Port of Seattle

May 15, 2001

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DEPT OF ECOLOGY

Mr. John Drabek
Department of Ecology
Northwest Regional Office
Water Quality Program
3190 160th Ave S.E.
Bellevue, WA 98008-5452

Dear Mr. Drabek:

This letter provides an update regarding fill material placed at the Third Runway Embankment during the first quarter 2001 and presents the final tonnage and calculated volumes for soil placed during the Third Runway Phase III Embankment contract (May 2000 through February 2001). There were no new sources of fill received during the first quarter 2001. Supplemental environmental information for ongoing chemical testing of fill sources is included.

The attached table provides a summary of soil placed during the 2000 Phase III Embankment contract. There a few minor differences between the estimates provided during earlier reports to Ecology and the final actual amounts presented in the attached table. Data provided in the attached table are based on the final contract records and take precedence over earlier submittals.

This documentation was developed consistent with the requirements of the 1999 Airfield Project Soil Fill Acceptance Criteria agreed to by the Port and Ecology in May 1999. If you have any questions regarding this information, I can be reached at (206) 439-6604.

Sincerely,

Paul W. Agid
Environmental Program Manager

xc: Jim Thomson (Port of Seattle)
Ching Pi Wang (Ecology)

Attachments: Fill summary table
Environmental documentation

Exhibit 293
Date 2/7/02
Witness CLARK
Diane Mills Court Reporter

Seattle-Tacoma
International Airport
P.O. Box 68727
Seattle, WA 98168 U.S.A.
TELEX 703433
FAX (206) 431-5912

May 15, 2001

Mr. John Drabek
Department of Ecology
Northwest Regional Office
Water Quality Program
3190 160th Ave S.E.
Bellevue, WA 98008-5452

Dear Mr. Drabek:

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Sincerely,

Paul W. Agid
Environmental Program Manager

Cc: Jim Thomson (Port of Seattle)
Ching Pi Wang (Ecology)

Attachments:
Fill summary table
Environmental documentation

THIRD RUNWAY CUMULATIVE FILL SUMMARY -- PHASE III EMBANKMENT (2000/2001)

Source Name	Supplier	Category	Description	Month Initial Receipt	Year Initial Receipt	Month Final Receipt	Year Final Receipt	Final Amount (Tons)	Final Volume (CY) (a)
Airborne Express/ FAA	FAA	A	New FAA Tower -- Phase 2	April	2000	May	2000		4,000
Airfield 2000 -Taxiway B	Port	A	Taxiway B Improvements	April	2000	June	2000		5,300
First Avenue Bridge	WSDOT	A	First Avenue Bridge, Seattle	April	2000	June	2000		85,000
No. Esplanade	Port	A	No. Esplanade - Conc. D	May	2000	May	2000		1,700
NW Hangar Project	NW/CTI	A	New NW Hangar	June	2000	August	2000	69,549	38,638
Lakeland Pit (2000)	CTI	B (b)	Borrow Pit, Sumner	June	2000	February	2001	370,164	205,647
CTI Pit No. 3	CTI	Borrow	Borrow Pit, Sumner	June	2000	February	2001	311,193	172,885
Auburn Pit (Miles Sa & Gvl)	CTI	Borrow	Borrow Pit, Auburn	June	2000	February	2001	288,783	160,435
Stoneway Pit (Kent-Kangley)	CTI	Borrow	Borrow Pit, Ravensdale	June	2000	February	2001	497,224	276,236
Airfield 2000 - So. Sat.	Port	A	Duct Bank, IWS Improve.	June	2000	Sept	2000		1,000
Lincoln Square	CTI	A	Bellevue Development	July	2000	November	2000	545,306	302,948
NE12th/112th Bellevue	CTI	A	Bellevue/Stowe Stockpile	August	2000	Sept	2000	95,012	52,784
REI	ICON	A	REI's Kent Expansion	July	2000	July	2000		6,000
IWS Lagoon No. 3	Port	A	Expansion Lagoon 3 (2000)	August	2000	November	2000	64,500	35,833
Third RW Offices	Port	B	New Offices - West Side	August	2000	Sept	2000		10,200
Airfield 2000- West Side	Port	A	RTA A and B, Taxi P,N	August	2000	October	2000		31,400
Black River Quarry	CTI	A	Stoneway Rock & Recycl.	August	2000	October	2000	93,328	51,849
Detention Ponds C and F	Port	B	West Side Detention Ponds	Sept	2000	October	2000	22,485	12,492
Seattle Olympus	CTI	A	Bell Tower - Seattle	October	2000	October	2000	196	109
Bellevue Summit Ridge	CTI	A	Bellevue Development	October	2000	January	2001	148,160	82,311

(a) Note these values may vary slightly from earlier submittals to Ecology. These values represent final contract actual amounts and take precedence over earlier estimates. Reported tonnage was converted to cubic yards (cy) assuming a soil density of 1.8 tons/cy.

(b) As part of source review for the Phase IV Embankment contract, the Port has reevaluated this site and determined that the site meets the requirements for Category B (this site was previously reported as Category A).

SUPPLEMENT
ENVIRONMENTAL REVIEW SHEET
Airport Project Fill Material

CONTRACTOR/SUPPLIER NAME: CTI

SITE: Black River Quarry

SITE LOCATION: Stoneway Rock and Recycling Renton Washington

DATE INITIAL REPORT TO ECOLOGY: Third Quarter 2000

COMMENTS:

This supplement documents additional sampling activities at the Black River Quarry site.

REVIEWER: E Clarke DATE: 4/30/01

Port of Seattle

Memo

To: Paul Agid

From: Beth Clark

CC: Elizabeth Leavitt, Jim Thomson

Date: 04/30/01

Re: Black River Quarry

Rock aggregrate was imported to the Third Runway embankment from the Black River Quarry during August through October 2000. The site, owned by Stoneway Rock & Recycling, also operates as a concrete crushing and recycling center. Blasting and crushing of bedrock derived from the quarry produces aggregate that is used for various construction projects in the Puget Sound. Chemical testing was conducted on samples of the aggregate by AMEC, environmental consultant to the supplier City Transfer, Inc. (CTI). The initial test results for this site were submitted to Ecology in the Port's Third Quarterly Report 2000. On the request of the Port, AMEC conducted additional chemical testing on the aggregate. These test results have been discussed with Mr. Chung Yee of the Department of Ecology (various telecommunications fall, 2000) and are discussed further below.

Testing for Petroleum Hydrocarbons

Table 1, prepared by AMEC, summarizes the test results for petroleum hydrocarbons. The initial test results indicated the presence of diesel and heavy oil range petroleum (TPH diesel and oil) at 200 and 310 ppm respectively. This exceeds the current Method A standard of 200 ppm, but is well below the new MTCA Method A standard of 2000 ppm which becomes effective August 15, 2001. The presence of TPH was attributed to the inadvertent mixing of residual asphaltic materials found in the recycling operations with the stockpiled soil. Subsequent samples collected on 6/22/00 and 7/6/00 of newly blasted rock also detected TPH but at levels below current and proposed MTCA Method A standards. Based on the results of the initial chemical testing, the Port agreed to accept only newly blasted rock and required AMEC to conduct ongoing TPH testing as a condition to the acceptance of the material to the Third Runway embankment. The initial test results were submitted to Ecology.

The results of the ongoing sampling of the aggregate are also summarized in Table 1 (9/25/00 through 10/11/00). The results indicate the continued presence of low levels of TPH (primarily oil). The results varied from non-detect up to 270 ppm. After careful review of the site operations, AMEC concluded that the only apparent source of TPH was residual material in the crushing equipment left from the asphalt recycling operations. The Port stopped the import of material from the Black River Quarry in October and instructed CTI and Stoneway to evaluate potential modifications in procedures to better separate the asphalt recycling and rock crushing operations. Based on their evaluation, Stoneway modified operations to include:

(1) Thorough cleaning of the crushing equipment after the asphalt recycling operations and before the switch to rock crushing, and
(2) Discard of the first hundred tons of rock crushed after the use of the equipment for asphalt recycling.

Subsequent on-site testing conducted by AMEC on 10/2400 through 10/30/00, after the modifications in operations, indicate levels below current and proposed Method A standards. Although there were no exceedances of Method A standards, none of this material was placed at the Third Runway.

Testing for Metals

After review of the Port's Third Quarterly Report 2000, Mr. Chung Yee of Ecology called the Port to discuss the metal data. He particularly noted the presence of copper at levels above typical background levels for Puget Sound, but for which there is not MTCA Method A standard. The initial test results are summarized on Table 2 (6/9/00). Based on Mr. Chung Yee's evaluation, the Port requested AMEC to conduct additional sampling of the aggregrate for total metals. AMEC and the Port also discussed the potential sources of copper and concluded that copper was naturally occurring in the rock formation and that there were no known on-site sources of copper contamination.

These results of the additional metals testing are also summarized on Table 2 (11/30/00). The results of the testing are compared to current and proposed MTCA Method A standards for analytes for which these standards are published, and MTCA Method B standards when there are no published Method A standards. The Method B standards were developed based on protection of groundwater using the Three Phase Partitioning Model (WAC 173-340-747). Ecology uses this conservative model to back-calculate soil concentrations that are protective of drinking water. The default assumptions used by Ecology in the regulations were used in the calculations. Metal test results in Table 2 in all cases are below the published MTCA Method A and calculated Method B standards.

Status

The Port stopped the import of material from the Black River Quarry in mid-October to allow time for the operational changes and additional testing discussed above. CTI did not bring any additional material from this site after mid-October 2000.

TABLE 1
SUMMARY OF ANALYTICAL RESULTS ON SOIL SAMPLES: PETROLEUM HYDROCARBONS
BLACK RIVER QUARRY, KING COUNTY, WASHINGTON

Date Collected	Sample No.	TPH-G	TPH-D	TPH-O
6/9/00	S-1	<20	>50	>100
6/9/00*	S-1*	NT	[redacted]	[redacted]
6/22/00	S-2	NT	29.4	65.6
	S-3	NT	48.4	83.4
	S-4	NT	28.4	50.6
7/6/00	S-1	NT	<10.0	31.5
	S-2	NT	<10.0	35.0
9/25/00	S-3	NT	<10	<25
	S-4	NT	<10	<25
9/27/00	S-2	NT	<10	<25
	S-4	NT	<10	<25
9/29/00	S-2	NT	<25	150
	S-4	NT	<10	[redacted]
10/02/00	S-3	NT	19	130
	S-4	NT	31	[redacted]
10/9/00	S-3	NT	<10	43
	S-4	NT	<10	26
	S-7	NT	<10	<25
	S-8	NT	<10	<25
10/11/00	S-3	NT	<10	<25
	S-4	NT	<10	<25
10/24/00	S-1	NT	<10	<25
	S-2	NT	<10	<25
10/25/00	S-1	NT	<10	87
	S-2	NT	<10	33
10/27/00	S-1	NT	<10	<25
	S-2	NT	<10	33
	S-3	NT	<27	<53
	S-4	NT	<27	<53
10/30/00	S-1	NT	13	62
	S-2	NT	<10	<25
MTCA Method "A" Cleanup Level		100	200	200

MTCA = Washington State, Model Toxic Control Act
(NT = Not Tested)
Sample collected on 6/9/00 was tested for TPH-G, TPH-D, TPH-O = Gasoline-, diesel-, and heavy oil-range petroleum hydrocarbons, (respectively), by Washington State Method WTPH-HCID.
* Sample re-tested for TPH-D and TPH-O = diesel-, and heavy oil-range petroleum hydrocarbons, (respectively), by Washington State Method WTPH-D (extended).
Samples collected after 6/9/00 were tested for TPH-D, TPH-O = Diesel-, and heavy oil-range petroleum hydrocarbons, (respectively), by Washington State Method WTPH-D (extended)
All results in parts per million (ppm)
Shaded Numbers = In excess of MTCA Method "A" Cleanup Levels

TABLE 2
SUMMARY OF ANALYTICAL RESULTS ON SOIL SAMPLES: METALS
BLACK RIVER QUARRY, KING COUNTY, WASHINGTON

Sample	Date	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
S-1	6/9/00	ND	3.5	<0.2	0.25	22	101	111	0.1	34	ND	4.3	ND	92.5
S-1	11/30/00	ND	ND	ND	ND	20	83	ND	ND	32	ND	ND	ND	81
S-2	11/30/00	NA	NA	NA	NA	NA	89	NA	NA	NA	NA	NA	NA	NA
S-3	11/30/00	ND	ND	ND	ND	28	95	ND	ND	40	ND	ND	ND	78
S-4	11/30/00	NA	NA	NA	NA	NA	77	NA	NA	NA	NA	NA	NA	NA
S-5	11/30/00	ND	ND	ND	ND	25	91	ND	ND	38	ND	ND	ND	59
S-6	11/30/00	NA	NA	NA	NA	NA	110	NA	NA	NA	NA	NA	NA	NA
S-7	11/30/00	ND	ND	ND	ND	31	83	ND	ND	41	ND	0.64	ND	59
S-8	11/30/00	ND	ND	ND	ND	23	96	ND	ND	43	ND	ND	ND	68
S-9	11/30/00	NA	NA	NA	NA	NA	100	NA	NA	NA	NA	NA	NA	NA
S-10	11/30/00	NA	NA	NA	NA	NA	88	NA	NA	NA	NA	NA	NA	NA
MTCA Standards														
MTCA Method A Current		N/A	20	N/A	2	100	N/A	250	1	N/A	N/A	N/A	N/A	N/A
MTCA Method A Proposed		N/A	20	N/A	2	2000 (Cr III)	N/A	250	2	N/A	N/A	N/A	N/A	N/A
MTCA Method B GW (a)		--	--	--	--	--	260	--	--	417	--	74	--	5,970

Notes:

All values reported in mg/kg

ND = Not Detected

NA = Not Analyzed

N/A=Not applicable; no published standard

(a) Method B Standards for protection of drinking water calculated using MTCA WAC 173-340-747 Three Phase Partitioning Model.
Calculated for those *detected* constituents for which Method A standards are not available.

ANALYTICAL DATA
METALS

FAX

amec

To Beth Clarke
Company POS
Fax 206-988 5636

From Meg Strong
Direct Tel 425 820 4669
Fax
Pages 19 (inc. cover)
Date January 4th 2001
cc

Project No. 0-93M-00087 TASK4
Fax Operator MS

Subject Analytical Results

Beth

Please find attached the analytical results for samples collected from the Stanwood pit on November 30, 2000.

The samples were mixed, prepared and crushed to provide a homogenised sample representative of the crushed bedrock material.

If you have any further questions, please feel free to call.

Regards

Meg Strong

AMEC Earth & Environmental, Inc.
11335 N.E. 122nd Way
Suite 100
Kirkland, Washington
U.S.A. 98034
Tel (425) 820-4669
Fax (425) 821-3914
www.amec.com

Date of Report: December 8, 2000
Samples Submitted: November 30, 2000
Lab Traveler: 11-232
Project: 0-93M-00087-0 T7

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 12-4&7-00
Date Analyzed: 12-5,6&8-00

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-232-01
Client ID: S-1

Analyte	Method	Result	PQL
Antimony	6010B	ND	5.6
Arsenic	6010B	ND	11
Beryllium	6010B	ND	0.56
Cadmium	6010B	ND	0.56
Chromium	6010B	20	0.56
Copper	6010B	83	0.56
Lead	6010B	ND	5.6
Mercury	7471A	ND	0.28
Nickel	6010B	32	1.1
Selenium	6010B	ND	11
Silver	6010B	ND	0.56
Thallium	6010B	ND	5.6
Zinc	6010B	81	2.8

Date of Report: December 8, 2000
Samples Submitted: November 30, 2000
Lab Traveler: 11-232
Project: 0-93M-00087-0 T7

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 12-4&7-00
Date Analyzed: 12-5,6&8-00

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-232-03
Client ID: S-3

Analyte	Method	Result	PQL
Antimony	6010B	ND	5.9
Arsenic	6010B	ND	12
Beryllium	6010B	ND	0.59
Cadmium	6010B	ND	0.59
Chromium	6010B	28	0.59
Copper	6010B	95	0.59
Lead	6010B	ND	5.9
Mercury	7471A	ND	0.29
Nickel	6010B	40	1.2
Selenium	6010B	ND	12
Silver	6010B	ND	0.59
Thallium	6010B	ND	5.9
Zinc	6010B	78	2.9

Date of Report: December 8, 2000
Samples Submitted: November 30, 2000
Lab Traveler: 11-232
Project: 0-93M-00087-0 T7

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 12-4&7-00
Date Analyzed: 12-5,6&8-00

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-232-05
Client ID: S-5

Analyte	Method	Result	PQL
Antimony	6010B	ND	5.6
Arsenic	6010B	ND	11
Beryllium	6010B	ND	0.56
Cadmium	6010B	ND	0.56
Chromium	6010B	25	0.56
Copper	6010B	91	0.56
Lead	6010B	ND	5.6
Mercury	7471A	ND	0.28
Nickel	6010B	38	1.1
Selenium	6010B	ND	11
Silver	6010B	ND	0.56
Thallium	6010B	ND	5.6
Zinc	6010B	59	2.8

Date of Report: December 8, 2000
Samples Submitted: November 30, 2000
Lab Traveler: 11-232
Project: 0-93M-00087-0 T7

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 12-4&7-00
Date Analyzed: 12-5,6&8-00

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-232-07
Client ID: S-7

Analyte	Method	Result	PQL
Antimony	6010B	ND	5.8
Arsenic	6010B	ND	12
Beryllium	6010B	ND	0.58
Cadmium	6010B	ND	0.58
Chromium	6010B	31	0.58
Copper	6010B	83	0.58
Lead	6010B	ND	5.8
Mercury	7471A	ND	0.29
Nickel	6010B	41	1.2
Selenium	6010B	ND	12
Silver	6010B	0.64	0.58
Thallium	6010B	ND	5.8
Zinc	6010B	59	2.9

Date of Report: December 8, 2000
Samples Submitted: November 30, 2000
Lab Traveler: 11-232
Project: 0-93M-00087-0 T7

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 12-4&7-00
Date Analyzed: 12-5,6&8-00

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-232-08
Client ID: S-8

Analyte	Method	Result	PQL
Antimony	6010B	ND	5.7
Arsenic	6010B	ND	11
Beryllium	6010B	ND	0.57
Cadmium	6010B	ND	0.57
Chromium	6010B	23	0.57
Copper	6010B	96	0.57
Lead	6010B	ND	5.7
Mercury	7471A	ND	0.29
Nickel	6010B	43	1.1
Selenium	6010B	ND	11
Silver	6010B	ND	0.57
Thallium	6010B	ND	5.7
Zinc	6010B	68	2.9

Date of Report: December 8, 2000
Samples Submitted: November 30, 2000
Lab Traveler: 11-232
Project: 0-93M-00087-0 T7

TOTAL COPPER
EPA 6010B

Date Extracted: 12-4-00
Date Analyzed: 12-6-00

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-232-09
Client ID: S-9

Analyte	Method	Result	PQL
Copper	6010B	100	0.58

Date of Report: December 8, 2000
Samples Submitted: November 30, 2000
Lab Traveler: 11-232
Project: 0-93M-00087-0 T7

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	12-4&7-00
Date Analyzed:	12-5,6&8-00
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB1204S2,MB1207S2&MB1207S5

Analyte	Method	Result	PQL
Antimony	6010B	ND	5.0
Arsenic	6010B	ND	10
Beryllium	6010B	ND	0.50
Cadmium	6010B	ND	0.50
Chromium	6010B	ND	0.50
Copper	6010B	ND	0.50
Lead	6010B	ND	5.0
Mercury	7471A	ND	0.25
Nickel	6010B	ND	1.0
Selenium	6010B	ND	10
Silver	6010B	ND	0.50
Thallium	6010B	ND	1.0
Zinc	6010B	ND	2.5

Date of Report: December 8, 2000
Samples Submitted: November 30, 2000
Lab Traveler: 11-232
Project: 0-93M-00087-0 T7

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 12-4&7-00
Date Analyzed: 12-5,6&8-00

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-232-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Antimony	ND	ND	NA	5.0	
Arsenic	ND	ND	NA	10	
Beryllium	ND	ND	NA	0.50	
Cadmium	ND	ND	NA	0.50	
Chromium	17.5	19.0	8.2	0.50	
Copper	73.7	80.2	8.5	0.50	
Lead	ND	ND	NA	5.0	
Mercury	ND	ND	NA	0.25	
Nickel	28.2	31.7	12	1.0	
Selenium	ND	ND	NA	10	
Silver	ND	ND	NA	0.50	
Thallium	ND	ND	NA	1.0	
Zinc	72.0	75.7	5.1	2.5	

Date of Report: December 8, 2000
Samples Submitted: November 30, 2000
Lab Traveler: 11-232
Project: 0-93M-00087-0 T7

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 12-4&7-00
Date Analyzed: 12-5,6&8-00

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-232-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Antimony	500	43.5	8.7	41.2	8.2	5.5	V
Arsenic	100	80.5	81	73.7	74	8.8	
Beryllium	50	42.3	85	42.5	85	0.38	
Cadmium	50	43.9	88	43.3	87	1.5	
Chromium	100	106	89	106	89	0	
Copper	50	126	105	128	108	1.0	
Lead	250	208	83	209	84	0.62	
Mercury	1.0	1.01	101	1.12	112	11	
Nickel	200	209	91	214	93	2.0	
Selenium	100	82.4	82	83.8	84	1.7	
Silver	50	43.2	86	42.4	85	2.0	
Thallium	100	81.5	81	84.4	84	3.6	
Zinc	50	116	88	121	97	4.0	

Date of Report: December 8, 2000
Samples Submitted: November 30, 2000
Lab Traveler: 11-232
Project: 0-93M-00087-0 T7

TOTAL COPPER
EPA 6010B

Date Extracted: 12-4-00
Date Analyzed: 12-6-00

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-232-02
Client ID: S-2

Analyte	Method	Result	PQL
Copper	6010B	89	0.57

Date of Report: December 8, 2000
Samples Submitted: November 30, 2000
Lab Traveler: 11-232
Project: 0-93M-00087-0 T7

TOTAL COPPER
EPA 6010B

Date Extracted: 12-4-00
Date Analyzed: 12-6-00

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-232-04
Client ID: S-4

Analyte	Method	Result	PQL
Copper	6010B	77	0.56

Date of Report: December 8, 2000
Samples Submitted: November 30, 2000
Lab Traveler: 11-232
Project: 0-93M-00087-0 T7

TOTAL COPPER
EPA 6010B

Date Extracted: 12-4-00
Date Analyzed: 12-6-00

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-232-06
Client ID: S-6

Analyte	Method	Result	PQL
Copper	6010B	**110**	0.56

Date of Report: December 8, 2000
Samples Submitted: November 30, 2000
Lab Traveler: 11-232
Project: 0-93M-00087-0 T7

TOTAL COPPER
EPA 6010B

Date Extracted: 12-4-00
Date Analyzed: 12-6-00

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-232-10
Client ID: S-10

Analyte	Method	Result	PQL
Copper	6010B	88	0.55

Date of Report: December 8, 2000
Samples Submitted: November 30, 2000
Lab Traveler: 11-232
Project: 0-93M-00087-0 T7

TOTAL COPPER
EPA 6010B
METHOD BLANK QUALITY CONTROL

Date Extracted:	12-4-00
Date Analyzed:	12-6-00
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB1204S2

Analyte	Method	Result	PQL
Copper	6010B	ND	0.50

Date of Report: December 8, 2000
Samples Submitted: November 30, 2000
Lab Traveler: 11-232
Project: 0-93M-00087-0 T7

TOTAL COPPER
EPA 6010B
DUPLICATE QUALITY CONTROL

Date Extracted: 12-4-00
Date Analyzed: 12-6-00

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-232-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Copper	73.7	80.2	8.5	0.50	

Date of Report: December 8, 2000
Samples Submitted: November 30, 2000
Lab Traveler: 11-232
Project: 0-93M-00087-0 T7

TOTAL COPPER
EPA 6010B
MS/MSD QUALITY CONTROL

Date Extracted: 12-4-00
Date Analyzed: 12-6-00

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 11-232-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Copper	50	126	105	128	108	1.0	

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% MOISTURE

Date Analyzed: 12-4-00

Client ID	Lab ID	% Moisture
S-1	11-232-01	11
S-2	11-232-02	12
S-3	11-232-03	15
S-4	11-232-04	12
S-5	11-232-05	10
S-6	11-232-06	10
S-7	11-232-07	14
S-8	11-232-08	13
S-9	11-232-09	14
S-10	11-232-10	9.0

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DATA QUALIFIERS AND ABBREVIATIONS

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

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

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

D - Data from 1:____ dilution.

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

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

G - Insufficient sample quantity for duplicate analysis.

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

I - Compound recovery is outside of the control limits.

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

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

L - The RPD is outside of the control limits.

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

O - Hydrocarbons outside the defined gasoline range are present in the sample; NWTPH-Dx recommended.

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

Q - Surrogate recovery is outside of the control limits.

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

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

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

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects. The Spike Blank recovery for Antimony equals 94%.

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

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

Y - Sample extract treated with an acid cleanup procedure.

Z -

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