Antimony	***************************************	0.0938	0.00100	mg/l	0.100	ND	93.4	75-125	5.60	20	***************************************
Arsenic		0.209	0.00100	11	0.200	ND	104	75-125	4.67	20	
Barium		0.284	0.00100	**	0.200	0.0751	104	75-125	2.78	20	
Beryllium		0.193	0.00100	"	0.200	ND	96.4	75-125	9.38	20	
Cadmium		0.199	0.00100	**	0.200	ND	99.4	75-125	5.38	20	
Chromium		0.194	0.00100	11	0.200	ND	97.0	75-125	5.03	20	
Cobalt		0.191	0.00100	"	0.200	ND	95.4	75-125	1.04	20	
Copper		0.197	0.00100	**	0.200	ND	98.3	75-125	3.98	20	٠.
Manganese		0.232	0.0100	**	0.200	0.0421	94.9	75-125	2.13	20	
Nickel		0.186	0.00100	**	0.200	0.00107	92.5	75-125	5.74	20	
Selenium		0.205	0.00100	11	0.200	ND	102	75-125	5.23	20	
Vanadium		0.257	0.00100	H	0.200	ND	128	75-125	7.26	20	Q-01
Zinc		0.204	0.0100	**	0.200	ND	100	75-125	5.25	20	
Matrix Spike Dup (0E23031-MSD2)					Source: B	0E0354-0	12			
Lead		0.235	0.00100	mg/l	0.200	ND	117	75-125	1.72	20	
Silver		0.188	0.00100	If	0.200	ND	94.0	75-125	2.15	20	
Thallium		0.249	0.0100	11	0.200	ND	124	75-125	11.5	20	
Batch 0E31014:	Prepared 05/31/00	Using E	PA 7470A								
Blank (0E31014-BL	LK1)										
Mercury .		ND	0.00100	mg/l	•						

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Golder Associates Inc.

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Redmond WA, 98052-3333

Project: Palmer/Landsburg Project

Project Number: 923-100

Reported:

06/22/00 11:31

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

Project Manager: Gary Zimmerman

			Reporting		Spike	Source		%REC		RPD	
Analyte		Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 0E31014: Prep	pared 05/31/00	Using I	EPA 7470A								
LCS (0E31014-BS1)											
Mercury		0.00386	0.00100	mg/l	0.00500		77.2	70-130			
Matrix Spike (0E31014-M	1 S1)					Source: I	30E0354-0	03			
Mercury		0.00400	0.00100	mg/l	0.00500	ND	80.0	75-125	,	***************************************	
Matrix Spike (0E31014-M	1S2)					Source: I	30E0455-0)2			
Mercury		0.00400	0.00100	mg/l	0.00500	ND	80.0	75-125			
Matrix Spike Dup (0E310	14-MSD1)				;	Source: E	30E0354-0)3			
Mercury		0.00383	0.00100	mg/l	0.00500	ND	76.6	75-125	4.34	20	
Matrix Spike Dup (0E310	14-MSD2)				;	Source: E	30E0455-0)2			
Мегсигу		0.00398	0.00100	mg/l	0.00500	ND	79.6	75-125	0.501	20	

North Creek Analytical - Bothell

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Louin Cack to Kirk Gendron, Project Manager



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Golder Associates Inc.

Project: Palmer/Landsburg Project

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Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Organochlorine Pesticides and PCBs by EPA Method 8081A and 8082 - Quality Control North Creek Analytical - Bothell

			Reporting		Spike	Source		%REC		RPD	
Analyte		Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 0E20007:	Prepared 05/20/00	Using I	EPA 3520C/	600 Series							
Blank (0E20007-BL	K1)								- 114		
Aldrin		ND	0.0400	ug/l							
alpha-BHC		ND	0.0200	"							
beta-BHC		ND	0.100	"							
delta-BHC		ND	0.0500	"							
gamma-BHC (Lindane)	i e	ND	0.0300	11							
Chlordane (tech)		ND	0.150	tt .							
alpha-Chlordane		ND	0.0500	ff							
gamma-Chlordane		ND	0.0200	"							
4,4´-DDD		ND	0.0400	11							
4,4'-DDE		ND	0.0300	tt							
4,4'-DDT		ND	0.0900	II							
Dieldrin		ND	0.0700	11							
Endosulfan I		ND	0.0300	tt .							r
Endosulfan II		ND	0.0500	n							
Endosulfan sulfate		ND	0.0700	"							
Endrin		ND	0.0800	II							
Endrin aldehyde		ND	0.100	11							
Heptachlor		ND	0.0300	n					•		
Heptachlor epoxide		ND	0.0300	n							
Methoxychlor		ND	0.500								
Toxaphene		ND	1.50	II							
Aroclor 1016		ND	0.100	11							
Aroclor 1221		ND	0.100	ti .							
Aroclor 1232		ND	0.100	11							
Aroclor 1242		ND	0.100	11							
Aroclor 1248		ND	0.100	II							
Aroclor 1254		ND	0.100	u			•				
Aroclor 1260		ND	0.100	11							
Aroclor 1262		ND	0.100	11							*
Aroclor 1268		ND	0.100	"							
Surrogate: TCX		0.165		"	0.200		82.5	40-130			
Surrogate: Decachlorob	iphenyl	0.141		"	0.200		70.5	40-130			

North Creek Analytical - Bothell

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Golder Associates Inc.

18300 NE Union Hill Road, Suite 200

Redmond WA, 98052-3333

Project: Palmer/Landsburg Project

Project Number: 923-100

Project Manager: Gary Zimmerman

Reported:

06/22/00 11:31

Organochlorine Pesticides and PCBs by EPA Method 8081A and 8082 - Quality Control North Creek Analytical - Bothell

			Reporting		Spike	Source		%REC		RPD	
Analyte		Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 0E20007:	Prepared 05/20/00	Using E	PA 3520C/	600 Series							
LCS (0E20007-BS)	1)										
Aldrin		0.205	0.0400	ug/l	0.250		82.0	45-143			
gamma-BHC (Lindane	e)	0.223	0.0300	H	0.250		89.2	45-147			
Heptachlor		0.189	0.0300	11	0.250		75.6	37-156			
Aroclor 1260		8.55	0.100	ti .	10.0		85.5	33-122			
Surrogate: TCX		0.193		"	0.200		96.5	40-130			
Surrogate: Decachlore	obiphenyl	0.203		"	0.200		101	40-130			
Matrix Spike (0E20	0007-MS1)					Source: E	30E0354-0)3			
Aldrin		0.331	0.0663	ug/l	0.415	ND	79.8	45-143			
gamma-BHC (Lindane	e)	0.334	0.0498	11	0.415	ND	80.5	45-147			
Heptachlor		0.331	0.0498	··	0.415	ND	79.8	37-156			
Aroclor 1260		13.6	0.166	ii .	16.6	ND	81.9	33-122			
Surrogate: TCX		0.283		"	0.332		85.2	40-130			
Surrogate: Decachlore	obiphenyl	0.304		"	0.332		91.6	40-130			
Matrix Spike Dup	(0E20007-MSD1)					Source: B	0E0354-0)3			
Aldrin		0.494	0.0902	ug/l	0.564	ND	87.6	45-143	39.5	36	Q-07
gamma-BHC (Lindane	e)	0.496	0.0677	tt .	0.564	ND	87.9	45-147	39.0	25	Q-07
Heptachlor		0.467	0.0677	n .	0.564	ND	82.8	37-156	34.1	37	
Aroclor 1260		20.1	0.226	11	22.6	ND	88.9	33-122	38.6	21	Q-07
Surrogate: TCX		0.360		"	0.451		79.8	40-130			
Surrogate: Decachlore	obiphenyl	0.462		n .	0.451		102	40-130			

North Creek Analytical - Bothell

Kirk Gendron, Project Manager

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Golder Associates Inc.

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Project: Palmer/Landsburg Project Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Volatile Organic Compounds by EPA Method 8260B - Quality Control North Creek Analytical - Bothell

		Reporting		Spike	Source		%REC		RPD	*******
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 0E22013: Prepared 05/22/0	0 Using E	PA 5030B	P/T]							
Blank (0E22013-BLK1)										
tert-Butyl methyl ether	ND	10.0	ug/l							
Acetone	ND	10.0	11							
Benzene	ND	1.00	11							
Bromobenzene	ND	1.00	"							
Bromochloromethane	ND	1.00	II .							
Bromodichloromethane	ND	1.00	11							
Bromoform	ND	1.00	"							
Bromomethane	ND .	1.00	H							
2-Butanone	ND	10.0	H							
n-Butylbenzene	ND	1.00	11							
sec-Butylbenzene	ND	1.00	10							
tert-Butylbenzene	ND	1.00	**							
Carbon disulfide	ND	1.00	Ħ							·
Carbon tetrachloride	ND	1.00	n							
Chlorobenzene	ND	1.00	11							
Chloroethane	ND	1.00	"							
Chloroform	ND	1.00	**							
Chloromethane	ND	5.00	II .							
2-Chlorotoluene	ND	1.00	n							
4-Chlorotoluene	ND	1.00	11							
Dibromochloromethane	ND	1.00	17							
1,2-Dibromo-3-chloropropane	ND	5.00	v							
1,2-Dibromoethane	ND	1.00	tt							
Dibromomethane	ND	1.00	H							
1,2-Dichlorobenzene	ND	1.00	11							
1,3-Dichlorobenzene	ND	1.00	u							
1,4-Dichlorobenzene	ND	1.00	**						•	
Dichlorodifluoromethane	ND	1.00	H							
1,1-Dichloroethane	ND	1.00	tt							
1,2-Dichloroethane	ND	1.00	#							
1,1-Dichloroethene	ND	1.00	11							
cis-1,2-Dichloroethene	ND	1.00	11							
trans-1,2-Dichloroethene	ND	1.00	ti .							
1,2-Dichloropropane	ND	1.00	**							

North Creek Analytical - Bothell

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Redmond WA, 98052-3333

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

06/22/00 11:31

Volatile Organic Compounds by EPA Method 8260B - Quality Control North Creek Analytical - Bothell

Project Manager: Gary Zimmerman

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
-				Level	Result	70KEC	Lillits	M.D		notes
Batch 0E22013: Prepared 05/22/00	Using 1	Using EPA 5030B [P/T]								
Blank (0E22013-BLK1)										
1,3-Dichloropropane	ND	1.00	ug/l			·				
2,2-Dichloropropane	ND	1.00	n							
1,1-Dichloropropene	ND	1.00	19							
cis-1,3-Dichloropropene	ND	1.00	11							
trans-1,3-Dichloropropene	ND	1.00	**							
Ethylbenzene	ND	1.00	U							
Hexachlorobutadiene	ND	1.00	11							
2-Hexanone	ND	10.0	Ħ							
Isopropylbenzene	ND	1.00	н							
p-Isopropyltoluene	ND	1.00	11							
Methylene chloride	8.43	5.00	11							I
4-Methyl-2-pentanone	ND	10.0	11							
Naphthalene	ND	1.00	ti							,
n-Propylbenzene	ND	1.00	ıı							
Styrene	ND	1.00	11							
1,1,1,2-Tetrachloroethane	ND	1.00	"							
1,1,2,2-Tetrachloroethane	ND	1.00	0							
Tetrachloroethene	ND	1.00	11							
Toluene	ND	1.00	"							
1,2,3-Trichlorobenzene	ND	1.00	**							
1,2,4-Trichlorobenzene	ND	1.00	**							
1,1,1-Trichloroethane	ND	1.00	n							
1,1,2-Trichloroethane	ND	1.00	II							
Trichloroethene	ND	1.00	11							
Trichlorofluoromethane	ND	1.00	**							
1,2,3-Trichloropropane	ND	1.00	н .							
1,2,4-Trimethylbenzene	ND	1.00	n							
1,3,5-Trimethylbenzene	ND	1.00	"							
Vinyl chloride	ND	1.00	"							
m,p-Xylene	ND	2.00	"							
o-Xylene	ND	1.00	u							
Surrogate: 1,2-DCA-d4	45.7		"	40.0		114	80-120			
Surrogate: Toluene-d8	40.2		n	40.0		101	80-120			
Surrogate: 4-BFB	43.5		"	40.0		109	80-120			

North Creek Analytical - Bothell

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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Volatile Organic Compounds by EPA Method 8260B - Quality Control North Creek Analytical - Bothell

			Reporting		Spike	Source		%REC		RPD	
Analyte		Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 0E22013:	Prepared 05/22/00	Using El	PA 5030B [P/T]							
LCS (0E22013-BS1)	*										
Benzene		19.2	1.00	ug/l	20.0		96.0	80-120			
Chlorobenzene		19.0	1.00	11	20.0		95.0	80-120			
1,1-Dichloroethene		21.9	1.00	**	20.0		109	80-120			
Toluene		19.0	1.00	ti	20.0		95.0	80-120			
Trichloroethene		20.2	1.00	11	20.0		101	80-120			
Surrogate: 1,2-DCA-d4		47.7		"	40.0		119	80-120			
Surrogate: Toluene-d8		40.5		"	40.0		101	80-120			
Surrogate: 4-BFB		41.5		"	40.0		104	80-120			
Matrix Spike (0E220	13-MS1)					Source: E	30E0354-0)3			
Benzene		16.4	1.00	ug/l	18.0	ND	91.1	80-120		***	
Chlorobenzene		16.7	1.00	"	18.0	ND	92.8	80-120			
1,1-Dichloroethene		16.9	1.00	ti	18.0	ND	93.9	80-120			
Toluene		16.2	1.00	"	18.0	ND	90.0	80-120			
Trichloroethene		16.3	1.00	19	18.0	ND	90.6	80-120			
Surrogate: 1,2-DCA-d4		45.6		"	40.0		114	80-120			
Surrogate: Toluene-d8		40.3		"	40.0		101	80-120			
Surrogate: 4-BFB		41.8		"	40.0		104	80-120			
Matrix Spike Dup (0)	E22013-MSD1)					Source: B	0E0354-0	3			
Benzene		15.4	1.00	ug/l	18.0	ND	85.6	80-120	6.29	15	ATT-1 4012-174-174-1-1-1-1-1
Chlorobenzene		15.7	1.00	**	18.0	ND	87.2	80-120	6.17	15	
1,1-Dichloroethene		15.3	1.00	**	18.0	ND	85.0	80-120	9.94	15	
Toluene		15.2	1.00	tt .	18.0	ND	84.4	80-120	6.37	15	
Trichloroethene		15.2	1.00	Ħ	18.0	ND	84.4	80-120	6.98	15	
Surrogate: 1,2-DCA-d4		45.4		"	40.0		114	80-120			
Surrogate: Toluene-d8		<i>40.1</i>		"	40.0		100	80-120			
Surrogate: 4-BFB		43.7		n	40.0		109	80-120			

North Creek Analytical - Bothell

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Project: Palmer/Landsburg Project

Project Number: 923-100

Project Manager: Gary Zimmerman

Reported:

06/22/00 11:31

Volatile Organic Compounds by EPA Method 8260B - Quality Control North Creek Analytical - Bothell

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 0E24010: Prepared 05/23/0	00 Using E	PA 5030B	[P/T]							
Blank (0E24010-BLK1)										
Acetone	ND	10.0	ug/l						***************************************	
Benzene	ND	1.00	n							
Bromobenzene	ND	1.00	n							
Bromochloromethane	ND	1.00	11							
Bromodichloromethane	ND	1.00	11							
Bromoform	ND	1.00	11							
Bromomethane	ND	1.00	ti							
2-Butanone	ND	10.0	н							
n-Butylbenzene	ND	1.00	11							
sec-Butylbenzene	ND	1.00	11							
tert-Butylbenzene	ND	1.00	n							
Carbon disulfide	ND	1.00	u							
Carbon tetrachloride	ND	1.00	n							
Chlorobenzene	ND	1.00	**							
Chloroethane	ND	1.00	**							
Chloroform	ND	1.00	n							
Chloromethane	ND	5.00	ıı							
2-Chlorotoluene	ND	1.00	11							
4-Chlorotoluene	ND	1.00	11							
Dibromochloromethane	ND	1.00	11							
1,2-Dibromo-3-chloropropane	ND	5.00	**							
1,2-Dibromoethane	ND	1.00	n							
Dibromomethane	ND	1.00	11							
1,2-Dichlorobenzene	ND	1.00	11							
1,3-Dichlorobenzene	ND	1.00	"							
1,4-Dichlorobenzene	ND	1.00	n							
Dichlorodifluoromethane	ND	1.00	II .							
1,1-Dichloroethane	ND	1.00	11							
1,2-Dichloroethane	ND	1.00	**							
1,1-Dichloroethene	ND	1.00	"							
cis-1,2-Dichloroethene	ND	1.00	tr							
trans-1,2-Dichloroethene	ND	1.00	n							
1,2-Dichloropropane	ND	1.00	п							
1,3-Dichloropropane	ND	1.00	11							

North Creek Analytical - Bothell

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Project: Palmer/Landsburg Project

Project Number: 923-100

Reported:

06/22/00 11:31

Volatile Organic Compounds by EPA Method 8260B - Quality Control North Creek Analytical - Bothell

Project Manager: Gary Zimmerman

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
					resuit	70LC	Pililits	ми	Lillit	140162
Batch 0E24010: Prepared 05/23/00	Using 1	EPA 5030B	[P/T]							
Blank (0E24010-BLK1)										
2,2-Dichloropropane	ND	1.00	ug/l							10707-0001-0
1,1-Dichloropropene	ND	1.00	u							
cis-1,3-Dichloropropene	ND	1.00	11							
trans-1,3-Dichloropropene	ND	1.00	11							
Ethylbenzene	ND	1.00	"							
Hexachlorobutadiene	ND	1.00	tt							
2-Hexanone	ND	10.0	11							
Isopropylbenzene	ND	1.00	11							
p-Isopropyltoluene	ND	1.00	"							
Methylene chloride	10.8	5.00	II							
4-Methyl-2-pentanone	ND	10.0	H							
Naphthalene	ND	1.00	11							
n-Propylbenzene	ND	1.00	"							
Styrene	ND	1.00	11							
1,1,1,2-Tetrachloroethane	ND	1.00	"							
1,1,2,2-Tetrachloroethane	ND	1.00	"							
Tetrachloroethene	ND	1.00	"							
Toluene	ND	1.00	H,							
1,2,3-Trichlorobenzene	ND	1.00	u							
1,2,4-Trichlorobenzene	ND	1.00	11							
1,1,1-Trichloroethane	ND	1.00	"							
1,1,2-Trichloroethane	ND	1.00	"							
Trichloroethene	ND	1.00	tt							
Trichlorofluoromethane	ND	1.00	ŧŧ							
1,2,3-Trichloropropane	ND	1.00	"							
1,2,4-Trimethylbenzene	ŃD	1.00	**							
1,3,5-Trimethylbenzene	ND	1.00	"							
Vinyl chloride	ND	1.00	H							
m,p-Xylene	ND	2.00	11							
o-Xylene	ND	1.00	"							
Surrogate: 1,2-DCA-d4	46.0		"	40.0		115	80-120			
Surrogate: Toluene-d8	40.3		"	40.0		101	80-120			
Surrogate: 4-BFB	46.0		"	40.0		115	80-120			

North Creek Analytical - Bothell

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Golder Associates Inc.

Redmond WA, 98052-3333

Project: Palmer/Landsburg Project

Project Number: 923-100

Reported:

Project Manager: Gary Zimmerman

06/22/00 11:31

Volatile Organic Compounds by EPA Method 8260B - Quality Control North Creek Analytical - Bothell

			Reporting		Spike	Source		%REC		RPD	
Analyte		Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 0E24010:	Prepared 05/23/00	Using E	PA 5030B [P/T]							
LCS (0E24010-BS1)			•								
Benzene		22.7	1.00	ug/l	20.0		114	80-120			
Chlorobenzene		22.4	1.00	11	20.0		112	80-120			
1,1-Dichloroethene		23.9	1.00	u .	20.0		119	80-120			
Toluene		22.4	1.00	"	20.0		112	80-120			
Trichloroethene		23.0	1.00	#	20.0		115	80-120			
Surrogate: 1,2-DCA-d4		47.5		"	40.0		119	80-120			
Surrogate: Toluene-d8		40.7		"	40.0		102	80-120			
Surrogate: 4-BFB		42.1		"	40.0		105	80-120			
Matrix Spike (0E240)	10-MS1)					Source: E	0E0334-0)2			
Benzene		16.7	1.00	ug/l	20.0	ND	83.5	80-120			
Chlorobenzene		16.3	1.00	11	20.0	ND	81.5	80-120			
1,1-Dichloroethene		17.9	1.00	11	20.0	ND	89.5	80-120			t
Toluene		16.7	1.00	Ħ	20.0	ND	83.5	80-120			
Trichloroethene		16.9	1.00	n	20.0	ND	84.5	80-120			
Surrogate: 1,2-DCA-d4		46.0		"	40.0		115	80-120			
Surrogate: Toluene-d8		41.1		"	40.0		103	80-120			
Surrogate: 4-BFB		44.6		"	40.0		111	80-120			
Matrix Spike Dup (01	E24010-MSD1)					Source: B	0E0334-0)2			
Benzene		16.2	1.00	ug/l	20.0	ND	81.0	80-120	3.04	15	
Chlorobenzene		16.1	1.00	"	20.0	ND	80.5	80-120	1.23	15	
1,1-Dichloroethene		16.8	1.00	u	20.0	ND	84.0	80-120	6.34	15	
Toluene		16.2	1.00	n	20.0	ND	81.0	80-120	3.04	15	
Trichloroethene		16.2	1.00	n	20.0	ND	81.0	80-120	4.23	15	
Surrogate: 1,2-DCA-d4		45.8		"	40.0		114	80-120			
Surrogate: Toluene-d8		40.5		n	40.0		101	80-120			
Surrogate: 4-BFB		44.5		"	40.0		111	80-120			

North Creek Analytical - Bothell

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Lacera Cacek for



Portland

423-420-9200 1ax 423-420-9210 East 11115 Montgomery, Suite B, Spokane, WA 99206-4776 509-924-9200 fax 509-924-9290 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132 503-906-9200 fax 503-906-9210 2032 Empire Avenue, Suite F-1, Bend, OR 97701-5711

541.383.9310 fax 541.382.7588

Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Semivolatile Organic Compounds by EPA Method 8270C - Quality Control North Creek Analytical - Bothell

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 0E20008: Prepared 05/20/00	Using E	PA 3520C/	600 Series			***				
Blank (0E20008-BLK1)										
Acenaphthene	ND	10.0	ug/l							
Acenaphthylene	ND	10.0	u							
Aniline	ND	10.0	"							
Anthracene	ND	10.0	"							
Benzoic Acid	ND	10.0	n							
Benzo (a) anthracene	ND	10.0	11							
Benzo (b) fluoranthene	ND	10.0	"							
Benzo (k) fluoranthene	ND	10.0	II							
Benzo (ghi) perylene	ND	10.0	11							
Benzo (a) pyrene	ND	10.0	n .							
Benzyl alcohol	ND	10.0	II .							
Bis(2-chloroethoxy)methane	ND	10.0	**							
Bis(2-chloroethyl)ether	ND	10.0	Ħ							
Bis(2-chloroisopropyl)ether	ND	10.0	n							
Bis(2-ethylhexyl)phthalate	ND	50.0	11							
4-Bromophenyl phenyl ether	ND	10.0	tr .							
Butyl benzyl phthalate	ND	10.0	U							
Carbazole	ND	10.0	11							
4-Chloroaniline	ND	10.0	11							
2-Chloronaphthalene	ND	10.0	u							
4-Chloro-3-methylphenol	ND	10.0	U							
2-Chlorophenol	ND	10.0	11							
4-Chlorophenyl phenyl ether	ND	10.0	**							
Chrysene	ND	10.0	H							
Dibenz (a,h) anthracene	ND	10.0	n							
Dibenzofuran	ND	10.0	" .							
Di-n-butyl phthalate	ND	10.0	"							
1,3-Dichlorobenzene	ND	10.0	II							
1,4-Dichlorobenzene	ND	10.0	u							
1,2-Dichlorobenzene	ND	10.0	"							
3,3'-Dichlorobenzidine	ND	10.0	tt .							
2,4-Dichlorophenol	ND	10.0	11							
Diethyl phthalate	ND	10.0	11							
2,4-Dimethylphenol	ND	10.0	n							

North Creek Analytical - Bothell

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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Semivolatile Organic Compounds by EPA Method 8270C - Quality Control North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
-										
Batch 0E20008: Prepared 05/20/00	Using	EPA 3520C/0	oud Series							
Blank (0E20008-BLK1)										
Dimethyl phthalate	ND	10.0	ug/l							
4,6-Dinitro-2-methylphenol	ND	10.0	"							
2,4-Dinitrophenol	ND	20.0	"							
2,4-Dinitrotoluene	ND	10.0	II .							
2,6-Dinitrotoluene	ND	10.0	11							
Di-n-octyl phthalate	ND	10.0	"							
Fluoranthene	ND	10.0	"							
Fluorene	ND	10.0	"							
Hexachlorobenzene	ND	10.0	H							
Hexachlorobutadiene	ND	10.0	11							
Hexachlorocyclopentadiene	ND	10.0	**							
Hexachloroethane	ND	10.0	"							,
Indeno (1,2,3-cd) pyrene	ND	10.0	tt							
Isophorone	ND	10.0	tt.							
2-Methylnaphthalene	ND	10.0	11							
2-Methylphenol	ND	10.0	"							
3 & 4-Methylphenol	ND	10.0	a ·							
Naphthalene	ND	10.0	**							
2-Nitroaniline	ND	10.0	11							
3-Nitroaniline	ND	10.0	11							
4-Nitroaniline	ND	10.0	11							
Nitrobenzene	ND	10.0	11							
2-Nitrophenol	ND	10.0								
4-Nitrophenol	ND	10.0	n							
N-Nitrosodiphenylamine	ND	10.0	Ħ							
N-Nitrosodi-n-propylamine	ND	10.0	Ħ							
Pentachlorophenol	ND	10.0	11		-					
Phenanthrene	ND	10.0	11							
Phenol	ND	10.0	n							
Pyrene	ND	10.0	11							
1,2,4-Trichlorobenzene	ND	10.0	TT .							
2,4,5-Trichlorophenol	ND	10.0	**							
2,4,6-Trichlorophenol	ND	10.0	**							
Surrogate: 2-FP	40.8		"	50.0		81.6	40-115			uenn marriman

North Creek Analytical - Bothell

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Golder Associates Inc.

Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Semivolatile Organic Compounds by EPA Method 8270C - Quality Control North Creek Analytical - Bothell

Analyte Result Limit Units Level Result %REC Limits RPD Limit Note No			Reporting		Spike	Source		%REC		RPD	
Blank (0E20008-BLK1) Surrogaie: Phenol-d6 39.1 ng/l 50.0 78.2 18-145 Nurrogaie: 2.46-TBP 40.4 " 50.0 80.8 24-130 Nurrogaie: Nurrogaie: 2.46-TBP 40.4 " 50.0 80.8 24-130 Nurrogaie: Nurrogaie: Phenol-d6 " 50.0 80.8 24-130 Nurrogaie: Phenol-d6 " 50.0 81.2 42-110 Nurrogaie: Phenol-d6 " 50.0 67.4 46-116 Nurrogaie: Phenol-d4 47.1 " 50.0 94.2 63-117 Nurrogaie: Phenol-d4 47.1 " 50.0 94.2 63-117 Nurrogaie: Phenol-d4 47.1 " 50.0 94.2 63-117 Nurrogaie: Phenol-d6 137 10.0 " 200 68.5 35-110 Nurrogaie: Phenol-d6 134 10.0 " 200 68.5 35-110 Nurrogaie: Phenol-d6 134 10.0 " 200 67.5 51-110 Nurrogaie: Phenol-d6 135 10.0 " 100 67.5 51-110 Nurrogaie: Phenol-d6 138 10.0 " 200 67.5 16-110 Nurrogaie: Phenol-d6 134 10.0 " 200 67.5 34-115 Nurrogaie: Phenol-d6 134 10.0 " 200 67.0 39-110 Nurrogaie: Phenol-d6 33.4 " 50.0 67.0 49-113 Nurrogaie: Phenol-d6 33.4 " 50.0 67.0 49-113 Nurrogaie: Phenol-d6 33.4 " 50.0 67.0 40-115 Nurrogaie: Phenol-d6 33.4 " 50.0 67.0 42-110 Nurrogaie: Phenol-d6 33.2 " 50.0 67.0 42-110 Nurrogaie: Phenol-d6 33.4 " 50.0 67.0 42-110 Nurrogaie: Phenol-d6 Nurrogaie: Phenol-d6	Analyte			Units		Result	%REC	Limits	RPD		Notes
Surrogate: Phenol-16	Batch 0E20008: Prepared 05/20/00	Using EI	PA 3520C/	600 Series							
Survegate: 2.4.6-TRP	Blank (0E20008-BLK1)										
Survegate: 2.4.6-TRP	Surrogate: Phenol-d6	39.1		ug/l	50.0		78.2	18-145			
Surrogate: 2-PEP 33.7 30.0 67.4 46-116 50.0 50.0 50.1 50.0 50.1 50.0 50.1 50.0 50.1 50.0 50.1 50.0 50.1 50.0 50.1 50.0 50.1 50.0 50.1 50.0 50.1 50.0 50.1 50.0 50.1 50.0 50.1 50.0 50.1 50.0 50.1 50.0 50.1 50.0 50.0 50.1 50.0 50.0 50.1 50.0 50.0 50.1 50.0	Surrogate: 2,4,6-TBP	40.4			50.0		80.8	24-130			
Namogate: p-Terphenyl-d14	Surrogate: Nitrobenzene-d5	40.6		"	50.0		81.2	42-110			
CCS (0E20008-BS1) CCS (0E20008-BS1) CCS (0E20008-BS1) CCS (0E20008-BS1) CCS (0E20008-BS1) CCS (0E20008-MS1) CCS											
Acenaphthene 79.2 10.0 ug/l 100 79.2 42-110 I-Chloro-3-methylphenol 137 10.0 " 200 68.5 35-110 2-Chlorophenol 134 10.0 " 200 67.0 45-110 1,4-Dichlorobenzene 68.8 10.0 " 100 68.8 23-110 1,4-Dichlorobenzene 67.5 10.0 " 100 67.5 51-110 1,4-Dintrotoluene 67.5 10.0 " 100 67.5 51-110 1,4-Dintrotoluene 67.5 10.0 " 100 69.3 34-115 Pentachlorophenol 138 10.0 " 200 79.0 30-124 Pentachlorophenol 158 10.0 " 200 79.0 30-124 Pentachlorophenol 134 10.0 " 200 79.0 30-124 Pentachlorophenol 134 10.0 " 200 67.0 39-110 Perene 103 10.0 " 100 103 49-113 Perene 103 10.0 " 100 71.3 17-110 Perene 103 10.0 " 100 71.3	Surrogate: p-Terphenyl-d14	47.1		"	50.0		94.2	63-117			
Chloro-3-methylphenol 137 10.0 " 200 68.5 35-110 -Chlorophenol 134 10.0 " 200 67.0 45-110 -Chlorophenol 134 10.0 " 100 68.8 23-110 -Chlorophenol 135 10.0 " 100 67.5 51-110 -Chlorophenol 135 10.0 " 200 67.5 51-110 -Chlorophenol 135 10.0 " 200 67.5 16-110 -Chlorophenol 138 10.0 " 200 67.5 16-110 -Chlorophenol 138 10.0 " 200 79.0 30-124 -Chenol 134 10.0 " 200 67.0 39-110 -Chenol 134 10.0 " 100 103 49-113 -Chenol 134 10.0 " 100 103 49-113 -Chenol 134 10.0 " 100 71.3 17-110 -Chlorophenol 138 10.0 " 100 71.3 17-110 -Chlorophenol 33.4 " 50.0 66.8 18-145 -Chlorophenol 33.5 " 50.0 66.8 18-145 -Chlorophenol 33.5 " 50.0 66.8 18-145 -Chlorophenol 33.5 " 50.0 66.4 46-116 -Chlorophenol 33.5 " 50.0 66.4 46-116 -Chlorophenol 259 18.6 " 372 ND 69.6 45-110 -Chlorophenol 270 18.6 " 372 ND 69.6 45-110 -Chlorophenol 270 18.6 " 372 ND 69.6 45-110 -Chlorophenol 270 18.6 " 372 ND 63.4 20-110 -Chlorophenol 236 18.6 " 186 ND 62.9 23-116 -Chlorophenol 248 18.6 " 186 ND 62.9 23-116 -Chlorophenol 268 18.6 " 372 ND 63.5 31-15 -Chlorophenol 268 18.6 " 372 ND 63.0 23-116 -Chlorophenol 268 18.6 " 372 ND 63.7 31-115 -Chlorophenol 268 18.6 " 372 ND	LCS (0E20008-BS1)										
1.00	Acenaphthene	79.2	10.0	ug/l	100		79.2	42-110			
A-Dichlorobenzene 68.8 10.0 " 100 68.8 23-110 A-Dinitrotoluene 67.5 10.0 " 100 67.5 51-110 A-Nitrosphenol 135 10.0 " 200 67.5 16-110 A-Nitrosphenol 135 10.0 " 200 67.5 16-110 A-Nitrosphenol 158 10.0 " 200 79.0 34-115 Pertachlorophenol 158 10.0 " 200 79.0 34-115 Pertachlorophenol 134 10.0 " 200 67.0 39-110 Pertachlorophenol 134 10.0 " 100 103 49-113 A-Yerne 103 10.0 " 100 71.3 17-110 Pertachlorophenene 71.3 10.0 " 100 71.3 17-110 Pertachlorophenene 71.3 70.0 " 70.0 66.8 81-45 Pertachlorophene 33.5 " 50.0 67.0 42-170 Pertachlorophene 42.8 " 50.0 85.6 24-130 Pertachlorophene 49.0 " 50.0 66.4 46-116 Pertachlorophene 49.0 " 50.0 66.4 46-116 Pertachlorophene 49.0 " 50.0 66.4 46-116 Pertachlorophene 138 18.6 ug/l 186 ND 74.2 Pertachlorophenol 259 18.6 " 372 ND 69.6 45-110 Pertachlorophenol 270 18.6 " 372 ND 69.6 45-110 Pertachlorophenol 236 18.6 " 186 ND 60.7 60-110 Pertachlorophenol 236 18.6 " 372 ND 63.7 31-115 Pertachlorophenol 236 18.6 " 372 ND 63.7 31-115 Pertachlorophenol 248 18.6 " 186 ND 62.9 23-116 Pertachlorophenol 248 18.6 " 372 ND 63.7 31-115 Pertachlorophenol 268 18.6 " 372 ND 63.7 31-115	4-Chloro-3-methylphenol	137	10.0	11	200		68.5	35-110			
A-Polinitrolulene 67.5 10.0 " 100 67.5 51-110 1-100 67.5 51-110 1-100 67.5 51-110 1-100 67.5 51-110 1-100 67.5 51-110 1-100 69.3 34-115 1-	2-Chlorophenol	134	10.0	"	200		67.0	45-110			
N-Nitropenol 135 10.0 " 200 67.5 16-110 N-Nitrosodi-n-propylamine 69.3 10.0 " 100 69.3 34-115 N-Nitrosodi-n-propylamine 69.3 10.0 " 200 67.5 16-110 N-Nitrosodi-n-propylamine 69.3 10.0 " 200 69.3 34-115 N-Nitrosodi-n-propylamine 134 10.0 " 200 67.0 39-110 N-Nitrosodi-n-propylamine 134 10.0 " 200 67.0 39-110 N-Nitrosodi-n-propylamine 135 10.0 " 100 103 49-113 N-Nitrosodi-n-propylamine 138 18.6 " 372 ND 67.0 40-115 N-Nitrosodi-n-propylamine 117 18.6 " 372 ND 69.6 45-110 N-Nitrosodi-n-propylamine 117 18.6 " 372 ND 63.7 31-115 N-Nitrosodi-n-propylamine 117 18.6 " 372 ND 62.9 23-116 N-Nitrosodi-n-propylamine 117 18.6 " 372 ND 72.0 39-129 N-Nitrosodi-n-propylamine 117 18.6 " 372 ND 72.0 39-129 N-Nitrosodi-n-propylamine 117 18.6 " 372 ND 72.0 39-129 N-Nitrosodi-n-propylamine 117 18.6 " 372 ND 63.7 31-115 N-Nitrosodi-n-propylamine 117 18.6 " 372 ND 72.0 39-129 N-Nitrosodi-n-propylamine 117 18.6 " 372 ND 63.7 31-115 N-Nitrosodi-n-propylamine 117 18.6 " 372 ND 72.0 39-129 N-Nitrosodi-n-propylamine 117 18.6 " 372 ND 63.7 31-115 N-	1,4-Dichlorobenzene	68.8	10.0	**	100		68.8	23-110			
No. No.	2,4-Dinitrotoluene	67.5	10.0	· ·	100		67.5	51-110			
Pentachlorophenol 158 10.0 " 200 79.0 30-124 Pennol 134 10.0 " 200 67.0 39-110 Peyrene 103 10.0 " 100 103 49-113 "2,4-Trichlorobenzene 71.3 10.0 " 100 71.3 17-110 Surrogate: 2-FP 33.5 " 50.0 67.0 40-115 Surrogate: 2,4,6-TBP 42.8 " 50.0 66.8 18-145 Surrogate: 2,4,6-TBP 42.8 " 50.0 66.8 18-145 Surrogate: Nitrobenzene-d5 33.5 " 50.0 67.0 42-110 Surrogate: P-Terphenyl-d14 49.0 " 50.0 66.4 46-116 Surrogate: p-Terphenyl-d14 49.0 " 50.0 66.4 46-116 Surrogate: p-Terphenyl-d14 49.0 " 50.0 66.4 46-116 Surrogate: p-Terphenyl-d14 49.0 " 50.0 66.4 46-116 Surrogate: p-Terphenyl-d14 49.0 " 50.0 66.4 46-110 **Cenaphthene 138 18.6 ug/l 186 ND 74.2 48-110 **Cenaphthene 138 18.6 " 372 ND 69.6 45-110 **Chloro-3-methylphenol 259 18.6 " 372 ND 69.6 45-110 **Chlorophenol 270 18.6 " 372 ND 72.6 39-110 **A-Dichlorobenzene 150 18.6 " 186 ND 80.6 27-110 **A-Dichlorobenzene 150 18.6 " 372 ND 63.4 20-110 **A-Dichlorobenzene 150 18.6 " 372 ND 63.9 23-116 **A-Dichlorobenzene 150 18.6 " 372 ND 63.9 23-116 **A-Dichlorobenzene 150 18.6 " 372 ND 63.9 23-116 **A-Dichlorobenzene 150 18.6 " 372 ND 63.9 23-116 **A-Dichlorobenzene 150 18.6 " 372 ND 63.7 31-115	4-Nitrophenol	135	10.0	n	200		67.5	16-110			
Price 134 10.0 200 67.0 39-110 200 67.0 39-110 200 67.0 39-110 200 67.0 39-110 200 67.0 39-110 200 67.0 49-113 200 67.0 49-113 200 67.0 40-115 200	N-Nitrosodi-n-propylamine	69.3	10.0	11	100		69.3	34-115			
Pyrene 103 10.0 " 100 103 49-113 10.0 " 100 103 49-113 17-110 100 103 49-113 17-110 100 103 10.0 " 100 71.3 17-110 100 103 10.0 " 100 71.3 17-110 100 10.0 10.0 10.0 10.0 10.0 10.0 1	Pentachlorophenol	158	10.0	11	200		79.0	30-124			
10.0 10.0 10.0 71.3 17-110 10.0 71.3 17-110 10.0 71.3 17-110 10.0 71.3 17-110 10.0 10.0 71.3 17-110 10.0	Phenol	134	10.0	11	200		67.0	39-110			
Surrogate: 2-FP 33.5 " 50.0 67.0 40-115	Pyrene	103	10.0		100		103	49-113			
Surrogate: Phenol-d6 33.4 " 50.0 66.8 18-145 Surrogate: 2,4,6-TBP 42.8 " 50.0 85.6 24-130 Surrogate: Nitrobenzene-d5 33.5 " 50.0 67.0 42-110 Surrogate: 2-FBP 33.2 " 50.0 66.4 46-116 Surrogate: p-Terphenyl-d14 49.0 " 50.0 98.0 63-117 Matrix Spike (0E20008-MS1) Acenaphthene 138 18.6 ug/l 186 ND 74.2 48-110 L-Chloro-3-methylphenol 259 18.6 " 372 ND 69.6 45-110 L-Chlorophenol 270 18.6 " 372 ND 72.6 39-110 L-4-Dinitrotoluene 150 18.6 " 186 ND 80.6 27-110 L-4-Dinitrotoluene 124 18.6 " 186 ND 60.7 60-110 L-Nitrophenol 236 18.6 " 372 ND 63.4 20-110 L-Nitrophenol 236 18.6 " 372 ND 62.9 23-116 L-Nitrophenol 268 18.6 " 372 ND 72.0 39-129 Chenol 237 18.6 " 372 ND 72.0 39-129 Chenol 237 18.6 " 372 ND 72.0 39-129 Chenol 237 18.6 " 372 ND 72.0 39-129 Chenol 237 18.6 " 372 ND 63.7 31-115	1,2,4-Trichlorobenzene	71.3	10.0	n	100		71.3	17-110			
Surrogate: 2,4,6-TBP 42.8 " 50.0 85.6 24-130 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50	Surrogate: 2-FP	33.5		"	50.0		67.0	40-115			
Surrogate: Nitrobenzene-d5 33.5 " 50.0 67.0 42-110 Surrogate: 2-FBP 33.2 " 50.0 66.4 46-116 Surrogate: p-Terphenyl-d14 49.0 " 50.0 98.0 63-117 Surrogate: p-Terphenyl-d14 49.0 " 50.0 98.0 63-117 Surrogate: p-Terphenyl-d14 49.0 " 50.0 98.0 63-117 Surrogate: p-Terphenyl-d14 49.0 " 50.0 98.0 63-117 Surrogate: p-Terphenyl-d14 49.0 " 50.0 98.0 63-117 Surrogate: p-Terphenyl-d14 18.6 " 186 ND 74.2 48-110 Surrogate: p-Terphenyl-d14 18.6 " 372 ND 69.6 45-110 Surrogate: p-Terphenyl-d14 18.6 " 372 ND 72.6 39-110 Surrogate: p-Terphenyl-d14 18.6 " 186 ND 80.6 27-110 Surrogate: p-Terphenyl-d14 18.6 " 186 ND 80.6 27-110 Surrogate: p-Terphenyl-d14 18.6 " 186 ND 66.7 60-110 Surrogate: p-Terphenyl-d14 18.6 " 186 ND 63.4 20-110 Surrogate: p-Terphenyl-d14 18.6 " 186 ND 62.9 23-116 Surrogate: p-Terphenyl-d14 18.6 " 186 ND 62.9 23-116 Surrogate: p-Terphenyl-d14 18.6 " 186 ND 62.9 23-116 Surrogate: p-Terphenyl-d15 18.6 " 372 ND 72.0 39-129 Surrogate: p-Terphenyl-d15 18.6 " 372 ND 72.0 39-129 Surrogate: p-Terphenyl-d15 18.6 " 372 ND 63.7 31-115 Surrogate: p-Terphenyl-d15 18.6 " 372 ND 63.7 31-115 Surrogate: p-Terphenyl-d14 18.6 " 372 ND 63.7 31-115 Surrogate: p-Terphenyl-d14 18.6 " 372 ND 63.7 31-115 Surrogate: p-Terphenyl-d15 18.6 " 372 ND 63.7 31-115 Surrogate: p-Terphenyl-d16 18.6 " 372 ND 63.7 31-115 Surrogate: p-Terphenyl-d16 18.6 " 372 ND 63.7 31-115 Surrogate: p-Terphenyl-d16 18.6 " 372 ND 63.7 31-115 Surrogate: p-Terphenyl-d16 18.6 " 372 ND 63.7 31-115 Surrogate: p-Terphenyl-d16 18.6 " 372 ND 63.7 31-115 Surrogate: p-Terphenyl-d16 18.6 " 372 ND 63.7 31-115 Surrogate: p-Terphenyl-d16 18.6 " 372 ND 63.7 31-115 Surrogate: p-Terphenyl-d16 18.6 " 372 ND 63.7 31-115 Surrogate: p-Terphenyl-d16 18.6 " 372 ND 63.7 31-115 Surrogate: p-Terphenyl-d16 18.6 " 372 ND 63.7 31-115 Surrogate: p-Terphenyl-d16 18.6 " 372 ND 63.7 31-115 Surrogate: p-Terphenyl-d16 18.6 " 372 ND 63.7 31-115 Surrogate: p-Terphenyl-d16 18.6 " 372 ND 63.7 31-115 Surrogate: p-Terphenyl-d16 18.6 " 372 ND 63.7 31-115 Surrogate: p-Terphenyl-d16 18.6 " 372 ND 63.7 31-115 Sur	Surrogate: Phenol-d6	33.4		"	50.0		66.8	18-145			
Surrogate: 2-FBP 33.2 " 50.0 66.4 46-116 Surrogate: p-Terphenyl-d14 49.0 " 50.0 98.0 63-117 Source: B0E0354-03 Matrix Spike (0E20008-MS1) Acenaphthene 138 18.6 ug/l 186 ND 74.2 48-110 Source: B0E0354-03 ND 69.6 45-110 Source: B0E0354-03 Source: B0E0354-03 ND 69.6 45-110 Source: B0E0354-03 Source: B0E0354-03 ND 69.6 45-110 Source: B0E0354-03 ND 69.6 ND 69.6 45-110 Source: B0E0354-03 ND 69.6 ND 69.6 ND 69.6 45-110 Source: B0E0354-03 ND 69.6 ND 69	Surrogate: 2,4,6-TBP	42.8		"	50.0		85.6	24-130			
Source S	Surrogate: Nitrobenzene-d5				50.0		67.0	42-110			
Matrix Spike (0E20008-MS1) Acenaphthene 138 18.6 ug/l 186 ND 74.2 48-110 1-Chloro-3-methylphenol 259 18.6 " 372 ND 69.6 45-110 1-Chlorophenol 372 ND 72.6 39-110 1-Chlorophenol 374 186 ND 80.6 186 ND 80.6 186 ND 80.6 186 ND 80.6 186 ND 80.6 186 ND 80.6 186 ND 80.6 186 ND 80.6 186 ND 80.6 186 ND 80.6 186 ND 80.6 186 ND 80.6 186 ND 80.6 186 ND 80.6 186 ND 80.6 186 ND 80.6 186 ND 80-110 N-Nitrophenol 80-Nitrosodi-n-propylamine 117 18.6 ND 80-Nitrosodi-n-propylamine 117 18.6 ND 80-Nitrosodi-n-propylamine 117 18.6 ND 80-Nitrosodi-n-propylamine 1186 ND 80-Nitrosodi-n-propylamine 119 110 N-Nitrosodi-n-propylamine 110 N-Nitrosodi-n-propylamine 1117 18.6 ND 80-Nitrosodi-n-propylamine 1128 ND 80-Nitrosodi-n-propylamine 1138 ND 80-Nitrosodi-n-propylamine 1148 ND 80-Nitrosodi-n-propylamine 1159 ND 80-Nitrosodi-n-propylamine 1160 ND 80-Nitrosodi-n-propylamine 117 18.6 ND 80-Nitrosodi-n-propylamine 117 18.6 ND 80-Nitrosodi-n-propylamine 1186 ND 80-Nitrosodi-n-propylamine 117 18.6 ND 80-Nitrosodi-n-propylamine 117 18.6 ND 80-Nitrosodi-n-propylamine 117 18.6 ND 80-Nitrosodi-n-propylamine 117 18.6 ND 80-Nitrosodi-n-propylamine 117 18.6 ND 80-Nitrosodi-n-propylamine 117 18.6 ND 80-Nitrosodi-n-propylamine 117 18.6 ND 80-Nitrosodi-n-propylamine 117 18.6 ND 80-Nitrosodi-n-propylamine 117 18.6 ND 80-Nitrosodi-n-propylamine 117 18.6 ND 80-Nitrosodi-n-propylamine 117 18.6 ND 80-Nitrosodi-n-propylamine 117 ND 80-Nitrosodi-n-propylamine 1186 ND 80-Nitrosodi-n-propylamine 119 ND 80-Nitrosodi-n-propylamine 119 ND 80-Nitrosodi-n-propylamine 119 ND 80-Nitrosodi-n-propylamine 119 ND 80-Nitrosodi-n-propylamine 119 ND 80-Nitrosodi-n-propylamine 119 ND 80-Nitrosodi-n-propylamine 119 ND 80-Nitrosodi-n-propylamine 119 ND 80-Nitrosodi-n-propylamine 119 ND 80-Nitrosodi-n-propylamine 119 ND 80-Nitrosodi-n-propylamine 119 ND 80-Nitrosodi-n-propylamine 119 ND 80-Nitrosodi-n-propylamine 119 ND 80-Nitrosodi-n-propylamine 119 ND 80-Nitrosodi-n-propylamine 119 ND 80-Nitrosodi-n-propylamine 119 ND 80-Nitrosodi-n-propylamine 119 ND 80-Nitrosodi-n-propylami	Surrogate: 2-FBP										
Acenaphthene 138 18.6 ug/l 186 ND 74.2 48-110 1-Chloro-3-methylphenol 259 18.6 " 372 ND 69.6 45-110 1-Chlorophenol 270 18.6 " 372 ND 72.6 39-110 1-A-Dichlorobenzene 150 18.6 " 186 ND 80.6 27-110 1-A-Dinitrotoluene 124 18.6 " 186 ND 66.7 60-110 1-Nitrophenol 236 18.6 " 372 ND 63.4 20-110 N-Nitrosodi-n-propylamine 117 18.6 " 186 ND 62.9 23-116 Pentachlorophenol 268 18.6 " 372 ND 72.0 39-129 Phenol 237 18.6 " 372 ND 63.7 31-115	Surrogate: p-Terphenyl-d14	49.0		"	50.0		98.0	63-117			
Chloro-3-methylphenol 259 18.6 " 372 ND 69.6 45-110 45-11	Matrix Spike (0E20008-MS1)										
270 18.6 " 372 ND 72.6 39-110,4-Dichlorobenzene 150 18.6 " 186 ND 80.6 27-110,4-Dinitrotoluene 124 18.6 " 186 ND 66.7 60-110,4-Dinitrophenol 236 18.6 " 372 ND 63.4 20-110,4-Nitrophenol 236 18.6 " 186 ND 62.9 23-116,4-Dinitrophenol 268 18.6 " 372 ND 72.0 39-129,4-Dinitrophenol 237 18.6 " 372 ND 63.7 31-115	Acenaphthene	138	18.6		186	ND	74.2	48-110			
150 18.6 " 186 ND 80.6 27-110 2,4-Dinitrotoluene 124 18.6 " 186 ND 66.7 60-110 1-Nitrophenol 236 18.6 " 372 ND 63.4 20-110 N-Nitrosodi-n-propylamine 117 18.6 " 186 ND 62.9 23-116 Pentachlorophenol 268 18.6 " 372 ND 72.0 39-129 Phenol 237 18.6 " 372 ND 63.7 31-115	4-Chloro-3-methylphenol		18.6		372	ND	69.6	45-110			
2,4-Dinitrotoluene 124 18.6 " 186 ND 66.7 60-110 1-Nitrophenol 236 18.6 " 372 ND 63.4 20-110 1-Nitrosodi-n-propylamine 117 18.6 " 186 ND 62.9 23-116 1-Nitrosodi-n-propylamine 268 18.6 " 372 ND 72.0 39-129 1-Nitrosodi-n-propylamine 237 18.6 " 372 ND 63.7 31-115	2-Chlorophenol	270	18.6	"	372	ND	72.6	39-110			
H-Nitrophenol 236 18.6 " 372 ND 63.4 20-110 N-Nitrosodi-n-propylamine 117 18.6 " 186 ND 62.9 23-116 Pentachlorophenol 268 18.6 " 372 ND 72.0 39-129 Phenol 237 18.6 " 372 ND 63.7 31-115	1,4-Dichlorobenzene	150	18.6	"	186	ND	80.6	27-110			
N-Nitrosodi-n-propylamine 117 18.6 " 186 ND 62.9 23-116 Pentachlorophenol 268 18.6 " 372 ND 72.0 39-129 Phenol 237 18.6 " 372 ND 63.7 31-115	2,4-Dinitrotoluene	124	18.6	11	186	ND	66.7	60-110			
Pentachlorophenol 268 18.6 " 372 ND 72.0 39-129 Phenol 237 18.6 " 372 ND 63.7 31-115	4-Nitrophenol	236	18.6	11	372	ND	63.4	20-110			
Phenol 237 18.6 " 372 ND 63.7 31-115	N-Nitrosodi-n-propylamine	117	18.6	11	186	ND	62.9	23-116			
2.0	Pentachlorophenol	268	18.6	11	372	ND	72.0	39-129			
Pyrene 97.4 18.6 " 186 ND 52.4 63-113 C	Phenol	237	18.6	11	372	ND	63.7	31-115			
	Pyrene	97.4	18.6	11	186	ND	52.4	63-113			Q-(

North Creek Analytical - Bothell

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Golder Associates Inc.

18300 NE Union Hill Road, Suite 200

Redmond WA, 98052-3333

Project: Palmer/Landsburg Project

Project Number: 923-100

Project Manager: Gary Zimmerman

Reported:

06/22/00 11:31

Semivolatile Organic Compounds by EPA Method 8270C - Quality Control North Creek Analytical - Bothell

Analyte		Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0E20008:	Prepared 05/20/00		PA 3520C/					2111113	10.10	Dillit	110103
		Osing Ex	11 332007	our beiles		C T	000000	3.2			
Matrix Spike (0E20	UU8-IVISI)		10.6		100	Source: E				· · · · · · · · · · · · · · · · · · ·	
1,2,4-Trichlorobenzene		146	18.6	ug/l	186	ND	78.5	54-123			
Surrogate: 2-FP		60.2		"	92.9		64.8	40-115			
Surrogate: Phenol-d6		18.6		"	92.9		20.0	18-145			
Surrogate: 2,4,6-TBP		69.4		"	92.9		74.7	24-130			
Surrogate: Nitrobenzen	e-d5	65.8		"	92.9		70.8	42-110			
Surrogate: 2-FBP		53.6		"	92.9		<i>57.7</i>	46-116			
Surrogate: p-Terphenyl	-d14	68.8		"	92.9		74.1	63-117			
Matrix Spike Dup (()E20008-MSD1)					Source: B	0E0354-0)3			
Acenaphthene		179	19.7	ug/l	197	ND	90.9	48-110	25.9	31	
4-Chloro-3-methylphen	ol	304	19.7	11	393	ND	77.4	45-110	16.0	30	
2-Chlorophenol		291	19.7	tt.	393	ND	74.0	39-110	7.49	38	
1,4-Dichlorobenzene		158	19.7	ii .	197	ND	80.2	27-110	5.19	42	
2,4-Dinitrotoluene		157	19.7	11	197	ND	79.7	60-110	23.5	28	*
4-Nitrophenol		303	19.7	"	393	ND	77.1	20-110	24.9	33	
N-Nitrosodi-n-propylan	ine	172	19.7	II .	197	ND	87.3	23-116	38.1	36	Q-07
Pentachlorophenol		324	19.7	11	393	ND	82.4	39-129	18.9	22	~
Phenol		295	19.7	"	393	ND	75.1	31-115	21.8	38	
Pyrene		183	19.7	"	197	ND	92.9	63-113	61.1	18	Q-07
1,2,4-Trichlorobenzene		161	19.7	"	197	ND	81.7	54-123	9.77	29	2.01
Surrogate: 2-FP		69.2		"	98.4		70.3	40-115			
Surrogate: Phenol-d6		65.4		"	98.4		66.5	18-145			
Surrogate: 2,4,6-TBP		80.1		"	98.4		81.4	24-130			
Surrogate: Nitrobenzen	e-d5	71.3		"	98.4		72.5	42-110			
Surrogate: 2-FBP		74.8		n	98.4		76.0	46-116			
Surrogate: p-Terphenyl-	d14	85.8		"	98.4		87.2	63-117			

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Golder Associates Inc.

18300 NE Union Hill Road, Suite 200

Redmond WA, 98052-3333

Project: Palmer/Landsburg Project

Project Number: 923-100

Project Manager: Gary Zimmerman

Reported: 06/22/00 11:31

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control North Creek Analytical - Bothell

			Reporting		Spike	Source		%REC		RPD	
Analyte		Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 0E20005:	Prepared 05/20/00	Using E	PA 3010A								
Blank (0E20005-BI	LK1)										***************************************
Hardness		ND	1.00 mg	eq. CaCO3/L					*********		
LCS (0E20005-BS1)										
Hardness		70.6	1.00mg	eq. CaCO3/L	66.2		107	70-130			
Matrix Spike (0E20	0005-MS1)					Source: B	0E0354-0)3			
Hardness		721	1.00mg	eq. CaCO3/L	66.2	646	113	75-125		···	
Matrix Spike Dup (0E20005-MSD1)					Source: B	0E0354-0)3			
Hardness		724	1.00mg	eq. CaCO3/L	66.2	646	118	75-125	0.415	20	***************************************
Batch 0E22019:	Prepared 05/22/00	Using G	eneral Prep	paration							
Blank (0E22019-BL	JK1)										
Cyanide (total)		ND	0.0100	mg/l	·	***************************************					• .
LCS (0E22019-BS1)										
Cyanide (total)		0.0466	0.0100	mg/l	0.0500	.,	93.2	75-125			
Duplicate (0E22019	-DUP1)					Source: B	0E0354-0	3			
Cyanide (total)		ND	0.0100	mg/l		ND			53.0	21	
Matrix Spike (0E22	019-MS1)					Source: B	0E0354-0	3			
Cyanide (total)		0.0502	0.0100	mg/l	0.0500	ND	96.0	75-125		73131.41	
Batch 0E30024:	Prepared 05/30/00	Using G	eneral Prep	aration							
Blank (0E30024-BL	.K1)										
Bicarbonate Alkalinity		ND	5.00 mg	/L as CaCO3							-19-2
Carbonate Alkalinity		ND	5.00	"							
Hydroxide Alkalinity		ND	5.00	"							
Total Alkalinity		ND	5.00	19							

North Creek Analytical - Bothell

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Laura Cacek An Kirk Gendron, Project Manager



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Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control North Creek Analytical - Bothell

			Reporting		Spike	Source		%REC		RPD	
Analyte		Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 0E30024:	Prepared 05/30/00	Using Go	eneral Pre	paration							
LCS (0E30024-BS1))										****
Total Alkalinity		50.5	5.00 m	ng/L as CaCO3	50.0		101	90-110			
Duplicate (0E30024	-DUP1)					Source: B	10E0388-0	13			
Bicarbonate Alkalinity		44.0	5.00 m	ıg/L as CaCO3		44.0			0	6	
Carbonate Alkalinity		ND	5.00	11		ND				6	
Hydroxide Alkalinity		ND	5.00	"		ND				6	
Total Alkalinity		44.0	5.00	tt		44.0			0	6	
Batch 0E30033:	Prepared 05/24/00	Using Ge	eneral Pre	paration							
Blank (0E30033-BL	K1)										
Total Dissolved Solids		ND	10	mg/l			-				
Duplicate (0E30033-	·DUP1)					Source: B	0E0354-0	13			
Total Dissolved Solids		630	10	mg/l		610			3.2	17	
Batch 0E31004:	Prepared 05/30/00	Using Ge	eneral Pre	paration							
Blank (0E31004-BL	K1)										
Nitrate/Nitrite-Nitrogen		ND	10.0	ug/l as N							
LCS (0E31004-BS1)											
Nitrate/Nitrite-Nitrogen		1030	10.0	ug/l as N	1000		103	90-110			
Matrix Spike (0E310	004-MS1)					Source: B	0E0354-0	3			
Nitrate/Nitrite-Nitrogen		538	10.0	ug/l as N	500	ND	107	71-128			

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Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control North Creek Analytical - Bothell

			Reporting		Spike	Source		%REC		RPD	
Analyte		Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 0E31004:	Prepared 05/30/00	Using G	eneral Pre	paration							
Matrix Spike Dup	(0E31004-MSD1)					Source: E	0E0354-0)3			
Nitrate/Nitrite-Nitroge	n	527	10.0	ug/l as N	500	ND	104	71-128	2.07	20	, , ,
Batch 0E31021:	Prepared 05/31/00	Using G	eneral Pre	paration							
Blank (0E31021-B)	LK1)										
Cyanide (total)		ND	0.0100	mg/l							T. (1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1
Blank (0E31021-B)	LK2)										
Cyanide (total)		ND	0.0100	mg/l							
LCS (0E31021-BS1)										
Cyanide (total)	- 10 - 10 - 10	0.0482	0.0100	mg/l	0.0500		96.4	75-125			
Duplicate (0E3102)	I-DUP1)					Source: B	0E0474-0)6			
Cyanide (total)		ND	0.0100	mg/l		ND			0	21	,
Matrix Spike (0E3)	(021-MS1)					Source: B	0E0474-0)6			
Cyanide (total)		0.0482	0.0100	mg/l	0.0500	ND	90.0	75-125			
Batch 0F01010:	Prepared 06/01/00	Using Ge	eneral Pre	paration							
Blank (0F01010-BI	LK1)										
Fluoride		ND	0.100	mg/l							
LCS (0F01010-BS1)										
Fluoride		1.08	0.100	mg/l	1.00		108	78-113			

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%REC

Golder Associates Inc.

Project: Palmer/Landsburg Project

Spike

Source

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reporting

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

RPD

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control North Creek Analytical - Bothell

Analyte		Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 0F01010:	Prepared 06/01/00	Using Ge	neral Pre	paration							
Duplicate (0F01010	0-DUP1)					Source: I	B0E0354-0)6			
Fluoride		ND	0.100	mg/l		ND			19.7	25	***************************************
Matrix Spike (0F0)	1010-MS1)					Source: I	B0E0354-0)6			
Fluoride		1.04	0.100	mg/l	1.00	ND	97.1	75-125			TOT TAKES

North Creek Analytical - Bothell

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Project: Palmer/Landsburg Project

18300 NE Union Hill Road, Suite 200

Project Number: 923-100

Reported:

Redmond WA, 98052-3333

Project Manager: Gary Zimmerman

06/22/00 11:31

Anions by EPA Method 300.0 - Quality Control North Creek Analytical - Bothell

			Reporting	•	Spike	Source		%REC		RPD	
Analyte		Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 0E22008:	Prepared 05/20/00	Using G	eneral Pre	paration							
Blank (0E22008-Bl	LK1)										
Chloride		ND	0.200	mg/l		***************************************		***************************************			
Sulfate		ND	0.200	11							
LCS (0E22008-BS1)										
Chloride		2.01	0.200	mg/l	2.00		100	90-110		·	
Sulfate		5.87	0.200	"	6.00		97.8	90-110			
Matrix Spike (0E22	2008-MS1)					Source: B	0E0356-0	13			
Chloride		81.2	2.00	mg/l	20.0	54.2	135	80-120			Q-0
Sulfate		58.6	2.00	11	60.0	ND	97.4	80-120			
Matrix Spike (0E22	2008-MS2)					Source: B	0E0324-0	5			
Chloride		132	4.00	mg/l	40.0	92.6	98.5	80-120			
Matrix Spike Dup (0E22008-MSD1)					Source: B	0E0356-0	3			1
Chloride	The second secon	76.5	2.00	mg/l	20.0	54.2	111	80-120	5.96	25	
Sulfate		58.2	2.00	11	60.0	ND	96.8	80-120	0.685	25	
Matrix Spike Dup (0E22008-MSD2)				,	Source: B	0E0324-0	5			
Chloride		134	4.00	mg/l	40.0	92.6	104	80-120	1.50	25	
Batch 0E24009:	Prepared 05/23/00	Using Ge	eneral Prep	paration							
Blank (0E24009-BI	LK1)										·
Chloride		ND	0.200	mg/l							

North Creek Analytical - Bothell

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Laura Cacek for Kirk Gendron, Project Manager



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Project Number: 923-100 Project Manager: Gary Zimmerman

Reported: 06/22/00 11:31

Anions by EPA Method 300.0 - Quality Control North Creek Analytical - Bothell

Analyte		Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Analyte		Result	Lillit	Ullits	Tevel	Result	70KEC	Lillits	- KrD	Pillit	Notes
Batch 0E24009:	Prepared 05/23/00	Using Go	eneral Pre	paration							
LCS (0E24009-BS1	1)										
Chloride		1.95	0.200	mg/l	2.00		97.5	90-110			7.731.02
Sulfate		5.77	0.200	**	6.00		96.2	90-110			
Duplicate (0E24009	9-DUP1)					Source: E	30E0386-0	01			
Sulfate		2.07	0.200	mg/l		2.07			0	25	
Duplicate (0E24009	9-DUP2)					Source: P	30E0386-0	01			
Chloride		30.1	1.00	mg/l		32.6			7.97	25	
Matrix Spike (0E24	4009-MS1)					Source: E	30E0386-0	01			
Sulfate		7.72	0.200	mg/l	6.00	2.07	94.2	80-120			
Matrix Spike (0E24	4009-MS2)					Source: B	80E0386-0	01			
Chloride		44.8	1.00	mg/l	10.0	32.6	122	80-120			Q-0

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Lauralacek Fu-Kirk Gendron, Project Manager



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Golder Associates Inc.

18300 NE Union Hill Road, Suite 200

Redmond WA, 98052-3333

Project: Palmer/Landsburg Project

Project Number: 923-100

Project Manager: Gary Zimmerman

Reported:

06/30/00 12:06

Notes and Definitions

Samples were diluted due to high sulfur content. A-01

A-02 Samples were biased high due to high CCVs.

В Analyte detected in the method blank.

The spike recovery for this QC sample is outside of established control limits. Review of associated batch QC indicates the Q-01

recovery for this analyte does not represent an out-of-control condition for the batch.

The RPD value for this QC sample is above the established control limit. Review of associated QC indicates the high RPD does Q-07

not represent an out-of-control condition for the batch.

Multiple analyses indicate the percent recovery is outside the control limits due to a matrix effect. Q-13

Analyses are not controlled on matrix spike RPD and/or percent recoveries when the sample concentration is significantly higher Q-15

than the spike level.

DET Analyte DETECTED

Analyte NOT DETECTED at or above the reporting limit ND

Not Reported NR

Sample results reported on a dry weight basis dry

Relative Percent Difference **RPD**

North Creek/Analytical - Bothell

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Kirk Gendron, Project Manager

North Creek Analytical, Inc. **Environmental Laboratory Network** Page 64 of 64



18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508
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(503) 906-9200 FAX 906-9210 (541) 383-9310 FAX 382-7588

CHAIN OF CUSTODY REPORT Work Order #: BoE0354

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CLIENT: Golder	toisozz/	29				INVO	ICE TO	ro: Golder								TURNAROUND REQUEST in Business Days*				———— Days*
REPORT TO: Gary Zim	EPORT TO: Gary Zimmerman DDRESS: 18300 NE Union Aill Road, Suite 200 Redmond, WA NEDEZ HONE: HZ5883-0777 FAX: 425882-5498 ROJECT NAME: Palmer Landsburg					1		- 0	10 (1)			_	2			Organic & Inorganic Analyses				
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Redmond, w	V N8ORS	, 10-									,, ~~	艺工	-			STD.	Petrole	um Hydrocarbo	n Analyses	
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APPENDIX A DATA SHEETS

				2474 50514	PM . 1	Ma d	13 1	
PIE WETLA	'ND DF		ION	JATA FURM	Plot	NO		
ROUTINE OF	PIE WETLAND DEL ATION DATA FORM Plot No. 43 ROUTINE ONSITE DETERMINATION METHOD Transect ID							
Weather:	Weather: Raw Cowardin PSS Project/Site: Land String Date: 5-30-00						23	
Project/Site	: land	3/2010			Date	2 - 20	-00	
Field Invest	igator:	ABOTM'	ŃВ	Size(ac)	(0.5)	<1 1-2	2-5 >5	
Normal Conds	2 Y/N	Su ba	dans				_	
Disturbance?	PN					<u> </u>	<u>.</u> .	
Problem Area							——-i	
1= 0 - 5-> 2.5	2=5 · 25 -> 15	3= 25 - 50	Cove 0-≯37.5	r Class 4= 50 - 75->62.5	- 95-1	85 6= >95	→ 97.5	
W/L Dominant Plant S	Cvr	Indicator Status	!	W/L (UP) Dominant Plant Species	Cvr	Indicator Status	Stratum	
RUSP	3	FACT	3	6 FUMU			<u> </u>	
12 5 t W	4			, RUSP, PUDI				
2				ACCI, SARE	<u> </u>		<u> </u>	
3				9				
				10			انسلا	
reg'n'l knowl	W/L pint lis	t D phys/re	pr adapt	morph adapt tech	Ht C	W/L plant dat	la base y N	
%OBL, FACW or	FAC	herb +	snrub +	(no FAC-)] other	, .	. op.,,		
							2.	
	Inund N Surl H20 depth: "Sat^12" (6" in sandy solits) N Depth of free H20 in pit/hole: Other 1" Indicators; water marks drift lines Geedlment deposit							
Other 1° Indicator Other field evider	rs; 🗆 water	marks 🗆 dr	ift lines 🧲	rediment deposit your	/L UIA	riage pattern	_	
Secondary Indica	tors: 🗀 oxidi	zed root cht	มกกอเราใช้	* □ water-stained leav	es 🛘	local soil sur	rvey data	
							□ none	
	Recorded Data: Stream, lake or tide gauge							
Wetland hydrolo	я и (У) ка	ationale:	Sart	water				
	_		COUR	10 at 10551 16"				
Series/Phase:		T	axonomy	Drainage C	lass_	Confirm	n Mapg Y N	
Deoth Matri	Color Color	Mottle?/Co		Gley? Ie		Iston	· clouds	
0-18+ 10	1272	.ØN _'	OYR	416 (P)	Sav	33,000	- CVIVI	
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*belo	w A horizon		hever sha	iflower)	A a u la 1	Jointure Beni	ime	
Hydric Soil Indic	ators: D Hist	osol 🚨 His Gleved/Low	tic epiped Chroma	iflower) ton □ Sulfidic Odor 95 □ High Surface Organ Hydric Solis L	ic Cor	tent in Sand	y Soils	
Concretions	LI Organic :	Streaking in	Sandy So	oils Hydric Soils L	lst: C]Local □N: Hydric Soll?	ational (V)N	
Aher hydric soll	Indicators:		daan			nyunc oom		
Rationale:	-brs.		7			_		
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Wetland?/Y.N her information	Rationale: ٩	li parany n	o ved u	3 80ii 8 110 tiyalal awiip	4 po			
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FUNCTIONS AND VALUES

HYDROLOGIC SUPPORT
Groundwater recharge (H M N/A)
Groundwater discharge (H M L N/A)
Stream baseflow contribution (H M L)N/A)
Floodwater attenuation (H_M/C)N/A)
Floodwater detention (H MC N/A)
Floodwater retention (H MLD/A)
Floodwater attenuation (H_M/L)]N/A)
Floodwater desynchronization (H M L N/A)
WATER QUALITY FUNCTIONS
Sediment/shoreline stabilization (H M L NA)
Retention of sediments, nutrients or toxicants (H M L N/A)
Transformation of nutrients or toxicants (H M L N/A)
· Wastewater treatment (H M L N/A)
NATURAL BIOLOGICAL FUNCTIONS
NATURAL BIOLOGICAL PONOTIONS
Primary productivity (H M(DN/A)
Organic accumulation (H MD N/A)
· Organic export (H .M(L)N/A)
Decomposition (H MT) N/A)
Detrital transport (H: M(DN/A)
Nutrient cycling and utilization (H M(L)N/A)
Food chain support (H M(E N/A)
HABITAT FUNCTIONS
Invertebrates (H M(L)V/A)
Amphibians (H M(
Fisheries (H M L (N/A)
· Mammals (H M D N/A)
Birds (H M(L)N/A)
Sanctuary and refuge (H M, L'N/A)
SOCIO-FCONOMIC FUNCTIONS
Non-consumptive value Recreational (H M L N/A)
Recreational (H M LN/M)
Aesthetic (H M L(N/A)
Historical (H-M L (N/A)
Archeological (H M-L (NA)
Consumptive value
Fisheries (H. M. L. W/A)
Renewable resources (H_M L WAL
Agricultural (H M L(N/A))
Wildlife
Data Plot Location Sketch

	PIE WETLAN	D DE	LINEA	HON	DATA FURIN	PIO	. IAO' _ - 3€		٠
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	Weather: Project/Site:_	Lan	dsbu	KO	,	Date	9: <i>5-2</i>	00-00	,
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	Disturbance? (9) Problem Area? (ŽN	Nen	essi	~ .	100		-	
I			•	Cove	r Class				
	1=0-5-> 2.5 2=5	- 25→1	3= 25 - 50	37.5	4= 50 - 75→62.5 5= 75	- 95-)	85 6= >95	→ 97.5	
	W/L	Cvr	Indicator		W/L UP Dominant Plant-Species	CAL	Indicator Status	Stratum	
	Dominant Plant Spp	Cls		Stratum		Cis	Status	3,12,0,11	•
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	%OBL, FACW of FAC		OBL FACW	or FAC	Ing FAC-)] Dother	,	· · · · · · ·		
	Hationalia: puz-50%	2.5	EF.	HYD	[no FAC-)] □ other PROLOGY y soils)? Y N Depth of i				
	Inund? YN Surf Ha	depth;	Sat^12" (6	in sand	y solls)? Y N Depth of t sediment deposit □ W/l	ree H	20 in pit/hole		
	Other 1 Indicators: L	, water t	narks Ci on		tuestion				
	Secondary Indicators:	□ oxidi:	zed root cha	nneis^12	 Mater-stained leave 	5 🗆	local soil sur	vey data	
	DFAC-Neutral Test (n vague	nyaroi) Li c	mer	-database Children			Пропе	į
	Growing Season? Y	N Base	d on: 🗆 date	□ obsy	growth D soil temp 919.	.7° >4	1°F 🗆	 :	•
	Wetland hydrology (Y'N R	tionale:	DLO4	growth soil temp 19	15		 .	
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	Other hydric soil indic Rationale:	ators: _	_ two	<u>~~</u>	triate Treat	بالبحي	iyunc sonr		,
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FUNCTIONS AND VALUES

HYDROLOGIC SUPPORT	
Groundwater recharge (H MC)N/A)	
Groundwater discharge (H MC N/A)	
Stream baseflow contribution (H M(L)N/A)	
Floodwater attenuation (HW)L N/A)	
Floodwater detention (H M L N/A)	
Floodwater retention (H (M) L N/A)	
Floodwater attenuation (H M) L N/A)	
Floodwater desynchronization (H M) L N/A)	
WATER CHALITY FUNCTIONS	
a dimension stabilization (H MC N/A)	
Potention of sediments, numerical toxicality (11(11) - 14/11	
Transformation of nutrients or toxicants (H M (L)N/A)	
· Wastewater treatment (H M L (N))	
NATURAL BIOLOGICAL FUNCTIONS	
Primary productivity (H M(C)VVA)	
Organic accumulation (H Mt L N/A)	
Organic export (H M L NA)	
Decomposition (H M L NA)	
Detailed transport (H (M71 N/A)	
Nutrient cycling and utilization (H M L N/A)	
Food chain support (H M (N/A)	-
HARITAT FUNCTIONS	
· Invertebrates (HLM DN/A)	
· Amphibians (Ft M / N/A)	
Fisheries (H M L N/A)	
· Mammals (H M (L) N/A)	
Birds (HKM T) N/A)	
Sanctuary and refuge (H M L)N/A)	
SOCIO-ECONOMIC FUNCTIONS	
Non-consumptive value	
Recreational (H M L (N/A)	
Aesthetic (H M/L) N/A	
Historical (H M YNA)	
Archeological (H M L (N/A)	
· Consumptive value	
Fisheries (H M L(N/A)	
Renewable resources (H M L WA)	
Agricultural (H M L (NA)	
Wildlife	
Data Plot Location Sketch	

	PIE WETLAND	DEI	LINEAT	ION [ATA FORM	Piot	140	,	i
	PIE WETLAND ROUTINE ONSIT	E D	FTERMI	NATIC	N METHOD T	ranse	ect ID	Y	
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	Isturbance?(Y)A	*							
<u>`</u> .	.;oblem Area? (Y/)	<u> </u>		Cours	Class			_	
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		5-71:	3= 25 - 50						
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	i reg'n'i knowl BW/L %OBL FACW or FAC Rationalie: \$>50% □	_	herb + 10	Shrub	(no EAC-)) [] other	Pro	A IM	<u>igena</u>	. XX
	Rationalie: 550% □ Inund2 YN Surf H20	<50%	OBL, FACY	OTPAC HYI	ROLOGY	7		Sint	
	,		7		. (. n . td. V/ N. Donith	OT TERM !	ייטווטוט וא טכר		
	Other 1st Indicators: 1st Other field evidence of Secondary Indicators: 1st Other field evidence	surfac	e inundation	or soil s	eturation	aves [local soil su	rvey data	
	Cassadesy Indicators: L	JOXIO	1200 1001 01.					[] no	ne .
	DFAC-Neutral Test (in Recorded Data: Distra	am, k	ke or tide g	uge 🗆	aerial photo O other	19 7° >	41°F 🛛		٠,
	Recorded Data: 🗆 stre Growing Season? Y N	Bas	ed on: 🛭 dat		A GLOWIN LY SOIL FRIIT	10.7			
	Growing Season? T N Wetland hydrology?	M P	łationale:						
					to at least 16"	Class	Confin	m Mapg Y.I	٧ ,
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	Hydric Soli Indicators:	□ HI	H 🗆 losots	stic epipe	lallower) idon □ Sulfidic Odor i □ High Surface Or Soils Hydric Soil	ganic C	ontent in San	dy Solls	*
(☐ Reducing condition ☐ Concretions ☐ O	8 7	PGinaking p	Sandy S	oils Hydric Soil	s List:	□Local □ Hydric Soi	Tape in	
1) Concretions U U Other hydric soll indic	I U a i m	. 0(100				Hydric Soi		
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FUNCTIONS AND VALUES

HYDROLOGIC SUPPORT
Groundwater recharge (H ML)(A)
· Groundwater discharge (H M L(N/A)
· Stream baseflow contribution (H M L N/A)
Floodwater attenuation (HVM(12)N/A)
· Floodwater detention (H M D N/A)
· Floodwater retention (H W 12 N/A)
· Floodwater attenuation (H M D) N/A)
· Floodwater desynchronization (H M L)N/A)
WATER QUALITY FUNCTIONS
· Sediment/shoreline stabilization (H M L(N/A))
Retention of sediments, nutrients or toxicants (M L N/A)
· Transformation of nutrients or toxicants (H M NA)
· Wastewater treatment (H M L (VA)
NATURAL BIOLOGICAL FUNCTIONS
Primary productivity (H M(L) N/A)
· Organic accumulation (H/M) L N/A)
Organic export (H M L N/A)
· Decomposition (HM TNA)
Detrital transport (H M L NA)
Nutrient cycling and utilization (H M N/A)
· Food chain support (in the Liver)
HABITAT FUNCTIONS
· Invertebrates (H.M.) N/A)
· Amphiblans (H M L) N/A)
Fisheries (H M L NA)
Mammals (H M L) N/A)
· Birds (H(M L)N/A)
Sanctuary and refuge (H M L N/A)
SOCIO-ECONOMIC FUNCTIONS
· Non-consumptive value
Recreational (H M L (A)
Aesthetic (H M L
Historical (H M L WA)
Archeological (H M L (N/A)
· Consumptive value
Fisheries (H M L (NA)
Renewable resources H M L WA
Agricultural (H M L (VA)
Wildlife
Data Plot Location Sketch