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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION III
CENTRAL REGIONAL LABORATORY
839 BESTGATE ROAD
ANNAPOLIS, MARYLAND 21401
(301) 266-9180

DATE : November 6, 1987

SUBJECT: Analytical Reports for Pigeon Point Landfill

FROM : James Barron (3ES21)
Acting Chief, Annapolis Laboratory

TO : Joel Karmazyn (3HW34)

Attached are the analytical reports for Pigeon Point Landfill. These reports are for the samples which were received at CRL on October 2, 1987. You may give me a call if you have any questions regarding these samples.

JB:jr

Attachments
a/s

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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ORIGINAL (Red)

DATE : November 6, 1987

SUBJECT: Metals Determinations of Pigeon Point Landfill
Superfund-Remedial (TFA03N9ZZ) (10/5/87 - 10/28/87), 871002-05-24

FROM : Bernard A. Sammons (BAS), Chemist
Charles A. Weisberg (C.A.W.), Chemist
Elmer H. Griffin, Environmental Scientist

TO : James Barron
Acting Chief, Annapolis Laboratory

THRU: Patricia F. Sosinski (PFS)
Team Leader, Metals Analysis Section

Samples 871002-05-24 were analyzed by furnace atomic absorption spectroscopy and inductively coupled plasma optical emission spectrometry. The results are presented in the attached table.

In those instances when filtered exceeds total, the difference is within the precision of the method.

Additional quality control data are available upon request.

Sample Description:

Lab No.	Description
871002-05	Pigeon Point Landfill, Filtered, STA MW28
871002-06	Pigeon Point Landfill, Unfiltered, STA MW28
871002-07	Pigeon Point Landfill, Filtered, STA MW45
871002-08	Pigeon Point Landfill, Unfiltered, STA MW45
871002-09	Pigeon Point Landfill, Filtered, STA MW29
871002-10	Pigeon Point Landfill, Unfiltered, STA MW29
871002-11	Pigeon Point Landfill, Filtered, STA MW51
871002-12	Pigeon Point Landfill, Unfiltered, STA MW51
871002-13	Pigeon Point Landfill, Filtered, STA MW50
871002-14	Pigeon Point Landfill, Unfiltered, STA MW50
871002-15	Pigeon Point Landfill, Filtered, STA MW52
871002-16	Pigeon Point Landfill, Unfiltered, STA MW52
871002-17	Pigeon Point Landfill, Filtered, STA MW25R
871002-18	Pigeon Point Landfill, Unfiltered, STA MW25R
871002-19	Pigeon Point Landfill, Filtered, STA MW26R
871002-20	Pigeon Point Landfill, Unfiltered, STA MW26R
871002-21	Pigeon Point Landfill, Filtered, STA MW27R
871002-22	Pigeon Point Landfill, Unfiltered, STA MW27R
871002-23	Pigeon Point Landfill, Filtered, STA MW31
871002-24	Pigeon Point Landfill, Unfiltered, STA MW31

BAS/CAW/EHG:nt
cc: Peggy Zawodny RCO

U.S. Environmental Protection Agency, Region III, Central Regional Laboratory

Project Name: Pigeon Point Landfill, Superfund-Remedial (TFA03N9ZZ)

Sample Number:	871002-05	871002-06	871002-07	871002-08	871002-09	871002-10
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
METALS - HSL						
Antimony	<5*(MSA)	<5*(86%)	<5(105%)	<5(107%)	<5*(MSA)	<5*(MSA)
Aluminum	<200*(107%)	439	<200	4,390	<200*(100%)	23,050
Arsenic	<5*(MSA)	<5*(MSA)	<5(MSA)	<5(MSA)	<5*(MSA)	33±4(MSA)
Barium	<200*(105%)	<200	<200	<200	<200	<200*(107%)
Beryllium	<5*(87%)	<5	<5	<5	<5	<5*(89%)
Cadmium	<5*(95%)	<5	<5	<5	<5	<5*(93%)
Chromium	<10*(90%)	<10	<10	<10	<10	48±0(90%)
Cobalt	203±3(110%)	186	<50	<50	<50	<50*(97%)
Copper	<25*(95%)	<25	<25	<25	<25	139±3(101%)
Iron	<100*(99%)	1,150	5,880	6,360	68,300±800(99%)	114,000
Lead	<5*(107%)	<5*(98%)	<5(91%)	<5(96%)	<5*(114%)	111±0(112%)
Manganese	9,480±170(105%)	9,070	92	86	1,400	1,660±10(104%)
Nickel	<40*(98%)	<40	<40	<40	<40	<40*(98%)
Selenium	<5*(94%)	<5*(90%)	<5(107%)	<5(98%)	<5*(96%)	<5*(101%)
Silver	<10*(91%)	<10	<10	<10	<10	<10*(99%)

MSA = Method of Standard Additions
*Analyzed in duplicate, both values below specified detection limit.
Numbers in parentheses are spike recoveries.

ORIGINAL (Red)

U.S. Environmental Protection Agency, Region III, Central Regional Laboratory

Project Name: Pigeon Point Landfill, Superfund-Remedial (TFA03N9ZZ)

Sample Number:	871002-05	871002-06	871002-07	871002-08	871002-09	871002-10
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
METALS - HSL						
Thallium	<5*(91%)	<5*(MSA)	<5(98%)	<5(100%)	<5*(93%)	<5*(113%)
Vanadium	<50*(83%)	<50	<50	<50	<50	84±3(88%)
Zinc	150±3(108%)	175	<20	<20	<20	206±4(96%)
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Calcium	67±1(111%)	64	12	11	23±1(104%)	20
Magnesium	62±0(115%)	61	3.8	5.0	33±0(105%)	38
Potassium	5.7±0(101%)	5.6	<5.0	<5.0	5.7	8.1±0(102%)
Sodium	441±6(94%)	458	14	14	183	179±0(99%)

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*Analyzed in duplicate, both values below specified detection limit.
Numbers in parentheses are spike recoveries.

ORIGINAL (Red)

U.S. Environmental Protection Agency, Region III, Central Regional Laboratory

Project Name: Pigeon Point Landfill, Superfund-Remedial (TFA03N9ZZ)

Sample Number:	871002-11 ug/L	871002-12 ug/L	871002-13 ug/L	871002-14 ug/L	871002-15 ug/L	871002-16 ug/L
METALS - HSL						
Antimony	<5(MSA)	<5*(MSA)	<5	<5	<5	<5
Aluminum	<200	24,900	<200	<200	<200	<200
Arsenic	<5(MSA)	33±4(MSA)	<5	<5	<5	<5
Barium	<200	<200	<200	<200	<200	<200
Beryllium	<5	<5	<5	<5	<5	<5
Cadmium	<5	<5	<5	<5	<5	<5
Chromium	<10	54	<10	<10	<10	<10
Cobalt	<50	<50	<50	<50	<50	<50
Copper	<25	164	<25	<25	<25	<25
Iron	67,100	125,000	<100	<100	<100	<100
Lead	<5(MSA)	135±1(93%)	<5	<5	<5	<5
Manganese	1,420	1,700	<15	<15	<15	<15
Nickel	<40	46	<40	<40	<40	<40
Selenium	<5(90%)	<5*(100%)	<5	<5	<5	<5
Silver	<10	<10	<10	<10	<10	<10

MSA = Method of Standard Additions
*Analyzed in duplicate, both values below specified detection limit.
Numbers in parentheses are spike recoveries.

ORIGINAL (Red)

U.S. Environmental Protection Agency, Region III, Central Regional Laboratory

Project Name: Pigeon Point Landfill, Superfund-Remedial (TFA03N9ZZ)

Sample Number:	871002-11	871002-12	871002-13	871002-14	871002-15	871002-16
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
METALS - HSL						
Thallium	<5(98%)	<5*(107%)	<5	<5	<5	<5
Vanadium	<50	91	<50	<50	<50	<50
Zinc	<20	244	<20	<20	<20	<20
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Calcium	19	20	<1.0	<1.0	<1.0	<1.0
Magnesium	25	39	<1.0	<1.0	<1.0	<1.0
Potassium	5.5	10	<5.0	<5.0	<5.0	<5.0
Sodium	183	184	<5.0	<5.0	<5.0	<5.0

MSA = Method of Standard Additions
*Analyzed in duplicate, both values below specified detection limit.
Numbers in parentheses are spike recoveries

ORIGINAL (Red)

U.S. Environmental Protection Agency, Region III, Central Regional Laboratory

Project Name: Pigeon Point Landfill, Superfund-Remedial (TFA03N9ZZ)

Sample Number:	871002-17 ug/L	871002-18 ug/L	871002-19 ug/L	871002-20 ug/L	871002-21 ug/L	871002-22 ug/L
METALS - HSL						
Antimony	<5*(86%)	<5*(86%)	<5(86%)	<5*(86%)	<5(MSA)	<5*(MSA)
Aluminum	<200	<200	<200*(90%)	<200	<200	1,500
Arsenic	<5*(86%)	<5*(MSA)	<5(MSA)	<5*(MSA)	<5(MSA)	<5*(MSA)
Barium	<200	<200	<200*(102%)	<200	<200	<200
Beryllium	<5	<5	<5*(93%)	<5	<5	<5
Cadmium	<5	<5	<5*(102%)	<5	<5	<5
Chromium	<10	<10	<10*(96%)	<10	<10	<10
Cobalt	<50	<50	<50*(108%)	<50	86	95
Copper	<25	<25	<25*(102%)	<25	<25	<25
Iron	<100	379	<100*(97%)	364	935	4,830
Lead	<5*(113%)	10±1(MSA)	<5(100%)	12±0(MSA)	<5(101%)	7±0(MSA)
Manganese	28,600	27,200	27,000±100(112%)	23,000	21,100	23,000
Nickel	<40	<40	<40*(96%)	<40	<40	<40
Selenium	<5*(85%)	<5*(MSA)	<5(88%)	<5*(88%)	<5(92%)	<5*(MSA)
Silver	<10	<10	<10*(95%)	<10	<10	<10

MSA = Method of Standard Additions
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Numbers in parentheses are spike recoveries.

ORIGINAL (Red)

U.S. Environmental Protection Agency, Region III, Central Regional Laboratory

Project Name: Pigeon Point Landfill, Superfund-Remedial (TFA03N9ZZ)

Sample Number:	871002-17	871002-18	871002-19	871002-20	871002-21	871002-22
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
METALS - HSL						
Thallium	<5*(MSA)	<5*(105%)	<5(95%)	<5*(93%)	<5(95%)	<5*(95%)
Vanadium	<50	<50	<50*(90%)	<50	<50	<50
Zinc	82	63	<20*(110%)	54	45	86
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Calcium	65	64	118±0(87%)	107	77	84
Magnesium	45	45	89±1(100%)	71	75	75
Potassium	9.8	9.6	9.8±0(106%)	8.7	7.8	8.1
Sodium	73	73	276±8(96%)	246	250	263

MSA = Method of Standard Additions
*Analyzed in duplicate, both values below specified detection limit.
Numbers in parentheses are spike recoveries.

ORIGINAL (Red)

U.S. Environmental Protection Agency, Region III, Central Regional Laboratory

Project Name: Pigeon Point Landfill, Superfund-Remedial (TFA03N9ZZ)

Sample Number:	871002-23	871002-24
	ug/L	ug/L
METALS - HSL		
Antimony	<5*(92%)	<5*(MSA)
Aluminum	<200*(95%)	23,550
Arsenic	<5*(MSA)	<5*(MSA)
Barium	238±1(93%)	369
Beryllium	<5*(91%)	<5
Cadmium	<5*(88%)	5
Chromium	<10*(85%)	97
Cobalt	<50*(92%)	<50
Copper	<25*(94%)	129
Iron	755±1(99%)	99,100
Lead	8±0(MSA)	304±0(109%)
Manganese	564±18(91%)	915
Nickel	<40*(94%)	<40
Selenium	<5*(96%)	<5*(107%)
Silver	<10	<10
Thallium	<5*(MSA)	<5*(MSA)
Vanadium	<50*(89%)	216
Zinc	331±3(106%)	436
	mg/L	mg/L
Calcium	33±0(100%)	40
Magnesium	13±0(98%)	15
Potassium	<5.0*(108%)	8.1
Sodium	43±0(102%)	46

ORIGINAL (Red)

MSA = Method of Standard Additions
*Analyzed in duplicate, both values below specified detection limit.
Numbers in parentheses are spike recoveries.